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# Exploring the Application of Artificial Intelligence (AI) in Enhancing the Operational Efficiency of Five-star Hotels in Kampala City: a Case of Sheraton Hotel Kampala and Kampala Serena Hotel

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**Abstract**

The study explored the application of artificial intelligence (AI) in enhancing the operational efficiency of five-star hotels in Kampala City; focusing on Sheraton Hotel Kampala And Kampala Serena Hotel as a case study. The study mainly focused on three specific objectives: To identify and categorize the Artificial Intelligence (AI) technologies currently implemented by the Sheraton Hotel Kampala and Kampala Serena Hotel; to analyze the operational, economic, and social implications resulting from the use of Artificial Intelligence (AI) in Sheraton Hotel Kampala and Kampala Serena Hotel; and to identify the major challenges, barriers, and risks associated with Artificial Intelligence (AI) adoption in Sheraton Hotel Kampala and Kampala Serena Hotel. The study adopted a descriptive cross-sectional research design using a mixed-methods approach (both quantitative and qualitative techniques) to understand the topic under study. Yamane's formula was used to select a sample size of 304 respondents from a population of the selected hotels and 235 were questionnaires collected for analysis. In addition, 45 interviews were successfully conducted out of the expected 69 interviews, giving a response rate of 65.2%. Data was examined using both descriptive and inferential statistics, including frequencies, percentages, Pearson correlation, model summary, ANOVA for regression analysis. The results indicated that AI adoption have a statistically significant positive relationship with operational efficiency ($r=.853$, $p<0.05$). This means that improvements in AI adoption are strongly associated with increased operational efficiency in the selected hotels. The coefficient of determination (R Square=0.727) shows that approximately 72.7% of the variation in operational efficiency is explained by AI application. This means that AI application significantly contributes to operational efficiency in five-star hotels through improved automation, service delivery, communication, decision-making, and resource management. The Adjusted R Square = 0.718 further confirms that the model remains strong even after adjusting for possible errors and sample variations. This indicates that the regression model is reliable in explaining the relationship between AI application and operational efficiency. The study concludes that both Sheraton Hotel Kampala and Kampala Serena Hotel are in a transitional phase of AI adoption, characterized by strong implementation in operationally critical systems, gradual expansion into advanced AI applications, and ongoing efforts to modernize service delivery. The study recommends

that both hotels should adopt a strategic, integrated, and human-centered approach to AI implementation by aligning technology with operational goals, employee capabilities, and customer expectations.

# CHAPTER ONE
# INTRODUCTION

## 1.0: Chapter Overview

This chapter presents the background to the study, problem statement, purpose of the study, objectives of the study, research questions, hypotheses of the study, scope of the study, and significance of the study.

## 1.1: Background of the Study

The background to the study was segmented into four perspectives; the conceptual perspective, theoretical perspective, historical perspective, and contextual perspective. Combining the four perspectives provides a comprehensive foundation for the study.

### 1.1.1: Conceptual Perspective

In this study, the application of AI is conceptualized as the independent variable (IV), while operational efficiency is the dependent variable (DV). The relationship between these concepts suggests that increased adoption of AI technologies is expected to improve operational processes in five-star hotels.

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think, learn, and make decisions (Marković et al. 2020). In the context of hospitality, AI includes technologies such as chatbots, automated booking systems, machine learning algorithms, predictive analytics, and smart room technologies (Lukanova and Ilieva, 2019). These tools are used to enhance service delivery, improve decision-making, and reduce human workload in hotel operations (Adekuajo and Fakeyede, 2023).

AI is regarded as a technological innovation tool. Technological innovation according to Tidd and Bessant (2020) can be described as the combination, integration and interaction of different technologies that make the product or service delivery efficient. This is evident in Lau's (2020) study which suggests that during the COVID-19 pandemic, many accommodation outlets like (hotels) invested in technology to enable guests to access their rooms using digital key devices. This innovation does not require face-to-face interaction with front desk officers, except, perhaps, when there is a malfunction, and where there is no automated mechanism to guide guests**.** Extant studies (Steyn and Hasnat, 2020) reveal that the automated device known as robot butler is popular among hotel guests and their service providers and helps to reduce face-to-face interactions with front desk officers. In addition, the device has facilitated revenue generation as it is used to deliver items including coffee within the lobby of a café for a fee (Francis, 2023). Also, Artificial Intelligence (AI) as a tool viable digital technology tool has been employed by some hotels to improve service quality during the pandemic (Yang et al. 2020).

Operational efficiency refers to the ability of an organization to deliver services in the most cost-effective and timely manner while maintaining high quality standards (Jiang and Wen, 2020). In hotels, operational efficiency is reflected in indicators such as reduced service delivery time, cost minimization, improved customer satisfaction, and effective utilization of resources (Mariani and Borghi, 2021).

The relationship between AI and operational efficiency in the selected hotels in Kampala is generally conceptualized as a positive, where increased adoption of AI technologies leads to improved operational performance (Ojambo, 2023). The application of AI is expected to enhance operational efficiency by improving the speed, accuracy, and quality of hotel services (Ku & Chen, 2024). AI tools such as automated booking systems, chatbots, and predictive analytics reduce human error, speed up service

delivery, and improve decision-making processes (Lau, 2020). As AI usage increases, operational efficiency is also expected to increase. AI improves check-in and check-out processes, customer inquiries, and reservation management. This reduces waiting time for guests and increases service speed, which enhances overall operational efficiency in both hotels.

**1.1.2: Theoretical Perspective**

The theoretical framework of this study was anchored on theories that explain how technology adoption and organizational efficiency are achieved within service organizations. The study is mainly guided by the Technology Acceptance Model (TAM) and the Resource-Based View (RBV) Theory, and Technological Determinism Theory (TDT) which help to explain the relationship between Artificial Intelligence (AI) and operational efficiency in hotels.

The Technology Acceptance Model, developed by Fred Davis (1987), explains how users come to accept and use technology (Marangunic, & Granic, 2015). The theory suggests that the adoption of technology is influenced by two key factors: perceived usefulness and perceived ease of use (Turner, et. al., 2010). In the context of this study, hotel staff and management are more likely to adopt AI systems if they believe these systems improve service delivery, reduce workload, and are easy to use. Therefore, TAM helps to explain the behavioral aspect of AI adoption within hotel operations. The TAM is significant to this study because it explains how hotel employees perceive, accept, and use AI technologies in their daily operations. In five-star hotels, the effectiveness of AI in improving operational efficiency depends largely on user acceptance, ease of use, and perceived usefulness of the technology.

While TAM remains useful in explaining individual perceptions of AI usefulness and ease of use, it has notable limitations in the hotel industry (Bagozzi, 2017). It oversimplifies adoption behavior, ignores emotional and organizational factors, and does not fully capture the complexity of AI-driven hospitality environments in Five-star hotels (Dwivedi, 2019). Therefore, it is often used together with other theories such as the Resource-Based View (RBV) and Technological Determinism Theory (TDT) to provide a more comprehensive explanation.

The Resource-Based View (RBV) theory advanced by Wernerfelt (1984) and Barney (1991) argues that organizations achieve competitive advantage by effectively utilizing valuable, rare, and inimitable resources (De la Cruz and Lin, 2016). In this study, AI technologies are considered strategic resources that can enhance operational efficiency. Through AI adoption, hotels can improve internal processes such as booking systems, customer service, and resource management, thereby gaining a competitive advantage in the hospitality industry. RBV therefore explains how AI contributes to improved operational efficiency and long-term performance (Crook, et.al. 2022). The Resource-Based View (RBV) theory is significant to this study because it explains AI as a strategic internal resource that enhances operational efficiency and competitive advantage. In five star hotels, success in AI adoption depends not only on technology availability but also on organizational capabilities, skilled personnel, and effective resource utilization.

While the RBV theory is useful in explaining how internal resources such as AI systems, staff skills, and infrastructure contribute to competitive advantage, it has several limitations in the hotel industry. Mariani & Baggio, 2012 criticized the theory for being too internally focused, static, and weak in explaining technology adoption and customer-driven service dynamics. In five-star hotels, operational efficiency is influenced not only by internal resources but also by external environmental factors, customer expectations, and employee acceptance of AI technologies.

The Technological Determinism Theory (TDT) was strongly developed by scholars such as Marshall McLuhan (1964), who emphasized that "the medium is the message," meaning that technology itself has a powerful influence on how people think, communicate, and act (Azam et al. 2020). The TDT explains that technology is the main driving force that shapes society, organizational structures, and human behavior (Ambassador-Brikins, et al. 2023). It argues that technological innovations develop independently and then influence how individuals and institutions operate, rather than being fully controlled by social or organizational choices.

Dafoe (2015) posits that technological determinism theory supports the idea that AI directly influences operational efficiency by automating routine tasks and reducing human workload, increasing speed and accuracy of service delivery, reshaping staff roles and workflow processes, and improving decision-making through data-driven systems. This means that once AI is introduced, it inevitably changes how hotel operations are performed, leading to improved efficiency.

In the context of this study on Artificial Intelligence (AI), the TDT theory suggests that AI technologies themselves shape how hotels operate, regardless of management preferences. In five star hotels, the introduction of AI systems like (automated booking systems, chatbots, and data analytics) is expected to transform operational processes such as service delivery, customer handling, and resource management. The theory helps explain that operational efficiency in five-star hotels is not only a result of managerial decisions but also a consequence of technological advancement itself. Therefore, increased adoption of AI in the luxurious hotels is expected to naturally transform operations and improve efficiency.

The integration of TAM, RBV, and TDT provides a strong explanatory framework showing that operational efficiency is achieved through a combination of human acceptance of technology, strategic resource utilization, and inherent transformative power of technology. While TAM explains why and how AI is adopted (Legris, Ingham, & Collerette, 2013), RBV explains how AI contributes to improved organizational performance once adopted. Together, these theories support the assumption that increased application of AI in Five-star hotels leads to enhanced operational efficiency through better decision-making, faster service delivery, and improved resource utilization. This combined perspective is particularly relevant for five-star, where AI adoption is both a technological and managerial process.

**1.1.3: Historical Perspective**

The global hospitality industry has been significantly influenced by technological innovations over the past two decades, with Artificial Intelligence (AI) emerging as a transformative force (Marković, *et. al*., 2020). The global hospitality industry has increasingly adopted Artificial Intelligence (AI) to improve service delivery, streamline operations, and enhance customer experience (Ivanov and Webster, 2019). Artificial Intelligence (AI) technologies such as chatbots, automated booking systems, smart room controls, and predictive analytics are transforming hotel operations by reducing costs and improving efficiency.

Artificial Intelligence emerged as an academic and technological field in the mid-20th century, focusing on machine intelligence, symbolic reasoning, and rule-based systems (McCarthy et al., 1956). AI refers to the simulation of human intelligence processes by machines, particularly computer systems, to perform tasks such as learning, reasoning, and self-correction (Russell & Norvig, 2020). The digital transformation phase (2000-2015) marked the shift toward data-driven hotel management, characterized by the adoption of ICT systems such as PMS, CRM, and online booking platforms (Buhalis & Law, 2008). While AI was not yet fully implemented, this period established the technological and data infrastructure necessary for intelligent automation, ultimately paving the way for modern AI-driven

operational efficiency in five-star hotels (Sigala, 2022). In the hotel sector, AI applications have been deployed to streamline operations, personalize customer experiences, enhance service delivery, and optimize revenue management (Ivanov & Webster, 2019). Technologies such as AI-powered chatbots, facial recognition systems, voice-activated assistants, and robotic concierge services have become common features in leading hotel brands worldwide (Tussyadiah, 2020).

Globally, the adoption of AI in hospitality promises several advantages, including improved efficiency, reduced labor costs, and enhanced guest satisfaction through personalized services (Lu et al., 2020). Hotels use Artificial Intelligence (AI) to predict guest preferences, automate routine tasks like check-ins and check-outs, manage bookings, and respond instantly to guest inquiries (Waheed et al., 2022). Additionally, AI-driven analytics assist hotel management in forecasting demand, setting dynamic pricing strategies, and identifying operational inefficiencies (Gretzel, 2021). However, the integration of Artificial Intelligence (AI) also presents notable challenges. Concerns over data security, privacy, high initial investment costs, and the displacement of human labor are critical issues that need to be addressed (Ivanov et al., 2019). Particularly in developing countries, barriers such as technological infrastructure limitations, lack of skilled personnel, and regulatory uncertainties further complicate the adoption process (Ndiaye, 2020).

Mariani and Borghi (2021) asserts that the United States as a country has played a pioneering role in the adoption of AI in five-star hotels, evolving from early digital systems to advanced intelligent automation. Tussyadiah, (2020) reveals that the country's advanced technological infrastructure, strong innovation ecosystem, and presence of global hotel chains have positioned it at the forefront of AI adoption. Mariani and Borghi (2021) further states that AI technologies have significantly improved operational efficiency by enhancing service delivery, decision-making, and cost management. Cobanoglu et al, (2021) avows that from 2016 onwards, U.S. hotels began integrating advanced AI technologies into their operations. Major hotel chains such as Marriott International and Hilton Worldwide have been pioneers in implementing these technologies. The U.S. model, characterized by a hybrid human-AI approach, provides a benchmark for other regions, including Africa and Uganda, in adopting AI within the hospitality sector.

In Europe, the hospitality industry has evolved from basic digital systems to structured and regulated AI adoption. During the early 2000s, European hotels focused mainly on digital transformation rather than full AI adoption. This phase laid the groundwork for later AI integration by generating large volumes of structured customer data (Buhalis & Law, 2008). In 2016, European hotels began adopting advanced digital systems and early predictive tools. However, systems were still not fully AI-driven, but rather data-assisted decision tools. From 2016 onwards, Europe experienced gradual but structured AI adoption, especially in luxury and five-star hotels. Five-star hotels in Europe use AI primarily to enhance operational efficiency, sustainability, and customer personalization, while maintaining strong human interaction. The region's emphasis on ethics and regulation ensures a balanced integration of technology and hospitality service standards.

In the African context, the hospitality industry is gradually embracing digital technologies, but the adoption rate of advanced AI applications remains relatively low compared to global standards (Kambwale & Chikandiwa, 2021). Statista (2023) posits that Artificial Intelligence in the hospitality industry reflects a rapidly emerging but unevenly developed technological landscape. While adoption started later compared to developed regions, Africa is increasingly integrating AI and digital technologies to enhance operational efficiency, service delivery, and competitiveness, particularly in

urban hospitality hubs such as Nairobi, Johannesburg, Lagos, and Kampala. The African hospitality industry is in a transitional phase of AI adoption, moving from basic digital systems toward intelligent automation (Statista, 2023). While five-star hotels in major cities are increasingly adopting AI to improve operational efficiency, challenges such as infrastructure limitations, financial constraints, and skills gaps continue to slow full integration. Nevertheless, Africa is emerging as a fast-growing region in hospitality technology adoption, with strong potential for future AI-driven transformation.

Uganda's hospitality sector, especially in Kampala, has witnessed steady growth in recent years, driven by increased tourism, international business travel, and conference tourism (Uganda Tourism Board, 2022). 5-star hotels are among the market leaders known for pioneering service innovations and offering premium guest experiences. Sheraton Kampala, part of the Marriott International Group, has begun incorporating digital innovations such as mobile check-ins, online reservations, and smart room features (Sheraton Kampala, 2023). Similarly, Serena Hotel has emphasized sustainable operations and technological improvements aimed at enhancing guest comfort and operational efficiency (Serena Hotels, 2023). Despite these advancements, the specific extent to which AI technologies are utilized, and the associated implications for hotel operations in Kampala, remains underexplored.

In Kampala City, five-star hotels like Sheraton Kampala Hotel and Kampala Serena Hotel are expected to maintain high standards of service and operational efficiency (Ojambo, 2020). However, challenges such as high operational costs, inefficiencies in service delivery, and increasing customer expectations necessitate innovative solutions like AI. Despite the global shift, the extent to which AI is applied in Uganda's hospitality sector and its impact on operational efficiency remains underexplored.

Understanding the current application of AI and its impact is critical, especially as the hospitality industry globally and regionally moves towards more technologically-driven models post-COVID-19 (Gursoy & Chi, 2020). In Uganda, where the tourism and hospitality sectors are vital contributors to GDP and employment, strategic adoption of AI could significantly boost competitiveness (Muwawu, 2022). Therefore, investigating how premier hotels in Kampala are adopting AI, and examining the operational, economic, and social implications, is timely and necessary for informing future strategies and policies. This study will thus fill a gap by focusing on the experiences of the 2 Hotels, offering insights into the successes, challenges, and prospects of AI integration in Uganda's 5-star hotel segment.

**1.1.4: Contextual Perspective**

According to Munene & Ntale (2022), Uganda has made progress in ICT development, driven by expansion of internet services and mobile connectivity, growth in digital financial services like (mobile money), and government initiatives promoting digital transformation. However, the level of technological advancement remains moderate compared to developed economies, which affects the pace of AI adoption in the hospitality sector. The hospitality industry in Uganda forms a key component of the service sector, contributing significantly to tourism, employment, and national revenue (Mukwaya and Nasif, 2022). Within urban centers such as Kampala city, the sector has evolved rapidly, driven by globalization, increased travel, and demand for high-quality accommodation and services. Leading establishments such as Sheraton Kampala Hotel and Kampala Serena Hotel represent the upper tier of hospitality services, offering luxury experiences aligned with international standards. Therefore, the purpose of this study was to provide a comprehensive view of AI adopted specifically by Sheraton and Kampala Serena Hotel affect operational efficiency.

Akello & Ogut (2020) avows that Sheraton Hotel opened on October 8, 1967, as the Apolo Hotel by Prime Minister Apollo Milton Obote; the Sheraton Kampala Hotel is a historic 5-star landmark in

Kampala, Uganda. Renamed the Kampala International Hotel in 1971 during Idi Amin's regime, it reverted to the Apolo Hotel in 1980. Following extensive refurbishment, it was rebranded as the Sheraton Kampala Hotel in 1991. The Sheraton Kampala Hotel is a hotel in Kampala, the capital of Uganda and its largest city. It is one of the three Five star hotels in Kampala, as rated by the Uganda Tourism Board in June 2015. Mirembe (2025) asserts that the Kampala Serena Hotel, located on Nakasero Hill, was originally built in 1971–1975 as the Nile Hotel and International Conference Centre for the OAU summit. Mirembe further added that the hotel was acquired by the AKFED in February 2004, subsequently undergoing a $30.5 million renovation to become a 5-star hotel in 2006.

According to Akello & Ogut (2020), Uganda's hospitality industry has experienced steady expansion due to several factors such as growth in international and domestic tourism, increased business travel and conferences, government efforts to promote Uganda as a tourist destination, and expansion of infrastructure such as roads, airports, and urban facilities. Five-star hotels, particularly in Kampala, play a strategic role in hosting international events and diplomatic functions, supporting business and corporate travel, and enhancing Uganda's global image as a tourism destination.

Technologically, the level of technological development, availability of digital infrastructure, and adoption of advanced systems within the environment of the study (Atwine and Mukiibi, 2022). In this research on AI adoption and operational efficiency in five-star hotels such as Sheraton Kampala Hotel and Kampala Serena Hotel, the technological context focuses on how digital transformation is shaping hotel operations in Uganda, particularly in Kampala. Hotels such as Sheraton Kampala Hotel and Kampala Serena Hotel operate in a technology-driven environment, yet adopting Artificial Intelligence (AI) comes with several financial, technical, organizational, and social challenges (Ojambo, 2020). These hotels have the capacity to adopt AI technologies; they face multiple challenges including high costs, limited technical expertise, system integration issues, and employee resistance. Addressing these challenges is essential for successful AI implementation and improved operational efficiency.

The evidence from the literature analysis showed that there had been little research on the topic in Uganda, but to the best of researcher knowledge, there has not been any work on the application of AI and operational efficient of the selected hotels in Kampala City. As a result, there is a knowledge gap that must be filled by the current study.

**1.2: Problem Statement**

The hospitality industry has increasingly adopted Artificial Intelligence (AI) technologies globally, with studies indicating that over 60% of five-star hotels worldwide have integrated at least one form of AI system such as chatbots, automated booking platforms, predictive analytics and customer relationship management platforms to enhance operational efficiency and customer experience (Davenport et al., 2020; McKinsey & Company, 2023). These technologies have been reported to optimize resource allocation, reduce operational costs by approximately 20% to 30%, improve service delivery speed by up to 40% in leading hotel chains and enhance decision-making through real-time data analytics (Davenport et al., 2020; WEF, 2023).

Although the adoption of AI in developed economies has been accelerated, its implementation in developing countries remains relatively low due to financial constraints, inadequate technological infrastructure, limited digital skills, and organizational resistance to change (UNCTAD, 2021; World Bank, 2023). In Uganda, particularly within Kampala City, only an estimated 25% to 35% of high-end hotels, including Sheraton Kampala Hotel and Kampala Serena Hotel, have introduced selected AI-enabled applications such as online booking platforms, digital customer service systems, and data-driven

guest management technologies. However, AI integration remains largely partial, with many operational activities continuing to rely on conventional manual processes (UTB, 2024; MTWA, 2024).

Despite these partial adoptions, operational inefficiencies persist. It is estimated that service delays in similar establishments account for approximately 15% to 25% of customer complaints, while inefficient manual processes contribute to an average of 18% to 22% higher operational costs compared to AI-enabled hotels in more developed markets (Ivanov & Webster, 2019; Buhalis & Leung, 2023). Further, the wide adoption of AI in many hospitality businesses is limited by the high costs of implementation, lack of technical knowledge, fears on acceptance of the employees and resistance of the organization to the technological changes (UNCTAD, 2021; World Bank, 2023). Consequently, many hotels have not yet fully benefited from AI's operational advantages, which include increased customer satisfaction, quicker service delivery, more productivity, and lower operating expenses.

Although existing literature has extensively studied AI adoption in the global hospitality sector, there is still no empirical data on how AI improves operational efficiency in Uganda's five-star hotels. In particular, there is little empirical data regarding the impact of AI technologies on operational efficiency at the Kampala Serena Hotel and Sheraton Kampala Hotel. Therefore, by concentrating on quantifiable variables such service speed, cost reduction, employee productivity, and customer satisfaction, this study aims to statistically investigate the relationship between AI application and operational efficiency.

Therefore, there remains a significant gap in empirical evidence regarding the actual extent to which AI improves operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel. This study seeks to statistically examine the relationship between AI application and operational efficiency, focusing on measurable indicators such as service speed, cost reduction, productivity levels, and customer satisfaction.

### 1.3: Purpose of the Study

To examine the effect of the Artificial Intelligence (AI) adoption on enhancing operational efficiency in five-star hotels in Kampala City, with a focus on Sheraton Kampala Hotel and Kampala Serena Hotel.

### 1.4: Specific Objectives

The study was guided by the following specific objectives;

- To examine the Artificial Intelligence technologies currently implemented by the Sheraton Hotel Kampala and Kampala Serena Hotel.
- To analyze the operational, economic, and social implications resulting from Artificial Intelligence adoption in Sheraton Hotel Kampala and Kampala Serena Hotel.
- To evaluate the challenges, barriers, and risks associated with the adoption of Artificial Intelligence in Sheraton Hotel Kampala and Kampala Serena Hotel.

### 1.5: Research questions

The study was guided by the following research questions;

- What are the Artificial Intelligence technologies currently implemented by the Sheraton Hotel Kampala and Kampala Serena Hotel?
- What are the operational, economic and social implications resulting from Artificial Intelligence adoption in Sheraton Hotel Kampala and Kampala Serena Hotel?
- What are the major challenges, barriers, and risks associated with adoption of Artificial Intelligence in Sheraton Hotel Kampala and Kampala Serena Hotel?

### 1.6: Research Hypothesis

$H_0$: Artificial Intelligence adoption has no statistically significant effect on operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel.

$H_1$: Artificial Intelligence adoption has a statistically significant effect on operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel.

### 1.7: Justification of the Study

Tumusiime (2020) asserts that although Artificial Intelligence (AI) adoption in the global hospitality industry has been widely documented, there remains limited empirical evidence on its practical application and impact in developing countries such as Uganda. This study addresses that knowledge gap by generating context-specific evidence on how AI contributes to operational efficiency in Uganda's five-star hotels. Since luxury hotels operate in a highly competitive environment characterized by high customer expectations, quality service delivery, cost efficiency, and rapid response to customer needs, there is a growing need to adopt innovative technologies that improve operational performance (Navuga, 2022; Okoth & Akello, 2023).

Hotels such as Sheraton Kampala Hotel and Kampala Serena Hotel have gradually introduced AI-enabled technologies, including automated reservation systems, customer relationship management platforms, digital guest services, and data-driven decision-support systems (Wasswa, 2024). However, the extent to which these technologies improve operational efficiency, reduce operational costs, enhance productivity, and increase customer satisfaction remains insufficiently documented. The findings of this study will therefore provide hotel owners, managers, investors, and policymakers with empirical evidence to support strategic planning, technology investment decisions, resource allocation, and digital transformation initiatives within Uganda's hospitality industry.

The study is further justified because it supports the implementation of Uganda Vision 2040, which identifies science, technology, innovation, and ICT as key drivers of socio-economic transformation and emphasizes modernization of the tourism and hospitality sector to increase Uganda's competitiveness in the global tourism market (National Planning Authority, 2013). By examining how Artificial Intelligence improves operational efficiency in leading hotels, the study contributes to the realization of Vision 2040's objective of building a modern, technology-driven and internationally competitive service economy.

The study also aligns with the Fourth National Development Plan (NDP IV) 2020/21–2024/25, which prioritizes digital transformation, industrialization, private sector competitiveness, tourism development, innovation, and productivity enhancement as critical pathways for sustainable economic growth (National Planning Authority, 2020). NDP IV recognizes ICT adoption and digital innovation as essential mechanisms for improving service delivery and increasing the competitiveness of Uganda's tourism sector. The findings of this study provide practical evidence on how AI technologies can contribute to these national development priorities.

Furthermore, the study supports the objectives of the National Tourism Development Plan (2020/21–2024/25), which emphasizes improving tourism service quality, promoting innovation, encouraging digital marketing and technology adoption, strengthening hospitality standards, and increasing Uganda's attractiveness as a competitive tourism destination (Ministry of Tourism, Wildlife and Antiquities (MTWA), 2020). AI-enabled hotel operations have the potential to improve guest experiences, enhance operational efficiency, strengthen destination competitiveness, and contribute to increased tourism earnings.

The study is equally relevant to the NRM Manifesto (2021–2026), which commits government to accelerating digital transformation, promoting ICT-enabled service delivery, enhancing tourism infrastructure, supporting private sector investment, creating employment opportunities, and increasing Uganda's export earnings through tourism (National Resistance Movement, 2021). The findings will provide evidence that can guide public and private sector initiatives aimed at promoting technology adoption and innovation within the hospitality industry.

At the international level, the study contributes to the achievement of global hospitality standards, which encourage hotels to adopt advanced technologies that improve operational excellence, customer satisfaction, sustainability, safety, data-driven decision making, and service quality. International hotel chains increasingly utilize Artificial Intelligence to personalize customer experiences, optimize resource utilization, automate routine operations, and enhance competitiveness. Understanding how these technologies perform within Uganda's hospitality context will enable local hotels to benchmark their operations against international best practices and improve compliance with global hospitality quality standards.

Finally, the study identifies organizational, financial, technological, and human resource challenges affecting AI implementation and proposes practical recommendations for overcoming these barriers. The findings will assist hotel managers in designing effective AI implementation strategies, strengthening employee digital competencies, improving organizational readiness, and achieving long-term operational efficiency and sustainable competitive advantage within Uganda's hospitality industry.

### 1.8: Scope of the Study

The study scope was divided into content or subject, time and geographical scope.

#### 1.8.1: Content Scope

The study focused on the application of AI in enhancing operational efficiency in five-star hotels. Specifically, it examined on types of AI technologies used (such as automation systems, chatbots, data analytics, and smart room technologies); the operational, economic, and social implications resulting from the use of AI Sheraton Hotel Kampala and Kampala Serena Hotel; and the challenges associated with AI implementation.

#### 1.8.2: Time Scope

The study covered a recent period, typically from 2020 to 2025, to capture current trends in the adoption and application of Artificial Intelligence (AI) in the selected hotels. This period is selected because it reflects the rapid growth of digital transformation and AI integration in hotel operations, especially after the global shift toward technology-driven services.

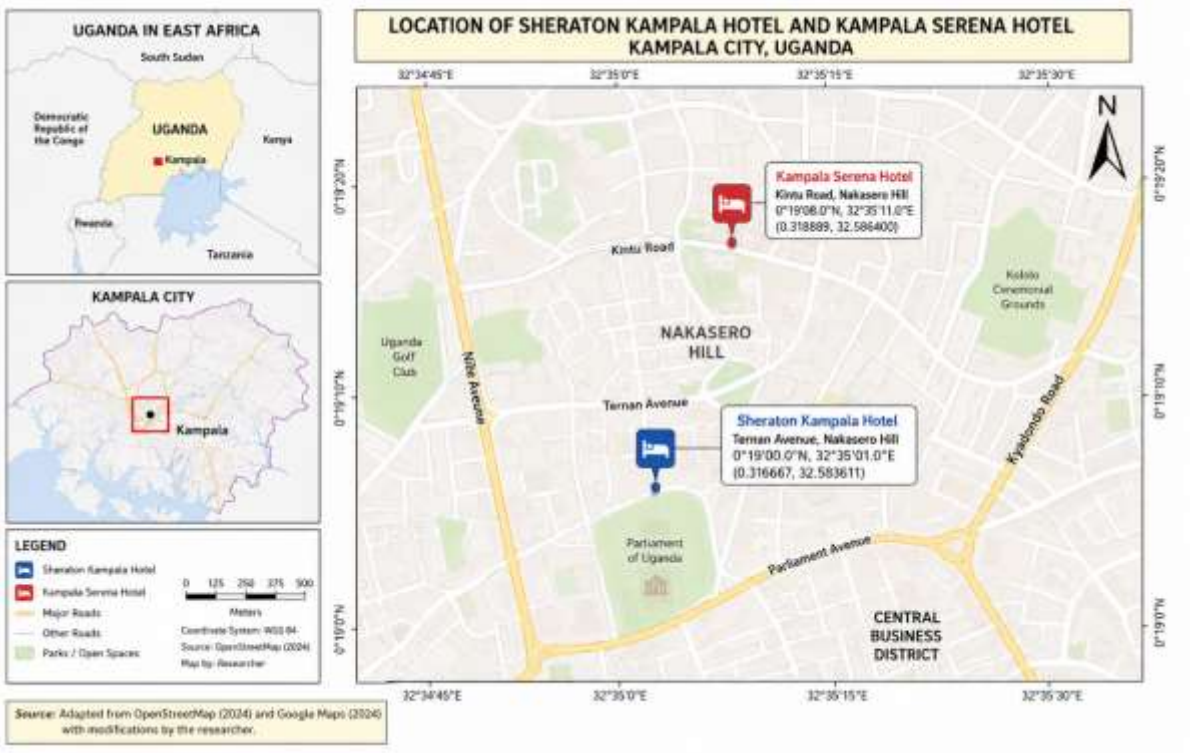
#### 1.8.3: Geographical Scope

The study was conducted in Kampala City, focusing specifically on two selected five-star hotels: Sheraton Kampala Hotel and Kampala Serena Hotel. These hotels are chosen because they are among the leading hospitality establishments in Uganda and are more likely to adopt advanced technologies such as AI, making them suitable case studies.

The Sheraton Kampala Hotel is centrally located on Ternan Avenue in the Nakasero hill area of Kampala, Uganda. Situated in the heart of the capital and surrounded by nine acres of gardens, it is approximately 45 minutes (about 33-40 km) from Entebbe International Airport (EBB) and close to the central business district. The Sheraton Kampala Hotel is located at coordinates 0°19'00.0"N,

32°35'01.0"E (0.316667, 32.583611). The hotel is a 5-star venue located in a prestigious, upscale neighborhood and offers easy access to local attractions and business centers.

**Map showing the location of Sheraton Kampala Hotel and Kampala Serena Hotel in Kampala City, Uganda.**




The Kampala Serena Hotel is a 5-star luxury hotel located on Kintu Road, Nakasero Hill, in the heart of Kampala, Uganda. It is set within 17 acres of landscaped gardens, adjacent to the Kampala Sheraton and near the Central Business District and various diplomatic offices. The coordinates of the Kampala Serena Hotel are 0°19'08.0"N, 32°35'11.0"E (Latitude: 0.318889; Longitude: 32.586400).

**1.9: Significance of the Study**

This study on the application of Artificial Intelligence (AI) in enhancing operational efficiency in five-star hotels is important to multiple stakeholders as stated below.

**Hotel Management:** The findings would provide practical insights to hotel managers on how AI can be effectively utilized to improve operational efficiency. Management at Sheraton Kampala Hotel and Kampala Serena Hotel would better understand how AI tools such as automation, data analytics, and smart systems can enhance service delivery, reduce operational costs, and improve decision-making. The findings of this study would provide hotel managers with evidence-based knowledge on how AI is affecting hotel operations and where improvements can be made. This is crucial for informed investment, workforce planning, and strategic service innovation.

**Academicians and Researchers:** The study would contribute to existing literature on AI adoption in the hospitality industry, particularly in developing countries such as Uganda. It would bridge the knowledge gap by providing empirical evidence on how AI technologies influence operational efficiency in five-star hotel settings, an area that remains under-researched in the Ugandan context.

The study would serve as a reference for future researchers interested in AI, hospitality management, and operational efficiency. It may also inspire comparative studies across different sectors or regions.

**Policy and Regulatory Implications:** The study would inform policymakers and stakeholders in the tourism and ICT sectors about the role of AI in improving service standards and competitiveness. It may guide the development of policies that promote digital transformation and innovation within the hospitality industry in Uganda.

**Employees and Skills Development:** The research would highlight how AI adoption affects employee roles, skills requirements, and productivity. It would provide insights into the need for training and capacity building to ensure that staff can effectively work with AI technologies.

**Investors and Industry Stakeholders:** Investors and stakeholders in the hospitality industry would benefit from understanding the cost benefit implications of AI adoption. The study would provide evidence on whether investing in AI technologies leads to improved operational efficiency and competitive advantage.

**Hotel Clients:** By examining how AI enhances efficiency, the study indirectly contributes to improved customer satisfaction. Faster service delivery, personalized experiences, and efficient operations can enhance the overall guest experience in five-star hotels.

**1.10: Definitions of Key Terms**

**Artificial Intelligence (AI):** Artificial Intelligence (AI) refers to the capability of computer systems to perform tasks that normally require human intelligence, such as learning, reasoning, problem-solving, and decision-making (Aqaba & Jawabreh, 2021). It involves the use of technologies like machine learning, natural language processing, and data analytics to enable systems to analyze information, adapt to new inputs, and perform tasks autonomously. In this study, AI refers to the application of intelligent technologies in hotel operations, including chatbots, predictive analytics, smart systems, and automation tools aimed at improving service delivery and decision-making.

**AI Technologies**: Artificial Intelligence (AI) technologies are computer systems and software designed to simulate human intelligence, allowing machines to learn, reason, problem-solve, perceive, and make decisions (Aqaba & Jawabreh, 2021). These technologies, including machine learning and neural networks, enable automated, data-driven actions that mimic cognitive functions to achieve specific goals or perform complex tasks.

**Operational Efficiency:** Operational efficiency is defined as the ability of an organization to deliver high-quality services while minimizing the use of resources such as time, cost, and labor **(**Assaf, Barros, & Josiassen, 2020). It reflects how well inputs like (staff, technology, finances) are transformed into outputs like (services and customer satisfaction). *In this study;* Operational efficiency is measured through service delivery, accuracy and error management, resource utilization, productivity and workflow, coordination and communication, and customer satisfaction.

