

Factors Affecting the Adoption of ICT in the Hospitality Industry in Imo State

Nwakanma I.C. ^{*1}, Ubani E.C. ², Asiegbu B.C. ¹ and Nwokonkwo O.C ¹

1: Information Management Technology, Federal University of Technology Owerri Imo State Nigeria

2: Bells University Ota Ogun State Nigeria

*: Corresponding author

ABSTRACT

The impact of ICT (Information Communication Technology) hotel and hospitality industries has been widely recognized as one of the major changes in the last decade: new ways of communicating with guests, using ICT to improve services delivery to guest etc. The study tried to investigate the ICT Infrastructural Diffusion in hotels in Owerri, Imo State. In order to know the extent of spread, the study examine the current ICT infrastructures being used, the rate at which its being used and the factors affecting its adoption. The data collected was analyzed using SPSS Software and Regression model was estimated. The findings revealed that the rate at which hotels adopt and use ICT infrastructure is low and the most significant factor affecting the adoption and use of ICT is scope of activities the hotel is engaged in. It is therefore recommended that Government should increase the economic activities in the state so as to increase the adoption of ICT infrastructures.

Key words: ICT, Hotel Management, Adoption, Hotel ratings

1. Introduction

Information and communication technologies (ICTs) are necessary components of business culture. In today's world using ICT is no more distinctive characteristic by itself, only an effective and efficient usage can help in obtaining a competitive advantage.

When the right technology is available and it is correctly applied, a manager can obtain visible organizational benefits and is able to stimulate the growth of the company, in line with the market evolution.

The travel and tourism sector is known to be one of the world's largest and enduring industries. Its revenues support a significant proportion of the economies of many nations and it is one of the largest employers worldwide. Its contribution to gross national product, employment and regional development are well documented and, unlike many other sectors, it is forecast to grow in importance in the coming decades as leisure time increases. Tourism is acknowledged to be very information intensive. This sector is also open to the elements of the fragmentary developments in the information and communication technologies (ICT) field. The exchange of information is very important at every stage in the sales cycle of the tourism product or service. Information must be able to flow quickly and accurately between the client, intermediaries and each of the tourism suppliers involved in servicing the client's needs. As a result, ICT (Information

Communication Technology) has become an almost universal feature of the tourism industry. Its power allows information to be managed more effectively, and transported worldwide almost instantly. As a result, it has had (and continues to have) a major effect on the methods of operation of the hospitality industry.

The hotel sectors, have been less enthusiastic, but are gradually waking up to the benefits which electronic distribution can bring. However, given the way in which ICT is reshaping the basic structure of both commerce and society in general, and consumers' increased demand for information, its importance to the success of a tourism enterprise can only grow in the future. As a result, tourism enterprises need to understand, incorporate and utilize ICT strategically in order to serve their target markets, improve their efficiency, maximize profitability, enhance services and maintain long-term profitability [1].

Tourism, like any economic activity has arguably produced detrimental security treats, the increasing rate of criminal activities within the hospitality centers in Nigeria is a challenge which tourism professions continue to grapple with. The recent killing of Miss Cynthia Osokogu Udoka, the only daughter of a retired General, in Cosmilla Hotel, Lakeview Estate, Amuwo Odofin, Festac Town, Lagos, has brought to the fore the issue of security in our hotels. The Lagos State Commissioner of Police, Umar Abubakar Manko told journalists that the detectives arrested the suspects using the close circuit television at the hotel where the crime was committed to identify them. Before now, the regulatory body in charge of tourism in the country, Nigeria Tourism Development Corporation (NTDC) had mounted a campaign calling for tighter security in Nigerian hotels in order to check the increasing wave of criminal activities in the industry [2].

It would probably have been more difficult for the detectives to arrest the suspects without the CCTV mounted by the hotel's management. It has become imperative for hotel owners to know that people come in and out of hotels constantly as guests, checks in and out, and so should make conscious efforts to control visitors, even at hotel lobbies considered as public spaces.

With recent events and threats of terrorism in the country, hotels should review and find ways to protect not only their guests but also themselves. Hoteliers should start thinking of installing additional surveillance cameras which some people may view as infringing on their privacy, despite these feelings, video cameras on guest room floors, in elevators, stairwells and lobby areas do help in protecting

guests. According to some experts, “Cameras can enable security staff to keep an eye out for suspicious behavior and therefore, prevent crime, such as theft and assault [3].

1.2 Statement of Problem

The vast majority of hospitality industry in owerri is small – large size firms. For many of them, the problem is to able to have a clear frame work for adopting of ICTs and features which are related to management and economic issues.

Management issues

1. Strategic importance
2. Level of integration in present environment, assessed on available software and hardware products and packages
3. Ease of implementation and use

Economic issues

1. Cost
2. Benefits.

1.3 Objectives of Study

The general intent of this research is to find out the spread of ICT more widely in hospitality industry in order to shape business process and service delivery. The specific objectives however are:

1. To identify existing ICT infrastructure in hotel sector in Owerri, Imo State.
2. To establish the extent of spread (diffusion) of ICT infrastructure in Owerri, Imo State
3. To identify the most used ICT infrastructure.
4. To discover the factors affecting the adoption of ICT among hoteliers in Owerri Imo State
5. To rank the factors in order of importance
6. To make recommendation where applicable

1.4 Research Questions

1. What is the type of ICT infrastructure found in hotels in Owerri, Imo state?
2. How well adopted are ICT infrastructures in hotel sectors in Owerri, Imo state?
3. Which ICT infrastructure is most used in the hotel sector in Owerri Imo State?
4. What are the factors affecting the adoption and use of ICT in the hotel sector in Owerri Imo State?
5. Is there any significant difference among the factors affecting the adoption of ICT infrastructure in Owerri, Imo State?

