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Assessing the Effectiveness of ICT Integration in Business: A Case Study of the Hospitality Sector in Lusaka

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Abstract
Against a global backdrop where ICT has become integral to business success, this paper examines the role and effectiveness of ICT adoption in Lusaka, Zambia's hospitality sector. While developed regions like North America, Europe, and parts of Asia demonstrate mature ICT integration in hospitality, emerging markets in Africa, including Zambia, face unique challenges in fully leveraging these tools due to infrastructural, economic, and skills-based constraints. Despite these barriers, Zambia's growing ICT landscape provides opportunities for improved customer engagement, efficient inventory management, and enhanced marketing strategies in the hospitality sector. The study's objectives were threefold: To establish the impact of ICT integration on e-commerce practices, to assess its influence on inventory management, and to examine its effects on marketing strategies and performance. A mixed-methods approach was employed, combining quantitative data from 70 respondents and qualitative insights to explore the specific ways ICT is shaping hospitality businesses in Lusaka. Data were analyzed using Stata software to identify patterns, trends, and correlations that reveal the degree and nature of ICT integration. The findings indicate that ICT integration positively affects e-commerce practices by enhancing customer engagement, facilitating personalized marketing, and expanding market reach. In inventory management, ICT adoption was found to improve inventory turnover, accuracy, and cost efficiency, though challenges remain regarding training and technical complexity. In marketing, ICT enables more targeted strategies, boosts brand visibility, and supports customer acquisition and satisfaction. Despite these benefits, the study highlights gaps in advanced ICT tool adoption, particularly in rural areas and smaller establishments. The study concludes that while ICT integration is transforming Lusaka's hospitality sector, further investment in infrastructure, training, and digital literacy is essential for maximizing its potential.

Keywords: ICT Tools, Hospitality Sector, Integration, Business Management, Lusaka

1. Introduction

1.1 Background

The integration of Information and Communication Technology (ICT) in business management has emerged as a critical driver of organizational efficiency, innovation, and competitiveness (Porter & Heppelmann, 2014) [22]. Globally, the adoption of cutting-edge ICT solutions in the hospitality industry, has become essential for businesses seeking sustainable growth and market relevance (World Economic Forum, 2019) [32]. The rapid pace of digital transformation reflects the growing need for companies to adapt to technology-driven market demands. Major economies have witnessed a paradigm shift in business models, with organizations leveraging ICT to enhance performance and gain a competitive advantage (McAfee & Brynjolfsson, 2017).

In the African context, many countries have undertaken telecom liberalization reforms and developed ICT policies. For instance, in East Africa, policy reforms between 1993 and 2002 were documented in Kenya, Uganda, and Tanzania (Mureithi, 2002). During this period, regulatory reforms played a critical role rather than multilateral commitments alone, ledding to greater competition, lower prices, and improved access (Djiofack-Zebaze & Keck, 2009) [9]. More recently, the focus has shifted from merely expanding access to integrating ICTs into key sectors such as education, health, hospitality and governance, as well as leveraging them for economic growth and structural transformation. Saba, Ngepah, and Odhiambo (2024) [24] highlight ICT as a driver of growth in developing regions, including Africa. Nevertheless, significant digital gaps persist, an analysis of technology adoption in Sub-Saharan Africa found that while mobile phone subscriptions grew steadily

from 2006 to 2022, adoption of fixed broadband and fixed-line telephones stagnated, reflecting uneven progress (Anwar & Graham, 2024).

Historically, the evolution of ICT integration in Zambia's business sector has mirrored global technological progress. In the early 2000s, the country experienced a surge in internet connectivity and the expansion of ICT infrastructure (World Bank, 2018) [31]. The introduction of the National ICT Policy in 2006 sought to establish an enabling environment for ICT development, encouraging businesses to incorporate digital technologies (Zambia Ministry of Transport and Communication, 2006) [38]. Over the past decade, ICT has transitioned from being viewed as a luxury to a necessity for business growth and survival. The increasing availability of affordable ICT solutions, coupled with government initiatives promoting digital literacy and connectivity, has accelerated ICT adoption across industries (ZICTA, 2021) [36]. Digitization has enabled real-time decision-making, streamlined supply chains, and expanded market reach beyond traditional boundaries (Bughin *et al*., 2018) [3]. Businesses in Zambia that have effectively integrated ICT report improved productivity, cost efficiency, and enhanced market presence (Zambia Development Agency, 2019) [33]. These policy initiatives and technological advancements have collectively shaped the country' s ICT landscape and strengthened its business ecosystem.

1.2 *Statement of the Problem*

According to the latest findings by the Zambia Information and Communications Technology Authority (ZICTA), a substantial proportion of enterprises in the region grapple with formidable obstacles in fully harnessing the potential of ICT, resulting in suboptimal performance and a distinct lack of competitiveness (ZICTA, 2022) [37]. This pronounced problem is underscored by the stagnation observed in business growth and innovation, as evidenced in the comprehensive report on ICT sector performance by the Zambia Development Agency (Zambia Development Agency, 2021) [34]. Such entrenched challenges not only hamper operational efficiency and innovation within the business sector but also pose a significant threat to the broader economic development trajectory of the nation. Consequently, there arises an urgent imperative for in-depth research endeavors aimed at not only acknowledging the existing gap but also delving into the underlying causes and formulating robust strategies to facilitate the seamless integration of ICT into business management practices in Zambia.

1.3 Objective

1.3.1 General Objective

The general objective of this study is to assess the overall effectiveness of ICT integration in business management within Zambia, focusing on its impact on organizational performance, communication, collaboration, innovation, and market leadership

1.3.2 Specific Objectives

1. To establish the effects of ICT integration on e-commerce.
2. To assess the influence of ICT integration on inventory management practices.
3. To examine the effects of ICT integration on marketing strategies and performance.

1.4 Theoretical Framework

The study is guided by the Technological-Organizational-Environmental (TOE) framework, proposed by Tornatzky and Fleischer (1990) [29], which provides a comprehensive approach to understanding the dynamics of ICT integration in business management. This framework examines three critical dimensions: the technological, organizational, and environmental aspects. The technological dimension focuses on the characteristics of ICT, including its ease of use, compatibility with existing systems, and complexity. The organizational dimension explores internal factors such as the structure, culture, leadership support, and availability of skilled personnel, which play a pivotal role in the successful adoption of ICT. The environmental dimension considers external influences, including market competition, regulatory frameworks, and the broader technological infrastructure.