**Operational Implications:** Operational implications refer to the effects that AI technologies have on the day-to-day functioning and internal operations of a hotel. These implications include improvements or changes in service delivery, operational efficiency, productivity, decision-making, resource utilization, and workflow automation. AI applications such as automated reservation systems, chatbots, smart room technologies, predictive maintenance, and revenue management systems enable hotels to reduce service delays, minimize human errors, optimize staff scheduling, improve inventory management, and enhance customer experiences (Ivanov & Webster, 2022; Buhalis & Leung, 2023).

**Economic Implications:** Economic implications refer to the financial outcomes associated with the adoption and use of AI technologies in hotel operations. These include changes in operating costs, revenue generation, profitability, return on investment (ROI), labor costs, resource efficiency, and

competitive advantage. AI can lower operational expenses through automation, optimize pricing using dynamic revenue management, increase occupancy rates through demand forecasting, improve customer retention, and enhance overall financial performance. However, AI adoption may also require substantial initial investment in technology, infrastructure, staff training, and system maintenance (Davenport & Ronanki, 2023; Ivanov & Webster, 2022).

**Social Implications:** Social implications refer to the effects of AI adoption on employees, customers, and society within the hospitality environment. These implications include changes in employee roles and skill requirements, customer satisfaction, service quality, workplace relationships, privacy, ethical concerns, and organizational culture. AI can improve customer experiences through personalized services and faster response times while creating opportunities for employees to focus on higher-value tasks. Conversely, AI may raise concerns regarding job displacement, employee resistance to technological change, data privacy, digital inclusion, and the need for continuous reskilling of the workforce (World Economic Forum, 2023; OECD, 2024).

**Five-star Hotels:** Five-star hotels are luxury hospitality establishments that provide exceptional standards of service, comfort, facilities, and customer experience, typically rated by national or international hotel classification systems (Wilkinson, 2023). These hotels are characterized by high-quality accommodation and amenities, personalized and professional services, advanced facilities such as (fine dining, spa, smart technologies), and highly trained staff and superior customer care. In this study, Five-star hotels refer to top-tier hotels operating in Kampala e.g. Serena Hotel and Sheraton Hotel that have adopted or are in the process of adopting AI technologies to enhance operational efficiency and service delivery.

## CHAPTER TWO
## STUDY LITERATURE

### 2.0: Introduction

This chapter presents the existing literature on AI adoption and operational efficiency in the five-star hotels. The chapter also reviews theoretical framework, literature review, empirical research and it then covers the conceptual framework of the study.

### 2.1: Theoretical Review

This section looked into theories that relate to AI adoption and Operational Efficiency in Five Star Hotels. The study was guided by Technology Acceptance Model (TAM) developed by Fred Davis (1987); Resource Based View Theory (RBV) developed by Barney (1991), and Technological Determinism Theory (TDT) developed by Marshall McLuhan (1964).

#### 2.1.1: Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) posits that users' acceptance and usage of technology are primarily influenced by their perceptions of its usefulness and ease of use (Davis, 1989). According to TAM, perceived usefulness refers to the extent to which users believe that a particular technology enhanced their job performance or productivity, while perceived ease of use reflects the degree to which users perceive the technology as effortless to use and understand (Davis, 1989). These two key constructs shape users' attitudes towards technology adoption, which in turn influence their actual behavior in adopting or rejecting the technology (Venkatesh & Davis, 2020). TAM argues that when users perceive a technology as both useful and easy to use, they are more likely to adopt it, whereas perceptions of low usefulness or high complexity can deter adoption (Venkatesh & Bala, 2023).

The TAM holds significant importance in informing a study about AI adoption and operational efficiency within organizational contexts. TAM provides a structured framework for understanding the factors influencing individuals' acceptance and usage of technology, which are fundamental to fostering innovative work behavior (Davis, 1989). By focusing on key constructs such as perceived usefulness and perceived ease of use, TAM offers valuable insights into users' attitudes towards new technologies and their intentions to adopt them, thereby guiding researchers in assessing the likelihood of technology adoption within the context of innovative work behavior (Venkatesh & Davis, 2020). Moreover, TAM's emphasis on individual perceptions and behaviors underscores the importance of considering the human factors involved in technology adoption, such as motivation, confidence, and resistance to change, which are critical determinants of innovative work behavior in organizational settings (Venkatesh & Bala, 2023).

The Technology Acceptance Model is applied in this study to explain how employees and management in five-star hotels accept and use Artificial Intelligence (AI) technologies to enhance operational efficiency. In hotels, the use of AI tools like (chatbots, automated booking systems, and smart customer service platforms) depends largely on whether staff perceive them as useful and easy to use (Venkatesh & Davis, 2020).When employees believe AI improves their work performance (e.g., faster service delivery and reduced workload), they are more likely to adopt it, and when AI systems are simple and user-friendly, resistance to change is minimized.

The Technology Acceptance Model (TAM) also applies to hotel management decisions regarding investment in Artificial Intelligence (AI) technologies. Hotel managers are more likely to invest in AI systems when they perceive that these technologies will improve operational efficiency, reduce operational costs, enhance customer satisfaction, and increase organizational competitiveness within the hospitality industry (Davis, 1989; Venkatesh & Davis, 2020; Mariani & Baggio, 2022). Management's perceptions of the usefulness and ease of implementing AI significantly influence technology adoption decisions and the successful integration of AI into hotel operations (Ivanov & Webster, 2022).

The acceptance and use of AI systems directly influence operational efficiency in hotels. When the two central TAM constructs perceived usefulness and perceived ease of use are positive, employees are more willing to adopt AI technologies, resulting in faster and more accurate service delivery, automation of administrative tasks, increased staff productivity, and improved customer service quality (Davis, 1989; Venkatesh & Bala, 2022). TAM therefore helps explain the human behavioural factors underlying AI implementation in this study. Even where AI technologies are available, their contribution to operational efficiency depends largely on employees' willingness to accept, learn, and effectively utilize them (Davis, 1989; Huang & Rust, 2021).

The Technology Acceptance Model is highly relevant to operational efficiency because it explains how employees' acceptance and actual use of technology influence the performance of organizational processes (Davis, 1989). When hotel employees perceive AI systems as useful and easy to use, they are more likely to integrate them into their daily work. This facilitates faster check-in and check-out processes, quicker responses to customer inquiries, efficient reservation management, and better coordination of hotel services, thereby improving operational efficiency (Ivanov & Webster, 2022; Buhalis & Leung, 2023). TAM further suggests that increased acceptance of AI minimizes employee resistance while promoting correct and consistent technology usage, reducing errors in reservation systems, billing processes, customer relationship management, and other operational activities (Venkatesh & Bala, 2022).

Furthermore, when AI systems are successfully accepted and integrated into routine hotel operations, employees spend less time performing repetitive manual tasks and can instead concentrate on higher-value activities such as personalized customer service, problem solving, and guest relationship management (Huang & Rust, 2021). This improves employee productivity, enhances service quality, and ensures more efficient utilization of human resources. Effective AI adoption, supported by positive perceptions of usefulness and ease of use, also reduces operational costs associated with manual processes, improves time management, and optimizes the use of organizational resources (Davenport & Ronanki, 2023). Consequently, operational efficiency improves through increased productivity, better resource utilization, and enhanced organizational performance.

Operational efficiency is closely associated with customer satisfaction in the hospitality industry. When AI systems are accepted and effectively utilized, hotel guests experience shorter waiting times, faster service delivery, personalized interactions, accurate reservations, and improved responsiveness, resulting in higher service quality and customer satisfaction (Buhalis & Leung, 2023; Huang & Rust, 2021). Within the context of this study, TAM provides a theoretical explanation of how employee acceptance of AI technologies can enhance operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel by promoting effective technology utilization and improving service delivery.

The application of the Technology Acceptance Model (TAM) in this study demonstrates that the success of Artificial Intelligence (AI) in enhancing operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel is strongly influenced by user acceptance. According to TAM, employees are more likely to adopt and effectively use AI technologies when they perceive them as useful and easy to use (Davis, 1989). Consequently, perceived usefulness and perceived ease of use become critical determinants of AI adoption and its effectiveness in improving hotel operations (Venkatesh & Davis, 2020). TAM provides a behavioural explanation of AI adoption by demonstrating that technology success depends not only on the availability of AI systems but also on users' willingness to accept and utilize them effectively (Venkatesh & Bala, 2022). Therefore, in Sheraton Kampala Hotel and Kampala Serena Hotel, operational efficiency is likely to depend significantly on the extent to which employees accept and appropriately use AI technologies to support service delivery, decision-making, and operational processes (Ivanov & Webster, 2022; Huang & Rust, 2021).

TAM is significant to this study because it provides a well-established theoretical framework for understanding why hotel employees and management accept or reject AI systems (Davis, 1989). The model explains how perceptions of usefulness and ease of use influence the adoption of AI applications such as automated booking systems, intelligent chatbots, customer relationship management systems, revenue management systems, and data analytics tools within hotel operations (Buhalis & Leung, 2023; Ivanov & Webster, 2022). The model is particularly relevant because it establishes a direct relationship between technology adoption and organizational outcomes, including improved operational efficiency, enhanced employee productivity, reduced operational costs, and improved customer satisfaction (Venkatesh & Davis, 2020).

The model also emphasizes the central role of human behaviour in successful technology implementation. It recognizes that even when AI technologies are available in five-star hotels, their contribution to operational efficiency depends on employees' willingness, confidence, and ability to utilize them effectively in their daily work (Huang & Rust, 2021; Mariani & Baggio, 2022). By adopting TAM as its theoretical foundation, this study is anchored in one of the most widely applied and empirically validated theories in information systems and technology adoption research (Davis, 1989;

Venkatesh & Davis, 2020). Consequently, the use of TAM strengthens the theoretical rigor of the study and enhances the credibility of its findings regarding the relationship between Artificial Intelligence adoption and operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel.

**2.1.2: Resource Based View Theory**

The Resource-Based View Theory is a strategic management theory that explains how organizations achieve and sustain competitive advantage by effectively utilizing their internal resources and capabilities. The theory was strongly developed by scholars such as Jay Barney (1991), who argued that firms gain superior performance when they possess resources that are valuable, rare, inimitable, and non-substitutable (VRIN framework). Bundle of resources in hotels can include systems, innovations and processes put in place to reduce hotels cost (Pearce & Robinson, 2021). Barney (1991) provided a more description of RBV theory, and defined firm resources as assets, capabilities, procedures, characteristics and knowledge that can be used by the firm to formulate and implement competitive strategies. Organizational resources are assets or entities that can be used by the organization strategically to maintain competitive advantage (Daft, 2022).

The RBV theory is based on the idea that organizations are bundles of resources and capabilities, competitive advantage comes from internal strengths rather than external market conditions, and resources must be effectively organized and utilized to generate superior performance. (Teece, Pisano, Shuen, 2017). Key resources include technology, human skills, information systems, financial capacity, and organizational processes. The Resource Based Theory notes that organizations are heterogeneous because they possess various resources, meaning hotels can have different strategies because they have different resource mixes. According to the Resource Based theory, a hotel's internal capabilities determine the strategic choice it makes in competing in its external environment. This is in line with the influence that strategic management practices have on the performance of an organization.

The RBV is applied in this study to explain how Artificial Intelligence (AI) functions as a strategic internal resource that enhances operational efficiency in five-star hotels.In the study context, AI technologies such as automated booking systems, chatbots, predictive analytics, and smart management systems are viewed as valuable organizational resources. These tools help hotels improve service delivery, reduce operational inefficiencies, and enhance customer experience.

RBV explains that when AI is effectively integrated and well-managed, it becomes a source of competitive advantage (Peteraf, 2023). In the selected hotels; AI improves speed and accuracy of service delivery, it enhances coordination of hotel operations, it reduces operational costs through automation, and it supports better decision-making using real-time data. These improvements directly contribute to operational efficiency. Also, Grant (2021) emphasised that the theory also suggests that organizations gain advantage when they develop unique capabilities. Barney and Hesterly, (2022) states that organizations like, hotels effectively use AI build capabilities such as personalized customer service, efficient resource allocation, predictive demand management, and enhanced customer relationship management. In this study context, operational efficiency is influenced by staff skills in using AI systems, availability of ICT infrastructure, management support for digital transformation, and organizational readiness for innovation.

Amit & Schoemaker (2022) asserts that the RBV Theory is highly relevant to operational efficiency because it explains how the effective use of internal organizational resources leads to improved performance and competitive advantage. RBV emphasizes that operational efficiency is achieved when organizations properly utilize their internal resources such as technology, human skills, and information

systems. In the context of hotels, Artificial Intelligence (AI) serves as a key resource that improves workflow efficiency and reduces wastage of time and effort.

When AI is effectively integrated as a strategic resource, it helps hotels reduce operational costs through automation of routine tasks such as bookings, customer inquiries, and billing. This leads to higher productivity as employees focus on value-added services rather than repetitive tasks. RBV explains that organizations with well-managed resources achieve superior performance. In this study, AI enhances operational efficiency by improving service speed, accuracy, and consistency, leading to better customer experiences in the selected hotels. Hotels that effectively utilize AI as a valuable resource gain a competitive advantage in the hospitality industry. This is because efficient operations enable them to deliver higher-quality services at lower costs compared to competitors

The RBV is significant to this study because it provides a strong foundation for understanding how Artificial Intelligence (AI) contributes to operational efficiency in five-star hotels. RBV is significant because it conceptualizes AI not just as a tool, but as a strategic organizational resource. This helps the study analyze how hotels use AI systems such as automation, chatbots, and data analytics to improve operational efficiency and competitiveness. Barney & Hesterly (2022) highlights that the theory shows that operational efficiency in five-star hotels depends on how effectively they utilize AI to develop unique capabilities such as faster service delivery, improved customer management, and cost optimization. RBV is important because it directs attention to internal factors such as staff skills, technological infrastructure, and management support. These factors determine how well AI is implemented and how much it improves operational efficiency.

While the RBV theory is useful in explaining how internal resources such as AI systems, staff skills, and infrastructure contribute to competitive advantage, it has several limitations in the hotel industry. Mariani & Baggio (2022) criticized the theory for being too internally focused, static, and weak in explaining technology adoption and customer-driven service dynamics. In five-star hotels, operational efficiency is influenced not only by internal resources but also by external environmental factors, customer expectations, and employee acceptance of AI technologies.

**2.1.3: Technological Determinism Theory (TDT)**

The Technological Determinism Theory (TDT) was strongly developed by scholars such as Marshall McLuhan (1964), who emphasized that “the medium is the message,” meaning that technology itself has a powerful influence on how people think, communicate, and act (Azam et al. 2020). The TDT explains that technology is the main driving force that shapes society, organizational structures, and human behavior (Ambassador-Brikins, et al. 2023). It argues that technological innovations develop independently and then influence how individuals and institutions operate, rather than being fully controlled by social or organizational choices.

The theory assumes that technology is the main force that drives social, organizational, and economic change (Bharadwaj, 2020). Once a new technology is introduced, it becomes the dominant factor shaping how systems operate.TDT assumes that human actions, decisions, and interactions are largely influenced by the technologies available (Orlikowski, 2022).The theory assumes that technological development follows its own path, often independent of social or managerial control.

According toTDT, institutions and organizations are forced to adjust their processes, workflows, and structures in response to technological change to remain functional and efficient (Feenberg, 2021).The theory assumes that once technology is introduced, it inevitably leads to changes in communication, operations, and performance, regardless of whether organizations are fully prepared (Héder, 2021).TDT

assumes that as technology becomes more advanced, human control over certain processes decreases, especially in automated systems where decisions are increasingly data-driven (Drew, 2021).

The Technological Determinism Theory(TDT) is applied in this study to explain how Artificial Intelligence (AI) independently drives changes in operational processes within five-star hotels.The introduction of AI technologies such as automated booking systems, chatbots, predictive analytics, and smart room controls is expected to transform how hotel operations are conducted (Winner, 2020). According to TDT, these technological changes occur regardless of management preference, forcing hotels to adjust their operational structures (Heilbroner, 2017). In the study context, AI systems reshape workflows in areas such as customer service and front desk operations, reservation and booking management, housekeeping coordination, data management and reporting.

TDT suggests that technology reshapes human roles. In this case, employees at Hotels must adapt to AI-driven systems by acquiring new skills and shifting from manual tasks to technology-supported roles (Mumford and Lolland, 2014). AI-driven transformation leads to faster service delivery, reduced human error, improved accuracy in operations, and enhanced coordination across departments (Heilbroner, 2017). These improvements occur as a direct result of technological integration rather than only managerial decisions. TDT explains that once AI is introduced, certain operational decisions become automated and data-driven (Héder, 2021). This reduces direct human control and increases system-based decision-making in hotel operations.

The Technological Determinism Theory is highly relevant to operational efficiency because it explains how technological innovations directly reshape organizational processes, leading to changes in performance outcomes (Smith, 2016). TDT explains that once technology such as Artificial Intelligence (AI) is introduced, it transforms how work is done. In 5-star hotels, AI automates tasks such as booking, customer service, and data management, which increases speed and reduces manual effort.

Ellul (2014) posits that the theory is relevant because it shows that technology drives faster ways of working. AI systems reduce waiting time for guests, improve response rates, and streamline service delivery processes; thereby enhancing operational efficiency.TDT suggests that technology reduces dependence on human decision-making in routine processes (Drew, 2021). In hotel operations, AI minimizes errors in reservations, billing, and customer handling, leading to more accurate and efficient operations. Operational efficiency improves as AI reshapes traditional workflows. AI technologies introduced through technological change enable real-time data processing and analytics. This improves forecasting, planning, and decision-making, which enhances overall operational efficiency.

The Technological Determinism Theory is significant to this study because it provides a strong explanation of how Artificial Intelligence (AI) influences operational efficiency in five-star hotels. The theory helps explain how AI reshapes key hotel operations such as booking systems, customer service, housekeeping coordination, and data management, leading to improved operational efficiency (MacKenzie and Wajcma, 2015). TDT is significant because it complements other theories like TAM and RBV by focusing on the power of technology itself, rather than user acceptance or resource utilization alone. This provides a more complete understanding of AI's impact on hotel operations.

The application of AI in enhancing operational efficiency in five-star hotels is anchored on an integrated theoretical framework comprising the Technology Acceptance Model (TAM), Resource-Based View (RBV) Theory, and Technological Determinism Theory (TDT). The integration of TAM, RBV, and TDT provides a multi-dimensional framework that explains why AI is adopted (TAM), how AI creates value (RBV), and how AI transforms operations (TDT).Each theory contributes a different dimension to

understanding AI adoption and operational efficiency. TAM (User Acceptance Dimension) explains how hotel employees and management accept and use AI based on perceived usefulness and ease of use. RBV (Resource Utilization Dimension) explains how AI serves as a strategic internal resource that enhances efficiency and competitive advantage. TDT (Technological Influence Dimension) explains how AI independently drives structural and operational changes within hotel systems. Together, these theories offer a strong foundation for analyzing the impact of AI on operational efficiency in five-star hotels in Kampala.

**2.2: Literature Review**

This section presents the existing literature about the AI adoption and operational efficiency in the five-star hotels. The literature review is organized thematically in line with each study objective in order to determine the conceivable relationships and gaps in past studies.

**2.2.1: The AI technologies currently implemented by the Five-Star Hotels**

Huang & Gursoy (2025) asserts that five-star hotels globally and increasingly in developing hospitality markets are adopting Artificial Intelligence (AI) to improve service delivery and operational efficiency. Also, Ivanov and Webster, (2022) reveals that in 5-star hotels, AI technologies are mainly applied in selected operational areas rather than full automation. Fowler et al. (2023) posits that AI-enabled technologies are becoming increasingly common in organisations, enhancing strategic decision-making for business survival, particularly in volatile industries like tourism and hospitality (T&H).

***AI-Powered Customer Service Systems***

Li et.al (2022) argues that AI-powered customer service systems are technologies that use Artificial Intelligence to handle customer interactions, provide support, and improve service delivery without requiring constant human intervention. These systems are widely used in the hospitality industry to enhance responsiveness, efficiency, and guest satisfaction.Also, Remountakis et.al (2023) highlights that AI-powered customer service systems include tools such as chatbots, virtual assistants, automated messaging platforms, and AI-driven customer support portals. These systems are designed to respond to customer inquiries in real time, provide information about hotel services, handle bookings, and resolve common complaints.

In hotels, AI-powered customer service systems are mainly used to respond to guest inquiries about room availability and pricing, assist with reservation confirmations and modifications, provide information on hotel facilities and services, and handle frequently asked questions without human staff involvement (Zahir, 2024). AI-powered customer service systems improve operational efficiency through; customers receive instant replies instead of waiting for human staff; front desk and customer service staff handle fewer repetitive inquiries; services are accessible at any time without interruption, and improved accuracy (Huang & Gursoy, 2025). These systems enhance guest satisfaction by providing quick and convenient communication, offering personalized responses based on customer data, reducing delays in service delivery, and improving overall service reliability.

***Automated Reservation and Booking Systems***

According to Gursoy & Cai (2025), automated reservation and booking systems are AI-enabled platforms that manage hotel room reservations, availability, pricing, and guest bookings with minimal human intervention. These systems are widely used in modern hospitality management to improve speed, accuracy, and efficiency in service delivery. Also, Abufawr et al. (2024) emphasised that automated reservation and booking systems use AI algorithms to manage real-time room availability, process online and direct bookings, prevent overbooking and double-booking, update reservation records

instantly, synchronize bookings across multiple platforms (website, travel agents, and third-party systems).

Agarwall, Das & Swain (2022) reveals that in 5-star hotels, automated booking systems are used to allow guests to book rooms online without visiting the hotel physically, manage check-in and check-out schedules efficiently, update room availability in real time, and integrate bookings from different digital platforms such as hotel websites and travel agencies. These systems enhance operational efficiency through reduces manual booking procedures and speeds up reservation processing; minimizes human errors such as duplicate bookings or incorrect entries; ensures synchronization between departments like front office and housekeeping; and automated booking systems also support dynamic pricing strategies by adjusting room prices based on demand and seasonality, maximizing occupancy rates, and increasing revenue generation efficiency (MDPI, 2024).

***Customer Relationship Management***

Customer Relationship Management (CRM) is a business strategy and technological approach that organizations use to create, maintain, and strengthen long-term relationships with customers by understanding their needs, improving service delivery, and enhancing customer satisfaction and loyalty (Buttle & Maklan, 2022). CRM integrates people, processes, and technology to manage customer interactions throughout the customer lifecycle, thereby improving organizational performance and competitiveness.

In the hospitality industry, CRM plays a critical role in improving guest satisfaction by enabling hotels to personalize services, manage reservations efficiently, maintain guest preferences, handle customer feedback, and build long-term relationships with guests. Modern CRM systems are increasingly integrated with Artificial Intelligence (AI) technologies such as chatbots, predictive analytics, recommendation systems, and automated customer support to enhance service quality, operational efficiency, and customer loyalty (Ssebuliba, 2020; Ivanov & Webster, 2022).

***Data Analytics and Predictive Systems***

Chen et.al (2022) posits that data analytics and predictive systems are AI-driven technologies that collect, process, and analyze large volumes of data to support decision-making and forecast future trends. In the hospitality industry, these systems help hotels understand customer behavior, improve planning, and enhance operational efficiency (Berezina, et. al, 2020). AI-based data analytics systems use advanced algorithms to analyze customer booking patterns and preferences, track occupancy rates and seasonal demand, monitor service performance and customer feedback, generate reports for managerial decision-making, and predict future demand and revenue trends (Doborjeh, 2021). Predictive systems go further by using historical data to forecast future outcomes such as peak booking periods, customer demand, and resource needs.

Elkhwesky, El-Manzani & Elbayoumi (2022) reveals that in 5-star hotels, data analytics and predictive systems are used to forecast room occupancy rates, identify customer preferences for personalized services, plan staffing levels based on expected demand, optimize pricing strategies through demand forecasting, and improve marketing targeting and customer engagement. These systems improve operational efficiency through better decision-making, resource optimization, cost reduction, improved service planning, and faster response to market changes. According to Cain et.al (2022), data-driven insights allow hotels to offer personalized services based on guest history, improve service quality and consistency, anticipate customer needs before they are expressed, and enhance overall guest experience.

***Smart Room Technologies***

Doborjeh (2021) states that smart room technologies are AI-enabled and digitally automated systems used in hotel rooms to enhance guest comfort, personalization, and operational efficiency. These technologies allow guests to control room functions and receive services through intelligent systems with minimal human intervention.Gajić et.al (2024) discloses that smart room technologies integrate Artificial Intelligence (AI), Internet of Things (IoT), and automation systems to manage room functions such as lighting control, temperature and air conditioning regulation, smart TVs and entertainment systems, voice-activated assistants, automated curtains and room settings, and digital check-in and keyless entry systems. These systems are designed to respond to guest preferences and commands in real time.

Gajić et.al (2024) further emphasises that in 5-star hotels, smart room technologies are used to provide personalized room settings based on guest profiles, allow guests to control room features using mobile apps or voice commands, enhance security through digital access systems, improve convenience by reducing the need for manual room service requests, and support energy management through automated systems. Ivanov et.al (2022) also reveals that smart room technologies improve operational efficiency through fewer manual adjustments are needed for room services; automated systems optimize electricity and water usage; guests can make requests instantly through digital systems; reduces wastage of utilities and time; and staff focus on complex service tasks instead of routine room adjustments.Cain et.al (2022) added that these technologies enhance guest satisfaction by offering personalized and comfortable room environments, providing convenience through automation and self-service options, improving privacy and control over room settings, and enhancing the overall luxury experience expected in five-star hotels.

***Revenue Management Systems***

Kumar, et.al (2021) clearly states that Revenue Management Systems (RMS) are AI-driven tools used in the hospitality industry to optimize pricing, manage demand, and maximize hotel revenue by analyzing market conditions, customer behavior, and occupancy trends. Also, Lata and Mehta (2021) says that RMS use Artificial Intelligence (AI) and data analytics to adjust room prices dynamically based on demand and supply, forecast occupancy levels and customer demand, analyze competitor pricing strategies, segment customers based on willingness to pay, and recommend optimal pricing strategies to maximize revenue. These systems ensure that hotel rooms are sold at the right price, at the right time, to the right customer.

Mariani et.al (2020) emphasised that in 5-star hotels, revenue management systems are used to set flexible room prices depending on seasonality and demand, monitor booking patterns and occupancy rates, optimize promotional offers and discounts, improve coordination between sales, marketing, and front office departments, and maximize revenue from both high and low demand periods. Li, Hu & Cui (2021) affirms that revenue management systems enhance operational efficiency through optimal pricing for maximum revenue generation, improve room occupancy and reduces idle capacity; helps managers plan staffing and inventory effectively; prevents underpricing or overpricing of rooms and AI provides real-time pricing recommendations. Ninemeier and Hayes (2021) reveals that these systems improve overall hotel performance by increasing occupancy rates, enhancing competitiveness in the hospitality market, supporting strategic financial planning, and improving long-term sustainability of hotel operations.

***Security and Surveillance Systems***

Pillai and Sivathanu (2020) asserts that security and surveillance systems are Artificial Intelligence (AI)-enabled technologies used in hotels to monitor, detect, and respond to security risks in real time. These systems enhance guest safety, protect hotel assets, and improve overall operational control (Nozawa *et.al*, 2022).AI-based security and surveillance systems combine smart technologies such as CCTV cameras with facial recognition, motion detection sensors, automated alarm systems, biometric access controls (fingerprint or facial scanning), and AI-powered threat detection software (Prentice, et al., 2020). These systems analyze security data in real time and trigger alerts when unusual activity is detected.

Ruel and Njoku (2021) argues that in high-end hotels, AI-powered security and surveillance systems are used to monitor hotel premises 24/7, control access to restricted areas such as guest floors and offices, identify unauthorized persons using biometric systems, track suspicious activities in real time, and support front desk verification and guest identification. These systems improve operational efficiency through reduced manual monitoring; faster response time; improved accuracy; cost efficiency; better coordination. Sinha & Praveen (2024) argues thatAI-powered security systems also enhance customer satisfaction by providing a safer and more secure environment, ensuring smooth and quick check-in/check-out processes, reducing security-related delays, and increasing guest confidence in hotel services.

***Inventory and Supply Chain Management***

As stated by Li, et.al (2022). That inventory and supply chain management refers to the use of Artificial Intelligence (AI)-enabled systems to monitor, control, and optimize the flow of goods and services within hotel operations. These systems ensure that hotels maintain optimal stock levels, reduce wastage, and efficiently manage procurement processes.Talukder, Kumar & Tyagi (2024) affirms that AI-based inventory and supply chain systems use data analytics and automation to manage food and beverage stock levels, linen, toiletries, and housekeeping supplies, procurement and supplier coordination, demand forecasting for supplies, and waste tracking and reduction systems. These systems help hotels maintain a balance between supply availability and operational demand.According to Tan, Zhang, & Wang (2021), in five star hotels, AI-based inventory and supply chain systems are used to track real-time stock levels of food, beverages, and consumables, predict future supply needs based on occupancy rates and seasonal demand, automate purchase orders when stock reaches minimum levels, monitor supplier performance and delivery timelines, and reduce overstocking and understocking risks.

### 2.2.2: Operational, Economic and Social Implications resulting from the use of AI in Five-Star Hotels.

The application of Artificial Intelligence (AI) in five-star hotels has generated a range of operational, economic, and social implications. These implications are both positive and negative, depending on the level of adoption and management of the technology.

**(1) Operational Implications of using AI in Five-Star Hotels.**

Tiwari & Mishra (2021) states that the operational implications of AI are to the effects that AI technologies have on the day-to-day functioning, service delivery processes, and internal coordination of hotel operations. In five-star hotels, these implications are evident in how work is organized, executed, and monitored. The operational implications were segmented into positive and negative operational effects;

**(i) Positive Operational Effects of using AI in Five-Star Hotels.**

The introduction of AI in five-star hotels has significantly improved operational performance by transforming how services are delivered, coordinated, and monitored.

***Speed of Service Delivery***

According to Wang et.al (2020), speed of service delivery refers to the time taken by a hotel to respond to customer requests and provide services efficiently. In the context of Artificial Intelligence (AI), it reflects how quickly hotel operations are executed through automation and digital systems. In five-star hotels, AI technologies significantly improve service speed by automating check-in and check-out processes, providing instant responses through chatbots and virtual assistants, processing reservations in real time, and enabling quick handling of guest requests via digital platforms (Wang et.al., 2020). Operational accuracy is improved through automated booking systems that prevent double reservations, AI-based billing systems that reduce calculation mistakes, and standardized service procedures that minimize inconsistencies.

***Accuracy and reduced errors***

Wirtz, (2023) defined that increased accuracy and reduced errors as the ability of Artificial Intelligence (AI) systems to perform hotel operations with high precision and consistency, minimizing mistakes commonly associated with manual processes. In five-star hotels, AI technologies enhance accuracy by automating booking and reservation systems, standardizing billing and payment processes, managing customer data with minimal human interference, and using algorithms to validate and process information (Tiwari & Mishra, 2021). AI reduces errors in a number of operational domains, such as reservation systems, where it stops duplicate bookings and incorrect room assignments; in billing and payments, AI removes computation errors and incorrect charges; in customer data management, artificial intelligence (AI) guarantees accurate guest information storage and retrieval; and in inventory management, AI lessens overstocking, understocking, and misreporting (Yang, Henthorne & George, 2020). Higher accuracy enhances customer satisfaction by providing correct billing and transparent transactions, ensuring reliable reservations and room allocations, delivering consistent and error-free services, and building trust and confidence in hotel operations.

***Coordination across Departments***

Agarwall, Das, & Swain (2022) avers that coordination across departments is the effective integration and synchronization of activities among different units within a hotel such as the front office, housekeeping, food and beverage, and reservations to ensure smooth and efficient service delivery. Cain et.al (2022) asserts that Artificial Intelligence (AI) improves coordination by enabling real-time communication and data sharing across departments. In 5-star hotels, AI systems integrate operational functions through centralized digital platforms, ensuring that all departments access the same updated information. Coordination across departments is a key indicator of operational efficiency influenced by AI adoption. It helps evaluate how AI systems improve internal communication and workflow integration in the hotel (Gajić, et.al. 2024).

***Automation of routine tasks***

Automation of routine tasks refers to the use of Artificial Intelligence (AI) systems to perform repetitive, rule-based hotel operations with minimal human intervention (Acharya & Datta, 2023). This shifts routine workload from employees to digital systems, improving efficiency and consistency. In five-star hotels, AI enables automation through integrated management systems that handle tasks automatically based on predefined rules and real-time data (Al-Hyari, et.al, 2023). Automation influences both staff

roles and service outcomes by allowing employees to focus on personalized guest interaction, reducing fatigue associated with repetitive work, improving speed and reliability of service delivery, and supporting multitasking across departments.

***Decision-Making***

Morosan, (2020) states that improved decision-making is the ability of hotel management to make timely, accurate, and data-driven choices that enhance operational performance. Lu, Cai & Gursoy, (2020) argues that Artificial Intelligence (AI) strengthens this capability by transforming raw data into actionable insights. In five-star hotels, AI systems support decision-making through real-time data analytics dashboards, predictive models for demand and occupancy, automated reporting tools, and customer behavior analysis (Buhalis & Leung, 2023). These tools enable managers to base decisions on evidence rather than intuition. Improved decision-making leads to faster response to operational challenges, better allocation of resources (staff, time, finances), reduced operational costs due to informed planning, increased productivity and performance, and enhanced coordination across departments. Aqaba and Jawabreh (2021) states that AI-driven decision-making improves overall hotel performance by increasing service quality and consistency, enhancing competitiveness in the hospitality industry, supporting strategic planning and long-term growth, and reducing risks associated with poor decisions.

***Resource Utilization***

Shin & Perdue (2022) avows that resource utilization is the efficient allocation and use of organizational resourcessuch as labor, time, finances, and materials to achieve maximum output with minimal waste. Waheed, Kaur, & Kumar (2022) disclose that Artificial Intelligence (AI) enhances this by optimizing how resources are planned, deployed, and monitored. Gretzel, (2021) reveals that in five-star hotels, AI systems support optimal resource use through real-time monitoring of operations, predictive analytics for demand and occupancy, automated scheduling and allocation systems, and data-driven planning tools; these capabilities ensure resources are used where and when they are most needed.

***Service Consistency***

Service consistency is the ability of a hotel to deliver uniform, reliable, and standardized services to all guests across different times, departments, and service encounters (Lu, et.al. 2020). It is a key indicator of operational efficiency and quality in the hospitality industry. AI enhances service consistency by standardizing processes and minimizing human variability. In hotels, AI systems ensure that services are delivered according to predefined standards regardless of time or staff involved. Service consistency improves operational efficiency by reducing variability in service delivery, minimizing errors and service complaints, enhancing workflow reliability, reducing the need for corrective actions, and improving overall process stability (Tussyadiah, 2020). Consistent service delivery enhances customer satisfaction by ensuring predictable and reliable service quality, building trust and confidence in hotel services, reducing dissatisfaction caused by inconsistent experiences, and strengthening customer loyalty and repeat visits (Sinha & Praveen, 2024). AI promotes consistency across several operational areas customer service, reservations, billing systems, housekeeping, and service delivery.

**(ii) Negative Operational Effects**

The negative operational effects of AI in 5-star hotels include overdependence on technology, system failures, reduced human interaction, high training requirements, resistance to change, and security risks (Munene & Ntale, 2022). These challenges must be managed effectively to fully realize the benefits of AI in hotel operations.Ivanov and Webster (2022) states that while AI improves efficiency, its

implementation in hotels also creates operational challenges that affect service delivery and internal processes.

