

Full Length Research Paper

Utilisation of information and communication technologies in hotel operations in the central region of Ghana

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This research was conducted in the central region of Ghana to investigate the utilisation of ICT in hotels business operation. Primary data collections employed in the study were obtained from 200 respondents using well-structured questionnaires. Findings of the research study revealed that telephones, computers, internet, printers and fax machines were ICT applications in hotels business operation. Telephones were the most common ICT application used, and then followed by fax machines were the least ICT applications used in hotels business operation in the Central Region. Findings of the research study further revealed that the majority hotels in the region were using the internet as the latest developments in telecommunications. Hotels in the Central Region have benefited from the uses of ICT in their business operations through accessing hospitality information, improving customer service and increasing patronage. The main conclusion drawn from the research study is that there is still a need to promote ICT utilisation in hospitality industry in the Central Region and Ghana at large.

Key words: Information communication and technology (ICT), internet, hotels, central region, Ghana.

INTRODUCTION

In the recent years, tourism industry used information technology to provide entertainment and service, and this practice has been widely accepted in the tourism sector. Page (2011) asserted that hotels are part of the hospitality industry that has not been immune to change. According to Walker (2010) technology has a great impact on the hospitality industry in recent years, and this will continue to increase the uses of computers and the growth of information technology in general. Furthermore, the sophistication of information technology has made it

possible for patrons/clients to sign in and check out from their rooms by using a keyboard linking the hotel's computers to the bedroom's television set (Jones and Lookwood, 2004; Walker, 2010). Information and Communication Technology (ICT) is defined as the use of digital tools for business function and processes. ICT includes the use of hardware, software, groupware, telecommunications, net ware and the intellectual capacity also known as human ware to develop programmes and preserve equipment (Cooper et al.,

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2013). The swift development of ICT for the hospitality and tourism industry has encouraged hotels around the globe to adapt to new technologies. In the past three decades hotel management has been influenced by three major waves of ICT namely, Computer Reservations System (CRS) which started in the 1970s, the Global Distribution System (GDS) which followed in the 1980s, and finally the introduction of the internet from the 1990s to date (Hinson and Boateng, 2007; Ansah et al., 2012). CRS is a computerised system which stores and distributes information on hotels, resorts or other lodging facilities. GDS is a computerised reservation network used for hotel bookings and selling of airline tickets. Developments in ICT “have changed the best operational and strategic practices for organisations on global level and altered the competitiveness of enterprises and regions around the world” (Cooper et al., 2013).

Most ICT applications in hotels occur in the Rooms Division which is made up of the front office, reservation, housekeeping, uniformed services and telephone department. Some of the major applications of ICT in the Rooms Division are reservations, registration of guests during check in, allocation of rooms and room rates, delivery of guest services and updates on room status. Others include creation of guest history records, guest accounts, and coordination of guest services. Technologies used by most hotel Rooms Division involve Property Management Systems (PMS). These include computer based applications such as reservations management systems, rooms’ management systems, guest account management systems and general management systems (Walker, 2010; Page, 2011). In spite of the good progress made so far in ICT, it can be said that ICT development is still at its early stages in Ghana. According to Ayeh (2005), some 3 to 5 star hotels in Accra are using reservation software such as “HELLO 2000, HOTELINX, LANDMARK, AMEDZRO and HOTIX”. The reservation software is just an indication of some level of the use of ICT in hotel management. Apart from few multinational hotels in Ghana and a few travel and tour agencies, most hospitality enterprises in Ghana are small and medium enterprises [SMEs] (Hinson and Boateng, 2007; Issahaku, 2012). Hence, there is a need to investigate the level of ICT utilisation in these small enterprises.

The rationale for this study emanated from the competition and customer expectation which has promoted the use of ICT in hotel operations around the world. The utilisation of ICT in the hotel industry has increasingly over the last decade through the uses of internet, intranet, e-mail, electronic transaction, central reservations systems and web application such as online check in and check out systems (Ham et al., 2005). The utilisation of the modern ICT applications in the hotel industry globally has made it necessary to educate hotels and specifically in this case, the Central Region of Ghana, to understand the importance of using ICT

applications in hotels business operations (Ayeh, 2005). Findings of the research study will contribute significantly towards the importance of ICT usage and training in hotels business operation. The information-management of hotels industry and potential investors in the sector will have informed knowledge about how to maintain a continuous use of ICT in their operations. Finally, the study will also form the basis for further research into ICT development in hotel operations in the Central Region, Ghana and the world at large.

Problem statement

Research carried out by Ismail (2002), Ayeh (2005), Hinson and Boateng (2007) and Issahaku (2012) indicate that there is limited knowledge on the use of ICT in the tourism sector, particularly the hotel subsector of Ghana. Areas in which they raised concerns included levels of ICT usage in hotels located outside Accra and access to ICT by hospitality organisations. Added to the above concerns raised, some hotels in Ghana still lack some basic ICT facilities such as internet and telephone in their guestrooms. In addition, most of the hotels which are located outside the capital city seem not to regard ICT facilities as important for their operations. The lack of ICT facilities makes it difficult for some customers such as business travellers who may need ICT services during their stay in the hotels. Although, research has been carried out on ICT use in the hotel sub-sector in Ghana, no such studies have been conducted on hotels in the Central Region which is one of the most popular tourist destinations in Ghana. This study, therefore, seeks to investigate the utilisation of ICT in hotels in the Central Region, and suggests possible solutions to the challenges associated with adoption of ICT by the hotels.

Objectives of the study

The general objective of the study is to analyse the utilisation of ICT in hotels in the Central Region of Ghana. The specific objectives of the study are to:

1. Ascertain the use of ICT in hotels in the Central Region.
2. Identify the factors that influence the use of ICT in hotels.
3. Determine the perceived benefits of ICT usage in hotels.