To enhance this analysis, the study integrates Rogers' Diffusion of Innovations Theory (2003) [23], which emphasizes how ICT innovations are adopted and diffused within organizational and environmental contexts over time. Together, these theoretical foundations provide a structured framework for evaluating the multifaceted impact of ICT integration on business performance, communication, collaboration, innovation, and market leadership in Zambia

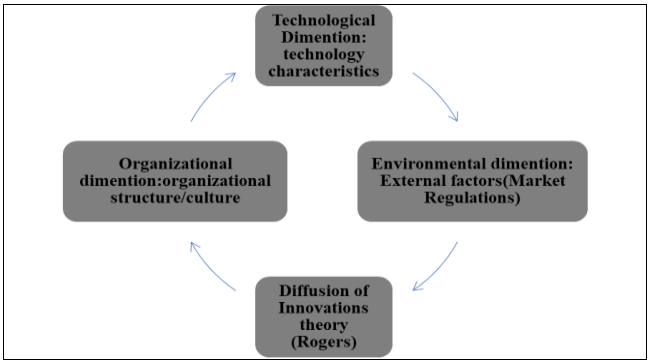

Fig 1: Theoretical framework

2. Literature Review

2.1 To establish the effects of ICT integration on e-commerce

Smith *et al*. (2018) conducted a comprehensive study on the impact of ICT integration on e-commerce in the hospitality sector in the United States, focusing on a diverse sample of 300 hotels across various regions. Using a quantitative survey methodology, the research systematically examined ICT adoption and its effects on e-commerce practices. The findings revealed a strong positive correlation between ICT integration and improved e-commerce outcomes. Hotels that embraced ICT solutions experienced significant increases in sales revenue due to enhanced online booking systems and customer engagement strategies. Additionally, ICT tools enabled expanded market reach, allowing hotels to access new customer segments and geographical markets. By providing robust empirical evidence, Smith *et al*. (2018) contribute meaningfully to existing literature and offer practical insights for hospitality businesses seeking to leverage ICT for improved e-commerce strategies and competitive advantage in the global market.

Mensah, A., & Osei, K. (2018) [16] conducted a qualitative study to explore the impact of ICT integration on the hospitality industry in Ghana, providing important insights

from an African perspective. Using interviews and focus group discussions, the researchers examined the experiences of hoteliers and guesthouse owners to understand the benefits and challenges of ICT adoption. The study, involving 15 hotels and guesthouses selected through purposive sampling, revealed that ICT integration significantly enhances online booking systems, improves customer convenience, and boosts revenue generation. Participants emphasized how ICT adoption streamlines operations, increases efficiency, and enhances guest experiences. By offering detailed perspectives on ICT adoption in Ghanaian hospitality establishments, the study provides valuable contributions to the literature and practical recommendations for stakeholders and policymakers aiming to leverage digital technologies to drive innovation and competitiveness in Africa's hospitality sector.

Mwansa and Mulenga (2019) [19] conducted an in-depth study on ICT integration in Zambia's hospitality sector, providing valuable insights into how digital transformation affects business operations and guest experiences. Using a mixed-methods approach combining quantitative surveys and qualitative case studies they examined 50 hotels and lodges across different regions of Zambia. This approach enabled them to capture both statistical data on ICT adoption levels and detailed insights into the challenges and opportunities faced by hospitality businesses. Their findings revealed that ICT integration significantly enhanced e-commerce capabilities, boosted revenues, and improved guest satisfaction. The study highlighted technology's critical role in driving innovation and competitiveness in Zambia's hospitality industry. Ultimately, Mwansa and Mulenga's research contributed important empirical evidence showing how ICT adoption positively influences business performance, offering practical guidance for industry stakeholders and policymakers seeking to leverage digital tools for growth and improved service delivery.

2.2 To assess the influence of ICT integration on inventory management practices

Chen *et al*. (2018) [5] conducted a global mixed-methods longitudinal study to examine the impact of ICT integration on inventory management practices within multinational corporations (MNCs). Using stratified sampling, the study involved 300 MNCs across various industries and regions, combining quantitative and qualitative methods to analyze the effects of ICT adoption over time. The findings revealed that ICT integration significantly enhances supply chain visibility and agility, leading to improved demand forecasting, inventory optimization, and responsiveness to market fluctuations. By capturing the evolving dynamics of ICT adoption, Chen *et al*. (2018) [5] demonstrated its transformative potential in driving operational excellence and resilience across global supply chains, offering a comprehensive understanding of its multifaceted impact on inventory management efficiency and supply chain performance.

Adeniyi and Ibrahim (2018) [2] conducted a mixed-methods study in Nigeria to examine the impact of ICT integration on inventory management practices within the hospitality sector. Using surveys and interviews, the researchers gathered data from 50 purposively selected hospitality businesses. The surveys focused on the types of ICT tools used, inventory tracking systems, and the perceived improvements in operational performance due to ICT adoption. Interviews with stakeholders, including hotel managers and inventory supervisors, provided qualitative insights into the challenges and benefits of ICT integration. The study revealed that ICT solutions, such as inventory management software, barcode systems, and automated tracking tools, significantly improved inventory management efficiency, reduced manual errors, optimized stock levels, and enhanced operational performance. These findings highlight the importance of ICT adoption in streamlining inventory processes, reducing wastage, and increasing competitiveness in the Nigerian hospitality industry, offering valuable recommendations for leveraging technology to drive efficiency.

Chansa and Mulenga (2019) conducted a longitudinal quantitative study in Zambia to examine the impact of ICT integration on inventory management practices within the hospitality sector. Using stratified sampling, they selected 80 hospitality establishments across various regions, ensuring a representative sample of the sector. Structured questionnaires were used to collect quantitative data on the extent of ICT adoption and its effects on inventory management. The study found that long-term ICT integration significantly improved inventory management practices in Zambian hospitality businesses. Establishments using ICT solutions experienced enhanced inventory turnover rates, operational cost savings, and sustained efficiency improvements. The findings emphasize the importance of ongoing ICT investment to optimize inventory processes, improve competitiveness, and achieve long-term financial benefits in the Zambian hospitality industry.

2.3 To examine the effects of ICT integration on marketing strategies and performance

Wang *et al*. (2019) [30] conducted a global qualitative case study to explore the role of ICT integration in enabling multinational retailers to implement targeted marketing campaigns and enhance customer engagement across diverse regions. Using purposive sampling, the researchers selected 10 multinational retail corporations with established ICT-driven marketing initiatives to analyze their strategies and outcomes. Through in-depth case studies involving interviews, marketing material reviews, and performance metric analysis, the study revealed that ICT integration significantly enhances retailers' ability to tailor marketing strategies to diverse customer segments. By leveraging data analytics, personalized messaging, and omni-channel platforms, multinational retailers improved customer engagement, built brand loyalty, and achieved sustainable growth. The research highlights the transformative potential of ICT in driving effective marketing campaigns and fostering customer relationships in competitive global markets.

Diop and Sow (2018) [8] conducted a quantitative longitudinal study in Senegal to assess the impact of long-term ICT integration on marketing effectiveness and business growth in Sub-Saharan countries. Using random sampling, they selected 200 companies across various sectors and tracked their ICT adoption and marketing performance over time. The study revealed that long-term ICT integration significantly enhances marketing capabilities, including improved targeting, customer engagement, and brand visibility, leading to higher market penetration, increased sales, and sustainable growth. Their

research highlights the transformative role of ICT in driving business competitiveness and expansion in Sub-Saharan Africa, emphasizing the importance of investing in digital technologies to achieve sustained growth in a digitalized economy.