1.5 Research Hypotheses

HO₁ There is no significant rate of adoption of ICT infrastructure among hoteliers in Owerri.

HO₂ There is no significant effect of the individual factor that affects the adoption of ICT infrastructure of hotels in owerri.

HO₃ There is no significant difference between the various factors affecting ICT adoption in hotel in Owerri.

HO₄ There is no significant impact of the combined factors affecting ICT infrastructure in hotel.

1.6 Significance of Study

This study shows the extent of ICT infrastructure utilization in hospitality industry in order to get a grip of the relationship existing between technological advancement and economical development trend.

This study will benefit the hotel industry by providing critical information to management in deciding on the areas which ICT should be adopted, such as room division or food & beverage division, as well as the specific technologies that would improve hotel performance. It also contributes valuable information to ICT marketing personnel.

The study will also create enough awareness on different types of ICT infrastructures used in hospitality industries today, help manages / stakeholders see ICT – based facilities as a tool that will provide greater competitive advantage or to blunt the advantage enjoyed by its competitors, increase profits/revenue, cut down cost and improve service delivery while doing so, also ease out employees work load, making his /her job easier and faster.

Once managers grasp the importance of ICT infrastructures, it will in return create employment opportunity for graduates in IT and IT experts, who will handle, install manage and train users of these infrastructures in the various hospitality industry that will adopt it.

1.7 Scope and Limitation of Study

The above objectives however are examined within the eyes of the managers of different hospitality industry including the ICT head and staff who are perceived to have better insights on the impact, adoption, and utilization of ICT in their establishments. The study will consider ICT as a factor external to the hotel and analyze managers perceptions of the way their internal systems should and do respond to the requirements imposed by ICT. For the purpose of this study the internal elements of the hotels, such as corporate culture and working processes, will be considered as a picture perfect totality which changes in response to the presence of ICT.

2.1 Historical Background of Hotel Industry in Nigeria

Little is known to the outside world about the many existing tourist attractions available in Nigeria. Historic

sites nestled amid rivers and rain forests, breath taking mountain vistas, remote creek villages, miles of pristine beach and exotic national wildlife reserves. There are also museums, festivals music and dance, a rich cultural mélange right down to everyday traditional markets. These are just some of the spectacular sights and sensual delight awaiting the traveler to Nigeria

Nigeria has the largest population of any country in Africa (About 120 million), and the greatest diversity of cultures ways of life, cities and terrain. With a total land area of 923,768 sq. km (356, 668 sq.m). Nigeria is the 14th largest country in Africa. It coastline, on the gulf of guines, stretches 774km (480 mi). Nigeria shares its international border of 4,470 km (2513 mi) with four neighbors Chad, Cameroon, Benin and Niger. Until 1989 the capital was LAGos, with a population of about 2,500,000. But the government recently moved the capital to Abuja[4].

Nigeria hotels are well positioned to accommodate the influx of international guests for example Nike Lake Resort Hotels in Enugu is ideally suited to those fans that also like to play sport with the opportunity for swimming, volleyball, basketball and tennis. Amber Tinapa located a few minutes' drive from the centre of calabar offers one of the most exhilarating water parks in the country, Nigeria Hotel which is located in the center of "Nollywood"- the Nigerian film industry. For an ideal vantage point from which to watch mountain race chose between Obudu mountain resort, at the climax of the race or join the pre-race buzz at utanga safari lodge.

Nigeria is fast becoming the new frontier in the hospitality industry in Africa and nothing compliments this status than the addition of a 7-star luxury hotel in the next two/three years.

2.2 Information and Communication Technology

Information technology is everywhere in this day and age and adding to communication technology, the possibility of how it can be used is endless. Information communication technology (ICT) involves the use of computer hardware, software and telecommunication devices to store , manipulate, convert, protect , send and receive data [4].computer and technological devices have made it easier for professionals to convert, store , manipulate and share data and information both individually and within organizations , Small and large, public and private. ICT has become an integral part of human daily activities that sometimes we barely notice its effect and has made a major impact on the way we live, work and play. The way hotel companies sell to customers is changing dramatically over the past few years. The use of networking in front office helps very much in strong information across the hotels in chain.

The growth in the use of networked computers is one of the most significant trends in modern computing. Through interconnection of computers in itself is not new.

Application of networking is seeing a dramatic increase such that it is now one of the major issues in computer and information technology [5] computers are presently widely used in sectors such as banking, Education , health commerce, agriculture, transport telecommunication etc. Computers in business operations could be used for typing documents, keeping and retrieving information, data analysis, sending and receiving information over short and long distances etc. Computers are becoming popular in business because work did by them could be very fast thus results in increasing productivity, accurate in performing repetitive task, store information safely in relatively small space [4].

Despite the increasing popularity of computers, they are still limited to those with the skill to use them. In hotels, computers are used in Accounting for guest, data management, forecasting guest demand for reservations, management of guest services, revenue and reservation management and yield management. These functions could be performed with the aid of management software [6].The delivery of business today is exposed to information and communication technologies either directly or indirectly.