Research questions

The research attempted to answer the following questions:

1. To what extent do hotels in the Central Region use ICT

- in their business operations?
2. Which factors influence ICT usage in hotels?
 3. What are the perceived benefits of ICT to hotels in the Central Region of Ghana?

Significance of the study

The research contributes to knowledge by providing hospitality policy makers, stakeholders and planners within the industry with relevant information on the main factors which influence the use of ICT in hotel business operations. This is important because these factors influence their use of ICT in their business operations. Secondly, the use of ICT by small hospitality organisations was noted to have many benefits (Duffy, 2010; Ansah et al., 2012). Hence, there was a need for the study to investigate the perceived benefits of ICT use in the hotels. The results of this study will help bring out, from the hotel management staff perspective, what they perceive to be the benefits of ICT use in their hotel operations. This information is essential because the benefits derived from ICT use differs from hotels. Thirdly, the research aims at providing hospitality and tourism policy makers with relevant information regarding the use of ICT in hotel business operations. The information is important because it will assist hoteliers to take an active role in promoting the use of ICT in their business operations to improve service quality and increase productivity. In addition, this study will provide valuable information to hospitality organisations by showing the different areas of hotel operation where ICT is utilised. It will also identify the different types of ICT commonly used in hotel operations. With this information, management of hotels and potential investors in the sector will have informed knowledge about how to maintain a continuous use of ICT in their operations. Finally, apart from contributing to existing knowledge, the study will also form the basis for further research into ICT development in hotel operations in the Central Region, in particular, and Ghana at large.

Literature review

General ICT usage in hotels

Developments in ICT have changed the best operational and strategic practices for organisations on global level and transformed the competitiveness of enterprises and regions around the world (Issahaku, 2012). There have been a number of changes affecting the hotel industry in recent times and these have mainly originated from developments in modern technology. Consequently, many hotels' accounting processes are now highly automated and the emphasis is now on a more audit based approach. Hotel chains benefit from electronic

systems such as the property management system (PMS). When hotels utilise ICTs and the internet widely for their reservations, it enables both customers and the travel agencies to access accurate information on room availability ((Ansah et al., 2012; Cooper et al., 2013). According to Lattin et al. (2014), computer applications which include user friendly management systems and web-based interactive operations have considerably changed many work areas within hospitality businesses. A case study in Thailand showed that all hotels had websites and engaged in e-mail communications with customers, but there was a variation in their reliance on the internet to communicate and transact business with customers. In order to cater for the expansion of wireless network service provision, many hotels have adopted Wireless Local Area Network (WLAN). However, social, technical, and organisational factors influence the adoption decision (Schneider and Datta, 2006; ILO, 2010).

Perceived benefits of ICT use in the hospitality industry

The utilisation of ICT in the hospitality industry has increased the demand by consumers for quality service from hotel practitioners. As a result, some hotels have adopted ICT towards increasing operational efficiencies, reduction in transactional cost, facilitation of quality management of hotels, enhancement of productivity and easy access to hospitality information (Camison, 2000; Issahaku, 2012). ICT empower consumers to identify, customize and purchase tourism and hospitality products (Bethapudi, 2013). It further supports the globalisation of the tourism and hospitality industry by providing tools for developing, managing and distributing offerings worldwide. In addition, effective and high-speed ICT infrastructure and software applications in the tourism and hospitality industry are crucial for tourism development. This development in ICT allow customer management relations and supply chain management to be combined into single source that facilitates a variety of operations such as product selection, ordering, tracking, payment and reporting to be performed within the shortest possible time (Bethapudi, 2013).

A survey conducted by Sigala (2003) on ICT productivity in 3-star hotels in the UK found that ICT assimilation greatly increased operational efficiencies. ICT allowed the hotels to replace manual re-entry of data with computerised automatic systems, ensured easy recovery of information, sharing and searching of consolidated databases, which are vital for informational dynamic product/services. In addition, she noted that integration among ICT was also limited and concentrated within three clusters. These clusters were identified as distribution and reservation ICT, Food and Beverage ICT and Front Office ICT in the hotel services (Ansah, 2012).

The significance of ICT and information systems (IS) in quality management in the Spanish hotel industry was investigated by (Claver-Cortes et al., 2007). According to them new technology forms the basis for decision-making and facilitates quality upgrading of the hotels. Their study revealed that some hotel organisations recognised a greater impact of information technology on total quality management (TQM) scale. Giving reasons, they noted that this impact has emerged because ICT and TQM implementation levels are connected. They reiterated that ICT/IS make it possible to increase firm productive efficiency, particularly in the hotel industry, since the cost and time required to perform organisational routines are reduced. According to them, this is due to the application of automated technologies by employees to improve customer service. Moreover, a hotel can offer a higher customer satisfaction to guests through the provision of new ICT/IS services such as internet, Wi-Fi, and cable television (Claver-Cortes et al., 2007; Jones, 2007).

Barriers to ICT usage in the hospitality industry

Hospitality organisations face challenges regarding ICT adoption and utilisation. Some of these barriers include limited ICT knowledge, inadequate infrastructure, financial constraints, level of activities engaged in by hospitality organisations and small size of hospitality organisations (Law and Jogaratnam, 2005; Issahaku, 2012). They explained that due to the service-oriented nature of the tourism and hospitality industries, many managers and employees have limited ICT knowledge. Hotel managers generally do not have a clear understanding of how advanced ICT can improve their business performance, and thus, cannot communicate well with the experts. To remain competitive, they advised practitioners to explore the potential opportunities that ICT provides, and be proactive in recognising the capability of technology. Technological knowledge of employees and the capability of management can be a barrier to the adoption and extension of the information systems in any hotel organisation. Some managers of SMEs particularly hospitality establishments are reluctant to introduce ICT systems in their daily operations because of the fear that their employees might not be familiar with the new technology. In addition, lack of training for employees from ICT service providers serve as a barrier to the implementation of ICT in the hospitality industry (Kim et al., 2008; Wang and Wang, 2010).