Mulenga and Ngoma (2017) [17] conducted a mixed-methods study in Zambia to investigate the influence of ICT integration on brand visibility, customer engagement, and overall marketing performance among Zambian enterprises. Using convenience sampling, the researchers selected 10 companies from various sectors that were accessible and willing to participate in the study. The research combined qualitative case studies and quantitative surveys to provide a comprehensive understanding of ICT's impact. The case studies involved interviews with key stakeholders, observations of marketing practices, and analysis of marketing materials and strategies, while the surveys collected data on marketing performance indicators such as brand visibility, customer engagement, and overall effectiveness. The findings revealed that ICT tools□particularly social media platforms, customer relationship management (CRM) systems, and digital advertising channels□played a crucial role in expanding market reach, enhancing brand exposure, and facilitating more interactive and personalized marketing campaigns. These advancements led to higher conversion rates, improved customer retention, and stronger brand loyalty. The study highlights the transformative potential of ICT integration in strengthening the competitiveness of Zambian enterprises and fostering sustainable marketing growth in a digitally driven business environment.

3. Research Methodology

Below is the summary of the methodology and its implementation;

Research design: A mixed-methods approach is employed in this study to provide a comprehensive understanding of the research problem. This approach combines both qualitative and quantitative methods, allowing for a deeper exploration of the impact of ICT integration on hospitality businesses. The qualitative component involves interviews and focus group discussions to gather rich insights into the experiences and perceptions of stakeholders, while the quantitative component utilizes surveys to quantify the extent of ICT integration and its effects on operational efficiency, customer experiences, and inventory management practices.

Target population: The target population for this study comprises hospitality establishments in Zambia, including hotels, lodges, guesthouses, and restaurants. These establishments represent a diverse range of businesses within the hospitality sector, allowing for a comprehensive examination of the research problem.

Sampling design: A stratified sampling design will be adopted to ensure representation from various segments of the hospitality industry. The population will be divided into strata based on factors such as business size, location, and type of establishment. Samples will then be randomly selected from each stratum to ensure proportional representation.

Sample size determination: The sample size will be determined based on the principles of statistical significance and practicality. A sample size of 70 hospitality establishments will be deemed sufficient to achieve the study's objectives while maintaining feasibility in terms of data collection and analysis.

Data collection methods: Data will be collected through a combination of methods, including semi-structured interviews, focus group discussions, and surveys. Interviews and focus groups will allow for in-depth exploration of stakeholders' perspectives, while surveys will provide quantitative data on ICT integration levels and their impact on business outcomes.

Data analysis: Qualitative data from interviews and focus groups will be analyzed thematically to identify recurring patterns and themes. Quantitative data from surveys will be analyzed using statistical methods to determine correlations and trends between variables related to ICT integration and business performance.

Triangulation: Triangulation will be employed to enhance the validity and reliability of the study findings. By using multiple data sources and methods, including interviews, focus groups, and surveys, triangulation will help to corroborate findings and ensure comprehensive coverage of the research problem.

Limitations of the study: Limitations of the study will include potential biases in participant responses, logistical constraints in data collection, and limitations inherent in the mixed-methods approach. These limitations will be acknowledged and addressed to the best extent possible to minimize their impact on the validity and reliability of the findings.

Ethical considerations: Ethical considerations will include obtaining informed consent from participants, ensuring confidentiality and anonymity of responses, and minimizing harm or discomfort during data collection. All ethical guidelines and protocols will be strictly adhered to throughout the research process to protect the rights and well-being of participants.

4. Results/Findings

Presentation of research findings

a. Gender demographic

Table 2: Gender demographic

Gender	Frequency	Percentage
Male	35	50.00%
Female	35	50.00%
Total	70	100.00%

Table 2 reveals the equal gender distribution that was observed among the participants of the study, with 50% being male and 50% female.

b. Summary of the ages of the Participants

Table 3: Summary of the ages of the Participants

Variable	Observations	Mean	Standard deviation	Minimum	maximum
Age	70	33.18571	6.861556	21	56

A look at Table 3 reveals that the ages of participants ranged from 21 to 56 years, with an average (mean) age of 33.19 years. The standard deviation of 6.861556 indicated that there was some variability in the ages of participants, but not excessively so.

c. Employment status

Table 4: Employment status

Current profession	Frequency	Percentage
Student	0	0%
Employed part-time	14	20.00%
Employed full time	50	71.43%
Self- employed	5	7.14%
Retired	1	1.43%
Total	70	100.00%

Table 4 provides insights into the employment status of individuals in the study. A significant majority, 71%, were employed full-time. Meanwhile, 20% of participants worked part-time. 7% were self-employed. 2% of participants were retired. Notably, there were no students among the participants (0%).

d. Educational attainment

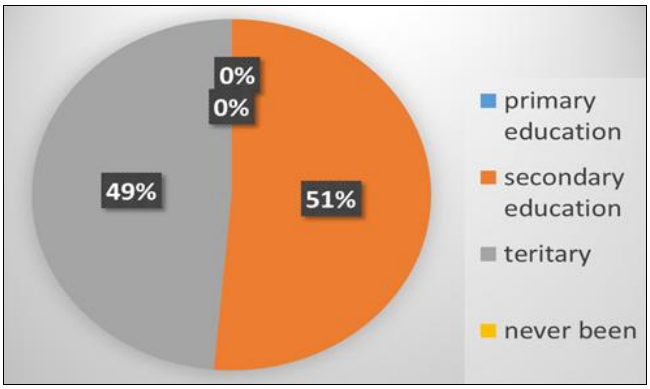

Fig 5: Educational attainment

Fig 5 represents the educational attainment levels among the participants. Specifically, 49% of the individuals had completed tertiary education. A slightly larger proportion, 51%, had attained secondary education. Notably, no participants had only primary education (0%), nor were there any without formal education (0).

e. Area of residence

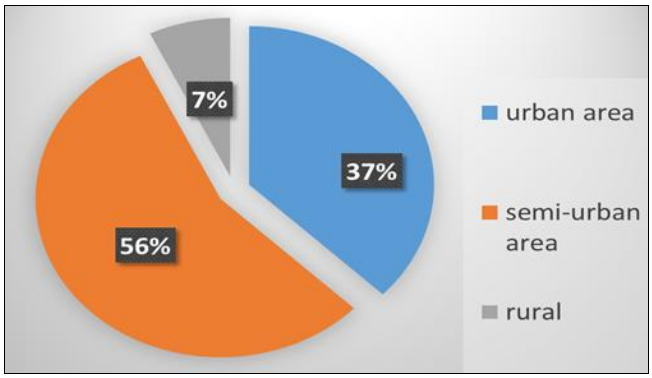

Fig 6: Area of residence

Above is Fig. 6, which illustrates the distribution of participants based on their place of residence. A majority, 56%, resided in semi-urban areas. Meanwhile, 37% of the participants lived in urban areas. A smaller percentage, 7%, resided in rural areas. This distribution highlighted a predominant presence in semi-urban areas, with lesser representation from both urban and rural settings.