Hotels being a subset of the hospitality industry traditionally practice manual system of operation in their front offices, as from occupancy of the guest rooms, recording of guest expenditure through to the eventual departure of the guest. Today, these operations are done using the electronic system. The use of information in the front office operation of the hospitality industry is fast growing, thus making work easier. Computerization is becoming very important for the efficient and effective operations of the front office.

Technology is used to push slower business by providing better service, improved decision making and increase revenue. Hotel operations are now realizing that a brand in itself is not enough [7].

2.3 Impact of ICT in Hotel Management

In the past, an individual can write or telephone the hotel directly, or approach a travel agent to make hotel room reservation. However, with current development in technology, the above methods are considered slow and costly, Writing to the hotel takes time as with olden days 'Snail mail'. The improvement of ICT has introduced room reservation, now an individual can make room reservation online anywhere anytime so long as there is an electronic device with internet access, thanks to the development of ICT. Moreover, using the online to make hotel room reservation has brought about a number of benefits.

First, an individual can book room from home by using online security to protect their privacy and financial information. Unlike the past where personal information may be given to a middle party (Travel Agent), where there is risk of our information leaked out or sold to others, However there is no 100% guarantee that using online security can 100% protect our privacy as technology

improves more security measures are taken to protect our privacy.

Secondly, individuals can use services provided by the online travel agents to compare prices and facilities at different hotels. Online hotel reservations are helpful for making last minute travel arrangements [8].

2.4 Factors Determining the Adoption Propensity for ICTs

The firm's propensity to adopt is a manifestation of its inclination towards innovativeness, and also reflects its ability to evaluate, accept and use new technologies. A firm with a high level of adoption propensity will be an early adopter of the new technology and will thus be a risk taker. The adoption propensity of a firm is fuelled by its attitude and belief in innovativeness as a source of competitive advantage. This belief is in turn based on the factors that define the competitive environment of the enterprise. Further, an enterprise's adoption propensity is also based on factors related to its internal capabilities and requirements. Thus a firm's propensity to adopt a new technology is affected by several factors, both internal and external.

In the hotel industry, the geographic location of a hotel has a major impact on its operations and profitability. The geographical location of a hotel would greatly determine the profile of its visitors, the size of its market and the level of competition that it has to face. These three variables have a strong impact on the ICT adoption propensity of a hotel also. This is because the ICT adoption propensity of a hotel can be linked mainly to its expectations about the value addition that the ICTs can provide to its customers, as well as the belief about the expansion of its target market through ICTs. A hotel will therefore be more inclined to adopt ICTs if it expects the ICT based facilities to either provide greater competitive advantage or to blunt the advantage enjoyed by its competitors considering the characteristics of its customer profile, its market size and the intensity of competition that it has to face. Thus based on the profile of a hotel's visitors, the size of the market, or the intensity of competition, hotels may differ in their levels of ICT adoption propensity.

Thus the location related factors considered in this study are:

- I. The percentage of consumers who visit the hotel's location from high Internet penetration countries.
- II. The overall market size of the hotel's location,
- III. The level of competition between the firms in the locality.

Unless the target consumers access and use the Internet as a medium for transaction, the hotels are not in a position to rely heavily on the Internet for its marketing activities. Therefore hotels in those locations where most of the visitors come from a country with a high level of Internet penetration would find the Internet to be of greater use than hotels in those locations where the major part of the visitors are from countries where the Internet penetration is low.

This will in fact prompt hotels in locations with a high proportion of visitors from high Internet penetration countries to adopt the Internet based technologies that enables them to enhance their market reach in a much faster manner. The market size, in terms of the number of tourists who visit the location, will also be a significant factor that affects ICT adoption propensity, since hotels in smaller underdeveloped destinations may need to use the internet and other ICT based technologies like the GDs to a greater degree to reach out to the global population than hotels located in developed destinations [9].

The competition level among the hotels in a location can also influence the adoption propensity of a hotel. The general occupancy rate in the location is an indicator of the competitive intensity among the hotels in a location. High levels of occupancy rate at a location imply that the competition is low, and the hotels can expect to get their rooms filled with relative ease while low levels of occupancy point towards higher levels of competition to attract customers between the hotels in the location. High levels of competition may prompt the hotels to aggressively use ICT based technologies both for attracting customers as well as to increase the efficiency of its operations.

The firm related factors considered are:

- I. The size of the hotel in terms of the number of rooms,
- II. The scope of activities of the hotel in terms of activities that the hotel was engaged in.
- III. The grade of the hotel
- IV. The age of the hotel.

Some of these factors have been found to have significant impact on the adoption of internet by [24] in a study conducted among managers in the hotel industry.

The size of the hotel has an important effect on ICT adoption propensity. Effective adoption of Several ICT technologies require a substantial investment of resources. Lack of resources may

Affect the inclination of small hotels to adopt costly ICTs and therefore large hotels can be expected to be more inclined to ICTs. Further the risky nature of investing in new technologies may prompt small hotels to wait till the technology has stabilized before investing in it. Another aspect of the hotel size that can influence adoption propensity is the inclination to change within the organization. Large hotels have been found to be more resistant to change than small firms.

This fact tends to suggest that large hotels are less inclined to adopt ICTs than small hotels as long as the investment required is not a consideration.