Rural communities have greater limitations than urban areas in relation to ICT developmental activities in hotel operations (Olatokun and Keybone, 2010). They noted that the advancement in ICT to some extent can reveal certain rural infrastructural limitations as far as hotel management is concerned. Stressing the challenges, they argued that introducing ICT in rural areas requires

some minimum basic infrastructure such as adequate telephone lines, proper computer equipment and wireless mobile broad band which most rural communities often lack. To them, the function of ICT in productive processes and services typically involves hiring employees who are sufficiently competent at different levels. As a result, it is only by placing emphasis and effort on workers' qualification and training that a certain level of ICT utilisation can be achieved. Recent studies in the tourism and hospitality industry revealed that most accommodation establishments are considerably small, medium sized, independent, and family hotels (Nwakanma et al., 2014). As a result, they find it extremely difficult to utilise ICT in their operations. Simple procedures such as making reservations, registration of guests, check in, check out and guest billing are done manually. Lack of capital has resulted in high cost of accessing ICT by small and medium sized hotels (Hinson and Boateng, 2007; Shanker, 2008). Cooper et al. (2013) also added that small hotels in the hospitality industry are not able to expand in order to attract first class reservations and clients with respect to international standards. Meanwhile, the tourism industry in the world is growing fast but the hospitality industry is not able to match the general trend in the tourism industry.

A theoretical model of technology adoption in hospitality organisations

Understanding the technology adoption behaviour of hospitality organisations has been one of the most challenging issues in recent times. Among the various ways of understanding the technology adoption behaviour of hospitality organisations is the proposed model of technology adoption in hospitality organisations developed by Wang and Qualls (2006). The framework was developed based on modifications of existing Technology Acceptance Models (TAMs) in order to capture the adoption behaviour at the organisational level in the hospitality industry (Wang and Qualls, 2006). Venkatesh and Davis (2000) extended the original TAM by adding theoretical constructs such as social influence processes and cognitive instrumental processes. However, there has been a restricted use of the TAM framework to identify the adoption behaviour of hospitality organisations (Wang and Qualls, 2006). The first part of their model examines the impact of organisation's technology capacity with technology characteristics as moderating factors on the relationship between perceptions about technology and the adoption behaviour. The second part of the model focuses on identifying different perceptions from both internal and external perspectives.

Rogers' (1995) theory of the diffusion of innovation and innovation adoption has been viewed as a process of uncertainty reduction and information gathering (Wang

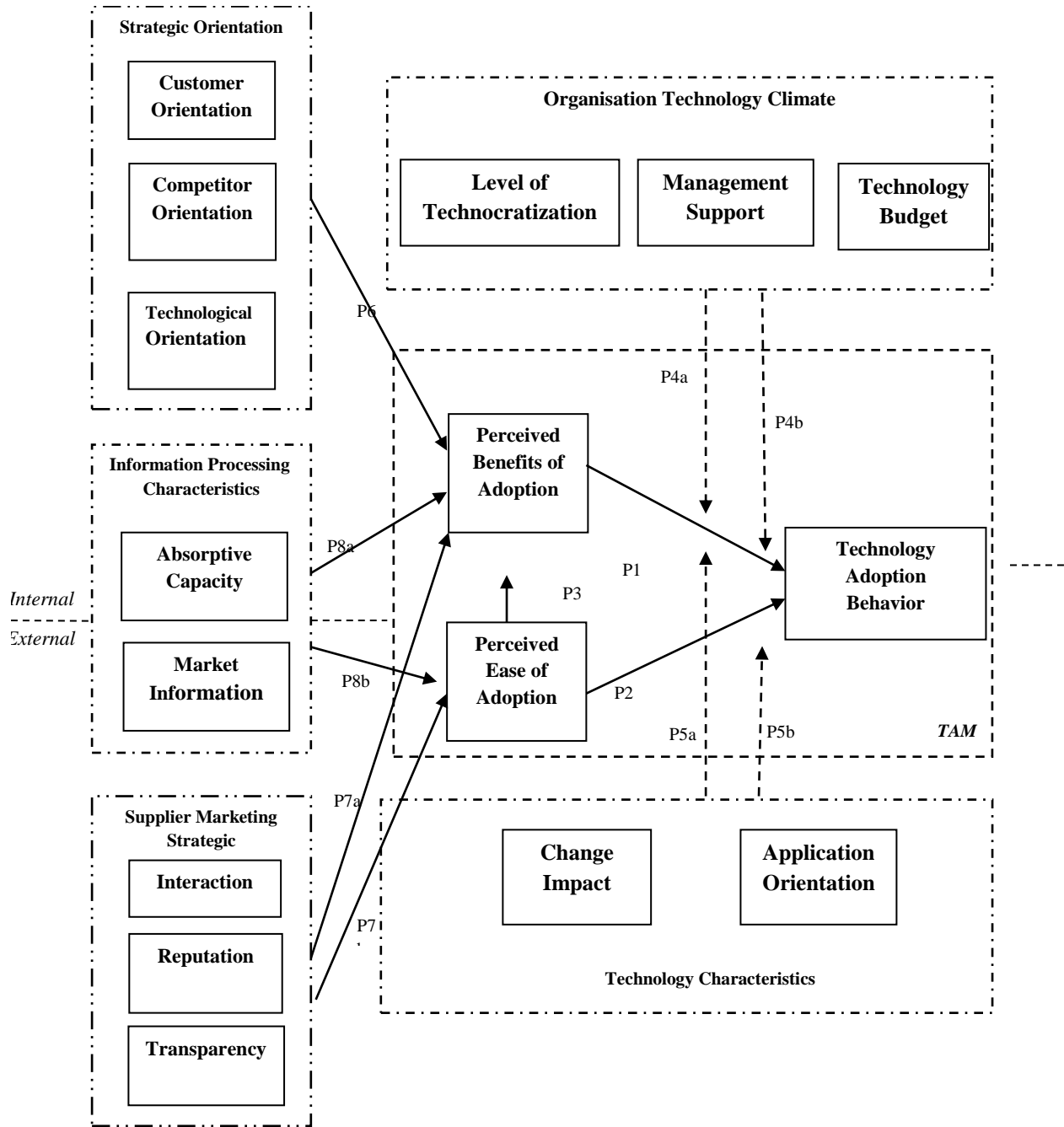


Figure 1. Proposed model of technology adoption by hospitality organisations; Source: Wang and Qualls (2006).