f. Types of establishment visited

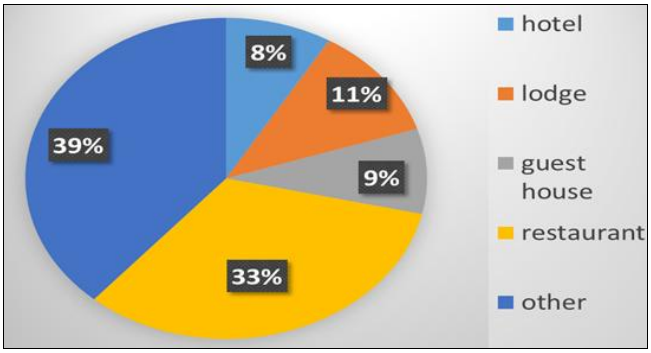

Fig 7: Types of establishment visited

Fig. 7 provides an overview of the types of establishments present in the study. The largest proportion, 39%, consisted of "other" types of establishments, such as travel agencies and car rental services. Restaurants made up 33% of the observed establishments. Smaller proportions of the establishments were dedicated to accommodation services: lodges accounted for 11%, guest houses made up 9%, and hotels constituted 8%.

g. Summary of the ages of the establishments

Table 8: Summary of the ages of the establishments

Variable	observations	Mean	Standard deviation	Minimum	Maximum
Age of establishments	70	10.4	5.603829	1	24

Above is Table 8, which provides insights into the age distribution of establishments within the study. The oldest establishment has been in operation for 24 years, while the youngest has been active for just 1 year. A mean age of 10.4 years was observed. The standard deviation of 5.603829 years showed the variation in the ages of these establishments.

h. Summary of the staffing levels of the establishments

Table 9: Summary of the staffing levels of the establishments

Variable	observations	Mean	Standard deviation	Minimum	Maximum
Age of establishments	70	18	9.071193	5	46

The findings in Table 9 offer an understanding of the staffing levels within establishments in the hospitality sector. The largest establishment observed had 46 employees, while the smallest had only 5 employees. A mean of 18 employees was observed. The standard deviation of 9.071193 highlighted the variation in employee numbers across these establishments.

i. Geographical distribution of the Establishments

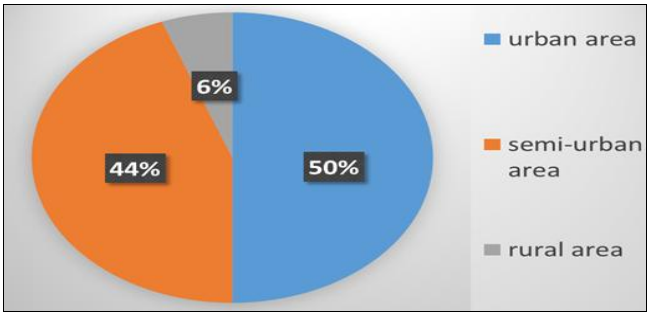

Fig 10: Summary of the ages of the establishments

Fig. 10 reveals the geographical distribution of establishments within the hospitality sector. A substantial majority, 50%, of the observed establishments were located in urban areas. 44% of the establishments were found in semi-urban areas. Only 6% of the establishments were located in rural areas.

j. The Overall effectiveness of ICT integration in business management

Table 11: The Overall effectiveness of ICT integration in business management

Variable	Frequency	Percentage
Very effective	25	35.71%
Effective	38	54.29%
Moderate	7	10.00%
Less effective	0	0%
Not effective	0	0%
Total	70	100.00%

Table 11 reflects the perceived effectiveness of ICT integration in business management within the hospitality sector, participants overwhelmingly viewed it in a positive light, though with varying degrees of enthusiasm. A significant 54% considered ICT integration "effective." Meanwhile, 36% rated ICT integration as "very effective." 10% rated ICT's impact as "moderate." Notably, no participants rated ICT integration as "less effective" or "not effective."

k. Position in the establishment

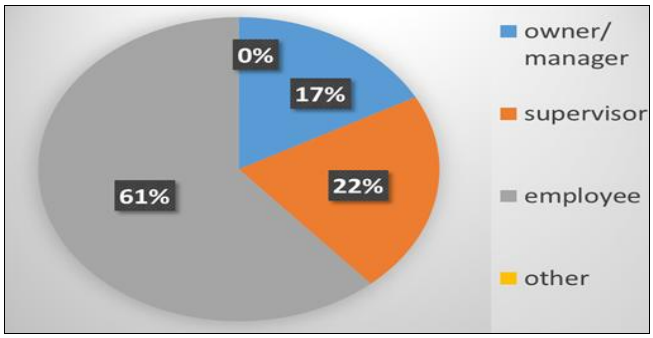

Fig 12: Position in the establishment

In Fig. 12, we see that the majority of participants were employees, making up 61% of the sample. Supervisors accounted for 22% of participants. Owners or managers represented 17% of the participants. Notably, there were no participants categorized as "others," (0%).

l. Level of ICT integration achieved in ecommerce operations

Table 13: Level of ICT integration achieved in ecommerce operations

Variable	Frequency	Percentage
Fully integrated	14	20.00%
Mostly integrated	29	41.43%
Partially integrated	21	30.00%
Minimally integrated	6	8.57%
Not integrated	0	0%
Total	70	100.00%

Table 13 gives a glimpse into the levels of ICT integration in e-commerce operations within the hospitality sector. The largest group, comprising 41% of establishments, had achieved a "mostly integrated" status. 30% of the establishments were as "partially integrated," Around 20% of the establishments were "fully integrated." 9% of establishments were categorized as "minimally integrated." Notably, 0% of the establishments were found to have no ICT integration at all.

m. Notable ICT tool used in ecommerce operations

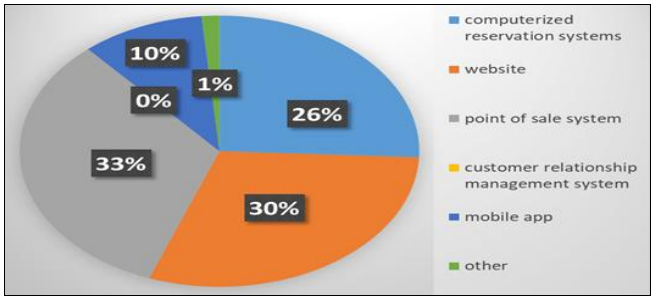

Fig 14: Notable ICT tool used in ecommerce operations

Fig. 14 reveals the range of ICT tools used by establishments in the hospitality sector for their e-commerce operations, highlighting varied levels of digital adoption. The most commonly used tool was point-of-sale (POS) systems, with 33% of establishments utilizing them. Websites were used by 30% of the establishments. Computerized reservation systems (CRS) were utilized by 26% of the establishments. Mobile apps were used by 10% of the establishments. 1% of establishments reported using other ICT tools. There was a complete absence of Customer Relationship Management (CRM) systems (0%).