The scope of activities that the hotel is engaged in can also influence its propensity to adopt ICTs. Since ICTs enable an effective integration of activities of an organization, hotels with varied lines of activities would find more use in the adoption of ICTs than hotels with a relatively lesser span of activities. Hotel grade which indicate the economic class of the hotel's target customers may also influence its propensity to adopt. Luxury Hotels which targets the high economic class may be more inclined to adopt ICTs due to the demand by the customers as well as to enhance their

image. Also hotels of a higher grade will be more equipped in terms of resources for adopting new technologies. The age of the hotel is also a major factor that influences ICT adoption since new hotels find it easier to adopt new technologies that need a complete revamp of the existing system. Several technologies like the installation of an organization wide property management system will require a large scale reorganization of the firm which will be highly resisted in an old hotel and will be much easily accomplished in relatively new one [9].

2.5 Contributions of Related Work

In their research, [19] found that the geographical location of a hotel has a major impact on its operations and profitability. Furthermore geographical location of a hotel greatly determines the profile of its visitors, the size of its market and the level of competition that it has to face. These three variables also have a strong impact on the ICT adoption tendency of a hotel. This is because the ICT adoption tendency of a hotel can be linked mainly to its expectations about the value addition that ICTs can provide to its customers, as well as the belief about the expansion of its target market through ICTs. A hotel will therefore be more inclined to adopt ICTs if it expects the ICT-based facilities to either provide greater competitive advantage or to blunt the advantage enjoyed by its competitors considering the characteristics of its customer profile, its market size and the intensity of competition that it has to face. Thus, based on the profile of a hotel's visitors, the size of the market, or the intensity of competition, hotels may differ in their levels of ICT adoption propensity.

This research agrees with [19]. The geographical location of the hospitality industry affects the propensity to adopt ICT, which goes to say that hotels located in reserved areas such as G.R.A or City fringe Urban or around a Beach, which serve a larger market, with larger competitors and high visitors profile tend to adopt ICT. Due to their visitors make a heavy use of ICT and will like to have ICT based infrastructures such as internet services around them and are also willing to pay for the extra charges.

In a similar study of small scale properties in Scotland, [10] found that even among hotels that did not have a computer, most had a web page to advertise and promote their business. Again, many of these properties used their computer for accounting and word processing. There was limited use of PMS type packages but extensive use of spreadsheets which individual owners could use to build functionality specific to their business needs. Of the sites not using a computer, (30% of the sample), the reasons most commonly given were that the owner did not see a requirement for one to operate the business and that the capital costs associated were too high.

[11] Examined booking systems in hotels and presented an overview of some of the internal technology as the following discussion outlines. For each individual hotel, the Property Management System (PMS) is at the centre of both technology and hotel operations.

This system is used to manage the room inventory, record guest details and produce billing information. It often

interfaces with other systems such as the telephone systems and food and beverage point of sales terminals to allow integrated billing and management reporting.

For hotels that are part of a chain or franchise group there may be a Central Reservation System (CRS). This allows on-booking between 10 hotels as well as the acceptance of direct bookings from a Central Reservation Office (CRO). These systems commonly have direct access into the PMS and update automatically so the hotel front desk and Central Reservations Office have the same view of the hotel's available room inventory. Outside of hotels exists the Global Distribution Systems (GDS) such as Sabre and Galileo. These systems include not only hotels but airlines, car rental and other travel resources and are commonly used by professional travel agents. In many cases these are allocated a block of rooms within the hotels PMS systems but bookings from the GDS do not automatically update the PMS and must be entered manually.

Bookings from the Internet can enter the system through any of these marketing channels, either via an on-line travel agent or directly from the customer.

[11] Noted that each of these channels has different costs associated with them for the hotel. GDS in particular incurs a charge for being listed, as well as substantial commissions per transaction. However, in their computer simulation of revenue contributions for a business hotel, no significant difference was found between revenue management by length of stay and room rate compared to adding the distribution channel to the process. They did note that the gap between room rates in comparison to the channel fees would be likely to affect the outcome. For example, in hotels where there was very little difference between room rate levels with widely varying distribution costs, the hotel would need to include distribution costs in their revenue management model.

[12] Identified the role of ICT in service delivery as providing systems for effective internal service support from support persons and systems, and other systems and technologies that make it possible for the contact employees to give good service. If such support is lacking, even the most customer-orientated and service-minded employees will eventually start to feel frustrated and lose interest in being good part-time marketers.

"Part-time marketing" following [13] definition is the term [12] used for "the people representing the firm (who) create value for the customers in various service processes, such as deliveries, customer training, claims handling, service and maintenance etc, and some are directly engaged in sales and cross-sales. Thus, they are involved in marketing" (p. 56) without being part of the formal marketing effort of the firm. Both writers emphasis' the importance of people in the service delivery process in forming the customers' image of the firm.

A number of writers address various points of interaction between people, technology and service delivery in hotels.

[14] Considered the implementation of a Computerized Yield Management System (CYMS) in a large hotel. For this case study, they interviewed a number of the managers and staff about the training they received and how they

understood the system to work. They found a level of confusion as to who was finally responsible for the system and, in the response of the front line staff, whose interactions with the guest in the booking process should be influenced by the system. Particularly worrying was that the Reception Manager reported that they were “committed to it [Yield Management] but none of my staff are” (p. 39). However, this group of staff is vital to the successful operation of a Yield Management system. One of the receptionists pointed out that they had “hardly any training and I’d be scared to touch the system in case it crashed” (p. 40), and that the Yield Management concept and how it related to bottom line profit was “still a mystery, I’m not really sure what it is all about” (p. 41). Thus, a very expensive piece of software was not going to be able to deliver its full benefits to the organization, due to not being fully utilized and integrated into the culture of the organization.