and Qualls, 2006). As indicated in Rogers' model information about the type and features of innovation flows all the way through the social system to which the organisations that are adopters belong. Hospitality organisations as prospective adopters of technology seek information to assess and estimate the expected consequences and benefits of adopting the innovation. However, a hospitality organisation's perceptions of the technology still determine its decision to adopt an

innovation. The study by Wang and Qualls (2006) seek to advance the idea that moderating factors influence the relationships between perception of technology and adoption behaviour. In addition, hospitality organisations often face constraints such as lack of resources, technological expertise, and management support which affect technology behaviour. The proposed model of technology adoption in hospitality organisations is presented in Figure 1.

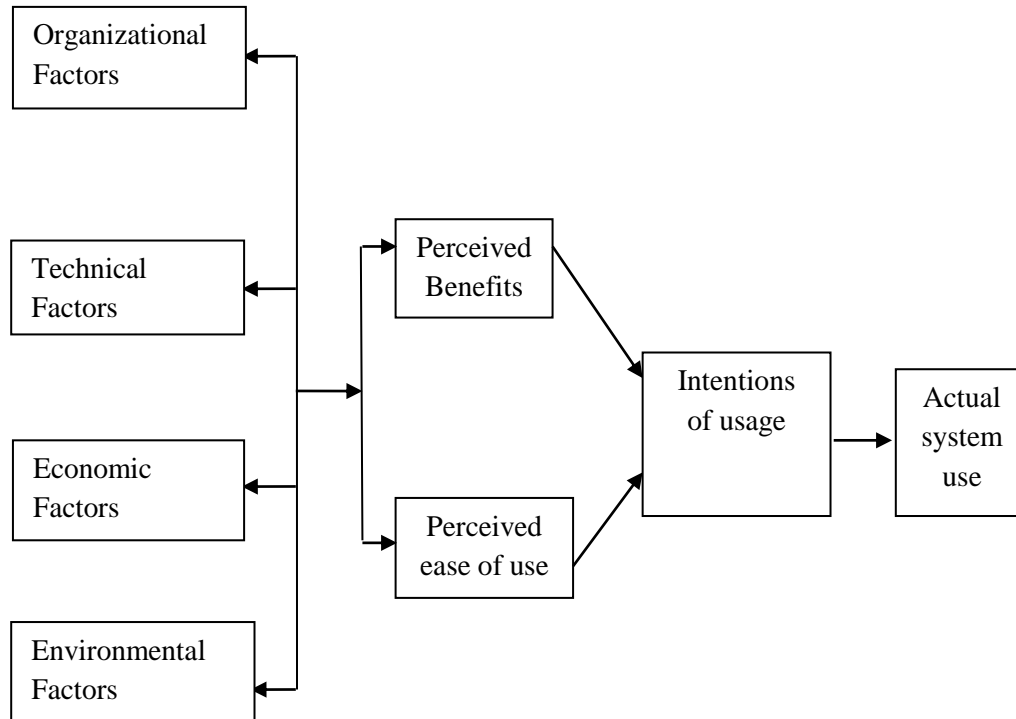


Figure 2. Conceptual model for ICT utilisation in hotel operations; Source: Adapted from Rofhok-Bjorni (2006).

Conceptual model

An adapted version of Rofhok-Bjorni (2006) model was used as a framework for the study because it has considerable amount of variables which is significant to ICT utilisation by organisations. The adapted model which is shown in Figure 2 indicates that there are four main sets of factors which influence the use of ICT in a hotel business operation. These are organisational, technical, economic and environmental factors. After examining the four main factors, the hospitality organisation then evaluates the perceived benefits of using the innovation. The perceived ease of use is also assessed. The perceived ease of use affects the technology usage behaviour since a technology which is easy to use saves time and reduces operational cost. The final stage of the model is the actual utilisation process of the adopted technology.

METHODOLOGY

Area of the study

The Central Region of Ghana was the study area. The capital city of the Central Region is Cape Coast which was the seat of British administration during colonial era until 1877 (Graham, 1994). The Central Region has several accommodation establishments ranging from 3-stars to budget hotels. Hotels are located along the famous beach destinations such as Gomoa Fetteh, Cape Coast and Elmina.

Research design

The study adopts a cross sectional survey design. Babbie (2011) explains that a cross-sectional design or transversal studies deals with observations of a sample or cross section of a population or phenomenon that are made in one point in time. The design helps to enrich a study because it allows a large group of people to be investigated at a single point in time.

Population of the study

The study targeted management and supervisors of hotel establishments located in the Central Region of Ghana based on the information collected from Ghana Tourism Authority (2011). These categories of people were selected as the target population because the research aimed to investigate the utilisation of ICT in hotel business operation in the Central Region. Hence, the management and supervisors of hotels were, targeted because they were in a good position to give in- depth information on ICT usage in their respective hotels. At the time of conducting the survey 130 had registered with the Ghana Tourism Authority in the Central Region.