***Overdependence on Technology***

According to Kambwale and Chikandiwa, (2021), overdependence on technology is a situation where hotel operations rely heavily on Artificial Intelligence (AI) systems to the extent that disruptions in these systems significantly affect service delivery and overall performance. In five-star hotels, extensive use of AI in reservations, customer service, billing, and inventory management can create a high level of reliance on digital systems (Ndiaye, 2020). When most operational processes are automated, the organization becomes vulnerable to technological disruptions. Overdependence on AI systems may arise due to extensive automation of core hotel operations, limited availability of manual backup systems, heavy reliance on centralized digital platforms, and inadequate staff capacity to operate without AI systems. Tussyadiah, (2020) states that five-star hotels can reduce overdependence by maintaining manual backup systems and procedures, training staff in both digital and manual operations, implementing system redundancy and backup technologies, and ensuring regular maintenance and monitoring of AI systems.

***Technical Failures and System Downtime***

Russell and Norvig (2020) asserts that technical failures and system downtime is interruptions in the functioning of Artificial Intelligence (AI) systems due to software errors, hardware breakdowns, network issues, or power disruptions. These interruptions can temporarily halt or slow down hotel operations, affecting service delivery and efficiency. In five-star hotels, AI systems support critical operations like reservations, billing, customer service, and inventory management (Adekuajo, et. al, 2023). When these systems fail, core services may be disrupted. Bagozzi, (2017) further states that technical failures may result from software bugs or system glitches, internet connectivity interruptions, power outages affecting digital infrastructure, server overload during peak demand periods, and cybersecurity attacks or system breaches. Sigala (2023) avows that technical failures also affect guests by causing delays during check-in and check-out processes, interrupting online booking or customer service responses, reducing trust in hotel reliability, and creating dissatisfaction due to service inconsistency. Tussyadiah (2020) highlights that hotels reduce the impact of technical failures by installing backup power systems and generators, maintaining redundant servers and backup systems, regularly updating and maintaining software, training staff on manual fallback procedures, and strengthening cybersecurity systems.

***Reduced Human Interaction***

Reduced human interaction refers to the decline in face-to-face communication between hotel staff and guests due to the increased use of Artificial Intelligence (AI) and automated systems in service delivery (Ruel& Njoku, 2021). In five-star hotels, AI technologies such as chatbots, self-service kiosks, automated check-in systems, and digital concierge services have replaced many traditional human-to-human service encounters (Cobanoglu, et.al, 2021). This effect arises due to increased automation of customer service processes, use of chatbots and virtual assistants instead of front desk staff, digital check-in and check-out systems, online booking and self-service platforms, AI-driven responses to customer inquiries. Yang, et.al (2020) also argued that the reduction in human contact affect guests by limiting emotional connection and personalized hospitality, reducing warmth and empathy in service delivery, creating a more mechanical or impersonal experience, and affecting satisfaction for guests who prefer traditional service interaction.

***High Training and Skill Requirements***

High training and skill requirements is the need for employees to acquire advanced technical, digital, and analytical competencies in order to effectively operate and manage Artificial Intelligence (AI) systems within hotel operations (Agarwall, et al, 2022). In five-star hotels, the adoption of AI technologies introduces systems such as automated booking platforms, chatbots, predictive analytics tools, and smart room technologies (Russell and Norvig, 2020). These systems require staff to possess both basic ICT skills and specialized knowledge in digital hospitality systems. According to Pillai and Sivathanu (2020), employees often require training in operation of AI-based reservation and booking systems, use of data analytics dashboards for decision-making, management of automated customer service platforms, cybersecurity awareness and data protection practices, and maintenance and troubleshooting of digital systems. Nozawa, et.al (2022) indicates that hotels can address these challenges through continuous staff training and upskilling programs, on-the-job training and mentorship systems, simplified user-friendly AI interfaces, and collaboration with technology providers for technical support.

***Resistance to Change***

Aqaba and Jawabreh (2021) reveals that resistance to change is the behavioral and organizational opposition that occurs when employees or management are unwilling or hesitant to adopt new technologies, systems, or ways of working such as AI. Also, Mukwaya, and Nasif, (2022) added that in five-star hotels, the introduction of AI-based systems such as (automated booking platforms, chatbots, and smart service tools) may face resistance from staff who are accustomed to traditional hospitality practices. Resistance to change negatively affect operational efficiency by slowing down AI implementation processes, reducing employee productivity during transition periods, causing errors in system usage due to reluctance or lack of cooperation, creating delays in service delivery and coordination, and undermining the intended benefits of automation. Hotels reduce resistance to change through effective communication about the benefits of AI, employee involvement in decision-making processes, continuous training and capacity building, gradual implementation of new technologies, and incentives and motivation for staff adoption.

***Data Security and Privacy Risks***

According to Lu, et.al (2020), data security and privacy risks refer to the potential threats, vulnerabilities, and unauthorized access associated with the collection, storage, processing, and sharing of digital information within AI-enabled systems in hotels. In five-star hotels, AI systems collect and process large volumes of sensitive guest and operational data, including personal identification details, payment and billing information, booking history and travel preferences, biometric data (where applicable), and communication records and service requests (Mariani & Borghi, 2021). This extensive data handling increases exposure to security and privacy threats. These risks may arise from cyberattacks such as hacking and ransomware, unauthorized access to hotel databases, weak authentication and system vulnerabilities, and insider threats from employees, and poorly secured third-party AI applications or integrations. Kumar and Attri, (2021) emphasises that hotels can reduce these risks through strong encryption and data protection systems, multi-factor authentication for system access, regular cybersecurity audits and monitoring, staff training on data protection policies, and compliance with data protection regulations and standards.

***High Maintenance and Operational Costs***

High maintenance and operational costs refer to the continuous financial requirements needed to install, run, upgrade, and sustain AI systems in hotel operations (Ndiaye, 2020). These costs extend beyond initial investment and include ongoing technical support, system upgrades, training, and infrastructure maintenance. Bagheri (2024) argues that in five-star hotels, AI systems such as automated booking platforms, smart room technologies, predictive analytics tools, and security systems require continuous financial input to remain functional and effective. High maintenance and operational costs affect efficiency by increasing overall operational expenditure, reducing short-term profitability despite long-term gains, straining hotel budgets, especially during early adoption stages, diverting financial resources from other service improvements, and requiring careful financial planning and cost control strategies.

**2: Economic Implications**

Economic implications refer to the financial effects both positive and negative resulting from the adoption of AI in hotel operations. In five-star hotels such, AI significantly influences cost structures, revenue generation, and overall financial performance.

**(i) Positive Economic Implications**

Positive economic implications refer to the financial benefits that hotels gain from adopting Artificial Intelligence (AI), particularly in terms of revenue growth, cost reduction, and improved financial performance. In five-star hotels, AI contributes significantly to economic efficiency and competitiveness.

***Revenue Generation***

Revenue generation refers to the ability of hotels to increase income through efficient pricing, improved occupancy, enhanced customer targeting, and diversified service offerings. Artificial Intelligence (AI) plays a central role in strengthening revenue performance by enabling data-driven financial decisions. In five-star hotels, AI supports revenue generation by analyzing large volumes of operational and customer data to identify profitable opportunities and optimize pricing strategies (Mbei and Kirenzi, 2025). AI enhances hotel revenue through several mechanisms such as dynamic pricing, occupancy optimization, personalized marketing, upselling and cross-selling, and market demand forecasting. Improved revenue generation leads to higher occupancy rates and reduced idle capacity, increased financial returns from existing resources, better alignment between demand and pricing strategies, and improved profitability without significantly increasing operational costs. According to (Tsutsi, and Tlale, 2024), AI-driven revenue generation improves overall performance by strengthening financial stability, enhancing competitiveness in the hospitality market, supporting long-term business sustainability, and improving investment returns on hotel operations.

***Cost Reduction***

Bakshi, & Singh (2024a) defines cost reduction is the decrease in operational and administrative expenses achieved through improved efficiency, automation, and optimal resource utilization. In the hospitality industry, AI plays a significant role in minimizing unnecessary expenditures while maintaining service quality. In five-star hotels, AI systems reduce costs by automating routine operations, improving planning accuracy, and optimizing resource usage across departments (Perera, 2024). Cost reduction improves operational efficiency by eliminating waste in resources and processes, ensuring optimal allocation of financial resources, enhancing productivity with fewer inputs, supporting sustainable hotel operations, and improving profitability without compromising service quality (Ninemeier, and Hayes, 2021). Through AI-driven cost management, hotels experience increased profit

margins, improved return on investment (ROI), better financial stability and control, and enhanced competitiveness in the hospitality market (Remountakis, et.al, 2023).

***Financial Planning and Decision-Making***

In hospitality industry, financial planning and decision-making is the improved ability of hotel management to plan, allocate, and control financial resources using data-driven insights generated through Artificial Intelligence (AI) systems (Russell & Norvig, 2020). It enables more accurate forecasting, budgeting, and strategic financial choices. In five-star hotels, AI systems support financial planning by processing large volumes of operational and market data to guide managerial decisions. Qi (2024) emphasised that that improved financial planning and decision-making leads to more accurate budgeting and reduced financial errors, efficient allocation of financial resources, reduced operational wastage and overspending, faster and more informed managerial decisions, and improved overall financial control and accountability. Russell & Norvig, (2020) further states that AI-driven financial decision-making enhances performance by increasing profitability and return on investment, strengthening financial stability and sustainability, supporting long-term strategic growth, and improving competitiveness in the hospitality industry

***Resource Allocation***

In hotel industry, resource allocation refers to the process of distributing and assigning available resources such as staff, time, finances, and materials across hotel operations in a way that maximizes efficiency and service quality (Sinha, et.al, 2021). In AI-enabled hotels, this process is enhanced through data-driven decision-making and automation. In five-star hotels, AI systems support resource allocation by analyzing operational data and optimizing how resources are assigned across departments in real time (Vinnakota, et.al, 2023). Effective AI-based resource allocation leads to reduced waste of financial and material resources, improved productivity through optimal staffing levels, enhanced coordination across departments, faster response to operational demands, and balanced workload distribution among employees (Arslan, Cooper, Khan, (2022). According to Bankins, Jooss, Restubog (2024), improved resource allocation enhances service quality by ensuring availability of staff and supplies when needed, reducing service delays caused by shortages or mismanagement, supporting consistent and timely service delivery, and improving guest satisfaction through efficient operations.

***Profitability and Competitiveness***

In five star hotels, profitability and competitiveness is the ability of hotels to generate sustainable financial returns while maintaining or improving their position in the hospitality market relative to competitors (Belanche, et.al, 2020). Artificial Intelligence plays a key role in strengthening both financial performance and market positioning. In five-star hotels, AI enhances profitability and competitiveness by improving efficiency, optimizing pricing, and supporting strategic decision-making based on real-time data (Chaturvedi, Verma, Ali, 2024). AI improves a hotel's market position by enabling faster and more responsive customer service, providing personalized guest experiences, supporting data-driven marketing strategies, improving service quality and consistency, and allowing real-time adaptation to market trends and competitor pricing (Bhuiyan et.al, 2024).

**(ii) Negative Economic Implications**

Negative economic implications are the financial challenges, risks, and costs associated with the adoption and continuous use of AI in hotel operations (Chen, Tzeng, Tham, 2021). While AI improves efficiency and revenue generation, it also creates significant financial burdens, especially in advanced hospitality settings.

***Initial Investment Costs***

In hotel industry, high initial investment costs are the substantial capital required at the beginning of implementing Artificial Intelligence (AI) systems in hotel operations (Chen, Tzeng, Tham, 2021). These costs arise before any operational or financial benefits are fully realized and often represent a major barrier to adoption. In five-star hotels, AI implementation requires significant upfront spending on advanced digital infrastructure and system integration. Chi, Denton and Gursoy (2020) avers that high initial investment costs affect hotels by increasing start-up financial pressure, reducing short-term profitability, delaying return on investment (ROI), and limiting the scale of AI adoption due to budget constraints.

***High Maintenance and Operational Expenses***

High maintenance and operational expenses refer to the continuous financial resources required to keep Artificial Intelligence (AI) systems functional, updated, and effective after their initial installation (Chi, Denton and Gursoy, 2020). These costs are recurring and often extend throughout the lifecycle of the technology. In five-star hotels, AI systems such as automated booking platforms, predictive analytics tools, and smart room technologies require constant monitoring and upgrading to maintain performance and reliability. High maintenance and operational expenses affect hotels by increasing long-term operational costs, reducing net profit margins despite revenue gains, creating continuous financial obligations, and straining budgeting and cash flow management.

***Training and Human Resource Costs***

Hussein et.al (2022) assert that training and human resource costs are the financial resources required to equip employees with the necessary knowledge, skills, and competencies to effectively use AI systems in hotel operations. These costs arise due to continuous capacity building, recruitment of specialized personnel, and staff adaptation to technological change. In five-star hotels such, the integration of AI technologies requires employees to shift from traditional service methods to technology-driven operations. Chung and Tan, (2025) clearly states that this transition demands structured and continuous investment in human capital development. Dogru, et.al, (2023) also avows that training and human resource costs affect hotels by increasing operational expenditure, reducing short-term profitability during training periods, creating continuous investment needs for skill upgrading, and adding pressure on budget allocation for human capital development.

***Uncertain Return on Investment (ROI)***

Uncertain Return on Investment (ROI) is the unpredictability of financial gains from AI investments, where the benefits may take a long time to materialize or may not fully match the initial and ongoing costs incurred by an organization (Ivanov & Webster, 2022). In five-star hotels, Artificial Intelligence systems are adopted to improve operational efficiency, revenue generation, and customer service. However, the financial returns from these systems are not always immediate or guaranteed, especially during the early stages of implementation. Kong et al., (2024) reveals that uncertainty in ROI may arise due to high initial investment costs that take time to recover, slow adoption by employees, reducing system effectiveness, implementation inefficiencies during transition periods, underutilization of AI systems due to lack of skills or integration issues, and changing market conditions affecting expected financial outcomes. Uncertain ROI affects hotel performance by delaying expected financial benefits, increasing risk associated with technology investment decisions, creating pressure on cash flow and budgeting, and making it difficult to measure the exact financial value of AI adoption (Law et al., 2024).

***Risk of Job Restructuring Costs***

The risk of job restructuring costs is the financial and organizational expenses incurred when a hotel adjusts its workforce structure due to the introduction of AI (Kong et al., 2023). This often involves redeployment, retraining, or reduction of staff roles to align with automated systems. In 5-star hotels, AI adoption changes job designs by automating routine tasks such as reservations, billing, customer service, and inventory management. As a result, the existing workforce structure may need to be reorganized (Law, Leung & Buhalis, 2021). These costs may include severance and compensation payments for redundant staff, recruitment costs for new technical or AI-skilled personnel, retraining and redeployment costs for existing employees, administrative costs related to workforce reorganization, and transition costs during adjustment to new job roles and systems. Jabeen et.al (2022) asserts that job restructuring costs affect hotels by increasing short-term operational expenditure, reducing profitability during transition periods, creating financial pressure on human resource budgets, and delaying full realization of AI-related cost savings.

***Technology Dependency Costs***

Technology dependency costs are the financial and operational burdens that arise when an organization becomes heavily reliant on AI and other digital systems for daily operations (Khaliq et al., 2022). These costs increase over time as hotels must continuously maintain, upgrade, and safeguard their technological infrastructure. In five-star hotels in China and Japan, AI systems are integrated into key operations including reservations, customer service, billing, and security (Lau, 2020). As dependence on these systems grows, so does the financial obligation to ensure uninterrupted performance. According to Khaliq et.al (2022), technology dependency increases costs by raising long-term operational expenditure, increasing vulnerability to unexpected system-related expenses, reducing financial flexibility due to continuous technological commitments, and creating hidden costs that are not always accounted for during initial investment.

**3: Social Implications**

Ku and Chen, (2024) reveals that social implications are the effects that Artificial Intelligence (AI) has on people, relationships, work environments, and the broader society within and around hotel operations. In five-star hotels, AI adoption influences both employees and guests in multiple ways.

**(i) Positive Social Implications:**

According to Ku and Chen, (2024), positive social implications is the beneficial effects that Artificial Intelligence (AI) has on people, workplace relationships, service quality, and overall human experience within hotel operations. In five-star hotels, AI contributes significantly to improving both employee and guest experiences.

***Customer Experience and Satisfaction***

Elkhwesky and Manzani (2022) assert that improved customer experience and satisfaction is the enhancement of guests' overall perception of service quality, convenience, and value received during their stay in a five star hotel. AI contributes significantly to achieving this by making services faster, more personalized, and more responsive. Hussein et.al (2022) clearly highlights that in five-star hotels such as Intercontinental residence in UAE use AI systems improve guest experiences by analyzing customer data and automating service delivery processes to ensure timely and accurate responses to guest needs. Jabeen et al., (2022) highlights that improved customer experience contributes to operational efficiency by reducing service complaints and follow-ups, increasing service speed and responsiveness, enhancing workflow coordination between departments, and reducing pressure on

frontline staff through automation. Kambwale and Chikandiwa (2021) argues that enhanced customer satisfaction leads to increased customer loyalty and repeat visits, positive online reviews and brand reputation, higher occupancy rates and revenue generation, and competitive advantage in the hospitality industry.

***Employee Productivity and Work Experience***

According to Gursoy & Cai, (2025), employee productivity and work experience is the positive changes in staff efficiency, job satisfaction, and workplace performance resulting from the adoption of AI in hotel operations. Ivanov & Webster (2022) argues that AI reshapes work processes by reducing repetitive tasks and enhancing coordination and decision-making. Gupta et al., (2022) avows that in five-star hotels, AI systems support employees by automating routine operations and providing real-time information that improves task execution and service delivery. Gupta et.al further argues that improved employee productivity leads to faster service delivery to guests, reduced human error in routine operations, and better coordination across departments, increased efficiency in daily hotel operations, and optimal use of human resources. Huang et al., (2022) reveals that AI positively influences employee experience by reducing workload stress and repetitive tasks, allowing staff to engage in more meaningful customer interactions, enhancing job satisfaction through improved work systems, supporting skill development in digital and technical areas.

***Workplace Safety and Security***

According to Berezina, Ciftci & Cobanoglu (2020), improved workplace safety and security in the hospitality industry is the enhancement of protection measures for guests, employees, and hotel assets through the use of AI-enabled systems that detect risks, prevent incidents, and support rapid response to emergencies. Atwine and Mukiibi (2022) stresses that in five-star hotels, AI systems strengthen safety and security by continuously monitoring hotel environments and identifying potential threats in real time. Doborjeh et al., (2022) emphasised that improved safety and security enhances efficiency by reducing response time to incidents and emergencies, minimizing security-related disruptions in hotel operations, enhancing coordination between security and other departments, reducing losses due to theft, fraud, or damage, and allowing security staff to focus on high-priority tasks rather than manual monitoring.

***Service Quality and Consistency***

According to Goel et al., (2022), service quality and consistency is the improvement in the standard, reliability, and uniformity of services delivered to guests over time, regardless of staff, shift, or department. According to Chen et.al (2022), AI strengthens this by standardizing processes and reducing variability in service delivery. In five-star hotels, AI systems support service quality by guiding staff actions, automating service procedures, and ensuring adherence to hotel standards across all operations(Goel et al., 2022). Buhalis and Law (2022) reveals that service quality and consistency improves efficiency by reducing service errors and customer complaints, minimizing rework and corrective actions, improving coordination across departments, increasing speed and reliability of service delivery, and strengthening workflow standardization.

***Skills Development and Empowerment***

According to Abufawr, et.al (2024), skills development and empowerment in hotel industry is the enhancement of employees' knowledge, competencies, and confidence in using AI systems, enabling them to perform tasks more effectively and adapt to technological changes in hotel operations. Cain, Thomas, & Alonso Jr. (2022) also argued that in five-star hotels, the introduction of AI-based systems

such as automated booking platforms, data analytics tools, and smart service technologies requires employees to acquire new digital and technical skills to remain effective in their roles. Buhalis & Leung (2023) reveals that AI contributes to empowerment by increasing employees' confidence in using modern technology, improving career growth opportunities in ICT-related roles, encouraging innovation & creativity in service delivery, and strengthening professional development within the hospitality sector. Bulchand-Gidumal, (2024) affirms that skills development and empowerment improve efficiency by reducing dependency on external technical support, improving speed and accuracy of task execution, enhancing teamwork and coordination across departments, minimizing errors in AI system usage, and increasing overall productivity and service quality.

**(ii) Negative Social Effects**

Negative social effects refer to the undesirable impacts of Artificial Intelligence (AI) on employees, guests, workplace relationships, and broader human interaction within hotel operations (Ali and Dogan, 2023). In five-star hotels such as Sheraton Kampala Hotel and Kampala Serena Hotel, AI adoption may introduce several social challenges despite its operational benefits.

***Job Displacement and Role Redesign***

According to Gajić, et.al (2024), job displacement and role redesign is the changes in employment patterns that occur when AI automates routine tasks, resulting in the reduction of some job roles while transforming others into more specialized, technical, or supervisory positions. Doborjeh, et.al (2021) posits that in five-star hotels, AI systems are increasingly used in areas like reservations, front desk operations, customer service, and inventory management. As a result, tasks that were previously performed manually are now automated or system-driven. AI tends to reduce the need for employees in roles involving repetitive tasks, such as front office clerks handling routine check-ins and check-outs, reservation officers managing manual booking processes, cashiers involved in billing and payment processing, and basic customer service attendants handling repetitive inquiries. Gajić, et.al (2024) further states that rather than complete elimination of jobs, many roles are restructured, including employees shifting from manual service delivery to system monitoring and support, staff focusing more on guest experience management and personalized services, emergence of new roles such as data analysts, IT support officers, and AI system coordinators, and managers increasingly relying on AI-generated reports for decision-making.

***Employee Resistance to Technology***

According to Héder (2021), employee resistance to technology is the reluctance or opposition by hotel staff to accept, adopt, or effectively use Artificial Intelligence (AI) systems introduced in the workplace. This resistance is often rooted in fear, uncertainty, lack of skills, or perceived threats to job security. In five-star hotels, AI systems such as automated booking platforms, chatbots, and smart management systems require employees to adjust their working methods. However, not all staff adapt easily to these changes, leading to resistance.

***Digital Skills Inequality***

According to Lata and Mehta (2021), digital skills inequality refers to the unequal distribution of knowledge, competencies, and confidence among employees in using AI and other digital technologies within the workplace. It occurs when some staff are highly competent in technology use while others lack the necessary skills to effectively operate AI systems. In five-star hotels, AI systems are increasingly integrated into operations such as reservations, customer service, housekeeping

management, and data analytics. However, not all employees possess the same level of digital literacy required to effectively use these systems.

### 2.2.3: Major Challenges, Barriers and Risks associated with Artificial Intelligence (AI) adoption in Five-Star Hotels.

According to Gursoy & Cai (2025), the adoption of AI in five-star hotels brings significant operational and strategic benefits; its adoption in five-star hotels is constrained by financial burdens, technical limitations, human resistance, cybersecurity risks, and organizational challenges that must be carefully managed for successful implementation. In 5-star hotels, these issues influence the effectiveness of AI in improving operational efficiency.

***Financial Barriers***

Gursoy & Cai (2025) clearly elaborates that financial barriers is the monetary constraints that limit or slow down the adoption, implementation, and sustained use of Artificial Intelligence (AI) systems in hotel operations. These barriers mainly arise from high costs, limited budgets, and uncertain financial returns. Héder, (2021) added that's in five-star hotels, AI adoption requires substantial upfront expenditure, including purchase of AI software systems (booking, analytics, and customer service tools), installation of smart infrastructure (sensors, servers, and automated systems), upgrading existing ICT systems to support AI integration, hiring technical experts for system deployment. These costs often require large capital outlays, which may strain hotel budgets.

After installation, AI systems require continuous funding for software updates and system upgrades, subscription and licensing fees, cybersecurity and data protection services, and technical support and system monitoring (Ivanov & Webster, 2022). These recurring expenses increase long-term operational costs. AI implementation demands investment in human capital, including staff training and re-skilling programs, recruitment of ICT specialists and data analysts, consultancy services for system adaptation, and temporary productivity losses during training periods (Jabeen et.al, 2022). Hotels may experience financial uncertainty due to delayed realization of AI benefits, slow adoption by employees affecting efficiency gains, difficulty in measuring direct financial returns from AI systems, and market fluctuations affecting expected profitability.

***Technological Challenges***

Kambwale & Chikandiwa (2021) defines technological challenges as technical limitations, system complexities, and infrastructure-related constraints that hinder the effective adoption and utilization of AI systems in five-star hotel operations. These challenges affect system performance, integration, reliability, and overall operational efficiency (Ku & Chen, 2024). In 5-star hotels, AI systems must be integrated with existing Hotel Management Systems (HMS). However legacy systems may not be compatible with modern AI platforms, data silos may exist between departments, integration requires specialized technical expertise, and system upgrades disrupt ongoing operations.

O'Neill and Mattila (2020) asserts that effective AI use depends on strong digital infrastructure, which may be constrained by unstable or slow internet connectivity, limited server capacity and storage systems, inadequate digital hardware (smart devices, sensors, networks), and high dependence on external ICT service providers. AI systems are vulnerable to unexpected system crashes and software bugs, network failures affecting real-time operations, power interruptions disrupting digital services, and delays in system recovery and troubleshooting (Ruel & Njoku, 2021). These issues interrupt hotel services such as booking, billing, and guest management. Pillai & Sivathanu (2020) posits that AI

adoption increases exposure to digital risks such as data breaches involving guest personal information, hacking and ransomware attacks, unauthorized access to hotel management systems, and weaknesses in data protection protocols. Prentice et.al (2020) discloses that AI systems depend on large volumes of data, which may present challenges such as poor data quality or incomplete records, difficulties in data storage and management, lack of standardized data formats across departments, and challenges in ensuring real-time data accuracy.

***Operational Risks***

Sinha & Praveen (2024) states that operational risks are the potential losses, disruptions, or inefficiencies that arise from failures in internal processes, systems, people, or external events affecting the use of Artificial Intelligence (AI) in hotel operations. These risks negatively impact service delivery, efficiency, and guest satisfaction. In luxurious hotels, AI systems are central to operations such as reservations, billing, and customer service. However, system failures interrupt bookings and check-in processes, network or software crashes may delay service delivery, power outages can affect digital service continuity, and recovery time may disrupt guest experiences.

***Data and Ethical Risks***

Data and ethical risks are the potential harm, misuse, or unintended consequences arising from the collection, processing, storage, and use of data by AI systems, as well as concerns related to fairness, transparency, and accountability in decision-making processes (Sinha & Praveen, 2024). In five-star hotels, AI systems collect large amounts of guest data, including personal identification details (names, contacts, nationality), payment and financial information, booking history and preferences, and behavioral and consumption patterns. This creates risks such as unauthorized access to sensitive guest data, data leakage or exposure to third parties, misuse of customer information without consent.

***Managerial and Organizational Barriers***

According to Sun & Lu (2024), managerial and organizational barriers are the internal institutional limitations related to leadership capacity, strategic direction, organizational structure, and decision-making processes that hinder effective adoption and utilization of AI in hotel operations. In five-star hotels, some managers may lack sufficient knowledge of AI systems, leading to difficulty in selecting appropriate AI technologies, poor understanding of system capabilities and limitations, weak strategic planning for digital transformation, and overreliance on external consultants (Talukder, Kumar & Tyagi, 2024).

**2.3: Dimensions of Operational Efficiency in 5-Star Hotels**

Operational efficiency in luxury hotels reflects how well resources, processes, and staff are coordinated to deliver high-quality services with minimal waste, delays, and errors (Wang et.al, 2020). In five-star hotels, efficiency is critical for maintaining premium service standards and customer satisfaction. Below are the structured explanations of the key dimensions;

**2.3.1: Service Delivery**

Service delivery in five-star hotels is a multi-dimensional concept involving speed, responsiveness, reliability, and quality (Assaf, Barros, & Josiassen, 2020). When effectively managed especially with the support of AI technologies it significantly improves operational efficiency and customer satisfaction. In luxury establishments such as 5-star hotels, service delivery is a core determinant of operational efficiency and competitive advantage. Service delivery efficiency can be measured using average service time like (check-in duration), waiting time for services, number of customer complaints, speed of complaint resolution, and customer satisfaction ratings (Barros, 2021a). Efficient service delivery

enhances guest experience, reduces complaints, and strengthens hotel reputation. Barros further states that modern five-star hotels enhance service delivery through automated booking and reservation systems, mobile check-in/check-out services, AI-powered customer service tools such as (chatbots); and data-driven personalization of services.

**2.3.2: Accuracy and Error Management**

Accuracy and error management is the degree of correctness in hotel operations and the systems in place to prevent, detect, and correct mistakes (Brown & Ragsdale, 2022). In luxury establishments such as 5-star hotels, maintaining high accuracy is essential for delivering reliable services and sustaining guest trust (Charnes, Cooper & Rhodes, 2021). Accuracy and error management are critical components of operational efficiency in five-star hotels. By combining trained personnel, standardized procedures, and advanced technologies, hotels can minimize errors, improve service reliability, and deliver a superior guest experience. Hu et.al (2020) avows that modern technologies enhance accuracy through automated reservation and billing systems, real-time data validation and updates, reduced human error in repetitive tasks, and integrated hotel management systems. Effective accuracy and error management reduces operational costs associated with mistakes, enhances customer satisfaction and trust, improves workflow and service consistency, and strengthens the hotel's reputation.

**2.3.3: Resource Utilization**

Resource utilization is a critical dimension of operational efficiency in five-star hotels (Lee, & Wang, 2021). By effectively managing human, physical, financial, and technological resources especially through AI-supported systems hotels can achieve cost efficiency, improved productivity, and high-quality service delivery. In high-end establishments, efficient resource utilization is essential for maintaining service excellence while controlling costs. Lee, & Wang, (2021) also reveals that AI enhances resource utilization through real-time monitoring of operations and resource use, predictive analytics for demand and occupancy forecasting, automated scheduling systems for staff allocation, and inventory management systems to reduce waste.

**2.3.4: Productivity and Workflow**

Productivity and workflow are central to operational efficiency in five-star hotels (Farrell, 2021). When tasks are well-organized, processes are integrated, and technology supports coordination, hotels can deliver fast, consistent, and high-quality services while maximizing resource use. Morey & Dittman, (2020) stresses that productivity and workflow refers to how efficiently tasks are completed (productivity) and how smoothly activities move across processes and departments (workflow). In luxury settings, these two elements are tightly linked well-designed workflows enable higher staff output, fewer delays, and consistent service quality.Morey & Dittman, (2020) also reveals that strong productivity and workflow systems reduce service delays and waiting times, improve consistency and quality of service, and enhance employee performance and accountability, and lower operational costs through efficiency gains.

**2.3.5: Coordination and Communication**

In the hospitality industry, coordination and communication the alignment of activities across departments and the effective flow of information among staff to ensure seamless service delivery (Chiang, et.al, 2024). Coordination and communication are fundamental drivers of operational efficiency in five-star hotels. Färe (2024) avers that when departments are well-coordinated and communication is clear and timely, hotels can deliver efficient, accurate, and high-quality services, leading to improved

performance and guest satisfaction. In luxury establishments, strong coordination and communication are essential for maintaining high service standards and operational efficiency (Wang, et al., 2020).

**2.3.6: Customer Satisfaction**

Customer satisfaction refers to the degree to which hotel services meet or exceed guest expectations. In luxury establishments, satisfaction is a critical outcome of operational efficiency and a key driver of repeat business, reputation, and profitability (Sun & Lu, 2024).Min & Min (2022) highlights that customer satisfaction is achieved when perceived service quality matches or exceeds expectations, guests experience value for money and services are delivered consistently and reliably. Customer satisfaction in five-star hotels is driven by service quality, timeliness, personalization, reliability, and effective complaint handling.

**2.4: Empirical Review**

An empirical review presents findings from previous studies related to Artificial Intelligence (AI) adoption and operational efficiency in the hospitality industry. It focuses on what has already been studied, the methods used, and the key outcomes, helping to identify research gaps that the current study addresses.

Ivanov and Webster (2022) conducted influential research on the application of Artificial Intelligence (AI) and automation in the tourism and hospitality industry. Their work is widely cited in discussions on how emerging technologies are transforming service delivery, operational processes, and employment structures in hotels and related sectors. The study mainly examined the role of AI, robotics, and automation in tourism services, how technology improves operational efficiency and service delivery, the impact of automation on employment and job roles in hospitality, and future trends in smart tourism and digital transformation. The study findings revealed that established that AI and automation significantly improve operational efficiency by reducing human error and increasing service speed; hotels benefit from cost reduction through automation of repetitive tasks; AI enhances decision-making processes through data analytics and predictive tools. However, increased automation may lead to job displacement and workforce restructuring. The hospitality industry is moving toward a hybrid model, where humans and AI systems work together. However, the study presented geographical and conceptual gaps. The study focuses on global trends, mainly drawing from developed and technologically advanced tourism markets, it does not explore AI adoption challenges in African hospitality contexts, and limited insights are provided on how AI functions in Ugandan five-star hotels. The study also presented a conceptual gap because it does not clearly separate operational, economic, and social impacts of AI; and lacks a clear conceptual model linking AI adoption directly to operational efficiency in hotels. Therefore, the current study seeks to close these gaps.

Adeola and Evans (2020) examined the role of digital technologies and Artificial Intelligence (AI)-related innovations in improving service delivery and operational efficiency within the hospitality and tourism sector, particularly focusing on developing economies, a case of Nigeria. The study primarily explored the adoption of digital technologies (including AI tools) in hotel operations; the impact of technology on service quality and operational performance; constraints affecting technology adoption in developing country contexts; and the relationship between innovation and competitiveness in hospitality firms The study findings established that digital technologies, including AI applications, significantly improve workflow coordination and service efficiency in hotels, AI adoption enhances customer responsiveness and service speed, reducing delays in service delivery, hotels that invest in technology

gain a competitive advantage through improved service quality and customer satisfaction. Despite benefits, adoption is hindered by inadequate infrastructure, high costs, and limited technical expertise, and human resource readiness plays a critical role in successful technology implementation. The study concludes that that AI and digital systems contribute to streamlined hotel operations and reduced service bottlenecks, improved decision-making through real-time data access, enhanced guest experience through faster and more reliable services, and better coordination among hotel departments. However, Adeola and Evans (2020) presented a contextual gap because it focused on Nigeria, a relatively large and more diversified hospitality market within West Africa. However, limited evidence exists on AI adoption in East African luxury hotel contexts, particularly Uganda. The operational realities of five-star hotels in Kampala may differ due to variations in infrastructure, technology maturity, and customer profiles. There is insufficient localized evidence from hotels such as Sheraton Kampala Hotel and Kampala Serena Hotel. Therefore, the current study seeks to close the gap.