This problem, in realizing the full potential of technology, is not limited to the hotel industry, [15] reported on the limitations imposed on airline use of revenue management tools by the absence of what he describes as a “community of practice” of skilled and experienced staff (p.138). This need for integration of ICT into the operating environment relates to [16] point that the full benefits of ICT are dependent on the culture of the organization and their conclusion that management practices are critical to maximizing the benefits.

In a Delphi study of lodging experts in the U.S. focusing on the future role of ICT, [17] asked for predictions for 2007 and 2027. The panel identified a number of technical areas such as wireless networking technology and on-line reservations that they expected to grow in importance over these timeframes. The panel also considered service automation and guest service experiences, an expectation emerging of more technology supporting fewer staff more strongly dedicated to guest interaction. Alongside the growing role of on-line booking was a concern that this could drive “commodisation” of hotel rooms with competition based solely on price with implications for future revenue realization.

Similarly, in their 2002 Delphi study of electronic distribution, O'Connor and Frew identified a growing role for web driven growth but still utilizing many of the traditional channels described by [11].

Academic literature has focused on the administrative and management information provision roles of ICT in hotels. The role of ICT in supporting service delivery has been overlooked as have the interactions of ICT with other elements of service support. Similarly the roles of staff and organizational culture in realizing the full benefits of ICT in all its roles have not been examined in the hotel context.

2.6 Gaps in the Literature

While the literature covers the types of ICT in use in hotels, it does not consider the most used ICT infrastructure found in hospitality industry and how well adopted are ICT infrastructures in the industry and ways that these are integrated with business practice in day to day operations. The description of ICT used in hotels is very much focused on administrative and operational uses, in part reflecting the

views of managers who do not see ICT as part of their strategic tool kit [1]. The significant rate of adoption of ICT among hoteliers and the effect of the individual factors affecting the adoption of various ICT infrastructures in hotels are potential issues in need of research, Suggesting that these are important variables in the use and adoption of ICT to produce best results for the business.

Generally, the literature on ICT in hotels did not consider Owerri, Imo state as a case study, given the fact that Owerri is considered a tourism destination and hospitality industry is the second biggest sector which follows after the Educational sector in Owerri, Imo State.

It is these gaps, regarding the business process surrounding adoption and use of ICT in hotels along with the factors that affect it in order to determine the diffusion of ICT infrastructure in hotels that this study seeks to address

3. Research Design

The study was conducted through a questionnaire survey amongst hotels in Owerri, 53 hotels of different grades and size and from various region of the city.

The questionnaire was directly given to general managers, ICT head and Receptionist of the various hotels. The general managers were selected for this study because they have the broad overview of how their organization is changing in response to ICT, most importantly. They are usually responsible for strategic development of the hotel, including the alignment of ICT with business strategic. The role of general managers is providing oversight and direction is key to realizing the potential benefits from ICT. The general managers with the stakeholders are the ones who make decisions about ICT use and monitor ICTs contributions in realizing the strategic aims of the business [8].

3.1 Research Study Area

Owerri is the capital of [Imo State](#) in [Nigeria](#), set in the heart of the [Igbo land](#). Owerri consists of three [Local Government Areas](#) including [Owerri Municipal](#), [Owerri North](#) and [Owerri West](#), it has an estimated population of about 400,000 as of 2006 and is approximately 40 square miles (100 km²) in area. Owerri is bordered by the [Otamiri River](#) to the east and the [Nworie River](#) to the south.

The Owerri Slogan is Heartland. It is currently referred to as the entertainment capital of Nigeria and is home to an annual beauty pageant called "Miss Heartland" [22].



Figure 1: Map of Owerri, Imo, State (where the sampled population is situated)
Source: [24]

Owerri was the capital of the [Republic of Biafra](#) in 1969. The capital of the secessionist state was continuously being moved as Nigerian troops captured the older capitals. [Enugu](#), [Aba](#), and [Umuahia](#) were the other capitals before Owerri [22].

Owerri has an airport 14 miles southeast of the city, called the Imo Airport which provides service to Abuja, Lagos, Port Harcourt, and Enugu. Right now, it serves as an alternate for Port Harcourt, but it does not serve international purposes. Some major roads that go through the city are; Port Harcourt Rd., Aba Rd., Onitsha Rd., and Okigwe Rd. Roads within the city are; Douglas Rd., Weathral Rd., Tetlow Rd., and Works Rd. Eke Ukwu Owere market is the main market in Owerri. Owerri sits in the rain forest and produces many agricultural products, such as yams, cassava, taro, corn, rubber and palm products.