n. The Influence of ICT integration on the conversion rate

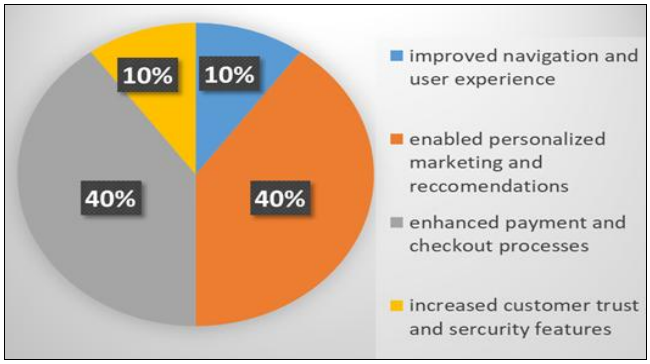

Fig 15: The Influence of ICT integration on the conversion rate

Fig. 15, reveals how ICT integration impacts conversion rates in the hospitality sector. 40% believed that ICT integration allows for personalized marketing and product recommendations. Another 40% thought that improved payment and checkout processes were the main benefit. 10% pointed to improved website navigation and user experience. Lastly, another 10% believed that ICT integration enhanced the ability to update offerings based on customer data and trends.

o. The influence of ICT on the frequency of updates on e-commerce platform

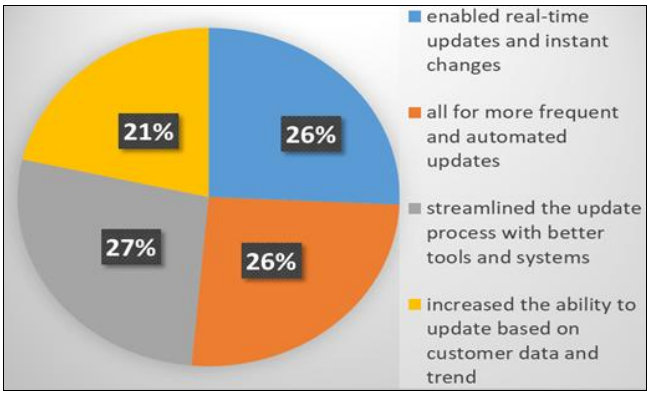

Fig 16: The influence of ICT on the frequency of updates on e-commerce platform

Fig. 16 explores how ICT integration influenced the frequency of updates on e-commerce platforms in the hospitality sector. A leading 27% believed that ICT integration streamlined the update process through better tools and systems. 26% highlighted the capability for real-time updates and instant changes. Similarly, another 26% felt that ICT integration allowed for more frequent and automated updates. Lastly, 21% believed that ICT integration enhanced their ability to update based on customer data and trends.

p. The influence of ICT integration on the return on investment

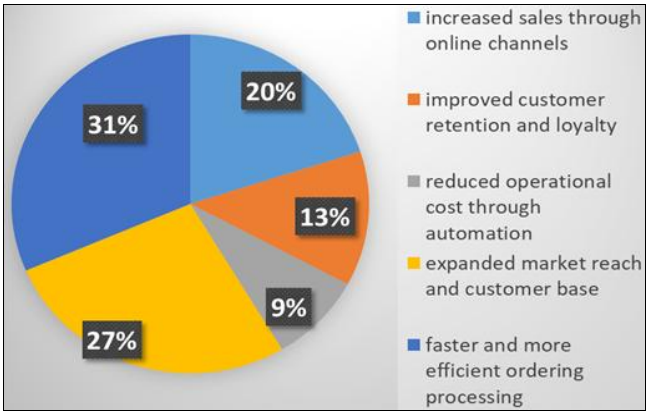

Fig 17: The influence of ICT integration on the return on investment

Fig. 17 examines the impact of ICT integration on return on investment (ROI) in the hospitality sector. A leading 31% believed that ICT integration enabled faster and more efficient order processing. Another 27% emphasized expanded market reach and customer base. About 20% believed that ICT integration increased sales through online channels. Meanwhile, 13% saw improved customer retention and loyalty as the primary way ICT integration impacted ROI. Lastly, 9% believed that ICT integration reduced operational costs through automation.

q. How customer feedback should be used to improve e-commerce' s ICT tools and features

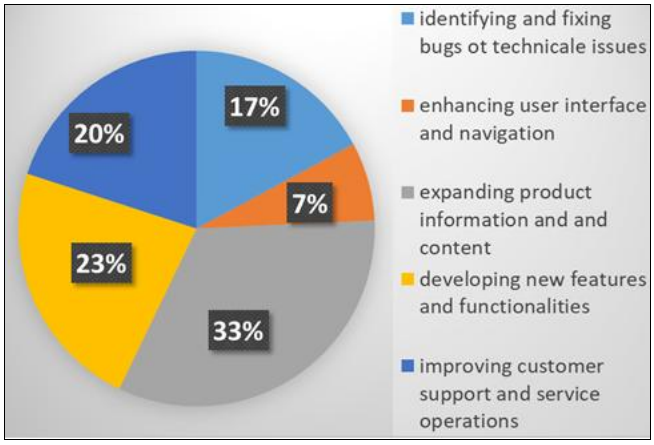

Fig 18: How customer feedback should be used to improve e-commerce' s ICT tools and features

Fig. 18 reveals how participants felt about how customer feedback should be used to improve e-commerce ICT tools in the hospitality sector. A leading 33% believed that feedback should expand product information and content. Another 23% thought feedback should guide the development of new features or functionalities. About 20% emphasized using feedback to improve customer support and service options. Meanwhile, 17% saw the value of feedback in identifying and fixing bugs or technical issues. Only 7% believed feedback should be focused on enhancing the user interface and navigation.

r. The Length of time the establishments had been using ICT tools in inventory management

Table 19: The Length of time the establishments had been using ICT tools in inventory management

Length of time	Frequency	Percentage
less than 1 year	2	2.86%
1-3 years	1	1.43%
3-5 years	10	14.29%
more than 5 years	57	81.43%
Never started	0	0%
Total	70	100%

Table 19 reveals that the vast majority of participants in the hospitality sector have a long history of using Information and Communication Technology (ICT) for inventory management. Specifically, 81% of the participants had been using ICT for more than 5 years. 14% of the participants had been using ICT for 3-5 years. 2%, had been using ICT for 1-3 years. 3% of participants had been using ICT for less than 1 year. Notably, 0% of the respondents had never used ICT for inventory management.

s. The Level of automation achieved in inventory management practices

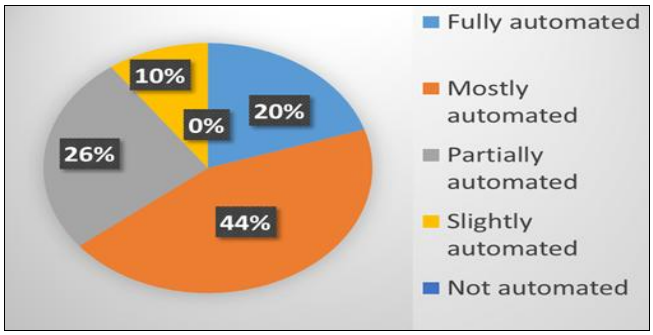

Fig 20: The Level of automation achieved in inventory management practices

The Fig. 20 provides insights into the varying levels of automation in inventory management practices within the hospitality sector. 44% were mostly automated in their inventory management processes. 26% of the establishments had partially automated their inventory management. 20% of the establishments had fully automated inventory management practices. Meanwhile, 10% of the participants were slightly automated. Interestingly, 0% of the establishments reported having no automation in their inventory management practices.