Murphy (2020) conducted research on the use of Artificial Intelligence (AI) tools particularly chatbots, virtual assistants, and automated service systems in enhancing customer service quality within the hospitality industry. The study focused on how AI influences guest experience, service efficiency, and hotel competitiveness. The study mainly examined the role of AI-enabled customer service technologies in hotels, the impact of automation on service responsiveness and accuracy, guest satisfaction levels resulting from AI interactions, and the balance between human service and automated systems in hospitality. Murphy et al. (2020) found that AI-powered chatbots and virtual assistants significantly improve response time to customer inquiries, automated systems enhance service efficiency and consistency in handling guest requests, AI contributes to higher guest satisfaction through 24/7 service availability, Hotels using AI tools experience improved operational speed and reduced workload for staff. However, over-reliance on AI may reduce human interaction and emotional connection with guests. The study concludes that AI applications in customer service reduce waiting time for guests, improve accuracy in handling reservations and inquiries, support staff by automating repetitive communication tasks, and enhance overall service delivery efficiency in hotels. Murphy (2020)focuses on general hospitality settings without deep emphasis on specific developing country hotel environments. This creates a contextual gap because the findings are mainly applicable to advanced or digitally mature hotel systems, limited attention is given to East African or Ugandan luxury hotel contexts, and the operational realities of hotels such as Sheraton Kampala Hotel and Kampala Serena Hotel are not explicitly addressed. Murphy et al. (2020) also presented a conceptual gap because they did not explicitly integrate theoretical frameworks such as TAM or RBV. Focus mainly on service efficiency rather than a structured model linking AI to operational performance, and do not separate clearly the operational, economic, and social dimensions of AI impact. Therefore, the current study seeks to close these gaps.

Law (2021) examined the challenges and implications of digital transformation and Artificial Intelligence (AI) adoption in the hospitality and tourism industry. The study focused on how hotels and tourism enterprises implement AI technologies and the barriers that affect successful adoption and performance outcomes. The study primarily investigated adoption of Artificial Intelligence (AI) and digital technologies in hospitality operations, barriers affecting successful implementation of AI systems, impact of technology on service delivery and operational performance, and human and organizational factors influencing technology uptake. Law et al. (2021) established that hotels face significant implementation challenges, including high costs and limited technical expertise; resistance to

change among employees slows down AI adoption; lack of adequate training and digital skills reduces system effectiveness; organizational readiness strongly determines the success of Artificial Intelligence (AI) integration. Despite challenges, AI has strong potential to improve service efficiency and competitiveness. The study concludes that AI adoption in hotels leads to improved operational efficiency when properly implemented, faster service delivery and better customer management, enhanced data-driven decision-making. Law (2021) focused broadly on hospitality and tourism enterprises without a specific emphasis on luxury hotel settings in developing countries. This creates a sector-specific gap because the study covers hospitality and tourism broadly without isolating luxury hotel operations; and lack of focus on how AI affects service quality standards specific to five-star hotels. Law's study also presented a human and social dimension gap, because it acknowledge resistance to change and skills gaps, they do not deeply examine employee attitudes, motivation, and adaptation experiences; provide limited analysis of job redesign, workplace culture changes, and digital inequality; and do not fully explore long-term social impacts of AI on hotel staff welfare. The current study closed these gaps.

Gursoy (2020) conducted research on consumer and employee perceptions of Artificial Intelligence (AI) and automation in the hospitality and tourism industry. The study focused on how AI technologies are perceived by both customers and employees, and how these perceptions influence acceptance, adoption, and service outcomes. The study mainly examined attitudes of employees and customers toward AI in service delivery, perceived benefits and risks of Artificial Intelligence (AI) adoption in hospitality, factors influencing acceptance of AI technologies, and the impact of automation on job security and service quality. Gursoy (2020) found that employees often show mixed or negative attitudes toward AI due to fear of job loss and reduced human roles, customers generally appreciate AI for speed, convenience, and efficiency, but still value human interaction, acceptance of AI depends on perceived usefulness, ease of use, and trust in technology, concerns about job displacement and reduced service personalization influence employee resistance, and successful AI adoption requires balancing technology efficiency with human touch. The study highlights that AI adoption affects hotel operations by improving service speed and efficiency through automation, enhancing customer convenience in booking and service delivery, creating internal tension between automation and human labor, and requiring careful management of employee perceptions and expectations. Gursoy (2020) focus broadly on hospitality and tourism without specific emphasis on five-star hotel operations in developing countries. This creates a contextual gap because the study does not deeply reflect the operational realities of luxury hotels in Africa; limited attention is given to institutions operating in resource-constrained environments; and findings may not fully apply to hotels such as Sheraton Kampala Hotel and Kampala Serena Hotel. Therefore, the current filled this gap.

Nyeko (2022) examined the adoption of AI and other digital technologies in the hospitality and tourism sector within East Africa, a case of Uganda, Kenya and Tanzania. The study focused on the extent of adoption, benefits realized, and constraints limiting effective implementation in developing country contexts. The study primarily explored level of AI and digital technology adoption in hospitality firms, impact of AI on service delivery and operational performance, challenges affecting implementation in East African hotels, and relationship between ICT infrastructure and technology uptake. Nyeko (2022) found out that AI has strong potential to improve service delivery efficiency, customer experience, and operational performance in hotels, adoption levels remain moderate to low in many East African hospitality establishments, major constraints include weak ICT infrastructure, high implementation costs, and limited technical expertise, hotels that adopt digital tools experience improved coordination

and faster service delivery. The study concludes that AI adoption contributes to improved efficiency in reservations, customer service, and operations management, enhanced guest experience through faster and more accurate service delivery, better data-driven decision-making. However, these benefits are often constrained by infrastructural and financial limitations. Nyeko (2022) examine AI adoption across East Africa generally, without a focused analysis of luxury hotel settings in Uganda. This creates a contextual gap because the study does not isolate five-star hotel operations where AI use is more advanced and complex; limited attention is given to specific institutional contexts such as hotels; and operational realities of the selected hotels in Kampala City are not deeply explored. The study presented a conceptual gap, because it does not clearly integrate structured theoretical models such as TAM, RBV, or Technological Determinism; lacks a comprehensive framework linking AI adoption to operational efficiency outcomes in hotels; and does not clearly separate operational, economic, and social dimensions of AI impact. Therefore, the current study bridged these gaps.

**2.4.1: Summary of Empirical Literature and Gaps**

In this subsection, the study presented the summarized literature used in the research. The gaps are subsequently identified as well as how they were bridged.

**Table 2.1: Summary of Empirical Literature and Gaps**

| Author(s) | Title | Key findings | Gaps | Focus of current study |
|---|---|---|---|---|
| Ivanov and Webster (2022) | The application of Artificial Intelligence (AI) and automation in the tourism and hospitality industry. | AI and automation significantly improve operational efficiency by reducing human error and increasing service speed. | The study focuses on global trends, mainly drawing from developed and technologically advanced tourism markets, it does not explore AI adoption challenges in African hospitality contexts, and limited insights are provided on how AI functions in Ugandan five-star hotels. | The present study fills this gap by providing a localized and comprehensive analysis of AI adoption and operational efficiency in five-star hotels in Kampala. |
| Adeola and Evans (2020) | The role of digital technologies and AI-related innovations in improving service delivery and operational efficiency within the hospitality & tourism sector, a case of Nigeria. | Digital technologies, including AI applications, significantly improve workflow coordination & service efficiency in hotels. | Presented a contextual gap because it focused on Nigeria, a relatively large and more diversified hospitality market within West Africa. However, limited evidence exists on AI adoption in East African luxury hotel contexts, particularly | The present study addresses these gaps by providing a focused, multi-dimensional analysis of AI adoption in Kampala's luxury hotel sector. |

| | | | | |
|---|---|---|---|---|
| | | | Uganda. | |
| Murphy 2020) | The use of Artificial Intelligence (AI) tools particularly chatbots, virtual assistants, and automated service systems in enhancing customer service quality within the hospitality industry. | AI-powered chatbots and virtual assistants significantly improve response time to customer inquiries. AI contributes to higher guest satisfaction through 24/7 service availability | Study creates a contextual gap because the findings are mainly applicable to advanced or digitally mature hotel systems; limited attention is given to East African or Ugandan luxury hotel contexts, and the operational realities of the selected hotels. | The present study fills this gap by providing a broader, empirical, and context-specific analysis of AI adoption and operational efficiency in five-star hotels in Kampala. |
| Law (2021) | The challenges and implications of digital transformation and Artificial Intelligence (AI) adoption in the hospitality and tourism industry. | Hotels face significant implementation challenges, including high costs and limited technical expertise. Resistance to change among employees slows down AI adoption. | The study creates a sector-specific gap because the study covers hospitality and tourism broadly without isolating luxury hotel operations; and lack of focus on how AI affects service quality standards specific to five-star hotels. | The present study fills this gaps by focusing on AI adoption and operational efficiency in five-star hotels in Kampala. |
| Gursoy (2020) | Consumer and employee perceptions of AI and automation in the hospitality and tourism industry. | Employees often show mixed or negative attitudes toward AI due to fear of job loss and reduced human roles. | The study creates a contextual gap because the study does not deeply reflect the operational realities of luxury hotels in Africa; limited attention is given to institutions operating in resource-constrained environments; and findings may not fully apply to hotels such as Sheraton Kampala Hotel and Kampala Serena Hotel.. | The present study addresses these gaps by focusing on AI adoption and operational efficiency in five-star hotels in Kampala. |
| Nyeko (2022) | The adoption of AI and other digital | AI has strong potential to improve | This creates a contextual gap because | The present study fills these gaps by |

| | | | | |
|---|---|---|---|---|
| | technologies in the hospitality and tourism sector within East Africa, a case of Uganda, Kenya & T.Z. | service delivery efficiency, customer experience, and operational performance in hotels. | the study does not isolate five-star hotel operations where AI use is more advanced and complex;<br>The study presented a conceptual gap, because it does not clearly integrate structured theoretical models such as TAM, RBV, or Technological Determinism; lacks a comprehensive framework linking AI adoption to operational efficiency outcomes in hotels; | focusing on AI adoption and operational efficiency in five-star hotels in Kampala, Uganda. |

**Source: Researcher, 2026**

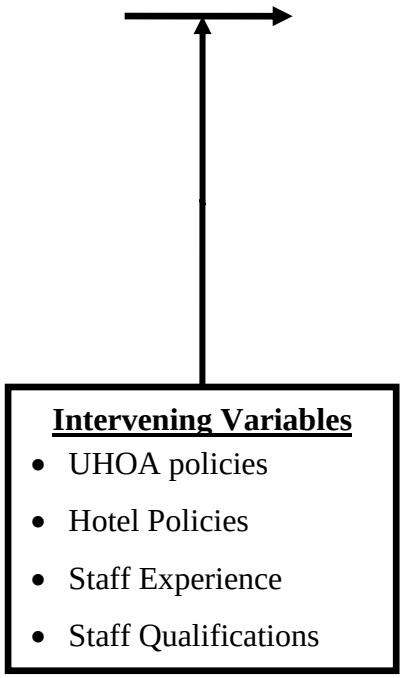
### 2.5: Conceptual Framework

A conceptual framework illustrates the expected relationship between the main variables. It defines the relevant objectives for the research process and maps out how they come together to draw coherent conclusions. In this section the conceptual framework figure 2.1 illustrates how independent variable relates to the dependent variable. The intervening model explained the relationship that exists between the AI application and operational efficiency of the selected hotels in Kampala City, Uganda.

**Independent Variables** **Dependent Variables**

**AI APPLICATION**
- AI Technologies.
- AI operational, economic &

**OPERATIONAL EFFICIENCY**
- Service delivery
- Accuracy & Error Management
- Resource Utilization




**Source: Hendrickson, et al., 2022, Modified by the Researcher, 2025**

**Figure 2.1: Conceptual Model on AI Application and Operational Efficiency in 5 –Star Hotels**

### 2.5.1: Explanation of the Conceptual Model

As indicated in Figure 2.1, the independent variable is application of Artificial intelligence (AI) viewed in terms of AI technologies implemented, AI operational, economic and social implications and challenges associated with AI implementation. The dependent variable is operational efficiency is measured bys ervice delivery, accuracy & error management, resource utilization, productivity and workflow, coordination & communication, and customer satisfaction.These are supported by the moderating variables defined in terms of UHOA policies, hotel policies, hotel culture, staff experience, and staff qualifications.

This conceptual framework provides a comprehensive understanding of how AI contributes to operational efficiency in five-star hotels. It highlights that while AI technologies have the potential to significantly improve service delivery and productivity; their effectiveness is contingent upon supportive policies, organizational culture, and staff capacity. Therefore, successful AI implementation requires not only technological investment but also institutional and human resource readiness.

AI application in five-star hotels is a multidimensional construct that goes beyond mere technology adoption (Abufawr et.al, 2024). It encompasses the tools used, the impacts generated, and the challenges encountered, all of which collectively determine how effectively AI can improve operational efficiency. Understanding these dimensions provides a comprehensive basis for analyzing the role of AI in modern hospitality management.

Operational efficiency is a critical outcome variable that reflects the overall performance of hotel operations (Akello & Ogut, 2020). In the context of AI adoption, it captures how effectively technology enhances service delivery, reduces errors, optimizes resources, and improves both internal processes and

customer experiences. Therefore, it serves as a comprehensive measure of the impact of AI in five-star hotel environments.

Intervening variables play a critical role in ensuring the successful implementation and impact of AI technologies in five-star hotels. Factors such as UHOA policies, hotel policies, staff experience, and staff qualifications determine whether AI adoption leads to meaningful improvements in operational efficiency. Therefore, achieving optimal results requires not only technological investment but also strong institutional support and skilled human resources.

## CHAPTER THREE
## RESEARCH METHODOLOGY

### 3.0: Introduction

This chapter presents the methods that were used in collecting relevant data of the study. It contains the research design, study population, study area, sample size, sample size determination, sampling techniques, data collection procedure, validity and reliability of tools, data collection methods, data collection instruments, data analysis techniques, data processing, ethical consideration, and limitation of the study.

### 3.1: Research Design

The study adopted a descriptive cross-sectional research design using a mixed-methods approach (both quantitative and qualitative techniques).A cross-sectional research design was adopted for this study because it facilitates collecting data from a sample of participants at a single point in time, allowing for a snapshot of the variables of interest and their associations (Dermatol, 2020). The cross-sectional survey design was most relevant for the study because it enabled the researcher to assess the current status of technology adoption and innovative work behavior. The study used quantitative and qualitative research which is generally associated with the positivist paradigm. It involved collecting and converting data into numerical form hence use of statistical calculations where conclusions were drawn.

### 3.2: Study Population

The target population of this research was from the 2 selected hotels in Kampala City that have exhibited adoption of AI technologies and encourage operational efficiency. The hotels included Sheraton Hotel Kampala and Kampala Serena Hotel. The respondents included Management and administration, information technology (IT), food & beverage, housekeeping, and front office. These categories of respondents were chosen because they were expected to have relevant and valid information about the study variables and how they are operationalized in hotels.

### 3.3: Sample Size and Selection

A sample was drawn from the total population of 1265 employees in the selected hotels to obtain representative information for the study. The sample size was determined using the Yamane (1967) formula, which is widely used for calculating sample sizes from finite populations at a specified level of precision. Using a 95% confidence level and a margin of error of 5%, the study obtained a sample size of 304 respondents. The selected respondents were considered adequate to provide reliable and representative data for achieving the study objectives.

$$n = \frac{N}{1+ N (e)^2}$$

Where: ***n*** = sample size, ***N*** = target population

**e** = level of significance = e = 0.05 = $e^2$ = $(0.05)^2$ =0.0025

$$n = \frac{1265}{1 + 1265(0.05)^2}$$

$$n = \frac{1265}{1 + 1265(0.0025)}$$

$$n = \frac{1265}{1 + 3.1625}$$

$$n = \frac{1265}{4.1625}$$

$$\mathbf{n = 304}$$

**Table 3.1: Population and Sample Size Distribution**

| Sn. | Name of the Hotel | Population of Employees | Sample Size |
|---|---|---|---|
| 1 | Sheraton Hotel Kampala | 444 | 104 |
| 2 | Kampala Serena Hotel | 821 | 200 |
| | **Total** | **1,265** | **304** |

Source: Field findings, 2026;Serena and Sheraton Hotel HR records, 2026

### 3.4: Sampling Methods

The study used to two sampling techniques to collect data from the respondents.

#### 3.4.1: Purposive Sampling

Snyder, (2022) defined purposive sampling as a non-probability sampling technique in which the researcher deliberately selects respondents who possess specific knowledge, experience, or characteristics relevant to the study. It is based on the researcher's judgment rather than random selection. The study employed purposive method of sampling to select respondents from hotel managers (general managers, operations managers), IT managers and system administrators, department heads (front office, housekeeping, food & beverage), and supervisors involved in operational decision-making as respondents in this study due to their specialized knowledge and pivotal role in the AI hotel activities. As key decision-makers directly involved in hotel activities, these respondents possess insights crucial for examining the relationship between AI application and operational efficiency. This method ensured efficiency and depth in data collection, focusing resources on participants with targeted expertise and relevance to the research question.

#### 3.4.2: Simple Random Sampling

Simple random sampling is a probability sampling technique in which every member of the target population has an equal and independent chance of being selected for the study (Snyder, 2022). Selection is done randomly, without bias or predetermined criteria. In this study on AI adoption and operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel, simple random sampling was used to select general staff respondents from different departments. Simple random sampling involves selecting respondents purely by chance, ensuring that every eligible staff member has an equal opportunity of being included in the sample. In this study, simple random sampling was used to select front office staff, housekeeping staff, food and beverage staff, security personnel, and other operational employees. These respondents were selected from staff lists provided by the hotels, ensuring randomness in selection.

### 3.5: Data Collection Sources

The study used two data sources to collect data from the field.

#### 3.5.1: Primary Data

Primary data refers to original data collected directly by the researcher from the field for the specific purpose of the study. In this study, primary data formed the main source of information for analysis. Primary data was collected from hotel employees (front office, housekeeping, F&B, security, IT), department supervisors and managers, key informants such as operations and IT managers, and direct observation of hotel operations. Primary data in this study was collected directly from employees and managers of five-star hotels through questionnaires, interviews, and observation. It provides the core evidence for analyzing AI adoption and operational efficiency, ensuring that findings are accurate, relevant, and context-specific.

#### 3.5.2: Secondary data

Secondary data refers to data that has already been collected, processed, and published by other researchers or institutions for purposes different from the current study. In this study, secondary data was used to complement primary data and strengthen the analysis. The study relied on the published academic materials such as journals on AI and hospitality management, research articles on hotel operational efficiency and books and academic publications; hotel reports such as hotel annual reports and operational reports, research articles on hotel operational efficiency, books and academic publication; online databases and websites such as hospitality and tourism research databases, government tourism reports such UTB and hotel websites; and previous research studies on AI adoption in hospitality, research on operational efficiency in hotels and empirical studies on digital transformation in tourism.

### 3.6: Data Collection Methods

Data collection methods refer to the procedures and techniques used by the researcher to gather information from respondents and other relevant sources. In this study on AI adoption and operational efficiency in the selected five-star hotels, both primary and secondary data collection methods were employed to ensure comprehensive and reliable findings.

#### 3.6.1: Survey Questionnaire Method

In this study, the questionnaire was one of the principal tools for collecting primary data. The questionnaire consisted of closed-ended questions and was designed using a five-point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Not Sure, 4= Agree and 5 = Strongly Agree). It was divided into sections aligned with the study objectives. A total of 304 questionnaires was used for data collection, each questionnaire contained statements that the respondents were at liberty to reflect their opinions on. The questionnaires were self-administered or researcher-assisted where necessary. Questionnaires were distributed to selected employees across departments such as front office, housekeeping, Food and Beverage, IT department, and management and supervisory staff. Respondents were given adequate time to complete and return the questionnaires. The questionnaire was used to collect quantitative data on the topic under study, measure respondents' perceptions and experiences, and enable statistical analysis of relationships between variables

#### 3.6.2: Interview Method

Mirlo (2020) reveals that the interview method is a qualitative data collection technique in which the researcher obtains information through direct verbal interaction with selected respondents using a guided set of questions. In this study, interviews were used to gather in-depth insights from key informants. The

study used a semi-structured interview guide, which included open-ended questions organized according to the study objectives. This format allows the researcher to ask pre-planned questions, probe further for clarification and deeper understanding, and capture detailed experiences and opinions. Interviews were conducted with key informants who have specialized knowledge of hotel operations and AI systems, including general managers, operations managers, IT managers and system administrators, and heads of departments (front office, housekeeping, food and beverage). These respondents are selected because they are directly involved in decision-making and implementation of technology systems. The interview method was used to obtain detailed qualitative information on AI implementation, understand managerial perspectives on operational efficiency, explore challenges, barriers, and risks in AI adoption, provide explanations that cannot be captured through questionnaires, and support and complement quantitative findings.

**3.6.3: Observation Method**

The observation method refers to a systematic data collection technique in which the researcher directly watches and records events, behaviors, and processes as they occur in their natural setting. In this study on AI adoption and operational efficiency in the selected five-star hotels, observation was used to capture real-time operational practices. The study used a structured observation checklist to guide data collection. The checklist focused on key indicators such as use of AI technologies in service delivery, staff interaction with digital systems, workflow and coordination between departments, customer service processes (check-in, check-out, room service), and evidence of delays, errors, or system disruptions.Observation was conducted in key operational areas, including Front Office (reception, reservations, and check-in/check-out), housekeeping operations, food and beverage services, security systems and access control, and general workflow and inter-department coordination. The observation method was used to verify actual use of AI technologies in hotel operations, assess real-time operational efficiency, identify workflow patterns and coordination levels, cross-check information obtained from questionnaires and interviews, and reduces reliance on self-reported data.

**3.7: Data Collection Instruments**

Data collection instruments are to the tools used by the researcher to gather relevant information from respondents and the study environment. In this study, multiple instruments were used to ensure comprehensive, valid, and reliable data.

**3.7.1: Self-Administered Questionnaire**

A self-administered questionnaire is a data collection instrument in which respondents complete the questionnaire on their own without direct assistance from the researcher (Saunders, Lewis and Thornhill, 2016). The self-administered questionnaire was a key tool for collecting primary quantitative data from hotel employees. The questionnaire was a structured instrument consisting mainly of closed-ended questions. SAQs were designed to be simple, clear, and easy to understand to ensure accurate responses. This instrument included sections covering the demographic characteristics of the respondents and the specific objectives of the study. The self-administered questionnaires were given to front office staff, housekeeping staff, food and beverage staff, security personnel, and other operational employees in the two selected hotels in Kampala City. When responding to a Likert questionnaire item, respondents specified their level of agreement or disagreement on a symmetric agrees-disagree scale for a series of statements. Thus, the scale captured the intensity of their feelings.

### 3.7.1: Interview Guide

An interview guide is a structured set of open-ended questions used to direct a qualitative interview process (Mihas, 2023). It helped the researcher obtain detailed, in-depth information from key informants while allowing flexibility for probing and clarification. In this study, the interview guide was used to collect qualitative data from selected management and technical staff. The interview guide was administered to key informants, including general managers, operations managers, IT managers / system administrators, and heads of departments (front office, housekeeping, food & beverage); and selected patron guests. These respondents are selected due to their direct involvement in decision-making and AI system implementation. The interviews were conducted to fill the information that might arise through the use of questionnaires. The researcher used structured and face to face interviews because they provide first-hand information; data was collected because it is less costly and has the ability to clarify questions. In this method, interview guides were drafted and questions were asked and then noted responses corresponding to the asked questions.

### 3.7.3: Observation Checklist

An observation checklist is a structured data collection instrument used to systematically record what the researcher sees during field observation (Saunders, Lewis and Thornhill, 2016). It helps in capturing real-time evidence of practices, behaviors, and processes without relying on respondents' self-reports. In this study on AI adoption and operational efficiency in the selected five-star hotels, the observation checklist was used to assess actual operational activities. The checklist focused on key operational areas within the hotel, including front Office operations (check-in/check-out process); housekeeping services and room readiness; food and Beverage service delivery; IT systems and AI-enabled platforms; coordination between departments; and customer service interactions. The observation checklist was a pre-designed structured tool that allows the researcher to record the presence, absence, or level of specific operational and technological practices. It focused on observable indicators related to AI usage and operational efficiency.

## 3.8: Data Quality

Data quality control refers to the procedures and techniques used to ensure that the data collected in the study is accurate, reliable, consistent, and free from bias or error**.** In this study on AI adoption and operational efficiency in the selected five-star hotels, data quality control is essential to enhance the reliability and validity of findings.

### 3.8.1: Validity of the Instrument

Validity refers to the degree to which a research instrument measures what it is intended to measure. Validity was ensured to guarantee that the questionnaires, interview guides, and observation checklist accurately capture the study variables. Content validity ensures that the instrument adequately covers all aspects of the research objectives. The questionnaire and interview guide was reviewed to ensure they capture AI technologies in hotels, operational efficiency dimensions, economic and social implications, challenges and risks of AI adoption. Experts in research methodology and hospitality management reviewed the instruments for relevance and completeness. The CVI was computed following Shrotryia and Dhanda's (2022) approach, where the number of items deemed relevant by experts was divided by the total number of items in the questionnaire. A CVI score equal to or greater than 0.7, criterion indicated the validity of the tool (Yusoff, 2022). This method ensures a rigorous assessment of content validity, offering a quantifiable benchmark to determine the instrument's adequacy in measuring the

intended constructs. For coefficients greater than (≥) to 0.7, the tool was considered to be valid (Yusoff, 2022). The formula for CVI is:

$$\textbf{CVI} = \frac{\text{Total Number of Valid Items} * 100}{\text{Total Number of All Items}}$$

**3.8.2: Reliability of the Instrument**

Reliability is the degree to which a research instrument produces consistent and stable results over repeated applications under similar conditions. Reliability was ensured to confirm that the questionnaire, interview guide, and observation checklist produce dependable and consistent data. The reliability of the instruments was assessed using the internal consistency technique, in which Cronbach's Coefficient Alpha was calculated using the average inter-correlations among the items assessing the idea. According to Amin (2022), any instrument considered to be dependable for data collection has a Cronbach's Coefficient Alpha of 0.7 or higher. To this end, the researcher pre-tested each instrument on 25respondents.

Reliability in this study was ensured through pilot testing, internal consistency measurement using Cronbach's Alpha, standardization of instruments, and careful data collection procedures. This guarantees that the instruments used will produce consistent and dependable results on AI adoption and operational efficiency in five-star hotels. The degree to which a research instrument provides consistent data results after repeated tests is measured by its reliability. To ensure consistent results, the same instruments must be administered to the same respondents after a three-week period (Bond, 2001).

**Table 3.2: Reliability and validity Results**

| | **Cronbach's Alpha** | **No of Items** | **Content Validity Index** |
|---|---|---|---|
| AI Adoption | .787 | 45 | .865 |
| Operational Efficiency | .770 | 16 | .806 |

Source: Field Data, 2026

Table 3.2 presents the reliability and validity results for the study variables. Reliability was assessed using Cronbach's Alpha coefficient, while validity was assessed using the Content Validity Index (CVI). The findings indicate that the Artificial Intelligence (AI) Adoption scale, comprising 45 items, achieved a Cronbach's Alpha coefficient of 0.787, indicating good internal consistency among the questionnaire items. The variable also attained a Content Validity Index (CVI) of 0.865, which exceeds the recommended minimum threshold of 0.70, suggesting that the instrument adequately measured the construct of AI adoption. Similarly, the Operational Efficiency scale, consisting of 16 items, recorded a Cronbach's Alpha coefficient of 0.770, demonstrating acceptable reliability. The Content Validity Index of 0.806 also exceeded the acceptable benchmark of 0.70, indicating that the items were relevant and representative of the operational efficiency construct.

The reliability coefficients for both study variables were above the recommended threshold of 0.70 proposed by Nunnally and Bernstein (1994), while the Content Validity Index values were also above the acceptable level of 0.70 recommended by Polit and Beck (2020). These results confirm that the research instrument was both reliable and valid for collecting data on Artificial Intelligence adoption and operational efficiency in the selected five-star hotels.

### 3.9: Data Presentation

Data presentation refers to the systematic organization and display of collected data in a clear and understandable format to facilitate interpretation, analysis, and decision-making. In this study, data was presented using both quantitative and qualitative techniques.

#### 3.9.1: Quantitative Data Presentation

Quantitative data presentation refers to the systematic organization and display of numerical data collected from respondents in a format that facilitates statistical analysis and interpretation. Quantitative data was primarily obtained from structured questionnaires. Quantitative data in this study was presented using frequency tables, percentages, means, standard deviations, and graphical illustrations. This approach ensures that findings on AI adoption and operational efficiency in the selected five-star hotels in Kampala City are clear, measurable, and statistically interpretable.The quantitative collected data was edited, coded and cross checked for completeness using Ms Excel and exported to Statistical Package for Social Sciences (SPSS) version 27 for analysis. The quantitative data was presented using tables and charts representing frequencies and percentages of results.

#### 3.9.2: Qualitative Data Presentation

Qualitative data presentation refers to the organization and presentation of non-numerical data such as opinions, experiences, perceptions, and explanations collected from respondents. In this study on, qualitative data was mainly obtained from interviews and observations. Qualitative data in this study was presented using thematic analysis, narrative descriptions, content categorization, and selected quotations. This approach ensured a comprehensive understanding of AI adoption and operational efficiency in the selected five-star hotels, complementing quantitative findings for a well-rounded analysis.

### 3.10: Data Analysis

Data analysis refers to the process of systematically organizing, processing, and interpreting collected data to draw meaningful conclusions in line with the study objectives. Both quantitative and qualitative data analysis techniques were used.

#### 3.10.1 Quantitative Data Analysis

Quantitative data analysis is the systematic examination of numerical data collected from respondents in order to describe patterns, test relationships, and draw statistical conclusions. Quantitative data was mainly obtained from structured questionnaires. The quantitative data was edited to identify and correct errors or omissions; cleaned to remove incomplete or inconsistent responses; coded, and cross-checked for accuracy before being captured using Statistical Package for Social Sciences version 27 for analysis. Descriptive statistics were used to analyze the quantitative data. Using this software, frequency distributions, correlations and regressions analysis were employed to address the research study objectives.

#### 3.10.2: Qualitative Data Analysis

Qualitative data analysis is the systematic process of examining non-numerical data such as opinions, experiences, and perceptions in order to identify patterns, themes, and meanings. Qualitative data analysis in this study followed a thematic approach involving coding, categorization, and theme development. This helped interpret interview and observation data, providing deeper understanding of the topic under study. Before analysis, qualitative data was prepared through transcription of interview

recordings into written text, organization of field notes from observations, familiarization by reading through the data repeatedly, and sorting data according to study objectives.

Qualitative findings were integrated with quantitative results through explanation of statistical results using real experiences, triangulation to confirm consistency across methods, and providing deeper understanding of numerical trends.

### 3.11: Ethical Considerations

Ethical considerations in this study ensured that research is conducted in a responsible and professional manner. By observing informed consent, confidentiality, privacy, and data protection, the study maintained the rights and dignity of participants while ensuring credible findings on AI adoption and operational efficiency in the selected five-star hotels in Kampala City. Ethical issues were considered during data collection, the researcher obeyed the rules and rights of the respondents. This was done so as to ensure that the right to privacy and protection of the respondents is not infringed. Furthermore, in relation to ethics and confidentiality in research, the researcher ensured the responsibility of ensuring that information about the subjects and their results remained confidential and that they were used for no purpose other than the research for which it is intended.

### 3.12: Limitation of the Study

The study faced some limitations which are worth listing at this point.

**Financial Constraints:** The researcher faced financial limitations related to transportation, printing questionnaires, internet access, and communication during data collection. However, through careful budgeting, efficient planning, and the use of cost-effective data collection methods, the researcher ensured that the study is completed successfully without compromising data quality.

**Technological and access limitations:** Technological and access limitations restricted full visibility into AI systems and internal hotel operations due to confidentiality and system security policies. However, through formal permissions, triangulation of methods and reliance on multiple data sources, the researcher ensured that sufficient and reliable information is obtained for the study.

**Non-response:** Non-response affected the quality and quantity of data collected in this study. The researcher established a good relationship with respondents by explaining the purpose and importance of the study. Respondents assured that the information provided was treated confidentially and used strictly for academic purposes. This reduced fear of disclosure and encouraged participation. Allowing respondents to choose convenient times for interviews or questionnaire completion helped accommodate their work schedules and reduced refusal rates.

**Time Constraints:** Time constraints limited the extent of data collection and depth of engagement in this study. The researcher developed a clear research timetable indicating specific activities and deadlines for proposal writing, data collection, analysis, and report writing. Proper scheduling helped ensure that all activities are completed within the required timeframe. Using appropriate sampling methods reduced the number of respondents while still obtaining reliable data, thereby saving time during fieldwork.

**Response Bias:** Response bias influenced the accuracy of findings by affecting how respondents answered questions. The researcher assured respondents that their identities and responses remained confidential and used only for academic purposes. This encouraged honest and accurate responses. Necessary corrections were then made before the actual study. Respondents were informed that there are no rights or wrong answers and their honest opinions are valuable for the success of the study.

# CHAPTER FOUR
# RESULTS AND DISCUSSIONS OF THE FINDINGS

## 4.0: Introduction

This chapter analyses and interprets results on the application of Artificial Intelligence (AI) in enhancing the operational efficiency in Sheraton Hotel Kampala and Kampala Serena Hotel. The chapter begins with response rate and followed bythe findings on the demographic features of the respondents, and then provides analysis and interpretations of the findings in relations the specific objectives of the study.

## 4.1: Rate of Response

Table 4.1 presents the response rate achieved during data collection. The study targeted 304 respondents for questionnaires and 69 respondents for interviews. Out of the 304 questionnaires distributed, 235 were successfully returned, representing a response rate of 77.3%. In addition, 45 interviews were successfully conducted out of the expected 69 interviews, giving a response rate of 65.2%.

The response rates obtained were considered adequate for the study because they exceeded the minimum acceptable level in social science research. According to Nulty (2022), a response rate of 50% and above is acceptable for social research surveys. Therefore, the achieved response rates were sufficient to provide reliable data for analysis and interpretation.

**Table 4.1: Rate of Response**

| Tools | Targeted | Rate Response (%) |
|---|---|---|
| Questionnaire submitted | 304 | $\frac{235}{304} * 100 = 77.3\%$ |
| Questionnaires returned | 235 | |
| Expected interviews | 69 | $\frac{45}{69} * 100 = 65.2\%$ |
| Interviews conducted | 45 | |

Source: Field Data (2026)

## 4.2: Demographic Characteristics of the Respondents

This section contains bio-information of the respondents, such as their gender, age, level of education attained, work category and duration in service working with the selected five-star hotels. The findings on the demographic characteristics are presented in Table 4.2.

**Table 4.2: Demographic Characteristics of the Respondents**

| Item | Categories | Frequency | Percent |
|---|---|---|---|
| **Gender of Respondents** | Male | 96 | 40.9 |
| | Female | 139 | 59.1 |
| | **Total** | **235** | **100.0** |
| **Age of the Respondents** | | | |
| | 20-30 years | 90 | 38.3 |
| | 31-40 years | 64 | 27.2 |
| | 41-50 years | 45 | 19.2 |
| | Above 51 years | 36 | 15.3 |
| | **Total** | **235** | **100.0** |
| **Level of Education attained** | | | |

| | | | |
|---|---|---|---|
| | Certificate | 56 | 23.8 |
| | Diploma | 66 | 28.1 |
| | Bachelors | 91 | 38.7 |
| | Masters | 22 | 9.4 |
| | **Total** | **235** | **100.0** |
| **Designation in this hotel** | | | |
| | Management & Administration | 29 | 12.3 |
| | Information Technology | 33 | 14.0 |
| | Food and Beverage | 34 | 14.5 |
| | Housekeeping | 78 | 33.2 |
| | Front Office | 61 | 26.0 |
| | **Total** | **235** | **100.0** |
| **Period of Service at the Hotel** | | | |
| | 1-2 years | 63 | 26.8 |
| | 3-5 years | 79 | 33.6 |
| | 6-8 years | 56 | 23.8 |
| | 9 and above | 37 | 15.7 |
| | **Total** | **235** | **100.0** |

Source: Field Data, 2026

**4.2.1: Gender of Respondents**

The gender data revealed that females made up 96(40.9%), while males made up 139(59.1%). This showed that a greater proportion of the respondents in the survey were males. Despite the fact that female outnumbered males at the selected five-star hotels, the data obtained was representative of both gender groups who took part in the survey to avoid bias in providing information on the under consideration.