Sample size

In order to get a representative sample size for the study, the present researcher used Sarantakos (2005) sample size table. The Sarantakos sample size table is a table that has a scientifically calculated sample size used for quantitative studies. This table is widely recognized as one of the scientific means of getting a representative sample size for quantitative analysis. This table has various population sizes that are representative enough to capture

Table 1. Sex of respondents and hotel category.

Gender of respondents	Hotel category						
	3-star	2-star	1-star	Guest house	Budget	Total	
	%	%	%	%	%	N	%
Male	62.5	53.6	61.7	61.5	53.3	97	57.4
Female	37.5	46.4	38.3	38.5	46.7	72	42.6
Total	100	100	100	100	100	169	100

Source: Fieldwork, 2012.

Table 2. Age distribution of respondents and hotel category.

Age of respondents	Hotel category						
	3-star	2-star	1-star	Guest house	Budget	Total	
	%	%	%	%	%	N	%
< 30	12.5	50.0	51.0	57.7	46.7	82	48.5
30-39	25.0	42.9	27.7	26.9	33.3	54	32.0
40-49	62.5	7.1	14.9	11.6	15.0	26	15.4
50 and above	-	-	6.4	3.8	5.0	7	4.1
Total	100	100	100	100	100	169	100

Source: Fieldwork, 2012.

the views of the people in the target population. In line with the cross-sectional design chosen for the study, a total of 50 hotels participated in the study out of the target population of 130 hotels. The total number of staff at the management and supervisory level from the 50 hotels were approximately 400. Based on the Sarantakos sample size table, and consistent with the cross-sectional design approach, a sample size of 200 was arrived at.

Instrument for data collection

The study employed quantitative method of data collection. The instrument used for the study was a questionnaire.

Method of data collection

The field work took place in March, 2012. The researcher administered 200 questionnaires by hand to management staff and supervisors of the 50 selected hotels. The sampled hotels were visited normally between the hours of 8am and 5pm each day. The questionnaires were given to the respondents and retrieved at a later date. A number of phone calls and visits were made to each of the sampled hotels in an attempt to retrieve the completed questionnaires. On the whole, 169 out of 200 questionnaires were retrieved. The response rate of 84.5% was deemed acceptable.

Data analysis technique

Statistical Product for Service Solution (SPSS) version 16 software was used to obtain descriptive statistics such as frequencies, cross-tabulations, tables, charts, mean and standard deviation for data analysis. Kruskal Wallis H Test and one-way analysis of variance (ANOVA), which are inferential statistical tools, were used to test for differences in ICT usage among hotel categories. To test for the differences in ICT usage, the dependent and independent variables were identified.

RESULTS

Socio-demographic characteristics of respondents

Sex of respondents

Out of the 169 respondents who responded to the question on gender, more than half (57.4%) were males and 42.6% were females as presented in Table 1. There were relatively more male respondents (62.5%) from 3-star hotels than any other category of hotel. The budget hotels had the lowest percentage of (53.3%) of male respondents. The budget hotels had the highest percentage of female respondents (46.7%), whilst 3-star hotels had the lowest.

Age distribution of respondents

The age group with the highest proportion of respondents (48.5%) was below 30 years of age group as shown in Table 2. The guest houses had most of their respondents (57.7%) in this age group. The 3-star hotels had the least proportion (12.5%) of respondents in this age group. Two categories of hotels which had over 30% of their respondents being in the 30 to 39 age group were 2-star and budget hotels. The 40 to 49 age bracket represented 15.4% of the respondents; and except for the 3-star hotels which had 62.5% of its respondents being in this age group, all other categories of hotels had only 15% or less of their respondents in this age group.

Table 3. Educational qualifications of respondents and hotel category.

Educational qualifications of respondents	Hotel category						
	3-star	2-star	1-star	Guest house	Budget	Total	
	%	%	%	%	%	N	%
JHS	-	7.2	12.7	26.9	6.7	19	11.2
SHS	12.5	21.4	42.6	50.0	53.3	72	42.6
Tertiary	87.5	71.4	44.7	15.4	36.7	74	43.8
Others	-	-	-	7.7	3.3	4	2.4
Total	100	100	100	100	100	169	100

Source: Fieldwork, 2012.

Table 4. Potential ICT equipment used in hotels business operation.

ICT equipment	Hotel category						
	3-star	2-star	1-star	Guest house	Budget	(N=169)	
	%	%	%	%	%	N	%
Telephone	16.7	22.8	30.7	55.3	41.9	169	32.9
Computers	16.7	19.5	23.6	21.2	19.6	106	20.6
Printers	16.7	19.5	15.0	15.0	11.9	79	15.4
Internet facility	16.7	10.6	17.6	8.5	10.5	67	13.0
Photocopiers	16.6	14.6	10.5	-	9.8	56	10.9
Fax machine	16.6	13.0	2.6	-	6.3	37	7.2
Total	100	100	100	100	100	514*	100

*More than N due to multiple responses; Source: Fieldwork, 2012.

Educational qualifications of respondents

With regards to educational qualifications of respondents, the greatest proportion (43.8%) had tertiary education as shown in Table 3. The 3-star hotels had most of their respondents (87.5%) with tertiary education, while 2-star hotels had 71.4% of respondents holding tertiary level education. Senior High School (SHS) certificate holders constituted 42.6% of the total number of respondents. A significant percentage of respondents (53.3%) in budget hotels held this qualification.

Potential ICT equipment used in hotels business operation

Findings of the research study revealed that usage of ICT equipment such as telephone representing (32.9%) in hotels business operation; then followed by the usage of computer (20.6%); and printers (15.4%) presented in Table 4. The least ICT equipment employed in the hotels industry were photocopiers (10.9%) and fax machines (7.2%). Furthermore, findings of the research study revealed that the majority of the guest houses were found not using ICT equipment such as fax and photocopier machines. The results of the research study allude that the 3-star hotels were found to have different types of ICT equipment such as Wi-Fi, key cards and mobile phones.