t. Notable ICT tool used in inventory management

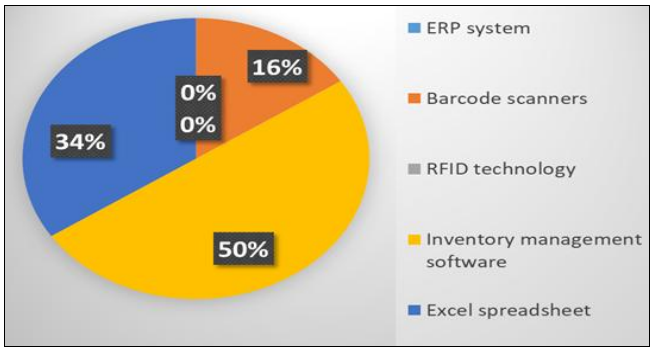

Fig 21: Notable ICT tool used in inventory management

Fig. 21 highlights the different Information and Communication Technology (ICT) tools used for inventory management in the hospitality sector, showing a preference for certain technologies over others. Half of the establishments (50%) used an inventory management system as their primary ICT tool. 34% of the establishments relied on Excel spreadsheets for their inventory management. 16% of the participants used barcode scanners as part of their inventory management process. Notably, none of the establishments reported using ERP (Enterprise Resource Planning) systems or RFID (Radio-Frequency Identification) technology for inventory management, as both had a 0% usage rate.

u. Authority over ICT tools used in inventory management

Table 22: Authority over ICT tools used in inventory management

Length of time	Frequency	Percentage
IT department	10	14.29%
Inventory management team	19	27.14%
Sourcing and procurement department.	10	14.29%
Sales department	31	44.29%
external consultants	0	0%
Total	70	100%

Table 22, provides insights into the distribution of authority over the ICT tools used for inventory management within the hospitality sector. A significant portion of establishments (44%) had delegated authority over ICT tools for inventory management to the sales department. 27% of establishments had granted authority to the inventory management team itself. About 15% of establishments had assigned this authority to the IT department. 14%, had given authority to the sourcing and procurement department. Notably, 0% of establishments had given authority over ICT tools for inventory management to external consultants.

v. The impact of ICT on establishment' s inventory management Costs

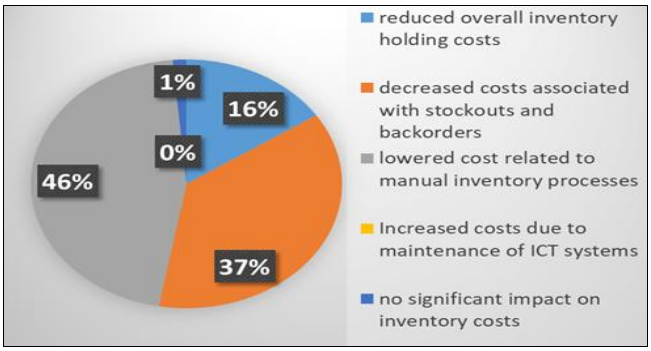

Fig 23: The impact of ICT on establishment' s inventory management Costs

The Fig. 23, sheds light on how establishments in the hospitality sector perceive the impact of ICT integration on inventory management costs. A significant 46% of participants believed that ICT integration lowered costs related to manual inventory processes, 37% of the participants believed that ICT integration decreased costs associated with stockouts and backorders. A further 16% believed that ICT integration had helped reduce overall inventory holding costs. Only 1% of the participants believed that ICT integration had no significant impact on their inventory costs. Interestingly, none of the participants (0%) believed that ICT integration increased costs due to the maintenance of ICT systems.

w. The Extent to which ICT integration had reduced Stockouts

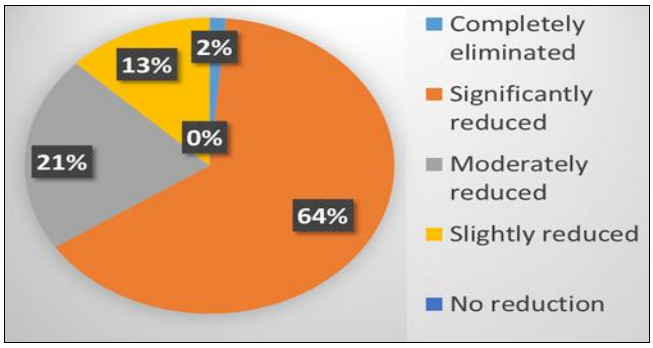

Fig 24: The Extent to which ICT integration had reduced Stockouts

The Fig. 24, provides insights into the perceived impact of ICT integration on reducing stockouts within the hospitality sector. A significant 64% of participants believed that ICT integration had significantly reduced stockouts in their establishments. 21% of participants believed that ICT integration had moderately reduced stockouts. Another 13% believed that ICT integration had slightly reduced stockouts. A very small percentage (2%) of participants believed that ICT integration had completely eliminated stockouts. Notably, 0% of the participants believed that there was no reduction in stockouts due to ICT integration.

x. The effect of ICT integration on inventory accuracy practices

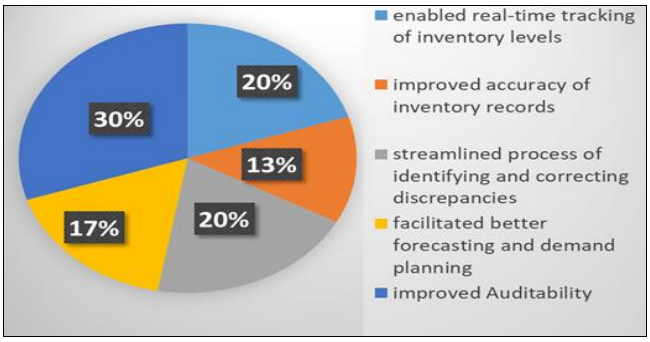

Fig 25: The effect of ICT integration on inventory accuracy practices

The Fig. 25 provides insights into how ICT integration has impacted inventory accuracy practices within the hospitality sector. A significant 30% of participants believed that ICT integration had improved auditability in their inventory management practices. Additionally, 20% of participants felt that ICT integration had streamlined the process of identifying and correcting discrepancies. Another 20% of participants believed that ICT integration had enabled real-time tracking of inventory levels. 17% of participants believed that ICT integration had facilitated better forecasting and demand planning. Lastly, 13% of participants believed that ICT integration had improved the accuracy of inventory records.