**4.2.2: Age Group of Respondents**

Table 4.2 above shows that the largest percentage 90(38.3%) of the respondents were between 20-30 years, followed by 64(27.2%) who were between 31-40 years, 45(19.2%) who were between 41-50 years, and the smallest percentage 36(15.3%) who was over 51 years. This suggests that the majority were 20-30 years; it was thus assumed that the respondents could provide trustworthy data based on their ages, which provided them with sufficient experience in hospitality industry.

**4.2.3: Highest Level of Education attained by the Respondents**

According to the results of the respondents' educational levels, the majority 91(38.7%) had undergraduate degrees, 66(28.1%) had diplomas, 56(23.8%) had certificates in hotel management, and22(9.4%) had master's degree. These findings indicate that all of the respondents had acceptable educational levels, allowing them to provide accurate responses due to their competency in understanding the contents of the questionnaire.

**4.2.4: Designation of the Respondents**

Findings on the respondents' categories involved in the study, the larger percentage 78(33.2%) were from housekeeping department, 61(26%) were from front office, 34(14.5%) were from food and beverage,33(14%) were from I.T department, 29(12.3%) were management and administration. These results suggested all respondents could prove accurate data on the topic under study.

### 4.2.5: Period of Service at the Hotel

The respondents had worked in hotel sector for a number of years. 63(26.8%) had worked for 1 to 2 years working in five star hotel, 79(33.6%) had worked for 3-5 years, 56(22.8%) had worked for 6-8 years, and 37(15.2%) had worked for 9 years and above. The findings suggest that most of the respondents had working experience. Therefore, respondents competently provide apt information on the study problem.

## CHAPTER FIVE

## AI TECHNOLOGIES CURRENTLY IMPLEMENTED BY THE SHERATON HOTEL KAMPALA AND KAMPALA SERENA HOTEL

### 5.0: Introduction

The chapter examined on theAI Technologies currently implemented by the Sheraton Hotel Kampala and Kampala Serena Hotel. The data were explained using Means and Standard Deviation, frequencies and percentages as presented in the Table below.

**Table 5.1: Descriptive Statistics on theAI Technologies currently implemented by the Sheraton Hotel Kampala and Kampala Serena Hotel**

| AI Technologies Implemented | N | *Mean* | *Std. Dev* | Scale | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 |
| The hotel use automated reservation/booking systems. | 235 | 4.36 | 1.003 | 36 15.3 % | 34 14.5 % | 8 3.4% | 79 33.6% | 78 33.2% |
| This hotel has adopted AI-powered customer service (chatbots/virtual assistants). | 235 | 3.90 | 1.790 | 38 16.2 % | 41 17.4 % | 14 6.0% | 79 33.6% | 63 26.8 |
| Data analytics and predictive systems are utilized in this hotel. | 235 | 3.73 | 1.807 | 44 18.7 % | 30 12.8 % | 18 7.7% | 83 35.3% | 60 25.5% |
| Smart room technologies (IoT, digital controls) are applied in this hotel. | 235 | 3.77 | 1.820 | 23 9.8% | 47 20.0 % | 15 6.4% | 98 41.7% | 52 22.1% |
| Revenue management systems (dynamic pricing) are used in this hotel. | 235 | 4.36 | 1.056 | 35 14.8 % | 37 15.7 % | 13 5.5% | 65 27.7% | 85 36.2% |
| In this hotel, security and surveillance systems (CCTV, biometrics) are implemented. | 235 | 4.67 | 1.715 | 37 15.7 % | 38 16.2 % | 21 8.9% | 59 25.1% | 80 34.0% |
| This hotel has inventory and supply chain management systems. | 235 | 3.20 | 1.461 | 29 12.3 % | 45 19.1 % | 14 6.0% | 89 37.9% | 58 24.7% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mobile check-in/check-out systems are adopted in this hotel. | 235 | 3.99 | 1.294 | 31 13.2 % | 35 14.9 % | 17 7.2% | 78 33.2% | 74 31.5% |
| Digital payment and contactless systems are available in this hotel. | 235 | 3.48 | 1.896 | 39 16.6 % | 40 17.0 % | 10 4.3% | 86 36.6% | 60 25.5% |
| Valid N (listwise) | 235 | **Avg=3.94** | **Avg=1.538** | | | | | |

Source: Field Data (2026) Key: **1**=Strongly Disagree, **2**= Disagree, **3**=Not Sure, **4**= Agree, **5**=Strongly Agree

### 5.1: Analysis and Interpretation of Results on the on the AI Technologies currently implemented by the Sheraton Hotel Kampala and Kampala Serena Hotel.

#### 5.1.1: The hotel use automated reservation/booking systems.

The study findings in Table 5.1above presents that 157(66.8%) of the respondents agreed that the hotel use automated reservation / booking systems, as reflected by a mean score of 4.36. The findings suggest that automation in hotel reservation and booking processes is widely implemented and recognized. This reflects improved adoption of digital systems in hospitality operations, likely leading to faster and more efficient booking processes, reduced manual errors in reservations, faster check-in and reservation processing, improved customer service delivery, and better coordination of room availability and management. Though, 8(3.4%) remained neutral on the statement and 70(29.8%) of the respondents were in disagreement. However, the presence of notable disagreement suggests possible challenges such as system downtime or inefficiencies, uneven implementation across departments, and limited user awareness or training gaps. Nonetheless, technical limitations and human resource capacity gaps remain key challenges that must be addressed to fully maximize the benefits of these systems.

Respondents consistently noted that automation has;

> *"Reduced time spent on manual bookings, enabled instant confirmation of reservations, and improved coordination between departments (front office and housekeeping). One respondent explained that the system "allows guests to book within minutes, even before arriving at the hotel."*

Key respondents also emphasized that these systems are mainly used in;

> *"Room reservations and allocations, guest check-in and check-out processes, coordination with online booking platforms (OTAs), and management of occupancy and availability records."*

#### 5.1.2: Hotel has adopted AI-powered customer service (chatbots/virtual assistants)

Research findings in Table 5.1above indicates that the majority 142(60.4%) of the respondents were in agreement that the selected hotels have adopted AI-powered customer service such as customer service tools such as chatbots and virtual assistants, as presented by a mean score of 3.90. The findings suggest that Sheraton Hotel Kampala and Kampala Serena Hotel have introduced AI-powered system to ensure faster response to guest inquiries, 24/7 customer support availability, improved booking assistance and service personalization, and reduced workload on human customer service staff. The relatively high standard deviation (1.790) reflects significant variation in respondents' experiences and perceptions. However, 14(6%) were neutral and 79(33.6%) of the respondents disagreed. This indicates that whereas the systems are present and beneficial, their impact is constrained by inconsistent deployment,

awareness gaps, and operational limitations, highlighting the need for stronger integration and user training to fully maximize AI-driven service delivery. They further emphasized that the systems are still in a developing or partial implementation stage, rather than fully replacing human agents.

Key respondents in an interview reported that;

> *"AI tools help reduce repetitive tasks, allowing employees to focus on complex guest needs and personalized services; AI tools such as chatbots help provide instant responses to common guest inquiries such as room availability, rates, and check-in times. Also, one frontline staff "guests no longer need to wait for email replies for simple questions."*

The author observed that;

> *"Both Sheraton Kampala and Kampala Serena Hotel have adopted AI-powered customer service tools, but implementation remains partial and supportive rather than fully automated. The systems are mainly used to enhance efficiency in basic communication tasks rather than replacing traditional customer service roles."*

**5.1.3: Data analytics and predictive systems are utilized in this hotel.**

Results in Table 5.1presents that the majority 143(60.8%) of the respondents were in agreement that data analytics and predictive systems are utilized in the selected five-star hotels in Kampala City, as revealed by a mean score of 3.73. Thesesystems are applied to forecasting room occupancy rates, analyzing customer preferences and booking trends, revenue management and pricing strategies, and improving operational planning and resource allocation. The high standard deviation of 1.807 suggests wide variation in responses, implying inconsistent application or awareness of these systems across the selected hotels. Although, 18(7.7%) were neutral and 74(31.5%) of the respondents were in disagreement. This means that their use is not yet fully embedded across all hotel functions, suggesting a need for stronger integration, staff training, and broader adoption of data-driven management practices.

**5.1.4: Smart room technologies (IoT, digital controls) are applied in the hotel**

Study results in Table 5.1reveals that 150(63.8%) of the respondents were in agreement that smart room technologies such IoT, digital controls are applied in the selected hotels, as shown by a mean of 3.77. The results indicate that smart room technologies such as keyless entry systems, digital room controls (lighting, temperature, curtains), automated guest convenience features and IoT-enabled monitoring systems for room management are moderately adopted in the hotel, contributing to improved guest experience and operational efficiency where implemented. The relatively high standard deviation of 1.820 reflects considerable variation in responses, suggesting uneven implementation or awareness across departments and guests. Nonetheless, 15(6.4%) remained neutral and 70(29.8%) were in disagreement. On the other hand, the uneven responses suggest that adoption is not yet fully standardized, highlighting the need for further investment in infrastructure upgrades, system integration, and guest awareness to maximize the benefits of IoT-based hospitality solutions.

**5.1.5: Revenue management systems (dynamic pricing) are used in this hotel.**

Study findings in Table 5.1presents that the majority 150(63.8%) of the respondents were in agreement that revenue management systems (dynamic pricing) are used in this hotel, as shown by a mean of 4.36. This means that the systems are used for adjusting prices in real time based on demand and seasonality, optimizing occupancy rates and revenue generation, analysing booking trends and customer behavior, aligning pricing with competitor and market conditions, contributing significantly to financial performance and operational efficiency. The relatively low standard deviation (1.056) suggests fairly consistent responses, meaning respondents largely share similar views. Still, 72(30.5%) were in

disagreement and 13(5.5%) remained neutral. Yet, the presence of disagreement suggests limited visibility of pricing systems to some staff, reliance on centralized or management-level systems not accessible to all employees, and possible inconsistencies in communication or understanding of how pricing is determined. Nonetheless, there is a need to enhance awareness and understanding across all staff levels to ensure alignment and maximize the strategic benefits of these systems.

Respondents highlighted that;

> "*Dynamic pricing helps the hotel maximize revenue during high-demand periods such as holidays, conferences, and peak tourist seasons."* One manager noted that *"room rates automatically increase when demand rises, ensuring we capture maximum value."*

Some respondents indicated that;

> *"not all staff fully understand how dynamic pricing works, leading to confusion, especially at the operational level; pricing decisions are highly dependent on system accuracy, and errors can lead to financial losses or customer dissatisfaction*. They added that "*in some cases, systems are not fully integrated with all booking platforms, causing delays or inconsistencies in price updates*."

**5.1.6: Security and surveillance systems are implemented in the Hotel**

Study findings in Table 5.1above present that 139(59.1%) of the respondents were in agreement that in the selected five-star hotels, security and surveillance system (CCTV, biometrics) are implemented, as revealed by a mean score of 4.67. The findings indicate that security and surveillance systems are strongly implemented in the hotel environment, playing a key role in ensuring guest and staff safety, monitoring of hotel premises, access control through biometric verification, prevention of theft and unauthorized access, and improved incident response and accountability. The study further agreed that CCTV and biometric systems are essential components of modern hotel security infrastructure. These technologies have significantly improved safety and operational control, although continuous investment and staff training are necessary to ensure optimal performance and address emerging challenges. The relatively high level of agreement reflects the importance of security technologies in maintaining trust and operational safety in five-star hotels. However, 75(31.9%) of the respondents were in disagreement; this suggests that some security measures are restricted to certain areas (entrances, back office, VIP zones), limited awareness among guests or non-security staff, differences in exposure to biometric systems versus CCTV systems, and possible gaps in communication about security infrastructure.

Respondents reported that;

> "*CCTV systems have significantly improved monitoring of hotel premises, reducing theft and unauthorized access.In case of incidents, CCTV footage helps in quick investigation and evidence gathering."*
>
> One security officer stated that *"every movement in key areas is monitored, which improves overall safety."*They added that "b*iometric systems ensure that only authorized staff access sensitive areas such as stores, kitchens, and administrative offices."*

**5.1.7: The hotel has inventory and supply chain management systems.**

Study results in Table 5.1 indicates that the majority 147(62.6%) of the respondents were in agreement that Sheraton Hotel Kampala and Kampala Serena Hotel have inventory and supply chain management systems, as presented by a mean score of 3.20. The findings indicate that inventory and supply chain management systems are present but not strongly embedded across all hotel operations. These systems are utilized for support tracking of food, beverages, and housekeeping supplies, procurement and

supplier coordination, stock level monitoring and replenishment planning, and cost control and waste reduction. The standard deviation (1.461) reflects noticeable variation in responses, indicating differing experiences among staff. However, 14(6%) remained neutral and 74(31.4%) of the respondents were in disagreement. This highlights the need for greater system integration, enhanced staff awareness and training, and improved automation of supply chain processes to fully optimize resource management and operational efficiency within these selected hotels.

The researcher observed that;

> *"Both Sheraton Hotel Kampala and Kampala Serena Hotel have inventory and supply chain management systems in place, primarily supporting food and beverage (F&B) operations, housekeeping supplies, maintenance materials and utilities, procurement and supplier coordination."*

Other respondents noted that;

> "*The inventory and supply chain management systems help in tracking stock levels in real time, reducing cases of stock-outs and overstocking."* They added that "*inventory systems contribute to better cost management, especially in food and beverage departments where wastage can be high*."

Some respondents indicated that;

> *"not all inventory processes are fully automated, with certain activities still handled manually; systems are sometimes not fully integrated with other hotel management systems, such as finance or front office systems; and a number of staff lack adequate training to fully utilize system features, leading to underutilization."*

**5.1.8: Mobile check-in/check-out systems are adopted in this hotel.**

Study findings in Table 5.1indicates that the majority 152(64.7%) of the respondents were in agreement that mobile check-in/check-out systems are adopted in this hotel, as presented by a mean score of 3.99. this means that these system provide faster and more convenient check-in/check-out processes, reduced waiting time at the front desk, enhanced guest autonomy and digital experience, and improved operational efficiency for front office staff. However, 66(28.1%) of the respondents were in disagreement and 17(7.2%) remained neutral on the statement. The standard deviation (1.294) suggests moderate variation, meaning staffs' views are somewhat aligned but not entirely uniform. However, the presence of mixed responses suggests that adoption is not fully standardized, highlighting the need for broader system rollout, increased guest awareness, improved integration with other hotel technologies to fully optimize the benefits of mobile-enabled hospitality services.

**5.1.9: Digital payment and contactless systems are available in this hotel.**

Results in Table 5.1above present that 146(62.1%) of the respondents were in agreement that digital payment and contactless systems are available in the selected five-star hotels in Kampala City, as reflected by a mean of 3.48. The findings suggest that digital payment and contactless systems are present but not fully standardized across all hotel operations. Digital systems like mobile payment options, card-based contactless transactions, digital billing and invoicing systems contribute to faster and more convenient transactions, reduced physical contact, enhancing hygiene and safety, and improved efficiency in billing and payment processing. Though, 10(4.3%) were neutral on the raised statement and 79(33.6%) of the respondents were in disagreement. This means that the adoption is not yet fully comprehensive, requiring broader implementation, enhanced system integration, increased user awareness and training to fully realize the benefits of digital financial technologies in hotel operations.

### 5.2: Testing Hypothesis One

To test Hypothesis One, the study employed Pearson Product Moment Correlation and simple linear regression analysis. Pearson correlation analysis was used to establish the strength and direction of the relationship between AI technologies currently implemented by the selected hotels and operational efficiency. Regression analysis was then conducted to determine the extent to which AI technologies predict operational efficiency.

#### 5.2.1: Correlations on AI technologies and Operational Efficiency

Table 5.2 presents the Pearson Product Moment Correlation analysis examining the relationship between AI technologies currently implemented and operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

**Table 5.2: Correlations on AI Technologies and Operational Efficiency**

| | | AI Technologies | Operational Efficiency |
|---|---|---|---|
| AI Technologies | Pearson Correlation | 1 | .848** |
| | Sig. (2-tailed) | | .000 |
| | N | 235 | 235 |
| Operational Efficiency | Pearson Correlation | .848** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 235 | 235 |
| **. Correlation is significant at the 0.05 level (2-tailed). | | | |

The findings reveal a very strong positive correlation between the two variables, with a Pearson correlation coefficient of r = 0.848. The positive correlation coefficient indicates that increased implementation and utilization of AI technologies are associated with higher levels of operational efficiency. This suggests that as the hotels expand the use of AI technologies such as AI-powered reservation systems, chatbots, customer relationship management (CRM) systems, predictive analytics, automated billing systems, smart room technologies, facial recognition, and intelligent security systems, they experience significant improvements in operational performance. The significance value (p=0.000) is lower than the accepted significance level of 0.05, indicating that the observed relationship is statistically significant and unlikely to have occurred by chance. Therefore, the relationship between AI technologies implemented and operational efficiency is both positive and statistically significant.

The findings imply that implementing AI technologies enables hotels to automate routine operations, reduce service delivery time, improve the accuracy of reservations and billing processes, optimize resource allocation, enhance decision-making through real-time data analytics, improve employee productivity, and deliver personalized customer experiences. Consequently, these technologies contribute significantly to improved operational efficiency in the selected hotels.

Since the Pearson correlation coefficient was r = 0.848 with a significance level of p = 0.000, which is less than 0.05, the study rejects the null hypothesis ($H_{01}$) and accepts the alternative hypothesis ($H_{10}$).The study therefore concludes that there is a statistically significant and very strong positive relationship between the AI technologies currently implemented by Sheraton Kampala Hotel and Kampala Serena Hotel and operational efficiency.

The results are consistent with the Technology Acceptance Model (TAM) developed by Davis (1989), which argues that organizations achieve greater performance when users perceive technology as useful

and easy to use. Successful implementation and acceptance of AI technologies enable employees to perform tasks more efficiently, thereby improving organizational performance. Similarly, the findings agree with Ivanov and Webster (2022), who contend that Artificial Intelligence enhances operational efficiency in the hospitality industry through automation, intelligent decision support, and service personalization. Buhalis and Leung (2023) also observed that smart hospitality technologies improve service quality, operational coordination, customer satisfaction, and competitiveness by integrating digital technologies into hotel operations.

**5.2.2: Regression Analysis on AI Technologies and Operational Efficiency**

To further determine the extent to which AI technologies currently implemented predict operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel, a simple linear regression analysis was conducted. The regression analysis examined whether AI technologies significantly explain variations in operational efficiency among the selected hotels.

**Model Summary on AI technologies and Operational Efficiency**

Table 5.3 presents the regression model summary examining the effect of AI technologies currently implemented on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

**Table 5.3: Model Summary on AI technologies and Operational Efficiency**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .848[a] | .719 | .717 | 1.46441 |
| a. Predictors: (Constant), AI Technologies | | | | |

The results reveal a very strong positive relationship between AI technologies and operational efficiency, as indicated by the correlation coefficient (R = 0.848). The coefficient of determination (R Square = 0.719) indicates that 71.9% of the variation in operational efficiency is explained by the AI technologies implemented in the two hotels. This finding suggests that AI technologies constitute a major determinant of operational efficiency, implying that the adoption of AI-powered reservation systems, chatbots, predictive analytics, customer relationship management systems, automated billing and payment systems, smart room technologies, and intelligent security systems contributes substantially to improvements in hotel operations. The Adjusted R Square value of 0.717 shows that after adjusting for the number of predictors in the model, AI technologies still explain 71.7% of the variation in operational efficiency. This demonstrates that the regression model has strong explanatory power and confirms the robustness of AI technologies as predictors of operational efficiency. The remaining 28.1% of the variation in operational efficiency is attributable to other factors not included in the regression model, such as organizational leadership, employee competencies, financial resources, ICT infrastructure, organizational culture, government policies, and market dynamics. The standard error of the estimate (1.46441) indicates the average difference between the observed values of operational efficiency and those predicted by the regression model. The relatively low standard error suggests that the regression model provides a good level of predictive accuracy, indicating that AI technologies are reliable predictors of operational efficiency.

The findings demonstrate that the implementation of AI technologies significantly contributes to improving operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel. The adoption of AI enables hotels to automate routine processes, improve the speed and accuracy of service delivery,

enhance resource utilization, strengthen customer relationship management, support data-driven decision-making, and improve overall organizational productivity.

These findings are consistent with Goel et.al (2022) observed that AI technologies improve operational efficiency in the hospitality industry by automating repetitive tasks, supporting intelligent decision-making, and enhancing customer experiences. Farrell (2021) further argued that digital technologies enable hotels to achieve operational excellence through automation, innovation, and integrated service delivery.

**ANOVA on AI Technologies and Operational Efficiency**

Table 5.4 presents the Analysis of Variance (ANOVA) results for the regression model examining the influence of AI technologies currently implemented on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

**Table 5.4: ANOVA on AI Technologies and Operational Efficiency**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 49.596 | 1 | 49.596 | 229.955 | .000[b] |
| | Residual | 19.411 | 233 | .216 | | |
| | Total | 69.007 | 234 | | | |
| a. Dependent Variable: Operational Efficiency | | | | | | |
| b. Predictors: (Constant), AI Technologies | | | | | | |

The ANOVA results indicate that the regression model is highly statistically significant, with an F-statistic of 229.955 and a significance level of p = 0.000, which is well below the conventional significance threshold of 0.05. The findings demonstrate that the regression model provides a significantly better prediction of operational efficiency than a model without AI technologies as a predictor. This implies that the AI technologies currently implemented in the selected hotels make a substantial contribution to explaining variations in operational efficiency.

The Regression Sum of Squares (49.596) represents the proportion of variation in operational efficiency explained by AI technologies, while the Residual Sum of Squares (19.411) represents the unexplained variation attributable to other organizational and environmental factors not included in the model. The Total Sum of Squares (69.007) represents the overall variation in operational efficiency among the respondents. Since the significance value (p = 0.000) is less than 0.05, the regression model is statistically significant. Therefore, the null hypothesis ($H_{01}$), which states that there is no statistically significant relationship between AI technologies currently implemented and operational efficiency, is rejected. The alternative hypothesis ($H_{10}$) is accepted, indicating that AI technologies currently implemented have a statistically significant positive influence on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

The results suggest that implementing AI technologies such as AI-powered reservation systems, chatbots and virtual assistants, predictive analytics, customer relationship management (CRM) systems, automated billing and payment systems, smart room technologies, and intelligent security systems enables hotels to streamline operations, improve service speed and accuracy, optimize resource utilization, reduce operational costs, and enhance customer satisfaction. Consequently, these technologies play a critical role in improving overall operational efficiency.

Based on the ANOVA results (F = 229.955, p = 0.000 < 0.05), the study concludes that the regression model is statistically significant. Therefore, the study rejects the null hypothesis ($H_{01}$) and accepts the alternative hypothesis ($H_{10}$). The study therefore concludes that AI technologies currently implemented have a statistically significant positive influence on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

These findings are consistent with Doborjeh et.al (2021), who explains that technologies perceived as useful and easy to use are more readily adopted and effectively utilized, leading to improved organizational performance. Similarly, Kong et.al (2024) found that AI technologies significantly enhance operational efficiency in the hospitality industry by automating routine tasks, supporting data-driven decision-making, and improving service quality. Khaliq et.al (2022) also argues that digital transformation and smart hospitality technologies improve operational performance by integrating intelligent systems into hotel service delivery and management processes.

**Coefficients on AI Technologies and Operational Efficiency**

Table 5.5 presents the regression coefficients showing the effect of AI technologies currently implemented on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

**Table 5.5: Coefficients on AI Technologies and Operational Efficiency**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .823 | .216 | | 3.808 | .000 |
| | AI Technologies | .864 | .057 | .848 | 15.164 | .000 |
| a. Dependent Variable: Operational Efficiency | | | | | | |

The results indicate that AI technologies have a positive and highly statistically significant effect on operational efficiency. The constant coefficient (B = 0.823) indicates that when AI technologies are held constant, the predicted level of operational efficiency is 0.823 units. The regression coefficient for AI technologies (B = 0.864) indicates that a one-unit increase in the implementation of AI technologies results in a 0.864-unit increase in operational efficiency, holding other factors constant. The standardized regression coefficient (β = 0.848) demonstrates a very strong positive effect of AI technologies on operational efficiency. This indicates that AI technologies are a major predictor of operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel. The large beta coefficient suggests that increased adoption of AI technologies substantially improves operational performance through automation, improved service quality, enhanced decision-making and better utilization of organizational resources. The t-statistic of 15.164 and the significance value of p = 0.000 indicate that AI technologies make a statistically significant contribution to the regression model. Since the p-value is less than 0.05, the effect of AI technologies on operational efficiency is statistically significant.

The findings imply that increased implementation of AI technologies, including AI-powered reservation systems, chatbots and virtual assistants, predictive analytics, automated billing and payment systems, customer relationship management (CRM) systems, smart room technologies, facial recognition systems, and intelligent surveillance technologies, significantly improves operational efficiency. These technologies enable hotels to automate repetitive tasks, reduce service delivery time, improve

operational accuracy, optimize resource allocation, support managerial decision-making, reduce operational costs, and enhance customer satisfaction.

Since the regression coefficient for AI technologies was positive and statistically significant ($\beta = 0.848$, $t = 15.164$, $p = 0.000 < 0.05$), the study rejects the null hypothesis ($H_{01}$) and accepts the alternative hypothesis ($H_{10}$). The study therefore concludes that AI technologies currently implemented have a statistically significant and positive influence on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel**.** The findings demonstrate that expanding the implementation and effective utilization of AI technologies can substantially improve operational performance by increasing efficiency, reducing operational costs, enhancing employee productivity, and improving customer service quality.

The results support the Technology Acceptance Model (TAM) developed by Davis (1989), which argues that technologies perceived as useful and easy to use are more readily accepted and effectively utilized, leading to improved organizational performance. The findings also agree with Ivanov and Webster (2022), who found that AI technologies enhance operational efficiency in hospitality by improving productivity, supporting data-driven decision-making, automating service processes, and creating personalized customer experiences. Similarly, Buhalis and Leung (2023) observed that digital transformation enables hotels to achieve greater operational effectiveness through intelligent automation and integrated service management.

## CHAPTER SIX
## THE OPERATIONAL, ECONOMIC, AND SOCIAL IMPLICATIONS RESULTING FROM THE USE OF AI IN SHERATON HOTEL KAMPALA AND KAMPALA SERENA HOTEL

### 6.0: Introduction

The chapter investigated the Operational, Economic, and Social Implications resulting from the use of AI in the selected Five-Star hotels. The data were explained using Mean and Standard Deviation, frequencies and percentages as presented in Table below.

**Table 6.1: Descriptive Statistics on the Operational, Economic, and Social Implications resulting from the use of AI in Sheraton Hotel Kampala and Kampala Serena Hotel**

| Implications from the use of AI | N | *Mean* | *Std. Dev* | Scale | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 |
| Artificial Intelligence has improved speed of service delivery in the hotel. | 235 | 3.66 | 1.035 | 34 14.5 % | 36 15.3% | 11 4.7% | 98 41.7% | 56 23.8% |
| Artificial Intelligence reduces operational errors in the hotel. | 235 | 3.89 | 1.044 | 37 15.7 % | 33 14.0% | 17 7.2% | 80 34.0% | 68 28.9% |
| Artificial Intelligence (AI) improves accuracy in bookings and billing. | 235 | 3.98 | 1.063 | 36 15.3 % | 21 8.9% | 14 6.0% | 82 34.9% | 82 34.9% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Artificial Intelligence enhances communication within the hotel. | 235 | 3.74 | 1.068 | 29 12.3 % | 32 13.6% | 13 5.5% | 92 39.1% | 69 29.4% |
| Artificial Intelligence systems experience frequent technical failures in the hotel. | 235 | 3.10 | 1.024 | 32 13.6 % | 34 14.5% | 19 8.1% | 83 35.3% | 67 28.5% |
| Overdependence on Artificial Intelligence affects service delivery in the hotel. | 235 | 3.30 | 1.012 | 37 15.7 % | 38 16.2% | 14 6.0% | 84 35.7% | 62 26.4% |
| Artificial Intelligence reduces operational costs of the hotel. | 235 | 3.31 | 1.442 | 45 19.1 % | 36 15.3% | 22 9.4% | 78 33.2% | 54 23.0% |
| In 5-star hotels, Artificial Intelligence improves resource utilization. | 235 | 3.47 | 1.121 | 32 13.6 % | 35 14.9% | 18 7.7% | 97 41.3% | 53 20.9% |
| Artificial Intelligence contributes to increased hotel revenue. | 235 | 3.67 | 1.096 | 41 17.4 % | 38 16.2% | 18 7.7% | 77 32.8% | 61 25.9% |
| In five star hotels AI adoption enhances competitiveness. | 235 | 3.88 | 1.194 | 32 13.6 % | 27 11.5% | 16 6.8% | 86 36.6% | 74 31.5% |
| AI systems implemented are expensive for the hotel. | 235 | 3.74 | 1.908 | 30 12.8 % | 39 16.6% | 25 10.6% | 70 29.8% | 71 30.2% |
| Maintenance and operational costs of Artificial Intelligence are high. | 235 | 3.45 | 1.990 | 29 12.3 % | 35 14.9% | 19 8.1% | 83 35.3% | 69 29.4% |
| Artificial Intelligence improves employee productivity in the hotel. | 235 | 3.68 | 1.073 | 36 15.3 % | 41 17.5% | 14 6.0% | 91 38.7% | 53 22.6% |
| In five-star hotels, Artificial Intelligence threatens staff job security. | 235 | 3.84 | 1.078 | 34 14.5 % | 38 16.2% | 13 5.5% | 77 32.8% | 73 31.1% |
| AI reduces human interaction with guests in the hotel. | 235 | 3.21 | 1.022 | 29 12.3 % | 37 15.7% | 19 8.1% | 103 43.8% | 47 20.0% |
| The hotel provides adequate AI training. | 235 | 3.40 | 1.032 | 34 14.5 % | 37 15.7% | 11 4.7% | 93 39.6% | 60 25.5% |
| Some employees in the five-star hotels resist AI adoption. | 235 | 3.74 | 1.917 | 35 14.8 % | 38 16.2% | 19 8.1% | 96 40.9% | 47 20.0% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| There is inequality in digital skills among staff in the five star hotels. | 235 | 4.32 | 1.746 | 39 16.6 % | 31 13.2% | 23 9.8% | 86 36.6% | 56 23.8% |
| Valid N (listwise) | 235 | **Avg=3. 63** | **Avg=1. 120** | | | | | |

Source: Field Data (2026)**Key**: **1**=Strongly Disagree, **2**= Disagree, **3**=Not Sure, **4**= Agree, **5**=Strongly Agree

**6.0.1: Interpretation of results on the Operational, Economic, and Social Implications resulting from the use of AI in Sheraton Hotel Kampala and Kampala Serena Hotel.**

**6.1: Positive Operational Implications**

**6.1.1: Artificial Intelligence has improved speed of service delivery in the hotel.**

The study findings in Table 6.1presents that 154(65.5%) of the respondents were in agreement that Artificial Intelligence (AI) has improved speed of service delivery in the selected hotels in Kampala City, as presented by a mean of 3.66. This means that AI enhance service speed through automated check-in and check-out system, chatbots and virtual assistants for instant customer support, smart reservation and billing systems, and real-time data processing and decision making. Nonetheless, 11(4.7%) were neutral on the statement and 70(29.8%) of the respondents disagreed. The standard deviation of 1.035 indicates a significant variability in responses. This suggests that while some hotels have effectively implemented AI technologies, others may still be in early stages or experiencing challenges. The inconsistencies observed are ascribed to uneven adoption of AI technologies across these hotels, limited staff training on AI systems, technical challenges or system failures, and resistance to change from traditional processes.

Many respondents interviewed indicated that AI has significantly improved service delivery speed in both hotels; they stated that;

> *"AI systems have made check-in and check-out faster in both Hotels; booking and reservation processes are now quicker due to automated systems; customer requests are handled faster through digital platforms and chat systems; and technology has reduced waiting time and improved efficiency overall."*

Some respondents acknowledged improvements but noted variation between departments or situations; they said that;

> *"AI has improved speed, but not all departments use it equally well; the systems work better in some areas than others; and there is improvement, but during peak times delays still occur."*

**6.1.2: Artificial Intelligence reduces operational errors in the hotel.**

Results in Table 6.1indicate that Artificial Intelligence (AI) reduces operational errors in the selected hotels, as reflected by a mean score of 3.88. This reveals that AI improves accuracy by automating processes and reducing manual input errors. This study further revealed that AI systems are effective in reducing human errors, especially in structured processes such as reservations and billing. The effectiveness of AI in these selected hotels depends heavily on proper usage, system integration, and staff competence. However, 17(7.2%) were neutral and 70(29.7%) of the respondents disagreed. Nevertheless, the persistence of errors supports the idea that technology effectiveness is dependent on user adoption and system reliability, not just availability. Thus, to maximize benefits, hotels should strengthen system integration, staff training, and technological reliability to ensure consistent error reduction.

Some interviewed respondents argued that;

> *"AI systems have reduced mistakes in booking and billing processes; there are fewer human errors since most processes are automated; customer information is now handled more accurately than before; and the system improves consistency and reduces duplication of errors."*

Other respondents asserted that;

> *"AI has reduced errors, but it has not completely eliminated them; mistakes still happen when systems are not properly used; and it depends on how well the staff interacts with the technology."*

Other added that;

> *"Some errors still occur when systems fail or are not updated; human involvement sometimes leads to mistakes even with AI systems; not all departments fully rely on the technology yet; and technical glitches can still cause operational mistakes."*

**6.1.3: Artificial Intelligence (AI) improves accuracy in bookings and billing**

Table 6.1present that the majority 164(69.8%) of the respondents were in agreement that Artificial Intelligence (AI) improves accuracy in bookings and billing, as presented by a mean score of 3.98. This suggests that AI plays a significant role in improving accuracy in booking and billing systems in five-star hotels. This is particularly important because these functions are critical to customer satisfaction and financial management. Though, 14(6%) were neutral on the statement and 57(24.2%) of the respondents disagreed. However, the presence of disagreement indicates that; some errors still occur due to system limitations or human interference, not all hotel processes are fully automated, and staff training and system integration vary across departments. Therefore, to achieve full reliability, hotels should strengthen system integration, staff training, and technological consistency across all departments.

**6.1.4: Artificial Intelligence enhances communication within the hotel.**

Study findings in Table 6.1above indicates that the majority 161(68.5%) of the respondents agreed that Artificial Intelligence (AI) enhances communication within the selected hotels in Kampala, as presented by a mean score of 3.74. These findings suggests that AI contributes positively to internal communication systems in five-star hotels, especially in facilitating faster and more structured information sharing between departments. Though, 13(5.5%) were neutral and 61(25.9%) of the respondents disagreed. The standard deviation of 1.068 indicates that responses are fairly consistent, with limited but noticeable variation among respondents. However, the presence of disagreement indicates that communication systems are not fully integrated across all departments, some staff are not able to use AI technologies, traditional communication methods are still in use in some areas, and technical or system limitation affect operational efficiency. On the other hand, its effectiveness depends on system integration and user adoption across all departments.