Services and usages of ICT in hotel business operation

Findings of the research study revealed that booking of client (29.7%) were the most frequently services and usages of ICT in hotels business operation; then followed by financial transactions (23.3%) and internet services (18.4%). Interestingly that the service and usage ICT in security and safety operation represent the least percentages of (7.1%) presented in Table 5.

Performance of ICT services in hotel business operations

Kruskal Wallis H Test, were used to test for the difference in mean scores of respondents in computers and telephone performance in different services and usages of ICT equipment in hotels business operations presented in Table 6. The analysis of the Kruskal test showed that the performance of computer and telephone in security and safety were found to have the higher rates in guest houses (mean rank = 102.44) than those of hotel ($X^2=8.823$; $df=4$; $P=0.066$). It was observed that the differences in the mean rankings of computer and telephone performance in security and safety service in hotels were not significant ($P> 0.05$). Booking of clients were found to have the higher rating in 1-star hotels

Table 5. Services and usage of ICT in hotel business operations.

Areas of ICT use	Hotel category						Total (N=169)	
	3-star	2-star	1-star	Guest house	Budget	N	%	
	%	%	%	%	%			
Booking of clients	25.0	21.6	25.8	52.4	33.6	129	29.7	
Financial transaction	25.0	25.5	25.0	14.3	22.4	101	23.3	
Internet services	21.5	22.5	18.8	19.0	14.2	80	18.4	
E-Business services	17.8	12.8	14.1	2.4	12.6	54	12.4	
Monitoring services	-	8.8	12.5	7.1	8.2	39	9.1	
Security and safety services	10.7	8.8	3.8	4.8	9.0	31	7.1	
Total	100	100	100	100	100	434*	100	

*More than N due to multiple responses; Source: Fieldwork, 2012.

(mean rank = 87.80) than the other hotels categories ($X^2=2.483$; $df=4$; $P=0.648$). The observed differences in the mean rankings of computer and telephone performance of booking of clients among hotels were not significant ($P > 0.05$). The guest houses and monitoring services has the higher rated (mean rank = 100.62) compared to the other hotels categories ($X^2=11.917$; $df=4$; $P=0.018$). The observed differences in the mean rankings in performance of computer and telephone in monitoring services were significant ($P < 0.05$). Financial transactions were found to have significant differences observed in the mean ranking of performance of computer and telephone ($P < 0.05$). Financial transactions was rated higher in guest houses (mean rank = 112.88) compared to the other hotels category ($X^2=24.620$; $df=4$; $P=0.000$). A significant difference was observed in the mean rankings of performance of computer and telephone in the provision of internet services ($P < 0.05$). Internet services were also rated higher in guest houses (mean rank = 113.87) compared to the others hotels categories ($X^2=26.408$; $df=4$; $P=0.000$). The Kruskal test analysis suggests that there is no significant difference between mean ranking for booking of clients, security and safety services for performance of computers and telephone in hotel category. However, there is significant difference the mean ranking of computers and telephone performance for monitoring services, internet services and financial transaction in the hotel category.

Factors that account for the utilisation of ICT in hotels

Principal Component Analysis (PCA) was employed to analyse the results presented in Table 7. The sixteen explanatory variables were subjected to the PCA, using the Statistical Product for Service Solutions (SPSS) version 16. Prior to performing the PCA, the suitability of the data for factor analysis was assessed. Evaluation of the correlation matrix revealed the presence of many

coefficients of 0.3 and above. The Kaiser-Meyer-Okin value was 0.748; this exceeded the recommended value of 0.60 (Kaiser as cited in Pallant, 2005) while the Bartlett's test of sphericity was statistically significant at 0.000.

Perceived benefits of ICT in hotel operations

This section examines perceived benefits of ICT usage in the study area. Findings of the research study revealed that (34.7%) of the interviewed perceived benefits of ICT usage was] access to business information easily. On the other hand, 25.4% of the interviewed stated that the perceived benefit of ICT usage was promoting better customer service. While (21.6%) of the interviewed allude that perceived benefits of ICT usage was to increased patronage. However, (6.9%) of the interviewed perceived that the benefits of ICT usage in security network as presented in Table 8. The least cited benefit was strong security network (6.9%) due to the fact hotels did not use ICT for security operations.

DISCUSSIONS

Potential ICT equipment used in hotels business operation

Table 4 showed that the telephone was the ICT equipment that was most commonly used by all categories of hotels 32.9% and fax machines were the least commonly used ICT application 7.2%. This is in relation to the work of Ayeh (2005) which concluded that the most common ICT applications found in the Ghanaian hotels was the telephone. The study also indicated that the next common ICT equipment available in the hotels were computers 20.6%, followed by printers 15.4% and internet 13.0%. This confirms Croes and Tesone (2004) assertion that computers have become popular ICT

Table 6. Mean comparison of performance of computers and telephone usage in areas of operation among hotel categories.

Areas of operations by hotel category	N	Kruskal Wallis mean	Rank	X ²	Df	(N=169) P – value
Security and safety Services						
guest house	26	102.44	1	8.823	4	0.066
1 –star	47	86.77	2			
Budget	60	86.18	3			
2 – star	28	70.84	4			
3 – star	8	58.69	5			
Booking of clients						
1 –star	47	87.80	1	2.483	4	0.648
Budget	60	87.21	2			
Guest house	26	85.04	3			
2 – star	28	82.20	4			
3 – star	8	61.69	5			
Monitoring services						
Guest house	26	100.62	1	11.917	4	*0.018
Budget	60	92.40	2			
1-star	47	82.16	3			
2 – star	28	68.82	4			
3 – star	8	52.06	5			
Financial transaction						
Guest house	26	112.88	1	24.620	4	*0.000
Budget	60	95.54	2			
1-star	47	76.64	3			
3 – star	8	61.12	4			
2 – star	28	57.38	5			
Internet services						
Guest house	26	113.87	1	26.40	4	*0.000
Budget	60	95.29	2			
1 –star	47	77.44	3			
2 – star	28	58.39	4			
3 – star	8	51.56	5			

*Significant level at $P < 0.05$ Source; Fieldwork, 2012.

applications in many organisations including hospitality establishments.