Important educational institutions in Owerri include Imo State University, Federal University of Technology Owerri, Federal College of Land Resources Oforola, Seat of Wisdom Seminary Owerri, Alvan Ikoku College of Education, Federal Government Girls College Owerri, Owerri Girls Secondary School, Government Secondary School Owerri, Development Secondary School Owerri, Emmanuel College Owerri, Holy Ghost College Owerri, Community Secondary School Oforola Owerri, Federal Polytechnic Nekede Owerri, Government Technical college Owerri, Army Day Secondary School Obinze Owerri etc Sports The soccer clubs Arugo F.C., Heartland F.C., and Papillo F.C. are based in Owerri. As in most of Igboland, Christianity is the dominant religion. The Catholics and Anglicans have the largest followings and Owerri is home to Assumpta Cathedral, seat of the Roman Catholic Archdiocese of Owerri [22].

3.2 Characteristics of the Study Population

The study consists of hotels ranging from 1 star – 5 star ,40 rooms – 400 rooms and above, although there are other forms of accommodation in the hospitality industry such as motel and guest house, but these were left out of this study due to the don't have enough resources to adopt ICT, such resources include initial cost and maintenance cost.

To define the sample frame, a list of hotels in owerri was drawn from [www.hotels.ng](#) , [www.facebook.com](#) and local knowledge of the researcher.

The hotels considered in this study were located in eight popular destinations in owerri which are Ikenegbu, World Bank, Port Harcourt Road , Orlu Road, Okigwe Road, Aladinma, New Owerri, Works Layout.

Table 1: Hotels considered in various location

Location	No of Hotels for the Study
Ikenegbu	5
Works Layout	6
Aladinma	6
Okigwe Road	6
New Owerri	10
Port Harcourt Road	9
Orlu Road	5
World Bank	6
Total	53

Source:[21]

3.3 Data Collection Instrument

Questionnaire was one of the methods of data collection instrument used in this research work. It was administered directly to the general manager, ICT head and Users (Receptionist).

The type of questionnaire used is the likert five-point scale, the likert summated scale involves a list of statement related to the attitude in question and which respondents are required to indicate the statement are added up to obtain the total score of each respondent. In a five point scale, for each statement respondents are requested to select only one position from among a scale that has five categories as follows. Strong Agree, Agree, Neutral Disagree and Strongly Disagree [18].

Interview's was also used in order to understand how the general mangers perceive technology fitting within their business. Interviews allow the interviewee to the world as the experience it [8]. This is particularly important for this topic, where there is limited material available in the existing literature, as in the case of this study. As this study was exploratory, it was more appropriate to allow

participants to determine their answers rather than the researcher supplying them, as in the case with questionnaire or close instrument as an extension of ordinary conversation allows for “to achieve richness and depth of understanding”. Interviews are able to change in response to the interviewees answer.

4.1 Description of Respondent

Out of 53 questionnaires distributed to 53 hotels, 34 were received while 19 were void. The analysis of the 34 questionnaire received are as follows

Table 2: Description of Respondents

Position in the company	No of respondents
General manager	7
ICT head	7
Staff/ Receptionist	20
Total	34

Source: Field work (2014)

The response from top management from the hotels where low due to the fact that most managers and ICT head where too busy to attend to us and some would not even like to give the attention to anything that would not bring return to them or the organization.

4.2 Description of hotel

Table 3: Data on ICT facilities in the hotels considered

ICT Facilities Consider	Availability of the ICT infrastructure consider in the hotel	
	Yes = Available	No = Not available
Email based booking	8	26
Online real time booking	7	27
Global distribution system	3	31
Business center	14	20
Intercom in all the rooms	34	0
Local Area Network for back office	5	29
Property management software	15	19
E – check out from rooms	3	31
CCTV Camera	10	24
Smoke Detector	3	31

Website	13	21
Wireless Internet	11	23
POS	10	24
ATM Machine	5	29

Source: Field work (2014)

Thirty four hotels were sampled within Owerri, Imo state and data obtained was tabulated as in table 3 which was then converted to chart as shown in figure 2. From the chart above the most used ICT infrastructure is Intercom which was found in every hotel within the sample area. It is absolutely glaring that the hotel in Owerri are not utilizing the use of ICT facilities. The percentages of availability ICT facilities sampled fall below average except for intercoms presence

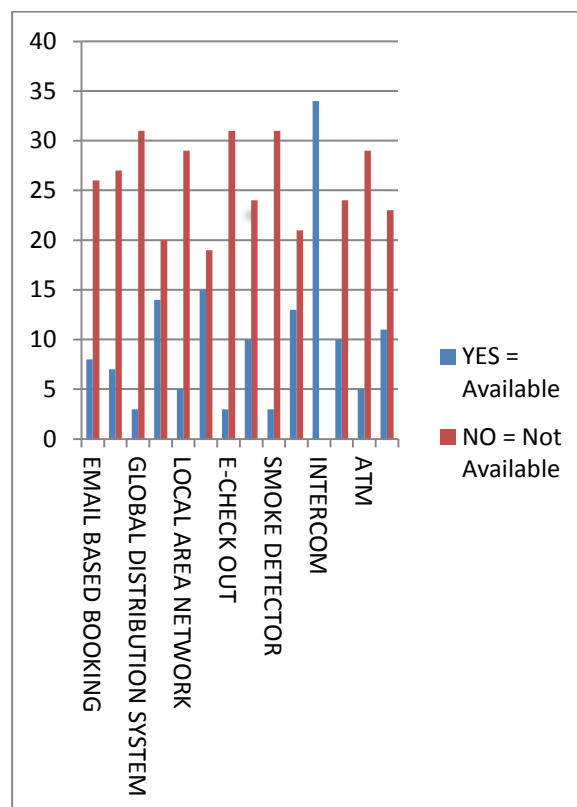


Figure 2: Chart Showing the ICT facilities usage in the Hotels

Source: Field work (2014)