**6.2: Negative Operational Implications**

**6.2.1: Artificial Intelligence systems experience frequent technical failures in the hotel.**

Results in Table 6.1shows that the majority 150(63.8%) of the respondents agreed that Artificial Intelligence (AI) systems experience frequent technical failures in the hotel. This means that AI system in five-star hotels are not fully stable and experience occasional technical disruptions; while many respondents acknowledge system failures, the moderate mean score of 3.84 indicates that these issues are not universally severe or constant. This implies that AI systems may be reliable most of the time but occasionally unstable, technical failures may depend on system type, usage level, or department, and infrastructure and maintenance quality may differ across hotels or units. However, 19(8.1%) were not

sure on the statement and 66(28.1%) of the respondents disagreed. Therefore, respondents indicate that AI systems in five-star hotels do experience technical failures, but not an extreme or constant level. To improve reliability, hotels should invest in system maintenance, technical support, backup systems, and staff training to minimize disruptions and ensure consistent service delivery.

Interviewed respondents stated that;

> *"The systems are reliable and rarely break down during operations; most of the time, the technology works smoothly without interruptions; technical failures are not common in day-to-day operations; and when properly maintained, the systems perform well consistently."*

Other respondents reported that;

> *"The system sometimes goes down, especially during busy periods; technical failures happen and affect service delivery; there are delays caused by system breakdowns; and some AI tools are not stable and require frequent fixing."*

They added that;

> *"Sometimes the system slows down, but it is quickly fixed; there are occasional glitches, especially during peak usage; failures happen, but they are not very frequent; and it depends on the system being used and the time of day."*

**6.2.2: Overdependence on Artificial Intelligence affects service delivery in the hotel.**

Results in Table 6.1presents that 146(62.1%) of the respondents agreed that overdependence on Artificial Intelligence affects service delivery in the hotel, as reflected by a mean score of 3.30. this indicates that overreliance on AI is perceived to have negative implications on service delivery, though not strongly pronounced. Respondents generally believe that excessive dependence on technology reduce flexibility and human responsiveness in hotel operations. This implies that AI sometimes replace human judgment in critical service situations, system failures significantly disrupt operations when there is heavy dependence, staff may become less engaged or less skilled in manual processes, and customers still require human interaction in certain services. Though, 14(6%) remained neutral and 75(31.9%) of the respondents disagreed. Therefore, Sheraton Hotel Kampala and Kampala Serena Hotel should maintain a balanced approach**,** combining AI efficiency with strong human oversight to ensure consistent and reliable service delivery.

**6.3: Positive Economic implications**

**6.3.1: Artificial Intelligence reduces operational costs of the hotel.**

Research results in Table 6.1above reveals that the majority 132(56.2%) of the respondents were in agreement that Artificial Intelligence (AI) reduces operational costs of the selected hotels, as reflected by a mean score of 3.31. this means that AI reduces costs through automation and reduced labor intensity, cost benefits are more visible in the long term than the short term, and the impact varies depending on the level of AI adoption and system integration. However, 22(9.4%) were neutral on the statement and 81(34.4%) of the respondents were in disagreement. The standard deviation of 1.442 indicated noticeable differences in respondents' views, suggesting that the impact of AI on cost reduction varies across departments or operational contexts. Therefore, to maximize cost benefits, Sheraton Hotel Kampala and Kampala Serena Hotel should focus on strategic implementation, efficient system use, and long-term planning of AI investments.

**6.3.2: In 5-star hotels, Artificial Intelligence improves resource utilization.**

Study findings in Table 6.1indicates that 150(62.2%) of the respondents agreed that in 5-star hotels such as Sheraton Hotel Kampala and Kampala Serena Hotel, AI improves resource utilization. This means

that AI helps optimize staff allocation, inventory management, and equipment use, some hotels or departments may not fully utilize AI capabilities, benefits depend on system integration, staff competence, and level of adoption, and traditional inefficiencies still exist alongside AI systems. However, 18(7.7%) were neutral on the statement and 67(28.5%) of the respondents were in disagreement. Therefore, AI is perceived to moderately improve resource utilization in five-star hotels, but its impact is not fully consistent across all operations. Strengthening system integration, staff training, and strategic use of AI should enhance its effectiveness in optimizing resource use.

**6.3.3: Artificial Intelligence contributes to increased hotel revenue.**

Findings in Table 6.1above indicate that 138(58.7%) of the respondents agreed that AI contributes to increased hotel revenue, as reflected by a mean score of 3.67. This reveals that AI enhances revenue through improved efficiency, customer experience, and service personalization, increased customer satisfaction lead to repeat business and higher occupancy rates, and revenue gain also come from better pricing strategies and demand forecasting. Though, 18(7.7%) were neutral on the statement and 79(33.6%) of the respondents disagreed. The standard deviation of 1.096 indicates moderate consistency in responses, with some variation in how hotel staff experience the revenue impact of AI. Therefore, to maximize revenue benefits, hotels should focus on strategic implementation, effective utilization, and alignment of AI systems with business goals.

Hotel managers, supervisors, IT personnel in an interview with the researcher emphasized that;

> *"AI helps us optimize pricing strategies, which increases revenue; with better data analysis, we can predict demand and maximize occupancy; automation improves service efficiency, leading to higher customer satisfaction and repeat business; and AI-driven marketing tools help attract more customers and increase bookings."*

**6.3.4: In five star hotels AI adoption enhances competitiveness.**

Study findings in Table 6.1above shows that the majority 160(68.1%) of the respondents were in agreement that in five star hotels such as Sheraton Hotel Kampala and Kampala Serena Hotel AI adoption enhances competitiveness, as revealed by a mean score of 3.88. This means that Artificial Intelligence (AI) enhances competitiveness through improved service quality, efficiency and innovation, these hotels use AI to differentiate themselves in the market, and also AI support faster decision making and personalised customer experiences, contributing to improved service delivery. The standard deviation of 1.194 reflects a moderate level of variation, indicating that while many respondents share similar views, some differences in perceptions exist. Nonetheless, 16(6.8%) remained neutral and 59(25.1%) of the respondents disagreed. Therefore, to fully realize this advantage, Sheraton Hotel Kampala and Kampala Serena Hotel should focus on strategic implementation, continuous innovation, and staff capacity building.

Respondents in an interview with the researcher emphasised that;

> *"AI helps these hotels offer faster and more personalized services, which gives them an advantage over others; both Sheraton and Serena use technology to attract and retain high-end customers; automation and digital systems improve efficiency, making the hotels more competitive; and AI supports better decision-making, which enhances performance and market positioning."*

Still in interview session; some respondents asserts that;

*"AI contributes to competitiveness, but other factors like service quality and brand reputation also matter; the impact depends on how effectively the technology is implemented; and both hotels are competitive, but not only because of* Artificial Intelligence (AI)*"*

Researcher also observed that;

*"Not all services are fully automated, so the competitive advantage is limited; these hotels also use similar technologies, reducing the uniqueness; AI systems are not always used effectively to create a strong advantage; and high costs of AI limit its contribution to competitiveness."*

**6.4: Negative Economic implications**

**6.4.1: AI systems implemented are expensive for the hotel.**

The study results in Table 6.1above presents that the majority 141(60%) of the respondents were in agreement that AI systems implemented by the selected hotels are expensive, as shown by a mean score of 3.74. This means that AI tools often involve high upfront but provide long-term efficiency gains and competitive advantage. The decision to adopt depends on the perceived balance between costs and expected benefits. The standard deviation of 1.908 indicates considerable variation in responses, meaning perceptions of cost differ widely among staff. However, 25(10.6%) remained neutral on the statement and 69(29.4%) of the respondents disagreed. Therefore, to maximize value, Sheraton Hotel Kampala and Kampala Serena Hotel should focus on strategic investment, phased implementation, and long-term cost recovery through improved efficiency and performance.

**6.4.2: Maintenance and operational costs of Artificial Intelligence are high.**

Study findings in Table 6.1reveal that 152(64.7%) of the respondents were in agreement that maintenance and operational costs of AI are high as presented by a mean score of 3.45. The results suggest that while AI systems are beneficial, their ongoing maintenance and operational costs are perceived as relatively high. This implies that AI systems require continuous updates, technical support, and system monitoring, costs include software licensing, system upgrades and staff training, and the selected hotels have more efficient systems, leading to lower perceived costs. The standard deviation of 1.990 indicates that staff have widely differing experiences regarding AI-related costs. Though, 64(27.2%) of the respondents were in disagreement and 19(8.1%) were neutral on the statement. Therefore, to manage these costs effectively, Sheraton Hotel Kampala and Kampala Serena Hotel should focus on efficient system management, staff training and strategic long-term planning to maximize return on AI investments.

**6.5: Positive Social Implications**

**6.5.1: Artificial Intelligence improves employee productivity in the hotel.**

Research results in Table 6.1above reveals that Artificial Intelligence (AI) improves employee productivity in the selected hotels, as shown by a mean score of 3.98. This means that Artificial Intelligence (AI) is perceived to significantly improve employee productivity in the selected hotels, contributing to better operational efficiency. The standard deviation of 1.063 suggests that AI has a significant positive impact on employee productivity, though the effect is not uniform across all hotel operations. This is an implication that AI enhances productivity by automating repetitive tasks, allowing employees to focus on higher-value activities, hotel employees complete tasks faster and more accurately with AI support, productivity improvements depends on staff competence, training, and system integration. Though, 14(6%) were neutral on the statement and 77(32.8%) of the respondents disagreed. However, to maximize these benefits, Sheraton Hotel Kampala and Kampala Serena Hotel should focus on staff training, system integration, and continuous improvement of AI technologies.

Some interviewed respondents indicated that;

*"AI systems help staff complete tasks faster and more efficiently; automation reduces manual workload, allowing employees to focus on more important tasks; employees can handle more customers within a shorter time; and AI tools improve accuracy, reducing time spent correcting errors."*

Other respondents acknowledged that;

*"AI improves productivity, but only when staff are well trained; there is improvement, but not in all departments; and productivity depends on how effectively the system is used."*

More respondents added that;

*"Some staff struggle to use AI systems, which slows down work; technical issues sometimes reduce productivity instead of improving it; not all processes are automated, so manual work is still required; and in some cases, AI adds complexity rather than simplifying tasks."*

**6.5.2: In five-star hotels, Artificial Intelligence threatens staff job security.**

Research findings in Table 6.1presents that the majority 150(63.9%) of the respondents were in agreement that in five-star hotels, Artificial Intelligence (AI) threatens staff job security, as presented by a mean score of 3.84. This means that AI poses a moderate threat to staff job security in the selected five-star hotels. The standard deviation of 1.078 indicates that a moderate level of variation, meaning staff's views are relatively consistent, though differences exist. The results suggest that AI adoption in five-star hotels is having potential negative implications for employment, particularly in roles that are routine and easily automated. This implies that AI replace repetitive and manual tasks, reducing the need for certain job roles, employees may feel uncertain about long-term job stability, some roles may evolve rather than disappear, requiring new skills and competencies; and perceptions of threat depend on level of awareness and understanding of AI systems.Though, 13(5.5%) were not sure on the statement and 72(30.7%) of the respondents disagreed.Therefore, to address these concerns, Sheraton Hotel Kampala and Kampala Serena Hotel should focus on employee reskilling, transparent communication, and integrating AI as a complementary tool rather than a replacement for human labour.

Some key interviewed respondents expressed that;

"*Some routine jobs are being replaced by automated systems; AI reduces the need for certain operational staff, especially in front office and billing; there is fear among employees that technology may replace their roles in the future; and hotels are increasingly relying on systems instead of human workers."*

Other respondents added that;

*"Human interaction is still very important in hospitality services; AI cannot replace the personal touch required in customer service; staff are still needed to manage and interpret system outputs; and technology supports employees rather than replacing them."*

*They further stated that;*

*"AI does not completely remove jobs, but it changes how staff work; employees are now required to supervise systems instead of doing manual tasks; and some roles are reduced, but new technical roles are being created."*

**6.5.3: AI reduces human interaction with guests in the hotel.**

Research findings in Table 6.1indicates that the majority 150(63.8%) of the respondents agreed that AI reduces human interaction with guests in the selected hotel, as presented by a mean score of 3.21.The results suggest that AI adoption in the selected hotels is gradually reducing direct human interaction staff

and guests, especially in routine service processes. This implies that AI systems such as chatbots, self-check in kiosks, and automated booking platforms reduce face to face contact; guest interact more with systems than with staff for basic services. Nevertheless, 19(8.1%) were neutral on the statement and 66(28%) of the respondents disagreed. However, maintaining a balance between automation and personalised human service is essential to sustain high quality guest experiences.

**6.5.4: The hotel provides adequate AI training**

Results in Table 6.1indicates that the majority 153(64.8%) of the respondents agreed that the selected hotels provide adequate AI training to their staff, as revealed by a mean score of 3.40. This reveals that the effectiveness of AI depends not only on system availability but also on user capability and continuous training. Without adequate training, the benefits of AI adoption may be limited. Nevertheless, 11(4.7%) remained neutral and 71(30.2%) of the respondents were in disagreement. This reveals that indicate that Sheraton Hotel Kampala and Serena Hotel Kampala provide moderate levels of Artificial Intelligence (AI) training, but there is still a significant gap in ensuring consistent and adequate training for all staff. Therefore, strengthening continuous professional development programs is essential for maximizing the benefits of AI adoption.

Interviewed respondents indicated that;

> *"Staff are trained on how to use the AI systems when they are introduced; the hotel provides orientation sessions on new technologies; there is some level of training, especially for front office and IT staff; and employees are guided on how to operate automated systems."*

**6.6: Negative Social Implications**

**6.6.1: Employees in the five-star hotels resist AI adoption.**

Research findings in Table 6.1indicate that some employees in the selected five-star hotels resist AI adoption, as revealed by a mean score of 3.74. Therefore, 143(60.9%) of the respondents were in agreement. This means that resistance arises due to concern about job security, lack of skills, or difficulty adapting to new systems. This implies that some employees fear that AI replace or reduce their roles, lack of adequate training contribute to low confidence in using AI systems, and resistance is older or less tech-oriented staff in the selected hotels. The standard deviation of 1.917 shows considerable variation in responses. However, 19(8.1%) remained neutral and 73(31%) were in disagreement. Respondents indicate that employee resistance to AI exists in five-star hotels but varies among staff. To reduce resistance, hotels should strengthen training, communication, and change management strategies to promote positive acceptance of AI systems.

**6.6.2: There is inequality in digital skills among staff in the five star hotels**

Table 6.1 presents that 142(60.4%) of the respondents agreed that there is inequality in digital skills among staff in the selected five star hotels, as presented by a mean score of 4.32. Standard deviation of 1.746 suggests considerable variation responses, reflecting differences in experiences across departments and staff categories. Though, 23(9.8%) were neutral and 70(29.8%) of the respondents were in disagreement. The results suggest that digital skill inequality is a significant issue in Sheraton Hotel Kampala and Kampala Serena Hotel. This implies that staff have uneven exposure to technology and training opportunities, differences exist between departments like (IT / front office verse housekeeping or food service), older or less experienced staff may struggle more with digital systems, and skill gaps affect efficiency, service delivery, and AI utilization. Therefore, these hotels should address the gap

through targeted training, continuous capacity building, and inclusive digital upskilling programs are essential for maximizing the benefits of AI adoption.

### 6.7: Testing Hypothesis Two

To test Hypothesis Two, the study employed Pearson correlation analysis and linear regression analysis to establish whether operational, economic, and social implications associated with Artificial Intelligence (AI) significantly influence operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel. Pearson correlation was used to determine the direction and strength of the relationship, while regression analysis was used to determine the predictive effect of AI implications on operational efficiency.

#### 6.7.1: Correlations on AI implications and Operational Efficiency

Table 6.2 presents the Pearson correlation results examining the relationship between AI implications and operational efficiency at Sheraton Kampala and Kampala Serena Hotel.

**Table 6.2: Correlations on AI implications and Operational Efficiency**

| | | AI implications | Operational Efficiency |
|---|---|---|---|
| AI implications | Pearson Correlation | 1 | .757** |
| | Sig. (2-tailed) | | .000 |
| | N | 235 | 235 |
| Operational Efficiency | Pearson Correlation | .757** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 235 | 235 |
| **. Correlation is significant at the 0.05 level (2-tailed). | | | |

The findings indicate a strong positive relationship between AI implications and operational efficiency, with a correlation coefficient of r = 0.757.The positive correlation coefficient implies that improvements in the operational, economic, and social implications associated with AI use are associated with corresponding improvements in operational efficiency. This suggests that effective application of AI technologies contributes to enhanced hotel performance through improved service speed, automation of routine processes, better resource utilization, cost optimization, improved employee productivity, and enhanced guest experiences. The significance value (p = 0.000) is below the accepted threshold of 0.05, indicating that the observed relationship between AI implications and operational efficiency is statistically significant. This means that the relationship is unlikely to have occurred by chance.

Therefore, the null hypothesis ($H_{02}$) stating that there is no statistically significant relationship between AI implications and operational efficiency is rejected. The alternative hypothesis ($H_{12}$) is accepted, confirming that operational, economic, and social implications resulting from AI use have a statistically significant relationship with operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.The findings indicate that AI adoption generates important operational benefits, including faster check-in and check-out processes, improved customer relationship management, automated reservation systems, predictive decision-making, and enhanced service personalization. Economically, AI contributes to cost reduction, improved productivity, and efficient allocation of resources. Socially, AI influences employee roles, skills requirements, and customer interaction patterns, making employee training and acceptance important for successful implementation.

Since the correlation between AI implications and operational efficiency was statistically significant (r=0.757, p=0.000<0.05), the study rejects the null hypothesis ($H_{02}$) and accepts the alternative hypothesis ($H_{12}$).The study therefore concludes that: Operational, economic, and social implications resulting from the use of Artificial Intelligence have a statistically significant relationship with operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

These findings are consistent with Huang & Rust (2021), who noted that smart hospitality technologies improve service delivery, operational coordination, and customer experiences through digital integration. Similarly, Buhalis, & Leung (2023) emphasized that Artificial Intelligence enhances hospitality efficiency by automating processes, supporting managerial decisions, and improving service quality, although organizations must consider workforce adaptation and technological readiness.

**6.7.2: Regression Analysis on AI implications and Operational Efficiency**

To further examine the predictive effect of operational, economic, and social implications resulting from Artificial Intelligence (AI) use on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel, a simple linear regression analysis was conducted using model summary, ANOVA test and coefficient results. The regression analysis established the extent to which AI implications explain variations in operational efficiency.

**Model Summary on AI implications and Operational Efficiency**

Table 6.3 presents the regression model summary examining the extent to which Artificial Intelligence implications (operational, economic, and social implications resulting from the use of Artificial Intelligence) predict operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

**Table 6.3: Model Summary on AI implications and Operational Efficiency**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .757[a] | .573 | .571 | 1.72730 |
| a. Predictors: (Constant), AI implications | | | | |

The results indicate a strong positive relationship between AI implications and operational efficiency, as shown by the correlation coefficient (R=0.757). This suggests that improvements in AI-related operational, economic, and social outcomes are strongly associated with improvements in operational efficiency within the selected hotels.

The coefficient of determination (R Square = 0.573) indicates that 57.3% of the variation in operational efficiency is explained by AI implications. This means that more than half of the changes in operational efficiency can be attributed to the benefits and effects associated with AI adoption, including automation of hotel processes, faster service delivery, improved customer relationship management, cost optimization, enhanced decision-making, and improved employee productivity.

The Adjusted R Square value of 0.571 indicates that after adjusting for the predictor included in the model, AI implications still explain 57.1% of the variations in operational efficiency. This confirms that the regression model has strong explanatory power and that AI implications are significant predictors of operational efficiency.

The standard error of the estimate (1.72730) represents the average difference between the actual operational efficiency values and those predicted by the regression model. The value indicates that the model provides a reasonable level of prediction accuracy in explaining operational efficiency based on AI implications.

The findings demonstrate that AI implications are important determinants of operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel. The results suggest that effective adoption and utilization of AI technologies can enhance hotel performance through improved operational processes, economic benefits, and positive social outcomes such as improved customer experiences and employee capability development.

These findings are supported by Buhalis and Leung (2023), who argue that smart technologies in hospitality enhance operational integration, service personalization, and efficiency through digital connectivity. Similarly, Ivanov and Webster (2022) explain that Artificial Intelligence contributes to hospitality performance by automating routine activities, supporting managerial decisions, reducing operational costs, and improving service quality.

**Analysis of Variance (ANOVA) on AI implications and Operational Efficiency**

Table 6.4 presents the Analysis of Variance (ANOVA) results for the regression model examining the effect of AI implications on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

**Table 6.4: ANOVA on AI implications and Operational Efficiency**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 21.401 | 1 | 21.401 | 40.458 | .000[b] |
| | Residual | 47.606 | 233 | .529 | | |
| | Total | 69.007 | 234 | | | |
| a. Dependent Variable: Operational Efficiency | | | | | | |

The ANOVA results indicate that the regression model is statistically significant, with an F-value of 40.458 and a significance level of p = 0.000, which is below the accepted significance level of 0.05.The findings demonstrate that the regression model provides a statistically significant prediction of operational efficiency based on AI implications. This means that operational, economic, and social implications arising from the use of Artificial Intelligence significantly explain variations in operational efficiency among the selected hotels. The Regression Sum of Squares (21.401) represents the amount of variation in operational efficiency explained by AI implications, while the Residual Sum of Squares (47.606) represents the unexplained variation arising from other factors not included in the model. The Total Sum of Squares (69.007) represents the overall variation in operational efficiency. Since the significance value (p=0.000< 0.05), the regression model is considered statistically significant. Therefore, AI implications significantly predict operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

The findings provide statistical evidence to reject the null hypothesis ($H_{02}$) which stated that there is no statistically significant relationship between operational, economic, and social implications resulting from AI use and operational efficiency. The alternative hypothesis ($H_{12}$) is therefore accepted. Based on the ANOVA results (F = 40.458, p = 0.000 < 0.05), the study concludes that operational, economic, and social implications resulting from the use of Artificial Intelligence have a statistically significant influence on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

The findings imply that AI adoption contributes significantly to hotel efficiency by improving automated service delivery, reducing operational costs, enhancing customer experiences, supporting data-driven decision-making, and transforming employee roles through improved digital capabilities.

These findings are consistent with Atwin and Mukiibi (2022), who observed that smart hospitality technologies improve operational performance through automation, connectivity, and personalized customer services. Similarly, Buhalis andLeung (2023) emphasized that Artificial Intelligence enhances hospitality competitiveness by improving productivity, reducing costs, and supporting efficient management decisions.

**Table 6.5: Coefficients on AI implications and Operational Efficiency**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.778 | .360 | | 4.941 | .000 |
| | AI implications | .589 | .093 | .757 | 6.361 | .000 |
| a. Dependent Variable: Operational Efficiency | | | | | | |

Table 6.5 presents the regression coefficients showing the effect of AI implications (operational, economic, and social implications resulting from the use of Artificial Intelligence) on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel. The results indicate that AI implications have a positive and statistically significant effect on operational efficiency. The constant coefficient (B = 1.778) indicates that when AI implications are held constant, the predicted level of operational efficiency is 1.778 units. The coefficient for AI implications is 0.589, implying that a one-unit increase in positive AI implications is associated with a 0.589-unit increase in operational efficiency, holding all other factors constant.

The standardized regression coefficient ($\beta = 0.757$) indicates a strong positive effect of AI implications on operational efficiency. This suggests that improvements in the operational, economic, and social outcomes associated with AI adoption are strongly linked to improvements in hotel operational efficiency. The t-value of 6.361 with a significance level of p=0.000 confirms that AI implications are a statistically significant predictor of operational efficiency. Since the p-value is less than the conventional significance level of 0.05, the effect of AI implications on operational efficiency is statistically significant.

The findings suggest that the operational implications of AI, such as automation of routine hotel operations, faster check-in and check-out procedures and enhanced decision-making, contribute significantly to operational efficiency. Economically, AI enables hotels to optimize resource utilization, reduce operating costs, improve productivity, and enhance revenue management. Socially, AI improves customer satisfaction through personalized services, quicker response times, and better guest experiences while also encouraging employees to develop digital competencies and adapt to technology-enabled work environments.

Since the regression coefficient for AI implications was statistically significant ($\beta = 0.757$, t=6.361, p=0.000<0.05), the study rejects the null hypothesis ($H_{02}$) and accepts the alternative hypothesis ($H_{12}$). The study therefore concludes that the operational, economic, and social implications resulting from the use of AI have a statistically significant positive influence on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

These findings are consistent with Mariani and Baggio (2022), who argue that smart hospitality technologies enhance operational performance by integrating digital systems that improve service

quality and organizational efficiency. The findings also support Ivanov and Webster (2022), who found that Artificial Intelligence creates operational, economic, and customer-service benefits in the hospitality industry by automating business processes, supporting managerial decision-making, and improving service delivery.

## CHAPTER SEVEN
## THE MAJOR CHALLENGES, BARRIERS, AND RISKS ASSOCIATED WITH AI ADOPTION IN SHERATON HOTEL KAMPALA AND KAMPALA SERENA HOTEL

### 7.0: Introduction

The section investigated the major challenges, barriers, and risks associated with AI adoption in Sheraton Hotel Kampala and Kampala Serena Hotel. The data were explained using Mean and Standard Deviation, frequencies and percentages as presented in the Table 7.1 below.

**Table 7.1: Descriptive Statistics on the on the major challenges, barriers, and risks associated with AI adoption in the selected Five-Star Hotels in Kampala.**

| Challenges, Barriers, & Risks Associated with AI adoption | N | *Mean* | *Std. Dev* | Scale | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 |
| Artificial Intelligence systems are expensive to implement by the five-star hotels. | 235 | 3.19 | 1.158 | 28 11.9 % | 38 16.2% | 15 6.4% | 78 33.2% | 76 32.3 % |
| Artificial Intelligence requires high maintenance and operational costs for the hotel. | 235 | 3.77 | 1.820 | 36 15.3 % | 39 16.6% | 18 7.7% | 82 34.9% | 60 25.5 % |
| Return on investment (ROI) from AI is uncertain. | 235 | 4.36 | 1.056 | 31 13.2 % | 37 15.7% | 13 5.5% | 96 40.9% | 58 24.7 % |
| AI systems are difficult to integrate with existing hotel systems. | 235 | 4.67 | 1.715 | 33 14.0 % | 32 13.6% | 20 8.5% | 60 25.5% | 90 38.3 % |
| There are frequent system failures or downtime in the hotel. | 235 | 3.20 | 1.461 | 20 8.5% | 25 10.6% | 14 6.0% | 97 41.3% | 79 33.6 % |
| Artificial Intelligence systems are complex to use by the hotel staff. | 235 | 3.99 | 1.294 | 31 13.2 % | 24 10.2% | 19 8.1% | 68 28.9% | 93 28.5 % |
| Employees in the five-star hotels resist AI adoption. | 235 | 3.48 | 1.896 | 40 17.0 % | 49 20.9% | 19 8.1% | 60 25.5% | 67 28.5 % |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| There is a lack of digital skills among staff. | 235 | 3.74 | 1.908 | 40 17.0 % | 33 14.0% | 24 10.2% | 73 31.1% | 65 27.7 % |
| Artificial Intelligence creates fear of job loss in the five star hotels. | 235 | 3.45 | 1.990 | 35 14.9 % | 48 20.4% | 12 5.1% | 71 30.2% | 69 29.4 % |
| Overdependence on AI affects operations in the 5-star hotels. | 235 | 3.74 | 1.068 | 39 16.6 % | 26 11.1% | 25 10.6% | 79 39.1% | 66 28.1 % |
| System failures disrupt hotel services. | 235 | 3.10 | 1.024 | 42 17.9 % | 31 13.2% | 16 6.8% | 92 39.1% | 54 22.9 % |
| Errors in AI systems affect decision-making of the established hotels. | 235 | 3.84 | 1.907 | 33 14.0 % | 36 15.3% | 17 7.2% | 79 33.6% | 70 29.8 % |
| Artificial Intelligence systems pose data security risks. | 235 | 3.67 | 1.515 | 33 14.0 % | 43 18.4% | 20 8.5% | 59 25.1% | 80 34.0 % |
| Guest privacy in the luxury hotels are at risk due to AI systems. | 235 | 3.20 | 1.461 | 40 17.0 % | 35 14.9% | 24 10.2% | 87 37.0% | 49 20.8 % |
| AI leads to unfair or biased decisions in the five star hotels. | 235 | 3.98 | 1.284 | 40 17.0 % | 34 14.5% | 18 7.7% | 78 33.2% | 65 27.8 % |
| Hotel management lacks expertise in AI technologies. | 235 | 3.58 | 1.898 | 31 13.2 % | 39 16.6% | 19 8.1% | 79 33.6% | 67 28.5 % |
| There is no clear AI strategy in the hotel. | 235 | 3.84 | 1.918 | 39 16.6 % | 33 14.0% | 18 7.7% | 60 25.5% | 85 36.2 % |
| Change management for AI implementation is weak in the five star hotels. | 235 | 3.55 | 1.980 | 35 14.9 % | 38 16.2% | 12 5.1% | 35 14.9% | 38 16.2 % |
| **Average Score** | 235 | **3.29** | **1.492** | | | | | |

Source: Field Data (2026)**Key**: **1**=Strongly Disagree, **2**= Disagree, **3**=Not Sure, **4**= Agree, **5**=Strongly Agree

**7.0.1: Interpretation of Results on the major challenges, barriers, and risks associated with AI adoption in Sheraton Hotel Kampala and Kampala Serena Hotel.**

**7.1: Financial Barriers**

**7.1.1: Artificial Intelligence systems are expensive to implement by the five-star hotels.**

Findings in Table 7.1 indicates that the majority 154(65.5%) of the respondents were in agreement that Artificial Intelligence systems are expensive to implement by the selected five-star hotels in Kampala

City, as revealed by a mean score of 3.77. This reveals that while AI technologies are recognised for its operational benefits, its implementation is widely perceived as financially demanding. This cost burden is associated with high initial investment in hardware, software, and system integration, and costs of installation, customization, and infrastructure upgrades; and continuous express related to maintenance, updates, and training. Though, 15(6.4%) were neutral on the statement and 66(28.1%) of the respondents were in disagreement. Therefore, the long-term operational and strategic benefits of AI justify the investment when effectively managed.

Some key respondents affirmed that;

> *"The initial cost of installing AI systems is very high, especially for infrastructure and software; yes, it is expensive, but it improves efficiency and service delivery in the long run; hotels invest a lot in technology, but the returns come through improved operations; and the cost is high, but it is necessary to remain competitive in the industry."*

Other respondents noted that;

> *"The cost depends on how advanced the system is and the hotel's size; some departments use expensive systems, while others use simpler tools; and implementation is costly, but not all hotels invest at the same level."*

They further emphasized that;

> *"The cost is too high for full implementation in all departments; hotels struggle to maintain AI systems because of financial constraints; small-scale upgrades are done because full systems are very expensive; and high costs delay or limit adoption of advanced technologies."*

**7.1.2: AI requires high maintenance and operational costs for the hotel.**

Study results in Table 7.1indicates that 142(60.4%) of the respondents generally agreed that AI requires high maintenance and operational costs for the selected hotel, as presented by a mean score of 3.77. The results suggest that while AI systems offer operational benefits, their ongoing costs are significant. These costs vary depending on system complexity, level of usage and management efficiency. This implies that AI systems requires continuous technical support, updates, and system monitoring, cost include software licensing, management contracts, and staff training, these hotels experience higher costs due to inefficient systems or lack of technical expertise. Although, 18(7.7%) were neutral and 75(31.9%) n disagreed. Therefore, effective cost management through strategic planning, system optimization, and staff training should be essential to maximize the benefits of AI investments.

**7.1.3: Return on investment (ROI) from AI is uncertain.**

Research findings in Table 7.1 presents that 154(65.6%) of the respondents were in agreement that ROI from AI is uncertain. This means that respondents strongly believe that ROI from AI in the selected five-star hotels are uncertain, mainly due to high costs and difficulty in measuring returns. However, 13(5.5%) were neutral on the statement and 68(28.9%) of the respondents were in disagreement. Therefore, Sheraton Hotel Kampala and Kampala Serena Hotel should develop clear evaluation frameworks, performance metrics, and long-term investment strategies to better assess AI value.

Key respondents in an interview expressed that;

> *"It is difficult to clearly measure the returns from AI systems; the benefits of AI are not immediately reflected in financial performance; we invest heavily in AI, but the returns take time to be realized; and there is no clear way to quantify the exact financial gains from AI."*

Another segment of respondents emphasized that;

"*AI reduces operational costs, which clearly improves returns; improved efficiency and customer retention, lead to increased revenue; the benefits outweigh the costs when systems are properly used; and AI investments are justified through improved performance and competitiveness.*"

**7.2: Technological Challenges**

**7.2.1: AI systems are difficult to integrate with existing hotel systems.**

Study findings in Table 7.1 indicate that Artificial Intelligence (AI) systems are difficult to integrate with existing hotel systems, as presented by a mean score of 4.67. The results suggest that system integration is a major barrier to effective AI adoption in the selected hotels. Despite the benefits of AI, aligning it with existing infrastructure remains complex. This implies that existing hotel system are outdated or incompatible with new AI technologies, integration requires technical expertise, customization, and significant time investment, lack of standardization across systems complicates seamless implementation, and poor integration lead to inefficiencies and underutilization of AI capabilities. However, 20(8.5%) were neutral and 65(27.6%) of the respondents disagreed. This means that integrating AI systems with existing hotel system is difficult and remains a significant challenge in Sheraton Hotel Kampala and Kampala Serena Hotel. To overcome this, these hotels should invest in modern infrastructure, skilled technical support, and strategic system integration planning to fully leverage AI capabilities.

Key respondents confirmed that;

*"Our current systems are not fully compatible with new AI technologies; integration requires a lot of customization, which is both time-consuming and expensive; we face challenges linking AI systems with legacy hotel management systems; and technical expertise is required, and not all hotels have that capacity."*

Respondents also acknowledged that;

*"Integration is difficult at first, but it becomes easier with proper planning; with support from IT experts, the systems can be aligned; and the challenge depends on how modern the existing systems are."*

A few respondents indicated that;

*"Modern systems are designed to integrate easily with AI; with the right vendors, integration is smooth; and our systems were already upgraded, so integration was not difficult."*

**7.2.2: There are frequent system failures or downtime in the hotel.**

Results in Table 7.1 presents that the majority 176(74.9%) of the respondents were in agreement that there are frequent system failure or downtime in the selected hotels, as presented by a mean score of 3.20. This means that AI and digital system experience technical glitches, interruptions, or performance issues; downtime disrupt service delivery, booking systems, and internal operations; and variations depend on system quality, maintenance practices and technical support availability. However, 45(19.1%) of the respondents disagreed. Respondents indicate that system failures and downtime are moderately common in five-star hotels, posing challenges to efficient service delivery. To address this issue, Sheraton Hotel Kampala and Kampala Serena Hotel should invest in system reliability, regular maintenance, technical support, and backup solutions to ensure continuous operations.

**7.2.3: Artificial Intelligence systems are complex to use by the hotel staff.**

Study findings in Table 7.1 presents that 161(57.4%) of the respondents were in agreement that Artificial Intelligence (AI) systems are complex to use by the hotel staff, as revealed by a mean score of

3.99. This implies that staff face difficulty understanding and operating AI systems, complexity may arise from technical design, lack of user-friendly interfaces, or insufficient training, employees with limited digital skills may struggle more, and complexity can reduce efficiency and confidence in system use. However, 19(8.1%) were neutral on the statement and 55(23.4%) of the respondents disagreed. Respondents indicate that Artificial Intelligence systems are relatively complex for hotel staff to use, which limits their effectiveness. To address, this challenge, Sheraton Hotel Kampala and Kampala Serena Hotel should focus on user-friendly system design, continuous staff training, and technical support to enhance and adoption.