y. Primary challenge faced with ICT integration in inventory management

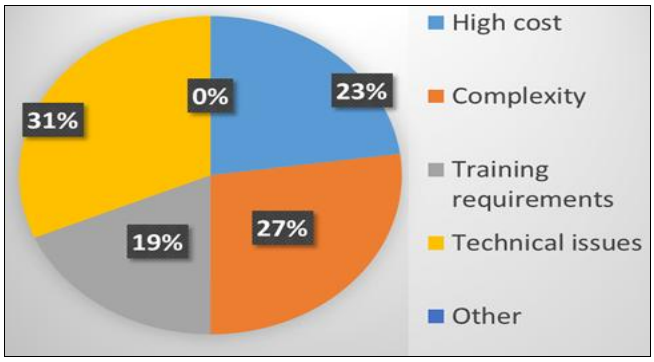

Fig 26: Primary challenge faced with ICT integration in inventory management

The Fig. 26 reveals how integrating ICT into inventory management in the hospitality sector is a complex process, with various challenges shaping how businesses approach digital transformation. 31% of participants identified technical issues as the main challenge. 27% cited complexity as their biggest challenge. For 23% of participants, the high cost of ICT integration was their primary barrier. 19% highlighted training requirements as their biggest challenge. Interestingly, 0% of respondents selected other issues as their primary challenge.

z. The Impact of ICT integration on establishment's ability to reach new customers

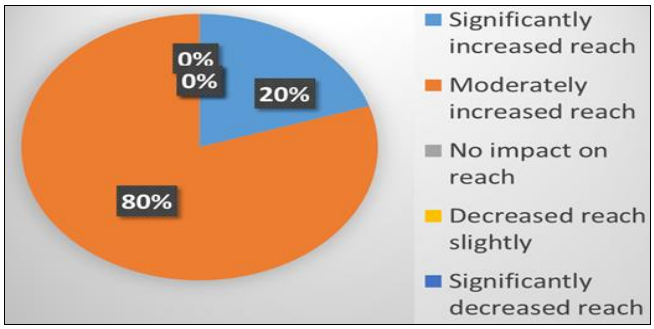

Fig 27: The Impact of ICT integration on establishment's ability to reach new customers

The Fig. 27 provides insights into how establishments in the hospitality sector perceived the impact of ICT integration on their ability to reach new customers. 80% of participants, believed that ICT integration had moderately increased their ability to reach new customers. Another 20% of participants believed that ICT integration had significantly increased their ability to reach new customers. Notably, 0% of participants felt that ICT integration had no impact on their ability to reach new customers or that it had decreased their reach in any way.

aa. Primary ICT tool used for marketing and customer engagement

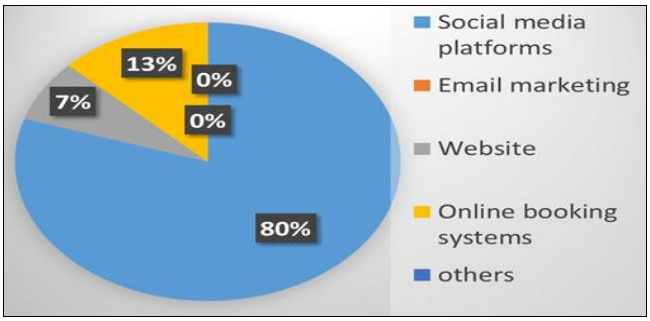

Fig 28: Primary ICT tool used for marketing and customer engagement

Fig. 28 highlights which ICT tools establishments in the hospitality sector relied on for marketing and customer engagement. A significant 80% of participants reported that social media platforms were their primary ICT tool for marketing and customer engagement. 13% of participants indicated that online booking systems were their key ICT tool for marketing and engagement. Another 7% of participants used websites as their main ICT tool for marketing and customer engagement. Notably, 0% of participants used email marketing or other ICT tools as their primary method for marketing and engagement.

bb. Extent to which ICT integration has enabled personalized marketing strategies

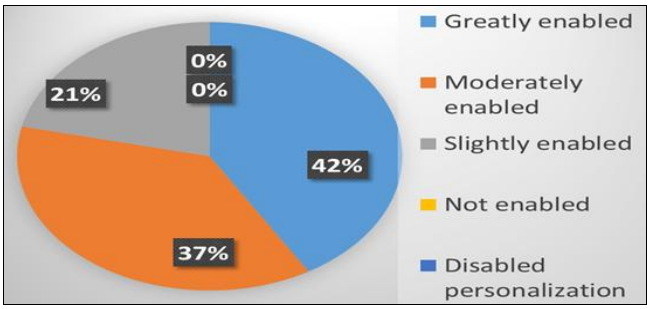

Fig 29: Extent to which ICT integration has enabled personalized marketing strategies

The Fig. 29 sheds light on the role of ICT integration in enabling personalized marketing strategies within the hospitality sector. 42% of participants believed that ICT integration had greatly enabled personalized marketing strategies. 37% of participants felt that ICT integration had moderately enabled personalized marketing. 21% of participants believed that ICT had slightly enabled personalized marketing strategies. Interestingly, 0% of participants believed that ICT integration had either not enabled or disabled personalized marketing strategies.

cc. Belief that ICT integration helped in tailoring services or products to meet customer preferences

Table 30: Belief that ICT integration helped in tailoring services or products to meet customer preferences

Variable	Frequency	Percentage
Yes, significantly	19	27.14%
Yes, moderately	30	41.86%
Yes, slightly	21	30%
No impact	0	0%
Negative impact	0	0%
Total	70	100.00%

Table 30 highlights participants' beliefs regarding the impact of ICT integration on their ability to tailor services or products to meet customer preferences within the hospitality sector. 43% of participants believed that ICT integration had moderately helped their establishments in this regard. 30% of participants believed that ICT integration had slightly helped in tailoring their offerings. 27% of participants believed that ICT integration had significantly helped them in personalizing their services or products. Notably, 0% of participants believed that ICT integration had no impact or a negative impact on their ability to tailor offerings.

dd. Overall effectiveness of ICT-enabled marketing strategies in increasing customer loyalty

Table 31: Overall effectiveness of ICT-enabled marketing strategies in increasing customer loyalty

Variable	Frequency	Percentage
Very effective	19	27.14%
Effective	35	50.00%
Moderate	16	22.86%
Less effective	0	0%
Not effective	0	0%
Total	70	100.00%

Table 31 provides insights into how participants in the hospitality sector perceived the effectiveness of ICT-enabled marketing strategies in fostering customer loyalty. 50% of participants believed that ICT-enabled marketing strategies were effective in increasing customer loyalty. 27% of participants felt that ICT-enabled strategies were very effective in boosting customer loyalty. 23% of participants believed that ICT-enabled marketing strategies had a moderate effect on customer loyalty. There was an absence of responses indicating that ICT-enabled strategies were less effective or not effective (0%).

ee. Extent to which ICT integration had facilitated real-time customer feedback and engagement

Table 32: Extent to which ICT integration had facilitated real-time customer feedback and engagement

Variable	Frequency	Percentage
Greatly facilitated	21	30%
Moderately facilitated	29	41.43%
Slightly facilitated	19	27.14%
Not facilitated	1	1.43%
Hindered facilitation	0	0%
Total	70	100.00%