4.3 Age of Establishment

The analysis is as follows:

Table 4: Sample by Hotel Age

Year of Establishment	No of Hotels
Below 5yrs old	10
5 -10 yrs old	5

10 – 15yrs old	6
15 – 20 yrs old	6
20 yrs above	7

Source: Field work (2014)

For age the category breaks were determined by possible infrastructure issues. Most properties less than five years old would have been built to incorporate advances in technology such as wiring to all rooms for data access. Those between five and ten years old would have been built and equipped in the midst of the transition, particularly regarding in-room technology. Properties over ten years of age are likely to be facing issues associated with retrofitting new technologies to existing buildings.

4.4 Hotel Grade and Size

The grade of the hotel was measured in terms of the number of stars the hotel has acquired which is determined the type of facilities and amenities in the hotel.

Table 5: Sample by hotel Grade

Star Rating	No of hotels
1 star	11
2 star	13
3 star	8
4 star	2
5 star	Nil

Source: Field work (2014)

The size of the hotels was determined by the number of rooms in the hotel. From the above analysis the major hotels found in Owerri are of small – medium size hotels.

Table 6: Sample by Hotel Size

Size (No of rooms)	No of hotels
Below 50	8
50 – 100	9
100 – 150	8
150 – 200	4
200 above	5

Source: Field work (2014)

4.5 Result Estimation and Regression Model

Recall that:

X1 – Hotel resources

X2 – hotel size

X3 – hotel scope of activities

X4 – hotel rating

X5 – hotel age

Y – Adoption and use of ICT in hotel

4.6 Pearson Correlation

From the pearson correlation, it can be seen that X3= 0.416, X2=0.204, X5= 0.145, X1 = -0.047 and X4 = -0.047, this mean that in other of ranking the factor with the highest impact Is the hotel scope of activities. Suggesting that the higher the scope of activities of a hotel the higher the propensity to adopt and use ICT infrastructures which in return increases the diffusion of ICT.

4.7 Significant (1 - Tailed) Test

Ranking the result using 0.05 (5%) confidence interval shows that X3= 0.007 while other independent variable are higher than 0.05, this further confirms that our earlier position that X3 is the most significant factor that affect the use and adoption of ICT in hotel industry is true.

4.8 Model summary and its interpretation

From the model summary, our R- Square value is 0.312 which is 31.2%. This means that the model developed by the findings of this project accounts for 31.2% of the independent variables. Further research may increase this value if the scope and population area is enlarger. Also the significant F-change=0.052. This is a relatively good value and it shows that the model developed is reliable and can be used for prediction and decision making. The value 0.052 also shows that the either independent variables (X1 – X5) have collective effect on the adoption and use of ICT in the hotels in Owerri, Imo State.

4.8 Regression Model

Using the standardized cost Beta Above we can state that

$$Y = A_0 + A_1X_1 + A_2X_2 + A_3X_3 + A_4X_4 + A_5X_5 + \text{error}$$

$$Y = 1.634 - 0.331X_1 + 0.177X_2 + 0.483X_3 - 0.073X_4 + 0.064X_5 + 0.71195$$

4.9 Hypothesis Testing

HO₁: There is no significant rate of adoption of ICT infrastructure among hotels in Owerri. From the above analysis, we reject Ho₁ since our result shows that 31.2 % rate was covered. Thus we accept alternative Ha₁ which states that there is significant rate of ICT infrastructure among hotels in Owerri.

HO₂ There is no significant effect of the individual factor that affects the adoption of ICT infrastructure of hotels in Owerri.

Our 1-tail test shows that only X₃ has significant effect on ICT usage in hotels. Thus we reject HO₂ for X₃ but accept HO₂ for X₁, X₂, X₄ and X₅.

Table 12: Summary of Hypothesis Analysis

	Meaning	Significance or Not
X ₁	Hotel Resources	Not
X ₂	Hotel Size	Not
X ₃	Hotel Scope Of Activities	Significant
X ₄	Hotel Rating	Not
X ₅	Hotel Age	Not

Source: Field work (2014)

HO₃: There is no significant difference between various factors affecting the adoption of ICT infrastructures, we reject this and accept the alternative which states that there is a significant difference between various factors affecting the adoption of ICT in hotels according to the above table.

HO₄: There is no significant impact of the combined factors affecting ICT infrastructure in hotel. Since Sig F-change = 0.05 we reject HO₄ and conclude that there is significant impact of the combined five factors affecting ICT infrastructure in hotels thereby accepting the alternative which states that there is significant impact of the combined factors affecting ICT infrastructure in hotels.

4.10 Discussion of Results

The results are discussed here in the context of the research questions:

Research Question One: What is the type of ICT infrastructure found in hotels in Owerri, Imo state?

The ICT infrastructures found in hotels in owerri consists of hardware, software and peripheral devices, but not limited to the following.

- a. Email based booking
- b. Online booking
- c. Global distribution system
- d. Business center
- e. Local Area Network
- f. Property Management Software
- g. E-check Out
- h. CCTV Camera
- i. Smoke Detector
- j. Website
- k. Intercom
- l. POS
- m. ATM
- n. Wireless Internet

Research Question Two: How well adopted are ICT infrastructures in hotel sectors in Owerri, Imo state?