**7.3: Human Resource and Social Barriers**

**7.3.1: Employees in the five-star hotels resist AI adoption.**

Findings in Table 7.1 present that the majority 127(54%) of the respondents agreed that employees in the five-star hotels resist AI adoption, as revealed by a mean score of 3.48. This means that resistance stem from fear of job loss, lacks of digital skills, or uncertainty about new systems, some employees feel unprepared or uncomfortable using AI technologies, staff recognize the benefit of AI in improving efficiency and productivity; and resistance levels vary depending on training, experience, and organization support. However, 19(8.1%) remained neutral and 89(37.9%) of the respondents were in disagreement. The study found out that employee resistance to Artificial Intelligence exists at a moderate level in Sheraton Hotel and Kampala Serena Hotel, but it varies across individuals and departments. Addressing requires effective training, communication, change management strategies to enhance acceptance and successful AI integration.

Key respondents in an interview confirmed that;

> *"Some staff are reluctant to use AI systems because they fear losing their jobs; there is resistance, especially among employees who are not familiar with technology; older staff tend to resist changes brought by AI systems; and some employees prefer traditional methods and are hesitant to adopt new technologies."*

Other respondents argued that;

> *"Resistance is there, but it reduces with proper training; employees initially resist, but they adapt over time; acceptance improves when employees understand the benefits of AI; and resistance depends on how the change is introduced."*

They also added that;

> *"Most employees are willing to learn and use AI systems; younger personnel are very comfortable with technology; AI is seen as a tool that makes work easier rather than a threat; and there is minimal resistance where proper support is provided."*

**7.3.2: There is a lack of digital skills among staff.**

Study findings in Table 7.1 above presents that 138(58.8%) of the respondents were in agreement that there is a lack of digital skills among staff in the selected five-star hotels in Kampala City, as presented by a mean of 3.74. The very high standard deviation of 1.908 shows strong variability in responses, suggesting unequal skill levels across departments or employees. The findings indicate a significant digital skills gap among staff, which poses a major challenge to effective AI adoption and operational efficiency. While some employees demonstrate competence, the overall inconsistency highlights the need for continuous training and capacity building, investment in digital literacy programs, and strengthening human resource capabilities to support technological transformation. Though, 24(10.2%)

were neutral on the statement and 73(31%) of the respondents were in disagreement. This means that some employees are not lacking digital skills. The majority of respondents indicate that there is a notable lack of digital skills among staff in five-star hotels, which can limit the effectiveness of AI adoption. Addressing this challenge requires targeted training, continuous upskilling, and capacity-building initiatives to enhance staff competence and improve operational performance.

Key respondents confirmed that;

> *"Some employees struggle to use AI systems due to limited digital knowledge; not all staff are comfortable working with modern technology; there is a noticeable gap between tech-savvy staff and others; and some departments lack the necessary digital competencies."*

Others added that;

> "*Most employees have basic digital skills needed for their roles; staff are able to use the systems after initial training; the hotel ensures that employees are equipped with necessary skills; and digital skills are not a major problem in all departments."*

**7.3.3: Artificial Intelligence creates fear of job loss in the five star hotels**

Findings in Table 7.1 above presents that the majority 140(59.6%) of the respondents were in agreement that Artificial Intelligence (AI) creates fear of job loss in the selected five star hotels. This reveals that AI adoption in the selected five-star hotels is associated with moderate levels of job insecurity among employees. This implies that employees fear that AI will replace certain roles, especially routine tasks, lack of understanding about AI increase uncertainty and anxiety, some staff perceive AI as a support tool rather an replace, reducing fear. The study further indicates that fear levels vary depending on job role, digital skills, and exposure to AI systems. Though, 12(5.1%) were neutral on the statement and 83(35.3%) of the respondents were in disagreement. Therefore, this concern requires transparent communication, reskilling initiatives, and supportive change management strategies to ensure employees view AI as an opportunity rather than a threat.

**7.4: Operational Risk**

**7.4.1: Overdependence on AI affects operations in the 5-star hotels.**

Results in Table 7.1 above indicate that 145(67.2%) of the respondents were in agreement that overdependence on AI affects operations in the selected 5-star hotels in Kampala City, as presented by a mean score of 3.74. This implies that overdependence reduce human oversight and decision making, system failures or downtime have greater impact when operations rely heavily on AI tools, employees in these hotels become less engaged or less skilled in manual processes; and a lack of balance between AI and human input affect service quality and flexibility. The standard deviation of 1.068 reflects a moderate level of consistency, indicating that respondents share relatively similar views on this issue. However, 65(27.7%) of the respondents disagreed. Therefore, Sheraton Hotel Kampala and Kampala Serena Hotel should adopt a balanced approach, integrating AI with human expertise to ensure efficient, flexible and resilient service delivery.

**7.4.2: System failures disrupt hotel services.**

Findings in Table 7.1 indicates that the majority 146(62%) of the respondents were in agreement that system failures disrupt hotel services, as revealed by a mean score of 3.10. This means that failures in AI and digital systems interrupt check-ins, billing, reservations and communication processes, service delays and inefficiencies occur during downtime, the level of disruption depends on system reliability and backup mechanisms. Nonetheless, 16(6.8%) remained neutral on the issue and 73(31.1%) of the respondents disagreed. Therefore, system failure moderately disrupts hotel services, emphasizing the

need for reliable systems, regular maintenance, and effective backup solution to ensure continuous and high-quality service delivery. Ensuring stable and resilient systems is therefore essential for sustaining operational efficiency in Sheraton Hotel Kampala and Kampala Serena Hotel.

Key Respondents in an interview argued that;

> *"System failures disrupt hotel services mainly through delays, reduced efficiency, and compromised customer experience. Although mitigation strategies exist, they are not sufficient to fully eliminate the operational impact, highlighting the need for stronger ICT infrastructure and system reliability improvements."*

Other respondents acknowledged that;

> *"When the system goes down, check-in and check-out processes are delayed; billing and reservations are affected whenever there is a system failure; guests get frustrated when services are interrupted due to technical downtime; and even a short system failure affects the smooth running of operations."*

The researcher observed that;

> "*Almost all departments rely on the system, so any failure affects the whole hotel; front office and reservations are fully system-based, so downtime stops work; communication between departments is affected during system breakdowns."*

Others added that;

> "*We have backup procedures when systems fail, so operations continue manually; the IT team usually responds quickly to restore services; and short downtimes do not completely stop operations."*

**7.4.3: Errors in AI systems affect decision-making of the established hotels.**

Study results in Table 7.1 reveals that the majority 149(63.4%) of the respondents agreed that errors in Artificial Intelligence (AI) systems affect decision making of the established hotels, as shown by a mean of 3.84. this implies that incorrect or incomplete system outputs lead to poor or delayed decision; also managers depend on AI for forecasting, booking management, and operational planning. The standard deviation of 1.907 indicates that experiences and perception differ across departments and respondents. However, 17(7.2%) were neutral on the statement and 69(29.3%) of the respondents disagreed. Therefore, to minimise risks, Sheraton Hotel Kampala and Kampala Serena Hotel should strengthen system accuracy, implement human oversight, and improve data validation processes to ensure reliable decision making.

**7.5: Data and Ethical Risks**

**7.5.1: Artificial Intelligence systems pose data security risks.**

Study findings in Table 7.1 indicates that 139(59.1%) of the respondents were in agreement that Artificial Intelligence (AI) systems pose data security risks, as revealed by a mean score of 3.67. This means that Artificial Intelligence system pose moderate data security risks in 5-star hotels, requiring strong cybersecurity measures, staff training, and robust data protection policies to safeguard sensitive information. However, 20(8.5%) remained neutral and 76(32.4%) of the respondents were in disagreement. Therefore, while AI enhances operational efficiency, its effectiveness depends heavily on robust cybersecurity measures and data protection systems. Addressing these risks is essential for sustaining trust, protecting guest information, and ensuring successful AI integration in hotels such as Sheraton Kampala Hotel and Kampala Serena Hotel. In addition, to manage these risks, these selected

five-star hotels such should prioritize strong cybersecurity systems, data encryption and access controls, regular system audits and updates, and staff training on data protection policies.

**7.5.2: Guest privacy in the luxury hotels are at risk due to AI systems.**

Findings in Table 7.1 presents that 136(57.8%) of the respondents were in agreement that guest privacy in the luxury hotels are at risk due to AI systems, as revealed by a mean score of 3.20. The standard deviation (1.461)reflects moderate variability, meaning perceptions differ across respondents. Though, 24(10.2%) remained neutral and 75(31.5%) of the respondents were in disagreement. This means that AI enhances efficiency and service delivery, its success depends on maintaining strong data protection, privacy safeguards, and ethical use of guest information. Kampala Hotel and Kampala Serena Hotel must therefore balance technological innovation with strict privacy protection to sustain guest trust and operational excellence.

Some key respondents asserted that;

> *"AI systems store a lot of guest personal information, which can be vulnerable if not well protected; there is a risk when data is shared across different systems and departments; guest information such as preferences and payment details may be exposed if security is weak; and with increased automation, there is greater dependence on digital data, which can be risky."*

Other respondents asserted that;

> *"Privacy risks exist, but we have security systems to protect guest data; access to guest information is restricted to authorized staff only; the hotel follows data protection policies to safeguard information; and risks are minimized through encryption and system controls."*

The researcher also observed that;

> *"The systems are secure and designed to protect guest information; these hotels have not experienced major privacy breaches due to Artificial Intelligence;AI actually improves record accuracy and reduces manual handling of data; and privacy is well managed through strict hotel procedures."*

**7.5.3: AI leads to unfair or biased decisions in the five star hotels.**

Study findings in Table 7.1 reveals that 143(61%) of the respondents agreed that AI leads to unfair or biased in the selected five-star hotels in Kampala City, as reflected by a mean score of 3.98. The standard deviation of 1.284 indicates that perceptions differ across respondents depending on exposure and understanding of Artificial Intelligence (AI) systems. This means that Artificial Intelligence (AI) decision reflect biases embedded in data or algorithms, automated systems not fully account for human judgement or contextual factors; there is also concern about fairness in areas such as pricing, staffing and customer service allocation. Still, 18(7.7%) remained neutral and 74(31.5%) of the respondents were in disagreement. Therefore, Sheraton Hotel Kampala and Kampala Serena Hotel should strengthen algorithm transparency, ethical AI governance, and human oversight mechanisms to ensure fair and reliable decision-making.

**7.6: Managerial and Organizational Barriers**

**7.6.1: Hotel management lacks expertise in AI technologies.**

Study findings in Table 7.1 above presents that the majority 146(62.1%) of the respondents were in agreement that hotel management lacks expertise in AI technologies. The standard deviation of 1.898 reflects significant variability, meaning perceptions differ widely across staff, likely due to differences in exposure, training, and hotel capacity. This implies that management may lack technical understanding of AI systems and their strategic application, decision-making related to AI depend on external

consultants or IT specialists, limited expertise hinder effective planning, implementation, and monitoring of AI systems, and differences across responses indicate uneven distribution of skills and training among hotels. Though, 19(8.1%) were neutral on the statement and 70(29.8%) of the respondents were in disagreement. This means that managers have general awareness, but lack deep technical skills; understand the benefits of AI, but not how to fully utilize it; skills are improving gradually through exposure and training; and experience with AI is still developing within management teams.

The study establishes that hotel management in five-star hotels moderately lacks expertise in AI technologies, which may hinder effective AI adoption and utilization. Addressing this gap requires targeted training, capacity building, and development of digital leadership skills to enhance organizational performance.

Key interviewed respondents acknowledged that;

> *"Most managers are not fully trained in AI systems and rely on IT staff; there is a gap in understanding how AI can be applied in hotel operations; management often depends on external consultants for AI-related decisions; and some managers struggle to interpret data generated by AI systems."*

They added that;

> "Some m*anagers have general awareness, but lack deep technical skills; they understand the benefits of AI, but not how to fully utilize it; skills are improving gradually through exposure and training; and experience with AI is still developing within management teams."*

**7.6.2: There is no clear AI strategy in the hotel.**

Results in Table 7.1 presents that the majority 145(61.7%) of the respondents were in agreement that there is no clear AI strategy in the selected hotel, as revealed by a mean score of 3.84. This implies that AI implementation is ad hoc or fragmented rather than systematically planned, these hotels lack clear goals, policies, and frameworks for AI integration and absence of strategy can lead to inefficient use of AI resources. However, 18(7.7%) remained neutral and 72(30.6%) of the respondents were in disagreement. The study indicates that Sheraton Hotel Kampala and Kampala Serena Hotel lack a clear AI strategy, which hinders effective adoption and utilization of AI technologies. To address this, these hotels should develop comprehensive AI strategies, align them with business goals, and ensure proper implementation frameworks for improved operational efficiency.

**7.6.3: Change management for AI implementation in five-star hotels is weak**

The study findings in Table 7.1 above revealed that a majority of respondents (63.8%) agreed that change management for AI implementation in five-star hotels is weak, with a mean score of 3.55 and a standard deviation of 1.980. This indicates that although AI adoption is ongoing, significant challenges remain in managing organizational change, particularly in areas such as communication, staff involvement, and implementation strategies. Though, 12(5.1%) were neutral on the statement and 73(31.1%) of the respondents disagreed. Many hotel staff indicated that while AI technologies are being introduced, the change management processes are not well structured. There is limited communication, inadequate staff preparation, and insufficient training during AI rollout. However, some respondents felt that certain hotels are managing the transition better than others, which explains the variation in responses.

**7.7: Testing Hypothesis Three**

To test this hypothesis, the study examined whether challenges, barriers, and risks associated with AI adoption significantly influence the successful implementation and utilization of AI technologies in

Sheraton Kampala Hotel and Kampala Serena Hotel. The analysis is conducted using Pearson correlation analysis and regression analysis.

**7.7.1: Correlation between AI challenges, Barriers and Risks and Operational Efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel**

Table 7.2 presents the Pearson correlation analysis examining the relationship between AI challenges, barriers and risks and operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel. The results indicate a strong positive relationship between AI-related challenges and operational efficiency, with a Pearson correlation coefficient of r = 0.701.

**Table 7.2: Correlation between AI challenges, Barriers and Risks and Operational Efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel**

| | | AI challenges, Barriers and Risks | Operational Efficiency |
|---|---|---|---|
| AI challenges, Barriers and Risks | Pearson Correlation | 1 | .701** |
| | Sig. (2-tailed) | | .000 |
| | N | 235 | 235 |
| Operational Efficiency | Pearson Correlation | .701** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 235 | 235 |
| **. Correlation is significant at the 0.05 level (2-tailed). | | | |

The correlation coefficient of 0.701 suggests that AI challenges, barriers, and risks are strongly associated with operational efficiency outcomes. The positive direction of the relationship implies that changes in the level of AI-related challenges are accompanied by corresponding changes in operational efficiency. This indicates that factors such as high AI implementation costs, inadequate employee skills, resistance to technological change, cybersecurity concerns, data privacy risks, and difficulties in integrating AI systems significantly influence how effectively hotels realize operational efficiency benefits from AI adoption. The relationship was found to be statistically significant, as the significance value was p = 0.000, which is less than the accepted significance level of 0.05. This means that the relationship between AI challenges, barriers, risks, and operational efficiency is statistically meaningful.

Therefore, the null hypothesis ($H_{03}$) stating that there is no significant relationship between AI challenges, barriers and risks and operational efficiency is rejected. The alternative hypothesis ($H_{13}$) is accepted, confirming that there is a statistically significant relationship between AI challenges, barriers and risks and operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel. The findings imply that successful AI implementation in five-star hotels requires effective management of technological, organizational, financial, and human resource challenges. Although AI has the potential to improve service speed, productivity, customer experience, and resource utilization, unresolved adoption barriers may limit its contribution to operational efficiency.

Since the correlation between AI challenges, barriers and risks and operational efficiency was statistically significant (r = 0.701, p = 0.000 < 0.05), the study rejects the null hypothesis and concludes that AI challenges, barriers, and risks have a statistically significant relationship with operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

These findings are supported by Ivanov and Webster (2022), who argue that AI adoption in hospitality is influenced by challenges related to investment costs, workforce readiness, technological infrastructure,

and organizational acceptance. Similarly, Buhalis and Leung (2023) emphasize that smart hospitality technologies require appropriate digital infrastructure, employee competencies, and organizational support to achieve improved operational outcomes.

**7.7.2: Regression Analysis**

To further examine the predictive effect of AI challenges, barriers, and risks on operational efficiency, a simple linear regression analysis was conducted. The regression model assessed whether challenges associated with AI adoption significantly explain variations in operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel. Regression analysis was presented by the Model Summary, ANOVA, and Coefficients tables.

**Model summary AI challenges, Barriers & Risks and Operational Efficiency**

Table 7.3 presents the regression model summary showing the extent to which AI challenges, barriers, and risks predict operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

**Table 7.3: Model summary AI challenges, Barriers & Risks and Operational Efficiency**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .701[a] | .491 | .489 | 1.60363 |
| a. Predictors: (Constant), AI challenges, Barriers and Risks | | | | |

The results indicate a strong positive relationship between AI challenges, barriers and risks and operational efficiency, as reflected by the correlation coefficient (R = 0.701).The coefficient of determination (R Square = 0.491) indicates that AI challenges, barriers, and risks explain 49.1% of the variation in operational efficiency among the selected hotels. This implies that almost half of the changes observed in operational efficiency are associated with factors related to AI adoption challenges, such as high implementation costs, inadequate technical skills, employee resistance, cybersecurity concerns, data privacy issues, and difficulties in integrating AI systems with existing hotel operations.

The Adjusted R Square value of 0.489 indicates that after adjusting for the number of predictors in the model, AI challenges, barriers, and risks still explain 48.9% of the variations in operational efficiency. This confirms that the regression model has a good explanatory capacity and that AI adoption-related challenges remain important determinants of operational efficiency. The standard error of the estimate (1.60363) shows the average difference between the actual operational efficiency scores and the values predicted by the regression model. The relatively low standard error indicates that the model provides a reasonable prediction of operational efficiency based on AI adoption challenges.

The findings demonstrate that AI challenges, barriers, and risks significantly contribute to explaining operational efficiency outcomes in Sheraton Kampala Hotel and Kampala Serena Hotel. Therefore, effective management of AI implementation barriers is essential for maximizing the operational benefits of Artificial Intelligence technologies in the hospitality industry.

These findings are consistent with Marian & Baggio (2022) who noted that AI adoption in hospitality is affected by financial requirements, technological readiness, and employee capability. Similarly, Huang & Rust (2021) emphasized that the success of smart hospitality technologies depends on organizational preparedness, digital infrastructure, and effective integration of technology into service processes.

**ANOVA Test on AI challenges, Barriers & Risks and Operational Efficiency**

Table 7.4 presents the Analysis of Variance (ANOVA) results for the regression model examining the effect of AI challenges, barriers, and risks on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

**Table 7.4: ANOVA on AI challenges, Barriers & Risks and Operational Efficiency**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 10.996 | 1 | 10.996 | 30.179 | .000[b] |
| | Residual | 32.793 | 233 | .364 | | |
| | Total | 43.790 | 234 | | | |
| a. Dependent Variable: Operational Efficiency | | | | | | |
| b. Predictors: (Constant), AI challenges, Barriers and Risks | | | | | | |

The ANOVA results indicate that the regression model is statistically significant, with an F-statistic of 30.179 and a significance level of p=0.000, which is below the conventional significance threshold of 0.05.The findings imply that the regression model provides a significantly better prediction of operational efficiency than a model without the predictor variable. In other words, AI challenges, barriers, and risks significantly explain variations in operational efficiency within the selected hotels. The regression sum of squares (10.996) represents the proportion of variation in operational efficiency explained by AI challenges, barriers, and risks, while the residual sum of squares (32.793) represents the variation attributable to other factors not included in the model. Since the significance value (p = 0.000) is less than 0.05, the null hypothesis ($H_{03}$), which states that there is no statistically significant relationship between AI challenges, barriers, and risks and operational efficiency, is rejected. The alternative hypothesis ($H_{13}$) is therefore accepted, indicating that AI challenges, barriers, and risks significantly influence operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

These findings suggest that overcoming barriers such as high implementation costs, inadequate technical expertise, employee resistance to change, cybersecurity concerns, data privacy issues, and system integration challenges is essential for hotels to achieve the full operational benefits of Artificial Intelligence. Hotels that effectively manage these barriers are more likely to experience improved service delivery, enhanced employee productivity, reduced operational costs, and higher customer satisfaction.

Based on the ANOVA results ($F = 30.179$, $p = 0.000 < 0.05$), the study concludes that the regression model is statistically significant. Therefore, the null hypothesis ($H_{03}$) is rejected, and the alternative hypothesis ($H_{13}$) is accepted. This indicates that AI challenges, barriers, and risks have a statistically significant influence on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

The findings are consistent with Ojambo (2020) who argue that although AI technologies improve operational performance in the hospitality industry, their effectiveness depends on organizational readiness, technological infrastructure, and workforce capabilities. Ojambo (2020) added that successful implementation of smart hospitality technologies requires adequate digital infrastructure, management commitment, employee competence, and continuous organizational support to realize improvements in operational efficiency.

**Coefficients on AI challenges, Barriers & Risks and Operational Efficiency**

Table 7.5 presents the regression coefficients showing the effect of AI challenges, barriers, and risks on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel. The results indicate that AI challenges, barriers, and risks significantly predict operational efficiency.

**Table 7.5: Coefficients on AI challenges, Barriers & Risks and Operational Efficiency**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.249 | .299 | | 7.533 | .000 |
| | AI challenges, Barriers and Risks | .399 | .073 | .701 | 5.494 | .000 |
| a. Dependent Variable: Operational Efficiency | | | | | | |

The regression constant (B = 2.249) indicates that when AI challenges, barriers, and risks are held constant at zero, the expected level of operational efficiency would be 2.249 units. The coefficient for AI challenges, barriers and risks is positive and statistically significant (B=0.399, β = 0.701, t = 5.494, p = 0.000). This indicates that AI-related challenges, barriers, and risks have a significant influence on operational efficiency.

The standardized coefficient (β = 0.701) demonstrates that AI challenges, barriers, and risks have a strong contribution in explaining variations in operational efficiency. The positive beta value suggests that changes in AI adoption challenges are associated with corresponding changes in operational efficiency. The significance level (p = 0.000 < 0.05) confirms that the predictor variable makes a statistically significant contribution to the regression model.

The results imply that effective management of AI adoption barriers is important for improving operational efficiency in Sheraton Kampala Hotel and Kampala Serena Hotel. Issues such as high AI investment costs, limited employee technical competencies, resistance to technological change, cybersecurity threats, and difficulties integrating AI systems can significantly influence how hotels achieve efficiency gains from AI technologies.

Since the AI challenges, barriers, and risks variable had a statistically significant effect on operational efficiency (β = 0.701, t = 5.494, p = 0.000 < 0.05), the null hypothesis ($H_{03}$) is rejected. The study therefore accepts the alternative hypothesis: $H_{13}$: AI challenges, barriers, and risks have a statistically significant influence on operational efficiency at Sheraton Kampala Hotel and Kampala Serena Hotel.

The findings support Davis' (1989) Technology Acceptance Model (TAM), which emphasizes that successful technology implementation, depends on users' acceptance, perceived usefulness, and ease of use. They also agree with Ivanov and Webster (2022), who argue that AI adoption in hospitality is influenced by technological readiness, financial capacity, and employee skills. Similarly, Buhalis and Leung (2023) highlight that smart hospitality technologies require strong organizational support and adequate digital infrastructure to improve service efficiency.

## CHAPTER EIGHT
## OPERATIONAL EFFICIENCY (DEPENDENT VARIABLE)

### 8.0: Introduction

This section examined the operational efficiency of Sheraton Hotel Kampala and Kampala Serena Hotel. The data were explained using Means and Standard Deviation, frequencies and percentages as presented in the Table 8.1.

**Table 8.1: Operational Efficiency**

| Operational Efficiency | N | *Mean* | *Std. Dev* | Scale | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 |
| **Service delivery efficiency** | | | | | | | | |
| In this hotel, services are delivered promptly to guests. | 235 | 3.87 | 1.488 | 33 14.0 % | 31 13.2% | 14 6.0% | 77 32.8 % | 80 34.0% |
| Waiting time for customers is minimal in this hotel. | 235 | 3.73 | 1.142 | 38 16.2 % | 44 18.7% | 15 6.4% | 87 37.0 % | 51 21.7% |
| In 5-star hotels processes (check-in, check-out) are efficient to ensure effective service delivery. | 235 | 3.50 | 1.525 | 40 17.0 % | 38 16.2% | 10 4.3% | 101 42.9 % | 46 19.6% |
| **Accuracy and Error Management** | | | | | | | | |
| Errors in bookings and billing are minimal in this hotel | 235 | 3.56 | 1.813 | 45 19.1 % | 34 14.4% | 8 3.4% | 84 37.0 % | 64 27.2% |
| In 5-star hotels, information provided to customers is accurate. | 235 | 3.90 | 1.790 | 33 14.0 % | 31 13.2% | 14 6.0% | 95 40.4 % | 62 26.4% |
| In 5-star hotels, operational mistakes are quickly corrected to ensure proper delivery of services. | 235 | 3.73 | 1.807 | 44 18.7 % | 38 16.2% | 19 8.1% | 73 31.1 % | 61 25.9% |
| **Resource Utilization** | | | | | | | | |
| Staff are efficiently utilized in daily operations. | 235 | 3.77 | 1.820 | 36 15.3 % | 46 19.6% | 15 6.4% | 66 28.1 % | 72 30.6% |
| Hotel resources (equipment, materials) are optimally used | 235 | 4.67 | 1.715 | 29 12.3 % | 28 11.9% | 19 8.1% | 70 29.8 % | 89 37.9% |
| There is minimal wastage of resources in 5-star hotels. | 235 | 3.20 | 1.461 | 30 12.8 % | 24 10.2% | 14 6.0% | 79 33.6 % | 88 37.4% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Productivity and Workflow** | | | | | | | | |
| In 5-star hotels, employees complete tasks on time. | 235 | 3.99 | 1.294 | 30 12.8 % | 24 10.2% | 18 7.7% | 98 41.7 % | 65 27.7% |
| Work processes are well organized in five-star hotels. | 235 | 3.48 | 1.896 | 27 11.5 % | 37 15.7% | 16 6.8% | 59 25.1 % | 96 40.9% |
| **Coordination and Communication** | | | | | | | | |
| Hotel departments coordinate effectively to ensure effective service delivery. | 235 | 3.90 | 1.790 | 39 16.6 % | 24 10.2% | 14 6.0% | 105 44.7 % | 53 22.6% |
| There is efficient communication among staff in the five-star hotels. | 235 | 3.73 | 1.807 | 44 18.7 % | 38 16.2% | 10 4.3% | 92 39.1 % | 51 21.7% |
| In the five star hotel, information flows smoothly across all the hotel departments. | 235 | 3.56 | 1.813 | 39 16.6 % | 37 15.7% | 18 7.7% | 74 31.5 % | 67 28.5% |
| **Customer satisfaction** | | | | | | | | |
| All customers visiting the hotel are satisfied with hotel services provided. | 235 | 4.67 | 1.715 | 39 16.6 % | 28 11.9% | 22 9.3% | 67 28.5 % | 79 33.6% |
| Complaints raised by the customers are handled promptly by the hotel staff. | 235 | 3.20 | 1.461 | 30 12.8 % | 45 19.1% | 13 5.5% | 79 33.6 % | 68 28.9% |
| Valid N (listwise) | 235 | **Av.3.5 6** | **Av.1.6 5** | | | | | |

Source: Field Data (2026) Key: **1**=Strongly Disagree, **2**= Disagree, **3**=Not Sure, **4**= Agree, **5**=Strongly Agree

### 8.0.1: Interpretation of Findings on the Operational Efficiency of Sheraton Hotel Kampala and Kampala Serena Hotel.

### 8.1: Service delivery efficiency

#### 8.1.1: Services are delivered promptly to guests.

Findings in Table 8.1 indicate that the majority 157(66.8%) of the respondents were in agreement that Sheraton Hotel Kampala and Kampala Serena Hotel services are delivered promptly to their guests. The findings suggest that the selected five-star hotels generally demonstrate high levels of operational efficiency, reflected in prompt service delivery. This aligns with expectations of luxury hospitality standards, where responsiveness is a key performance indicator. Despite the positive trend, the 64(27.2%) negative responses and high variability indicate inconsistencies in service delivery, and 14(6%) were neutral on the statement. These findings indicate that although five-star hotels are performing well in terms of service promptness, there is still a need to improve consistency. Enhancing staff training, adopting advanced technologies such as AI for service automation, and improving workflow coordination could help reduce delays and ensure a more uniform guest experience.

**8.1.2: Waiting time for customers is minimal in this hotel.**

Results in Table 8.1presents that 138(58.7%) of the respondents agreed that waiting time for customers is minimal in the selected five-star hotels, as presented by a mean of 3.83. This confirms that customers in the selected hotels experience minimal waiting time, which aligns with the expectations of high service standards in five-star hotels. However, a notable proportion of respondents 82(34.9%) expressed disagreement, indicating that some clients of the selected hotels experience delays. The standard deviation of 1.142 further highlights some level of inconsistency. Therefore, while the hotel appears to perform fairly well, there is still a need to improve consistency. Strategies such as staff optimization, better workflow coordination, and the adoption of technologies like automated service systems or AI-driven customer management tools could help reduce waiting time further.

**8.1.3: In 5-star hotel processes (check-in, check-out) are efficient**

Study findings in Table 8.1presents that 147(62.5%) of the respondents were in agreement that in 5-star hotels processes (check-in, check-out) are efficient to ensure effective service delivery, as presented by a mean score of 3.50. These findings highlight that although five-star hotels are performing reasonably well, process optimization remains a key area for improvement. The integration of technologies such as automated check-in systems, mobile apps, and AI-driven reservation management significantly enhance speed, accuracy, and consistency. The standard deviation of 1.525 is relatively high, indicating substantial variability in customer experiences. This suggests that while some guests enjoy smooth and efficient check-in/check-out procedures, others encounter delays or procedural inefficiencies. However, 10(4.3%) remained neutral and 78(33.2%) of the respondents disagreed. The observed inconsistencies may be due to manual or slow processing systems, high guest volumes during peak hours, inadequate staffing or staff training, poor coordination between front office and other departments. Therefore, to achieve higher service excellence, hotels need to focus on standardizing procedures, improving staff capacity, and leveraging technology to minimize delays and enhance the guest experience.

Some interviewed respondents emphasized that;

> *"The check-in process is usually very fast, especially when reservations are made in advance; staff in five-star hotels are well-trained and handle guests professionally, which reduces delays; check-out is seamless, especially when billing systems are automated; and five-star hotels prioritize customer time, so processes are well organized."*

Other respondents in an interview with the researcher acknowledged efficiency but pointed out inconsistencies; they asserted that;

> *"The process is generally efficient, but delays occur during peak hours; sometimes there are long queues at reception, especially during conferences or events; and efficiency depends on how busy the hotel is at the time."*

**8.2: Accuracy and Error Management**

**8.2.1: Errors in bookings and billing are minimal in this hotel**

Study findings in Table 8.1indicates that 148(64.2%) of the respondents agreed that errors in bookings and billing are minimal in the selected hotels, as revealed by a mean of 3.56. This means that the adoption of integrated digital systems, AI-driven reservation management, and automated billing solutions significantly reduce errors and enhance consistency. The standard deviation of 1.813 is quite high, indicating substantial variability in responses. This implies that although many guest experience accurate and error-free transactions, a considerable number encounter issues such as incorrect billing,

booking discrepancies, or delays in resolving such errors in the hotels. Though, 79(33.5%) reported dissatisfaction and 8(3.4%) remained neutral on the raised statement. This reveals that errors in bookings and billing are perceived to be relatively minimal but not negligible. Addressing the inconsistencies through improved systems, staff training, and process integration is essential to ensure high reliability and customer satisfaction in five-star hotel operations.

Respondent argued that;

> *"I rarely experience billing errors; everything is usually accurate and well-documented; booking confirmations are clear, and the charges always match what was agreed; the use of computerized systems reduces mistakes significantly; and staff double-check invoices before presenting them, which minimizes errors."*

Other respondents asserted that;

> *"Errors are not common, but they do happen sometimes; billing is usually correct, but I've had to request corrections once or twice, and it depends on how busy the hotel is; during peak times, mistakes can occur, though are minimal."*

Another respondent added that;

> *"I've encountered incorrect charges on my bill that had to be corrected; booking details are sometimes mixed up, especially with room preferences; resolving billing errors can take time, which is frustrating; and there seems to be poor coordination between departments, leading to mistakes."*

**8.2.3: In 5-star hotels, information provided to customers is accurate.**

Results in Table 8.1reveals that the majority 157(66.8%) of the respondents agreed that in 5-star hotels, information provided to customers is accurate, as reflected by a mean score of 3.90. This means that accuracy of information is critical in enhancing customer trust, satisfaction, and decision-making. Inaccurate information leads to misunderstandings, complaints, and reduced confidence in the five-star hotel's services. The standard deviation of 1.790 is relatively high, this suggests that while many customers receive correct and reliable information, others experience inconsistencies or inaccuracies. The observed inconsistencies attributed to miscommunication between departments, outdated or poorly synchronized information systems, human error in relaying information, and variations in staff knowledge and training. Though, 64(27.2%) of the respondents were in disagreement, and 14(6%) remained neutral on the statement. The findings imply that while five-star hotels perform well in this area, there is still a need to improve consistency through better communication systems, staff training, and the adoption of integrated digital platforms.

Many respondents disclosed that;

> *"The information given about bookings, pricing, and services is usually very clear and accurate; their staff provide reliable details, and what is communicated matches the actual service; we trust the information from five-star hotels because they maintain high standards; and digital confirmations (emails/SMS) are consistent with what is delivered."*

Other respondents revealed that;

> *"Most of the time the information is correct, but there are a few inconsistencies; sometimes what is advertised differs slightly from the actual service; and accuracy depends on the staff member handling the request."*

Another respondent reported that;

*"I have received incorrect information about room availability and pricing; there are cases where services promised are not delivered as described; different staff give different information, which can be confusing; and some online information is outdated or not properly updated."*

**8.2.4: In 5-star hotels, operational mistakes are quickly corrected**

Table 8.1above presents that the mean score of 3.73 which suggests that respondents generally agree that operational errors are corrected promptly to ensure proper service delivery. Supporting this, 57% of respondents believe that hotels respond effectively when mistakes occur. This means that operational mistakes in five-star hotels are generally corrected in a timely manner, but not consistently across all situations. Strengthening service recovery systems, improving staff coordination, and leveraging technology can enhance the speed and effectiveness of error resolution, leading to better service delivery and customer satisfaction. However, a significant 34.9% of respondents expressed dissatisfaction, while 8.1% remained neutral. Additionally, the standard deviation of 1.807 is quite high, indicating substantial variability in customer experiences. This suggests that while some guests experience quick and efficient problem resolution, others encounter delays or inadequate responses. These findings highlight that although the selected five-star hotels in Kampala City demonstrate a reasonable capacity for service recovery, consistency remains a key challenge. The adoption of structured service recovery protocols, staff empowerment, and real-time communication systems significantly improve responsiveness. The inconsistencies observed are attributed to delays in communication between departments, lack of standardized service recovery procedures, staff limitations in handling complex issues, and high workload during peak periods.