The Table 32 reveals insights into how participants in the hospitality sector perceived the impact of ICT integration on facilitating real-time customer feedback and engagement. 42% of participants believed that ICT integration had moderately facilitated real-time customer feedback and engagement. 30% of participants felt that ICT integration had greatly facilitated real-time feedback and engagement. 27% of participants believed that ICT integration had slightly facilitated real-time feedback and engagement. 1% of participants believed that ICT integration had not

facilitated real-time feedback and engagement. There was an absence of responses indicating that ICT integration had hindered feedback (0%).

ff. The overall impact of ICT integration on establishment's marketing performance

Table 33: The overall impact of ICT integration on establishment's marketing performance

Variable	Frequency	Percentage
Very positive	21	30%
Positive	25	35.71%
Neutral	43	61.43%
Negative	2	2.87%
Very negative	0	0%
Total	70	100.00%

The data in Table 33 suggests a strong belief among participants that ICT integration has played a crucial role in enhancing their marketing performance, with 61% of participants viewing the impact as positive and 36% perceiving it as very positive. 3% viewed the impact as neutral and there was a complete absence of negative feedback (0% for both negative and very negative).

4.1 Discussion

This section discusses the key findings from the study, Assessing the Effectiveness of ICT Integration in Business Management: A Case Study of the Hospitality Sector. The discussion focuses on how the integration of Information and Communication Technology (ICT) has influenced e-commerce, inventory management, and marketing strategies within the hospitality sector, as well as the broader implications for business operations and performance.

Background of the Respondents: The background characteristics of the study' s respondents provide critical context for understanding ICT integration within Lusaka's hospitality sector. The balanced gender distribution (50% male and 50% female) and mean age of 33 years suggest a youthful yet mature workforce, potentially open to adapting new technologies. The high level of educational attainment, with 51% of respondents having completed secondary education and 49% tertiary education, implies a workforce with the skills necessary for utilizing ICT tools effectively. The majority of participants reside in semi-urban (56%) or urban (37%) areas, likely facilitating their access to ICT infrastructure and resources compared to the minority from rural areas. This geographic and educational distribution aligns with the sector's demand for digital literacy and adaptability. Employment roles varied, with a majority of respondents in full-time positions (71%) and predominantly in operational roles (61%), reflecting a workforce closely engaged in daily ICT-driven business processes.

To Establish the Impact of ICT Integration on E-commerce: The findings on ICT integration in e-commerce reveal that hospitality businesses in Lusaka have recognized the value of ICT in expanding their online presence and enhancing customer interactions. Establishments have reached varying levels of integration, with 41% mostly integrated and 20% fully integrated, indicating progressive yet incomplete adoption across the sector. The use of ICT tools such as point-of-sale systems, websites, and computerized reservation systems highlights a foundational approach to e-commerce that could be further expanded with more advanced systems, such as customer relationship management (CRM) tools, which were notably underutilized. The observed impact of ICT on conversion rates, specifically through personalized marketing and optimized checkout processes, reflects a growing understanding among businesses of the importance of tailoring digital interactions to customer needs. Furthermore, the ability of ICT to streamline updates and support real-time changes has helped establishments respond to customer expectations promptly, enhancing their competitiveness. The positive return on investment noted by many respondents, through increased sales, expanded customer reach, and improved operational efficiency, underscores ICT' s role as a revenue-driving asset in e-commerce.

To Assess the Influence of ICT Integration on Inventory Management Practices: ICT integration has significantly shaped inventory management practices, with 81% of establishments using ICT tools in inventory management for more than five years, indicating a high level of operational familiarity with these tools. A notable degree of automation exists, with 44% of establishments mostly automated and 20% fully automated, reflecting a trend towards reducing manual inventory processes. The prevalent use of inventory management systems and Excel spreadsheets suggests a mix of both modern and traditional tools, likely influenced by varying resource capacities among establishments. Although advanced technologies like ERP and RFID systems remain underutilized, the observed impact on inventory turnover, accuracy, and cost efficiency highlights ICT' s effectiveness in reducing stockouts, improving auditability, and streamlining stock-tracking processes. Additionally, the delegation of ICT authority to sales and inventory management departments suggests a practical approach to internal control, enabling teams directly involved in stock-related activities to oversee ICT applications. However, challenges such as technical issues, system complexity, and training requirements underscore the need for additional support to maximize the potential of ICT in inventory management.

To Examine the Effects of ICT Integration on Marketing Strategies and Performance: In the realm of marketing, ICT integration has notably expanded establishments' reach and engagement strategies. A strong majority of establishments (80%) reported moderate success in reaching new customers through ICT, with social media emerging as the predominant tool. The use of social media platforms, online booking systems, and websites highlights a digital-first approach to customer engagement, although other marketing tools like email remain underutilized. ICT' s facilitation of personalized marketing strategies, cited by 42% as greatly enabling such initiatives, reflects a shift towards data-driven engagement in Lusaka' s hospitality sector, with businesses increasingly tailoring offerings based on customer preferences. Real-time customer feedback and engagement capabilities provided by ICT further support customer satisfaction and loyalty, as indicated by a majority of respondents who reported moderate to high levels of effectiveness in these areas. This is echoed in the overall perception of ICT' s positive impact on marketing performance, where a combined 97% of respondents noted positive or very positive effects. The emphasis on customer acquisition, enhanced brand visibility, and improved satisfaction levels underscores ICT' s integral role in shaping competitive marketing strategies within the sector,

allowing establishments to engage more effectively with a digitally connected audience.

In summary, the study's findings demonstrate that ICT integration has brought considerable benefits across e-commerce, inventory management, and marketing practices. While there is still room for growth in adopting more advanced ICT tools and addressing challenges related to system complexity and training, the hospitality sector in Lusaka has largely embraced ICT as a critical driver of operational improvement and market competitiveness.

4.2 Conclusion

The findings from this study suggest that ICT integration has had a transformative impact on e-commerce, inventory management, and marketing practices within Lusaka's hospitality sector. ICT tools have proven instrumental in enhancing e-commerce by increasing market reach and sales while enabling more personalized customer engagement. The implementation of point-of-sale systems, reservation software, and mobile applications has allowed businesses to streamline customer interactions and efficiently manage online sales processes, ultimately improving customer satisfaction. In inventory management, ICT integration has significantly improved turnover rates, cost efficiency, and inventory accuracy. Establishments have increasingly adopted inventory management systems, facilitating real-time tracking, reducing stockouts, and enabling better demand forecasting, which helps minimize the costs associated with holding inventory. Marketing strategies have similarly benefited from ICT integration; social media and online platforms have enhanced brand visibility, allowing businesses to reach a broader audience and acquire new customers. The ability to engage customers in real time and tailor marketing strategies to specific preferences has led to a boost in customer satisfaction and loyalty. Overall, the effectiveness of ICT integration in Lusaka's hospitality sector highlights its role as a critical driver of operational efficiency, customer engagement, and competitive advantage in a digitally evolving marketplace.

5. Acknowledgment

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