Services and usages of ICT in hotel business

Table 5 shows that the service areas where ICT was most frequently utilised were booking of clients (29.7%), financial transactions (23.3%) and internet services (18.4%). ICT was least employed for security and safety operations (7.1%). Most of the hotels did not use ICT for security services. This finding is in line with a study by Organisation for Economic Co-operation and

Development (OECD) (2004) which found that hospitality firms including hotels utilised ICT mainly for booking of clients.

Performance of ICT in services in hotel business operations

From Table 6, the analysis further suggests that the mean ranking for booking of clients had a higher rating in 1- star hotels (mean rank = 87.80), security and safety services was rated higher in guest houses (mean rank = 102.44) for performance of computers and telephone

Table 7. Rotated component matrix showing factor loadings and amount of variance explained for the use of ICT in hotels in the central region.

Factor	Variable	Factor loading	Eigenvalue	% of variance explained
Economic factors	Software prices	0.768	2.757	18.922
	Cost of ICT infrastructure	0.732		
	Cost of ICT training	0.685		
	Computer hardware prices	0.627		
	Affordability of ICT equipment	0.431		
Technical factors	Compatibility	0.802	1.229	15.579
	Accessibility	0.447		
	Convenience to use	0.332		
Total			4.056	34.501

Bartlett's test of sphericity (Approx. Chi-square) = 580.432, Significance = 0.000, Kaiser-Meyer-Olkin (KMO) Measure of Sample Adequacy = 0.748.

Table 8. Perceived benefits of ICT usage in hotels business operations.

Areas of operation	Hotel category					Total	
	3-star	2-star	1-star	Guest House	Budget	(N=169)	
	%	%	%	%	%	N	%
Easy access to information	34.8	25.3	36.7	41.3	36.3	135	34.7
Better customer services	26.1	24.1	22.0	33.2	26.5	99	25.4
Increase in patronage	26.1	21.5	21.1	21.2	21.2	84	21.6
Easy monitoring of visitors	8.7	16.4	11.0	4.3	11.5	44	11.4
Strong security network	4.3	12.7	9.2	-	4.5	27	6.9
Total	100	100	100	100	100	389*	100

*More than N due to multiple responses; Source: Fieldwork, 2012.

showed no significant difference with hotel category. However, the mean ranking of computers and telephone performance for monitoring services (mean rank = 100.62), internet services (mean rank = 113.87) and financial transaction (mean rank = 112.88) showed a significant difference with hotel category.

Factors that account for the utilisation of ICT in hotels

Table 7, shows the rotated component matrix which suggests that economic factors (component 1) 18.92% and technical factors (component 2) 15.57% are the main factors that statistically influence the use of ICT in hotels in the Central Region. This supports the findings on ICT utilisation in hotels in Portugal by Calatrava (2005) which concluded that economic factors such as computer hardware prices, software prices, and cost of ICT infrastructure are major factors which influence the use of ICT in the hotel industry.

Perceived benefits of ICT in hotel operations

Table 8, showed that easy access to business information (34.7%) was perceived by the interviewed as the major benefits of ICT usage. This confirms Jones and Lockwood (2004) assertion that flawless transfer of information through joint electronic files and networked computers increase the efficiency of business processes in the general hotel operations. In addition, 25.4% of the interviewed stated that the perceived benefit of ICT usage was promoting better customer service. While 21.6% of the interviewed revealed that perceived benefits of ICT usage was to increase patronage. This finding supports Huang (2008) study which found out that hospitality businesses derives benefits such as improvement in customer service from ICT use. The international hotel industry has been and continues to face technological change. High technology services have become a requirement demanded by sophisticated hotel guests. A new challenge for hotel management staff in the Central Region is how to integrate the new and

complex ICT systems into their existing business operations. The lack of absorption of ICT into hotel operations in the study area hinders full ICT utilisation.

CONCLUSION AND IMPLICATIONS

Although, there is an increasing demand on the usage of ICT in the hospitality industry in the most part of the world. The usage of ICT equipment such as telephones and computer were mainly utilize for booking of clients and financial transaction are relatively good in the hospitality industry business and operations in the Central Region of Ghana. However, on the other hand, the utilization of internet services for security and safety services were very limited which mean the general managers of the hotels industry were not aware fully on the advantage of utilizing ICT equipment's in hotels business operation. There is an evidence that there is limited budget especially for the ICT in most of the hotels industry in the region. There is a need for Ghana Hotels Association (GHA) in collaboration with Ghana Tourism Authority (GTA) to promote and encourage the hoteliers' and general managers to benefit from ICT in the hotels business operations. Lack of trained personnel, unreliable power supply, slow internet connectivity, virus infection of files and lack of ICT facilities which affect ICT utilisation by some hospitality firms in the region. The hospitality firms in the Central Region need to invest in ICT so as to benefit from the opportunities it offers. There is also the need for hotels to work out strategies for a long term ICT investment as a way of increasing productivity and maximising profit.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