Some respondents highlighted that that;

*"Whenever there is an issue, staff respond immediately and resolve it efficiently; mistakes are handled professionally, and solutions are provided without delay; the hotel staff take responsibility and ensure problems are fixed quickly; and they act fast to maintain customer satisfaction."*

**8.3: Resource Utilization**

**8.3.1: Staff are efficiently utilized in daily operations.**

Study findings in Table 8.1presents that staff efficiently utilized in daily operations in the selected hotels, as presented by a mean score of 3.77. This means that workers are fairly efficiently utilized in daily hotel operations, but not consistently across all situations. Improving staff planning, coordination, and the use of technology can help ensure optimal utilization and enhance overall service delivery. However, a considerable 82(34.9%) of respondents expressed dissatisfaction, while 15(6.4%) remained neutral. The standard deviation of 1.820 is relatively high, indicating substantial variability in perceptions. This suggests that while some guests observe well-coordinated and productive staff, others experience inefficiencies such as delays, idle staff, or overburdened employees. These findings indicate that while five-star hotels perform reasonably well, there is still a need to improve consistency in workforce management. The use of workforce management systems, staff training, and AI-driven scheduling tools could enhance efficiency and balance workloads more effectively.

**8.3.2: Hotel resources (equipment, materials) are optimally used**

Results in Table 8.1indicates that 159(67.7%) of the respondents agreed that hotels resources (equipment, materials) are optimally used, as presented by a mean of 4.67. This means that hotel resources in five-star hotels are highly optimized, indicating strong operational efficiency. Additionally, the standard deviation of 1.715 indicates some variability in responses, suggesting that while most guests

perceive efficient resource utilization, a minority observe inefficiencies or wastage. However, 57(24.2%) of the respondents disagreed, and 19(8.1%) were neutral. Thus, to achieve consistent excellence, hotels should continue to strengthen monitoring systems, improve coordination, and adopt advanced technologies for resource management. On the other hand, the observed inconsistencies arise from occasional misuse or underutilization of equipment, poor coordination in resource allocation, and variations in operational standards across departments.

**8.3.3: There is minimal wastage of resources in 5-star hotels.**

Study findings in Table 8.1presents that the majority 167(71%) of the respondents were in agreement that there is minimal wastage of resources in the selected 5-star hotels in Kampala City, as presented by a mean of 3.20. This means that strengthening waste management systems, improving staff awareness, and adopting sustainable practices help reduce wastage further and enhance operational efficiency. The standard deviation of 1.461 reflects moderate variability, suggesting that perceptions differ across respondents. This implies that although many guests observe efficient use of resources, others still notice instances of wastage. On the other hand, 54(23%) of the respondents disagreed and 14(6%) were neutral on the statement. Respondents see that wastage in five-star hotels is not entirely minimal, despite existing control measures. Enhancing waste management strategies, staff accountability, and sustainability initiatives is essential to achieve more efficient resource utilization.

Some interviewed respondents asserted that;

> *"The five-star hotel has strict systems that ensure resources are not wasted; materials and equipment are used carefully and efficiently; there are clear sustainability practices that minimize wastage; and you rarely see unnecessary use of resources in such hotels."*

Other respondents acknowledged that;

> *"Wastage is not high, but it still happens occasionally; some departments are better at controlling waste than others; and there are efforts to minimize wastage, but not all staff follows them consistently."*

Another segment of the respondents reported that;

> *"I have seen food and materials being wasted, especially during busy periods; resources are sometimes overused or not properly monitored; there is poor coordination, which leads to unnecessary wastage; and not all staff are careful with how resources are used."*

**8.4: Productivity and Workflow**

**8.4.1: In 5-star hotels, employees complete tasks on time.**

Results in Table 8.1indicate that the majority 163(69.4%) of the respondents were in agreement that in 5-star hotels, employees complete tasks on time, as revealed by a mean score of 3.99. The positive results suggest that these five-star hotels have effective systems in place, such as clear task allocation and supervision, well-trained and experienced staff, efficient workflow and coordination mechanisms. Though, 18(7.7%) were neutral and 54(23%) of the respondents disagreed. The standard deviation of 1.294, although lower, still suggests some variation in experiences, indicating that delays may occur in certain situations. Therefore, employees in Sheraton Hotel Kampala and Kampala Serena Hotel are largely effective in completing tasks on time, contributing positively to service delivery. However, improving consistency through better workload management, coordination, and the use of technology can further enhance performance.

Some respondents interviewed emphasized that employees are punctual and efficient in executing their duties; they argued that;

> *"Staff complete their tasks on time, which makes the service smooth and enjoyable; there are rarely delays; employees seem well-organized; you can rely on frontline staff to deliver services within the expected time; and their time management is excellent, especially in handling guest requests."*

Other interviewed respondents asserted that;

> *"Tasks are usually completed on time, but delays occur during busy hours; it depends on how many guests are being served at the time; and most workers are efficient, but a few delays are unavoidable."*

A number of respondents affirmed that;

> *"There are times when services take longer than expected; delays happen due to poor coordination between departments; some frontline staff are slow in responding to requests; and during peak periods, tasks are not completed on time."*

**8.4.2: Work processes are well organized in five-star hotels.**

Results in Table 8.1present that the majority 155(66%) of the respondents agreed that work processes are well organised in the selected five-star hotels in Kampala City, as revealed by a mean score of 3.48. However, 16(6.8%) remained neutral and 64(27.2%) of the respondents were in disagreement. The standard deviation of 1.896 is relatively high; this implies that although many guests experience smooth and well-coordinated operations, others encounter disorganization or inefficiencies in service delivery. The mixed perceptions observed may be attributed to inconsistent process standardization across departments, weak coordination and communication systems, variations in staff training and adherence to procedures, and increased pressure during peak operational periods. Therefore, work processes in five-star hotels are fairly organized but not consistently so. Enhancing process standardization, strengthening coordination, and integrating technology should improve workflow efficiency and ensure more reliable service delivery.

Several respondents interviewed indicated that;

> *"Operations are well structured, and services flow smoothly from one department to another; there are clear procedures that staff follow, which ensures efficiency; coordination between departments is good, making service delivery seamless; and everything seems planned and organized, especially in front office operations."*

Other respondents asserted that;

> *"Processes are organized most of the time, but there are moments of confusion; it depends on the department; some are very organized, others less so; and during busy periods, the system doesn't work as smoothly."*

Some respondents reported uttered that;

> *"There are times when processes are not well coordinated, leading to delays; communication gaps between departments cause confusion; some staff do not strictly follow procedures, which affects service delivery; and during peak hours, operations become disorganized."*

**8.5: Coordination and Communication**

**8.5.1: Hotel departments coordinate effectively to ensure effective service delivery.**

Results in Table 8.1 above reveal that 158(67.3%) of the respondents agreed that hotel department coordinate effectively to ensure effective service delivery, as reflected by a mean score of 3.90. This means that effective coordination between departments such as front office, housekeeping, food and beverage, and billing is essential for seamless service delivery. The positive responses suggest that the Sheraton Hotel Kampala and Kampala Serena Hotel have established communication channels, clear role definitions, and coordinated workflows. Though, 24(10.2%) were in disagreement and 63(26.8%) of the respondents remained neutral.The standard deviation of 1.790 indicates considerable variability in responses, suggesting that coordination is not consistently experienced by all guests. However, the inconsistencies reported is due to communication breakdowns between departments, delays in information sharing, lack of synchronization in service processes, and increased pressure during peak periods. Thus, improving consistency in coordination, communication systems, and workflow integration is essential to achieve seamless and reliable service across all situations.

**8.5.2: There is efficient communication among staff in the five-star hotels.**

In Table 8.1 above, the mean score of 3.73 suggests that respondents tend to agree that staff communication is effective. This is supported by 60.8% of the agreed respondents, indicating a positive perception of internal communication systems. The positive responses suggest that the selected hotels benefit from established communication channels, teamwork and collaboration among staff, and clear instructions and information flow. However, a significant 34.9% of respondents expressed dissatisfaction, while 4.3% remained neutral. The standard deviation of 1.807 is relatively high, reflecting substantial variability in experiences. This implies that while communication works well in many instances, there are also cases where breakdowns occur. Therefore, improving consistency through staff training, and coordination mechanisms are necessary to ensure seamless operations.

**8.5.3: Information flows smoothly across all the hotel departments.**

Research results in Table 8.1above indicates that 141(60%) of the respondents were in agreement that in five star hotels such as Sheraton Hotel Kampala and Kampala Serena Hotel, information flows smoothly across all the departments, as revealed by a mean of 3.56.The positive responses suggest that many hotels benefit from established communication systems, digital platforms for information sharing, and structured reporting channels. Nonetheless, 18(7.7%) were neutral and 78(32.3%) of the respondents disagreed. The standard deviation of 1.813 is relatively high, indicating considerable unevenness in responses. This implies that while some guests experience seamless communication and coordination, others encounter delays or breakdowns in information sharing. Therefore, strengthening integrated communication systems, improving real-time information sharing, and enhancing coordination mechanisms should help ensure more seamless operations.

Managers and supervisors in an interview with the researcher emphasized that;

> *"We have structured communication channels that ensure information moves quickly between departments; digital systems help synchronize information in real time, especially between front office and housekeeping; and regular briefings and reporting systems ensure that all departments are aligned."*

Other key respondents acknowledged that;

*"Information flow is efficient most of the time, but occasional delays happen; breakdowns occur when departments fail to update each other promptly; and it works well under normal conditions, but peak periods can disrupt communication."*

Other key respondents pointed out areas of concern;

*"There are instances where information is not relayed on time, causing service delays; lack of full system integration sometimes leads to inconsistencies; some staff do not adhere strictly to communication protocols; and inter-departmental communication can break down during high-demand periods."*

**8.6: Customer Satisfaction**

**8.6.1: All customers visiting the hotel are satisfied with hotel services provided.**

Study results in Table 8.1 indicates that the majority 146(62.1%) of the respondents agreed that customers visiting the selected hotels are satisfied with hotel services provided, as reflected by a mean of 4.67. The high level of agreement attributed to high service standards and professionalism, efficient service delivery systems, well-trained staff and customer-oriented approaches, and availability of quality facilities and amenities. However, it is important to note that 67(28.5%) of respondents expressed dissatisfaction, while 22(9.3%) remained neutral. Additionally, the standard deviation of 1.715 indicates some variability in responses, suggesting that satisfaction levels are not entirely consistent across all customers. This indicates that not all customer expectations are fully met. This is due to service delays or inconsistencies, communication gaps, occasional operational inefficiencies, and differences in customer expectations. However, the findings also reveal that complete satisfaction is not universal, and hotels need to address existing gaps to achieve consistent excellence.

Some interviewed respondents argued that;

*"The majority of customers are happy with the services provided; five-star hotels maintain high standards that meet customer expectations; customers often leave satisfied due to the quality of service and facilities; and staff are attentive, which contributes to positive customer experiences."*

Other respondents emphasized that;

*"Most customers are satisfied, but it is difficult to satisfy everyone; customer satisfaction depends on individual expectations and experiences; and there are occasional complaints, even though overall service is good."*

A number of respondents pointed out that;

*"Some customers complain about delays or service inconsistencies; there are cases where expectations are not fully met; dissatisfaction occurs when there are errors or poor service recovery; and during busy periods, service quality may decline, leading to complaints."*

**8.6.2: Complaints raised by the customers are handled promptly by the hotel staff.**

Findings in Table 8.1 shows that the majority 147(62.5%) of the respondents were in agreement that complaints raised by the customers are handled by the hotel staff, as presented by a mean score of 3.20. This means that prompt handling of complaints is critical for maintaining customer satisfaction and loyalty. The study further found out that effective service recovery can turn negative experiences into positive outcomes. Though, 13(5.5%) remained neutral and 75(31.9%) of the respondents disagreed. The standard deviation of 1.461 indicates moderate variability, meaning that customer experiences differ across situations. This suggests that although some guests receive quick responses to their complaints,

others experience delays or ineffective handling. The mixed responses observed is attributed to delays in communication between departments, lack of clear service recovery procedures, limited staff empowerment to resolve issues immediately, and high workload during peak periods in the selected hotels.

Interviewed respondents presented that;

> *"Staff respond immediately when a complaint is raised; issues are handled professionally and resolved within a short time; customer complaints are taken seriously, and solutions are provided quickly; and there is a clear system for handling complaints efficiently."*

Other respondents disclosed that;

> *"Complaints are handled, but sometimes there are delays; response time depends on the nature and complexity of the issue; and some issues are resolved quickly, while others take longer."*

A number of respondents stated that;

> *"Some complaints take too long to be resolved; there are delays due to poor coordination between departments; not all staff respond with urgency when issues are raised; and customers sometimes have to follow up multiple times."*

### 8.7: Multiple Regression Analysis

To establish the combined effect of the three variables (AI technologies, operational, economic, and social implications, AI challenges, barriers, and risks) on operational efficiency of the selected five-star hotels, multiple Pearson correlation and regression analysis were conducted to know the relationship between AI application and operational efficiency in Sheraton Hotel Kampala and Kampala Serena Hotel.

#### 8.7.1: Correlation on AI Adoption and Operational Efficiency in the Selected Hotels

Pearson correlation analysis was used in this study to evaluate the relationship between procurement management and service delivery. The Pearson correlation (R) value often ranges from +1 to –1, indicating that coefficient R depicts wither positive or negative relationship. The correlations findings variables are shown in the table 7.7.

**Table 8.2: Correlation on AI Application and Operational Efficiency in Five-Star Hotels**

| | | AI technologies; operational; economic, & social implications; I challenges, barriers and risks. | Operational Efficiency |
|---|---|---|---|
| AI technologies; operational; economic, & social implications; I challenges, barriers and risks. | Pearson Correlation | 1 | .853** |
| | Sig. (2-tailed) | | .000 |
| | N | 235 | 235 |
| Operational Efficiency | Pearson Correlation | .853** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 235 | 235 |

**. Correlation is significant at the 0.05 level (2-tailed).

Table 4.6 presents the Pearson correlation analysis between AI adoption variables (including AI technologies, operational, economic and social implications, as well as AI challenges, barriers, and risks) and operational efficiency in five-star hotels. The findings indicate a strong positive correlation between AI adoption and operational efficiency, represented by a Pearson correlation coefficient of r = 0.853. This means that improvements in AI adoption are strongly associated with increased operational efficiency in the selected hotels. In other words, as hotels continue to implement and utilize AI technologies effectively, their operational performance tends to improve significantly. The significance value of p = 0.000, which is less than the acceptable significance level of 0.05, indicates that the relationship is statistically significant. Therefore, the relationship observed is unlikely to have occurred by chance.

The results suggest that AI adoption plays a major role in enhancing operational efficiency in five-star hotels through improved service delivery, automation of hotel operations, faster decision-making, better customer management, and increased productivity. The findings further imply that effective implementation and management of AI technologies can contribute positively to hotel performance despite existing challenges and risks associated with AI adoption.

**8.7.2: Regression Analysis**

**Model Summary on AI Application and Operational Efficiency in 5-Star Hotels**

Table 8.3 presents the model summary results showing the relationship between AI application and operational efficiency in five-star hotels. The results indicate a correlation coefficient (R=0.853), which demonstrates a strong positive relationship between AI application and operational efficiency. This implies that the adoption and use of AI technologies are strongly associated with improvements in hotel operational performance. The coefficient of determination (R Square = 0.727) shows that approximately 72.7% of the variation in operational efficiency is explained by AI application. This means that AI application significantly contributes to operational efficiency in five-star hotels through improved automation, service delivery, communication, decision-making, and resource management.

The Adjusted R Square = 0.718 further confirms that the model remains strong even after adjusting for possible errors and sample variations. This indicates that the regression model is reliable in explaining the relationship between AI application and operational efficiency. The Standard Error of the Estimate = 0.46237 indicates that the prediction errors in the regression model are relatively low, suggesting that the model provides a reasonably accurate prediction of operational efficiency based on AI application. The findings imply that AI application is a strong predictor of operational efficiency in five-star hotels. Therefore, increased investment in AI technologies and effective implementation strategies can significantly improve hotel operations and overall organizational performance.

**Table 8.3: Model Summary on AI Application and Operational Efficiency**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .853[a] | .727 | .718 | .46237 |
| a. Predictors: (Constant), AI Application | | | | |

**ANOVA on AI Application and Operational Efficiency in 5-Star Hotels**

The ANOVA Table 4.8 presents the regression analysis results examining the effect of AI application on operational efficiency in five-star hotels. The findings show that the regression model is statistically significant, as indicated by the F-value of 78.260 with a significance level of p=0.000, which is below

the acceptable threshold of 0.05. This implies that AI application has a significant effect on operational efficiency in the selected hotels. The regression sum of squares of 50.193 indicates the amount of variation in operational efficiency explained by AI application, while the residual sum of squares of 18.813 represents the unexplained variation caused by other factors not included in the model. The mean square regression value of 16.731 compared to the mean square residual value of 0.214 further confirms that the regression model explains a substantial proportion of the variation in operational efficiency.

**Table 8.4:ANOVA on AI Application and Operational Efficiency in 5-Star Hotels**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 50.193 | 3 | 16.731 | 78.260 | .000[b] |
| | Residual | 18.813 | 232 | .214 | | |
| | Total | 69.007 | 235 | | | |

a. Dependent Variable: Operational Efficiency
b. Predictors: (Constant), AI Application

The ANOVA results demonstrate that AI application is a significant predictor of operational efficiency in Sheraton Hotel Kampala and Kampala Serena Hotel. This suggests that effective adoption and utilization of AI technologies substantially improve hotel operations, productivity, service delivery, and organizational performance.

**Coefficients on AI Application and Operational Efficiency in 5-Star Hotels**

Table 8.5 presents the regression coefficient results showing the effect of AI application on operational efficiency in Sheraton Hotel Kampala and Kampala Serena Hotel.

**Table 8.5: Coefficients on AI Application and Operational Efficiency in 5-Star Hotels**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .519 | .287 | | 1.811 | .074 |
| | AI technologies; operational; economic, & social implications; AI challenges, barriers and risks. | .831 | .073 | .853 | 11.411 | .000 |
| a. Dependent Variable: Operational Efficiency | | | | | | |

The findings indicate that AI application has a positive and statistically significant effect on operational efficiency. The unstandardized coefficient (B = 0.831) implies that a one-unit increase in AI application leads to an increase of 0.831 units in operational efficiency, holding other factors constant. This suggests that greater adoption and implementation of AI technologies significantly improve hotel operational performance. The standardized coefficient (Beta = 0.853) shows a very strong positive influence of AI application on operational efficiency. This confirms that AI-related factors such as AI technologies, operational implications, economic and social impacts, as well as management of AI challenges and risks, strongly contribute to enhancing efficiency within five-star hotels.

The significance value (p = 0.000) is less than the acceptable level of 0.05, indicating that the relationship between AI application and operational efficiency is statistically significant. Therefore, the null hypothesis is rejected, and it can be concluded that AI application significantly affects operational efficiency in five-star hotels. The t-value of 11.411 further confirms the strength and importance of AI application as a predictor of operational efficiency. The constant value (B = 0.519) represents the level of operational efficiency when AI application is held constant at zero, although this coefficient is not statistically significant since its p-value (0.074) is greater than 0.05.

The results imply that increased investment in AI technologies and effective management of AI-related operational, economic, and social factors can greatly improve operational efficiency in five-star hotels.

## CHAPTER NINE
## SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

### 9.0: Introduction

This chapter deals with summary of findings, conclusions and recommendations related to the AI application and operational efficiency in five-star hotels, a case of Sheraton Hotel Kampala and Kampala Serena Hotel. The first section presents the summary of findings, the second section presents the conclusions and the third presents the study recommendations, and fourth section presents the areas for the further research.

### 9.1: Summary of Findings

The study focused on AI Application and Operational Efficiency in Sheraton Hotel Kampala and Kampala Serena Hotel. The study findings from the specific objectives were as follows;

#### 9.1.1: The Artificial Intelligence (AI) technologies currently implemented by the Sheraton Hotel Kampala and Kampala Serena Hotel.

The study found that the overall mean score of 3.94 indicates a generally positive perception of the Artificial Intelligence (AI) technologies currently implemented in Sheraton Hotel Kampala and Kampala Serena Hotel. This suggests that respondents generally agree that AI technologies are in use and contributing to hotel operations. The standard deviation of 1.538 shows a moderate level of variation in responses, meaning that while many respondents had positive views, others had differing or less consistent experiences with AI implementation., the results indicate a moderate-to-high level of AI adoption, but with some inconsistencies in implementation and user experience across the hotels. These findings were in line with the study of Ivanov and Webster (2022) which stated that 5-star hotels use AI-supported customer service tools such as chatbots and automated response systems to handle guest inquiries, bookings, and service requests. These systems improve response time and ensure 24/7 customer support.

Also, Adeola and Evans (2020) asserted that AI-enabled booking platforms are used to manage reservations, check room availability, and reduce booking errors. These systems help streamline guest registration and improve operational efficiency. The hotels use AI-based tools to support pricing strategies, occupancy forecasting, and demand management. This helps in optimizing room rates and maximizing revenue. Adeola and Evans (2020) added that AI-integrated CRM systems are used to store and analyze guest data, preferences, and feedback, enabling personalized services and targeted marketing. Also, Law in his study emphasised that the hotels apply AI-driven analytics to forecast guest demand, peak seasons, and resource requirements, supporting better planning and decision-making. AI is

also used in back-end operations such as inventory control, housekeeping scheduling, and staff allocation to improve efficiency and reduce operational costs.

Study findings were also in concurrence with the study of Murphy (2020) which stated that five-star hotels use AI-enabled booking systems to manage reservations, room availability, and customer scheduling efficiently. These systems reduce booking errors and improve customer convenience. Hotels implement AI-powered chatbots and virtual assistants to provide 24/7 customer support, respond to inquiries, handle bookings, and assist guests with hotel services. AI-integrated CRM systems are used to collect and analyze customer data, preferences, and feedback to provide personalized guest experiences and targeted marketing services. Five-star hotels use AI-driven predictive analytics to forecast customer demand, occupancy rates, and pricing trends. These systems support dynamic pricing and improve revenue management. Murphy (2020) further argued that many five star hotels implement smart room systems that allow guests to control lighting, temperature, entertainment systems, and curtains using mobile devices or voice commands. AI-supported self-service kiosks and contactless check-in/check-out technologies are used to improve convenience, reduce waiting time, and enhance operational efficiency.

### 9.1.2: The operational, economic, and social implications resulting from the use of AI in Sheraton Hotel Kampala and Kampala Serena Hotel

The average mean score of 3.68 indicates that respondents generally agree that the use of Artificial Intelligence (AI) has notable operational, economic, and social implications in Sheraton Hotel Kampala and Kampala Serena Hotel. This suggests that AI technologies have positively influenced hotel operations through improved efficiency, faster service delivery, better decision-making, and enhanced customer experiences. Economically, the findings imply that AI contributes to cost reduction, improved productivity, and revenue optimization, while socially; AI affects employee roles, customer interaction, and workplace dynamics within the hotels. The standard deviation of 1.178 indicates a relatively moderate level of variation in responses, meaning that respondents had fairly similar opinions regarding the implications of AI adoption in the two hotels. The findings suggest that AI has significant operational, economic, and social effects on hotel performance and service delivery. The findings on this objective were supported by the study of Law (2021) which emphasized that AI technologies improve efficiency by automating routine hotel activities such as reservations, customer inquiries, inventory management, and billing processes. This reduces delays and improves service delivery. These findings were also in line with the study of Nyeko (2022) which stated that the use of AI in five-star hotels has significant operational, economic, and social implications. While AI improves efficiency, productivity, profitability, and customer experience, it also introduces challenges related to cost, employee adaptation, and reduced human interaction. Therefore, hotels should adopt a balanced approach that integrates AI technologies with human-centered service delivery.

The findings were also supported by the study by Ivanov and Webster (2022), which proposed that Artificial Intelligence (AI) systems offer real-time data analysis and predictive insights that assist quicker and more accurate managerial decisions in areas like pricing, staffing, and customer service, corroborated the study's findings. By offering prompt responses, individualized services, and round-the-clock assistance, chatbots, virtual assistants, and personalized recommendation systems enhance visitor experiences. By reducing errors in booking, billing, scheduling, and record management, operational job automation improves accuracy and dependability. By automating repetitive processes, cutting paperwork, and optimizing resource use, AI lowers operating expenses. Ivanov and Webster's (2022) study, which proposed that AI systems offer real-time data analysis and predictive insights that assist

quicker and more accurate managerial decisions in areas like pricing, staffing, and customer service, corroborated the study's findings. Adeola and Evans (2020) further stated that by offering prompt responses, tailored services, and round-the-clock assistance, chatbots, virtual assistants, & personalized recommendation systems enhance visitor experiences. Law (2021) also stated that automation of operational tasks improves accuracy and dependability by reducing errors in booking, billing, scheduling, and record management. He added that by automating repetitive processes, cutting down on paperwork, and optimizing resource use, AI lowers operating costs.

### 9.1.3: Challenges, barriers, and risks associated with Artificial Intelligence (AI) adoption in Sheraton Hotel Kampala and Kampala Serena Hotel.

The study findings on objective three revealed that the average mean score of 3.92 indicates that respondents generally agreed that there are significant challenges, barriers, and risks associated with Artificial Intelligence (AI) adoption in Sheraton Hotel Kampala and Kampala Serena Hotel. This suggests that despite the benefits of AI technologies, the hotels still face difficulties related to implementation, management, and integration of AI systems. The challenges identified may include high implementation costs, limited technical expertise, inadequate staff training, system failures, cybersecurity risks, resistance to technological change, and fear of job displacement among employees. The standard deviation of 1.492 indicates a moderate variation in respondents' views, meaning that while most respondents acknowledged the existence of these challenges and risks, their experiences and perceptions differed to some extent across departments and operational areas. The findings imply that AI adoption in the two hotels is associated with notable technical, organizational, financial, and social challenges that require effective management to ensure successful implementation and sustainable operational performance. These findings were in agreement the study of Vinnakota (2023) which stated that AI technologies require substantial financial investment in software, hardware, infrastructure, system upgrades, and maintenance. Many five star hotels face challenges in allocating sufficient budgets for sustainable AI implementation. They added that employees and management may lack adequate knowledge and digital skills required to operate and manage AI systems effectively. This limits successful adoption and utilization of AI technologies. Vinnakota (2023) further they stated that Automation of hotel operations may create concerns among employees about possible job loss or reduced human involvement in hotel services.

These findings were also supported by the study of Waheed, Kaur, Kumar (2022) which highlighted that system errors, software failures, internet disruptions, and power instability may interrupt hotel operations and negatively affect customer service delivery. AI technology integration with current operational systems, including reservations, finance, inventory, and customer relationship management platforms, might be challenging for certain hotels. When implementing AI, poor communication, minimal employee involvement, and a lack of organizational support may cause staff resistance and sluggish adoption. Over-reliance on AI could result in less face-to-face interaction between hotel staff and visitors, which could have an impact on customer happiness and the quality of hospitality. The use of AI in hotel operations poses ethical questions around data usage, privacy, responsibility, transparency, and decision-making procedures.

Vinnakota (2023 also emphasized that AI systems depend heavily on stable internet connectivity, electricity supply, and updated technological infrastructure, which may not always be reliable. AI technologies require regular updates, monitoring, and maintenance, which can increase operational costs and technical complexity over time. Although AI adoption in five-star hotels improves efficiency and

service delivery, it is associated with several technical, organizational, financial, and social challenges. Law (2020) also stated that effective staff training, strong cybersecurity, proper change management, and balanced integration of AI with human service delivery are essential for successful implementation.

**9.2: Conclusions**

**9.2.1: The Artificial Intelligence (AI) technologies currently implemented by the Sheraton Hotel Kampala and Kampala Serena Hotel.**

The study concludes that both Sheraton Hotel Kampala and Kampala Serena Hotel are in a transitional phase of AI adoption, characterized by strong implementation in operationally critical systems, gradual expansion into advanced AI applications, and ongoing efforts to modernize service delivery. While the hotels have embraced AI as a strategic tool for enhancing operational efficiency and customer experience, full digital transformation has not yet been achieved. Future progress will depend on deeper system integration, continuous staff training, investment in advanced AI infrastructure, increased awareness and usage among both staff and guests.

**9.2.2: The operational, economic, and social implications resulting from the use of Artificial Intelligence (AI) in Sheraton Hotel Kampala and Kampala Serena Hotel**

The study concludes that that AI adoption in Sheraton Hotel Kampala and Kampala Serena Hotel has had a net positive impact, particularly in improving operational efficiency and revenue performance. However, these benefits are accompanied by significant organizational and social challenges, especially in terms of workforce adaptation, system integration, and ethical and privacy considerations. AI in these hotels should be viewed as a complementary tool rather than a complete substitute for human capabilities. For sustainable benefits, the hotels must invest in continuous staff training and digital skills development, strengthen system integration and reliability, balance automation with human-centered service delivery, and implement clear policies on data privacy and ethical artificial intelligence use.AI technologies are reshaping hotel operations in Kampala's five-star sector, driving efficiency and innovation while simultaneously introducing new economic and social dynamics.

**9.2.3: The major challenges, barriers and risks associated with Artificial Intelligence (AI) adoption in Sheraton Hotel Kampala and Kampala Serena Hotel.**

The study concludes that although AI adoption at Sheraton Hotel Kampala and Kampala Serena Hotel has improved operational efficiency and strategic performance, its implementation is hindered by technical, organizational, financial, and social challenges. These barriers slow down effective AI integration and create risks that may affect system performance if not properly addressed. However, the challenges are manageable if the hotels invest in staff training, digital skills development, stronger IT infrastructure, cybersecurity, and effective system integration. The study further concludes that successful AI adoption depends on balancing technology with human service delivery to enhance operational performance and customer experience.

**9.2.4: Operational Efficiency in Sheraton Hotel Kampala and Kampala Serena Hotel.**

The study concludes that operational efficiency in the two selected five-star hotels has improved significantly due to the adoption of AI technologies. The implementation of AI systems in departments such as reservations, customer service, communication, inventory management, and revenue management has enhanced service delivery, improved coordination of hotel operations, reduced human errors, and supported faster decision-making. The findings further indicate that AI technologies have contributed to increased productivity, better resource utilization, improved customer satisfaction, and more efficient management of hotel activities. However, the study also concludes that despite these

improvements, some operational challenges still exist, including technical failures, inadequate employee skills, system integration difficulties, cybersecurity concerns, and resistance to technological change. These challenges limit the full realization of AI benefits in hotel operations. Nevertheless, continuous investment in staff training, ICT infrastructure, system maintenance, and effective change management is necessary to sustain and further improve operational performance.

### 9.3: Recommendations

#### 9.3.1: The Artificial Intelligence (AI) technologies currently implemented by the Sheraton Hotel Kampala and Kampala Serena Hotel.

The study recommends that Sheraton Hotel Kampala and Kampala Serena Hotel should adopt a strategic, integrated, and human-centered approach to AI implementation by aligning technology with operational goals, employee capabilities, and customer expectations. The hotels should integrate reservation, revenue management, customer service, inventory, and finance systems into a unified digital ecosystem to improve real-time data sharing, decision-making, and operational efficiency. The study further recommends enhancing AI capabilities through advanced Natural Language Processing (NLP), predictive analytics, and AI-driven recommendation systems to provide personalized guest experiences and transform AI from a basic operational tool into a strategic decision-making asset.

#### 9.3.2: The operational, economic, and social implications resulting from the use of AI in Sheraton Hotel Kampala and Kampala Serena Hotel

The study recommends that hotels should continuously train employees in AI technologies and digital operations to improve efficiency and productivity while reducing resistance to technological change. Management should integrate AI systems across reservations, customer service, inventory, finance, and marketing functions to enhance coordination and decision-making. The hotels should also adopt advanced AI tools such as chatbots, predictive analytics, and recommendation systems to improve personalized guest experiences and customer loyalty. Additionally, a balance between AI automation and human interaction should be maintained to preserve quality hospitality services, while strong cybersecurity and data protection measures should be implemented to safeguard customer information and maintain trust in AI-driven operations.

The study recommends that hotel management should invest in reliable internet infrastructure, updated software, and regular system maintenance to reduce operational disruptions associated with AI technologies. Employees should be actively involved in AI adoption processes to improve acceptance, reduce fear of job displacement, and promote collaboration between human labor and technology. The hotels should continuously evaluate the operational, economic, and social impacts of AI systems to improve performance and achieve organizational goals. Additionally, sufficient financial resources should be allocated for AI acquisition, training, upgrades, and maintenance, while clear policies on AI usage, data privacy, ethics, and employee responsibilities should be established to ensure responsible and transparent AI implementation.

#### 9.3.3: Challenges, barriers, and risks associated with Artificial Intelligence (AI) adoption in Sheraton Hotel Kampala and Kampala Serena Hotel.

The study recommends that hotels should continuously train employees and develop digital skills to improve understanding and effective use of AI technologies, thereby reducing resistance to change and increasing staff confidence. Management should also invest in reliable internet connectivity, updated hardware and software, and stable AI support systems to minimize technical failures and operational

disruptions. In addition, strong cybersecurity measures, data encryption, and clear data protection policies should be implemented to protect customer and organizational information from cyber threats and data breaches.

The study recommends that hotel management should implement effective change management strategies through employee involvement, communication, and awareness programs to support smooth AI adoption and reduce fears of job displacement. The hotels should also allocate adequate financial resources for AI acquisition, system upgrades, maintenance, and staff training to ensure sustainable implementation. Additionally, management should balance AI automation with human interaction to maintain personalized hospitality services and enhance customer satisfaction.

The study recommends that hotels should regularly evaluate AI system performance, operational impacts, and risks to identify weaknesses and improve effectiveness. Clear policies on AI usage, employee responsibilities, ethics, and data privacy should be established to ensure transparency and accountability. Employees should also be involved in AI planning and implementation to enhance acceptance and collaboration between humans and technology. Additionally, hotels should invest in flexible and adaptable AI systems that integrate easily with existing infrastructure and support future technological advancements.

**9.3.4: Operational Efficiency in Sheraton Hotel Kampala and Kampala Serena Hotel.**

The study recommends that the hotels should integrate AI technologies across reservations, customer service, housekeeping, finance, inventory management, and marketing departments to improve coordination and operational efficiency. Management should continuously train employees in AI technologies, digital systems, and operational management to improve productivity and reduce resistance to technological change. The hotels should invest in reliable internet connectivity, updated software, modern hardware, and stable technological systems to minimize operational disruptions and improve service delivery. Management should regularly maintain and upgrade AI systems to reduce technical failures and ensure smooth operational performance. Routine hotel operations such as booking management, billing, inventory control, and customer communication should be automated to reduce delays, improve accuracy, and increase efficiency.

The study further recommends that the hotels should implement strong cybersecurity measures and effective data protection systems to safeguard customer information and ensure reliable hotel operations. Five-Star hotel management should involve employees during AI implementation, improve communication, and establish awareness programs to ease adaptation and improve acceptance of new technologies. The hotels should use AI-driven predictive analytics to forecast customer demand, optimize staffing, manage resources efficiently, and improve strategic decision-making. Although AI improves efficiency, the hotels should maintain personalized human interaction to preserve hospitality quality and customer satisfaction. The hotels should regularly assess operational performance and Artificial Intelligence (AI) effectiveness to identify weaknesses, improve service delivery, and ensure continuous operational improvement.

**9.4: Areas for the Further Research**

Since this study explored the application of Artificial Intelligence (AI) in enhancing the operational efficiency of five-star hotels in Kampala City, focusing on Sheraton Hotel Kampala and Kampala Serena Hotel. The study recommends that a similar study should be done on other areas concerning this topic and these areas of further research needed include the following:

- Examining how Artificial Intelligence affects job security, employee retention, and workforce restructuring in the hospitality sector.
- To investigate the financial implications of AI implementation, focusing on return on investment, operational savings, and long-term profitability in hotels.
- Exploring the security vulnerabilities associated with AI systems in hotels and strategies for mitigating cyber threats and data breaches.

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