According to figure 2 (chart showing the ICT facilities usage in hotels), It is absolutely glaring that the hotels center in Owerri are not utilizing the use of ICT facilities. The percentages of availability ICT facilities sampled fall below average except for intercoms presence.

Research Question Three: Which ICT infrastructure is most used in the hotel sector in Owerri Imo State?

According to Table 4.3, the most used ICT infrastructure is Intercom in all rooms.

Research Question Four: What are the factors affecting the adoption and use of ICT in the hotel sector in Owerri Imo State?

According to [11], the factors affecting the adoption and use of ICT in hotels include; the size of the hotel in terms of the number of rooms, the scope of activities of the hotel in terms of the activities the hotel is engaged in, the grade of the hotel in terms of the hotel star rating, the age of the hotel and hotel resources.

Research Question Five: Is there any significant difference among the factors affecting the adoption of ICT infrastructure in Owerri, Imo State?

Yes, there is a significant difference among the factors affecting the adoption of ICT. The test of hypothesis three show that hotel scope of activities is the most significant factor affecting the adoption of ICT, this doesn't mean that other factors collective do not affect the adoption of ICT.

5.1 Summary

The project finding can be summarized as follows

1. The five factors collectively affect the adoption and use of ICT infrastructure in Owerri. These five factors are: Hotel Resources, Hotel Size, Hotel Scope of Activities, Hotel Rating and Hotel Age.
2. The most significant factor among these five is X₃ which is Hotel's scope of activities
3. There is a relatively rate (31.2%) of adoption of ICT usage by Hotels in Owerri, Imo State.

5.2 Recommendations

Coverage Area/scope can be extended by further researches. Since our work was carried in Owerri, Imo State. Other researchers can cover south east in order to verify and clarify our claim.

Government need to increase the economic activities in Owerri in other to boost the hotel activities (X₃) according to this study. This doesn't mean that other factors collectively do not affect the adoption of ICT infrastructures in hospitality industry in Owerri, Imo state.

For sustainable tourism development in Owerri, there is need for managing and controlling of security in the hospitality industry. Due to this it is mandatory to integrate ICT for management and control of security in the hospitality industry. This research work revealed that some of the hotels have few ICT facilities as in hardware or software for sustainable tourism development. Where some of these facilities are available, there is no electric power to run them as most of the hotels visited are operating with use of generator. Also booking is been done manually in almost all the sampled hotels. Based on these it is highly recommended that government should provide an enabling environment for hotel business to survive in Owerri. It is highly recommended that government should set up an ICT standard that a hotel should meet before they can operate.

5.3 Conclusion

The study considers an issue which has not received much empirical attention which is ICT infrastructure diffusion in hospitality industry. The findings give valuable insights into the marketers of ICTs who wish to gain entry into the hotel sector. The study effectively enables suppliers of ICT based facilities a framework for predicting the adoption propensity of their potential customers. The paper also holds policy implications for the tourism administrators specifically with regard to promotion of ICT adoption in the hotel industry in developing cities. It is important to adopt such policies that motivate hotels to adopt ICTs like incorporating the need for ICT developments in grading initiatives, giving support for training or funding for ICT adoption projects in older hotels etc. The paper argues that ICT adoption is important for reducing the phenomenon of 'tourism leakage' in a developing city since greater levels of ICT adoption leads to reduced reliance on traditional intermediaries by hotels. It is also felt that overemphasis on demand generation activities without adequately addressing supply side problems only leads to the exacerbation of the problem of tourism leakage.

It is however important to find out more about the factors that influence the adoption propensity of ICTs in the hotel industry. While the study gives a general idea about the impact of various factors, the reasons for such a pattern of impact may have to be explored further.

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BIOGRAPHY OF AUTHORS

Baldwin C. Asiegbu is a Reader in the Dept. of Information Management Technology, Federal University of Technology Owerri Imo State Nigeria. His educational progression is as follows: B.Sc., 1988, Economics(Mathematical Economics with Computer Science), Kharkov State University, Ukraine, M.Sc,1989, Economics (Social and Economic Planning, Economic Cybernetics), Kharkov State University, Ukraine, PhD, 1993, Economics (Economics Cybernetics), Kharkov State University, Ukraine and Certificate to Teach Russian as a Foreign Language, 1989, Kharkov State University, Ukraine. He has over twenty journal and technical reports to his credit.

Nwakanma Ifeanyi Cosmas is also a lecturer in the department of Information Management Technology, Federal University of Technology Owerri Imo state Nigeria. His educational progression is as follows: ND (Distinction) in Electrical/Electronic Engineering, B.Eng in Communication Engineering, and MSc in Information Technology all in Federal Polytechnic Nekede Owerri and Federal University of Technology Owerri respectively. He has about 13 journal papers to his credit.

Ubani E.C. is a senior lecturer and an authority in Industrial Production management. His academic progression is as follows: B.Sc and MSc in Industrial Engineering, PhD in Project Management Technology from Federal University of Technology Owerri. He has several papers to his credit especially in the area of industrial engineering and operations management.

Nwokonkwo O.C. is an Engineer and Lecturer in the department of Information Management Technology, Federal University of Technology Owerri Imo State. He studied Electrical/Electronic Engineering(B.Eng) and Project Management Technology (MSc) from same institution.