- Ansah KA, Kontoh M, Blankson VS (2012). The use of information communication technologies (ICT) in front office operations in chain hotels in Ghana. *Int. J. Adv. Comput. Sci. Appl.* 3(3):72-77.
- Ayeh JK (2005). Information Communication Technology (ICT) and tourism promotion in the Greater Accra Region: The use of internet in Ghana hotels (Unpublished Master's thesis). University of Cape Coast, Cape Coast, Ghana.
- Babbie E (2011). *The basics of social research*. 5th edition Belmont: Thompson Wadsworth.
- Bethapudi A (2013). The role of ICT in tourism industry. *J. Appl. Econ. Bus.* 1(4) 67-79.
- Calatrava J (2005). New information and communication technologies on European rural development: Some considerations about their use and potentiality. EFITA/WCCA Joint Conference on IT in Agriculture. Vila Real, Portugal. Retrieved on 30/06/2011 from <http://www.docstoc.com/docs/.../July25-28-2005-Vila-Real-Portugal>.
- Camison C (2000). Strategic attitudes and information technologies in the hospitality business: An empirical analysis. *Int. J. Hosp. Manag.* 19(2):125-43.
- Claver-Cortes E, Pereira-Moliner J, Tari JJ, Molina-Azorin JF (2007). TQM managerial factors and performance in the Spanish hotel industry. *Indust. Manag. Data Syst.* 108(2):228-244.
- Cooper C, Fletcher J, Fyall A, Gilbert D, Wanhill S (2013). *Tourism principles and practice*, (5th Ed). London: Pearson Education Limited.
- Croes RR, Tesone V (2004). Small firms embracing technology and tourism development: Evidence from two nations in Central America. *Int. J. Hosp. Manag.* 23:557-564.
- Duffy S (2010). Factors influencing technology adoption amongst SMEs, Conference on Tourism and Hospitality Research. Ireland. Retrieved on 04/06/2011 from <http://www.shannoncollege.com/.../THRIC-2010-Full-Paper-S-Duffy.pdf>.
- Ham S, Kim W, Jeong S (2005). Effect of information technology on performance in upscale hotels. *Int. J. Hosp. Manag.* 24(2):281-294.
- Hinson R, Boateng R (2007). Perceived benefit and management commitment to e-business usage in selected Ghanaian tourism firms. *Elect. J. Inform. Syst. Dev. Ctries.* 31:1-18.
- Huang L (2008). Bed and breakfast industry adopting e-commerce strategies in e-service. *Service Indust. J.* 28(5):633-648.
- Ghana Tourism Authority (2011). *Inspection and licensing programme list of hotels*. Cape Coast, Ghana.
- Graham JE (1994). *Cape Coast in history*. Cape Coast, Ghana: Anglican Printing Press.
- International Labour Organisation (2010). *Human resources development, employment and globalisation in the hotel, catering and tourism sector*. Tripartite Meeting on the Human Resources Development Employment and Globalisation at International Labour Office in Geneva. Retrieved on 13/01/2011 from <http://www.turismdurabil.ro/literature/csr/additional.../ILOReport%20Tourism.pdf>.
- Ismail M (2002). *Readiness for the networked world: Ghana assessment*. The centre for international development. USA: Harvard University Press.
- Issahaku I (2012). *Adoption of E-Business in the hospitality industry in Ghana: A case study of hotels* (Unpublished Master's thesis). Kwame Nkrumah University of Science and Technology, Ghana.
- Jones P, Lockwood A (2004). *The management of hotel operations*. United Kingdom: TJ International Press.
- Jones P (2007). Drivers of productivity improvement in the tourism and hospitality industry: Practice, research evidence and implications for teaching, Eurhodip Conference in London. Retrieved on 11/11/2010 from http://epubs.surrey.ac.uk/2199/1/Drivers_of_Productivity_EDITED_v2.pdf.
- Kim TG, Lee JH, Law R (2008). An empirical examination of the acceptance behaviour of hotel front office system: An extended technology acceptance model. *Tour. Manag.* 29:500-513.
- Lattin GW, Lattin TW, Lattin JE (2014). *The lodging and food service industry*, 8th edition American Hotel and Lodging Association, USA: Educational Institute.
- Law R, Jogaratnam G (2005). A study of hotel information technology applications. *Int. J. Contemporary Hosp. Manag.* 17(2/3):170-180.
- Nwakanma IC, Ubani EC, Aseigbu BC, Nwokonkwo OC (2014). Factors affecting the adoption of ICT in the hospitality industry of Imo States. *Int. J. Comput. Sci.* 11(1):170-181.
- OECD (2004). *ICT, e-business and SMEs*. Paris, France: Organisation for Economic Co-operation and Development.
- Olatokun W, Keybone M (2010). E-Commerce technology edoption by SMEs in Botswana. *Int. J. Emerging Technol. Soc.* 8(1):42-56.
- Page SJ (2011). *Tourism management: An Introduction*, 4th edition UK: Elsevier Ltd.
- Pallant J (2005). *SPSS survival manual 2nd edition* Berkshire: Open University Press.
- Rohfok-Bjorn A (2006). *Electronic invoicing in Finland: Attitude towards electronic invoicing by financial managers in small to medium sized companies*. (Master's thesis, Swedish School of Economics and Business, Sweden).
- Sarantakos S (2005). *Social research*, 3rd edition Australia: Macmillan Press LTD.

- Schneider C, Datta P (2006). Adoption of WLANs in the hotel industry: A theoretical cost-analytic framework. *J. Hosp. Tour. Manag.* 13(2):189-198.
- Shanker D (2008). *ICT and tourism: Challenges opportunities*. Indian: Institute of Technology Press LTD.
- Sigala M (2003). The information and communication technologies productivity impact on the UK hotel sector. *Int. J. Operations Prod. Manag.* 23(10):1224-1225.
- Venkatesh V, Davis FD (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Manag. Sci.* 46(2):186-204.
- Walker JR (2010). *Introduction to Hospitality Management 3rd edition* USA: Pearson Education Inc.
- Wang Y, Qualls W (2006). Towards a theoretical model of technology adoption in hospitality organisations. *Int. J. Hosp. Manag.* 26(3):560-573.
- Wang HY, Wang SH (2010). Predicting mobile hotel reservation adoption: Insight from a perceived value standpoint. *Int. J. Hosp. Manag.* 29:598-608.