Information and Communication Technology in Small Firms

Abbreviations List

ICTs	-	Information and Communication Technologies
SMEs	-	Small and Medium Enterprises
PMS	-	Property Management System
CRS	-	Central (Computer) Reservation System
GDS	-	Global Distribution System
OECD	-	Organisation for Economic Co-operation and Development
APDIP	-	Asia-Pacific Development Information Programme
UNDP	-	United Nation Development Programme

INTRODUCTION

The Information and Communication Technology (ICT) has deeply influenced the way business is conducted these days (Alam, 2009; Buhalis and Law, 2008). There has been transformation in global production, business strategies, business practices, consumption pattern of consumers and the structure of industries due to the development of the ICT (Porter, 2001; Alam, 2009). Organisations take advantage of the benefits the ICT offers. Ryssel et al. (2004) described ICT as any form of technology which is used in order to capture, present, communicate, create, exchange, manipulate as well as the usage of information in its various forms. It also include business data, still images, voice conversations, multimedia presentations, motion pictures etc. (In Ruiz-Molina et al, 2010). The ICT have had huge impact not just on the tourism and hospitality organisation, but on all industries as a whole (Ip et al, 2010). A good example of its success in the tourism and hospitality industry could be attributed to the introduction of Central Reservation System (CRSs) in the 1970's; while the Global Distribution System (GDSs) was introduced in the 1980's; and the internet in the 1990's, all these technologies shaped the industry (Ip et al, 2010). Adopting ICTs not only benefits customers but also suppliers. It helps customers search and purchase tourism and hospitality product with ease, and it helps suppliers develop, manage and distribute their products without any geographical constraint or time limitation (Buhalis and Law, 2008).

The small and medium enterprise dominates more than half of all business in the UK, creating over half of all employment (Kazi, 2007). It also dominates the tourism and hospitality industry all around the world (Morrison, 1998; Morrison and Thomas, 1999; cited in Buhalis, 2007). Nowadays, the SME's adopts the use of ICT due to its cost-effectiveness, cheap ICT products and personal ownership (Alam and Noor, 2009). SMEs can successfully compete with large corporations if they make use of ICT because it improves business

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competitiveness with internet providing lots of opportunities (Albert and Fernando, 2007). Buhalis (2007) described the SME's as organisations which operates with less than 250 employees, and are not considered as international chain. This essay looks into the impacts of the Information and Communication Technology (ICT) on small and medium sized hotels. The objective of the essay is to examine existing practices, trends and challenges the small and medium hotels face.

ICTs and SMEs

Economists view ICTs as a producer of durable goods in order to increase firm's competitiveness and substitute expensive resources input e.g. labour (Tangen, 2004; In Gretzel et. al, 2010). According to Hamelink (1997) ICT "***consist all technologies which enable the handling of information and facilitates different forms of communication among human actors, between human beings and elect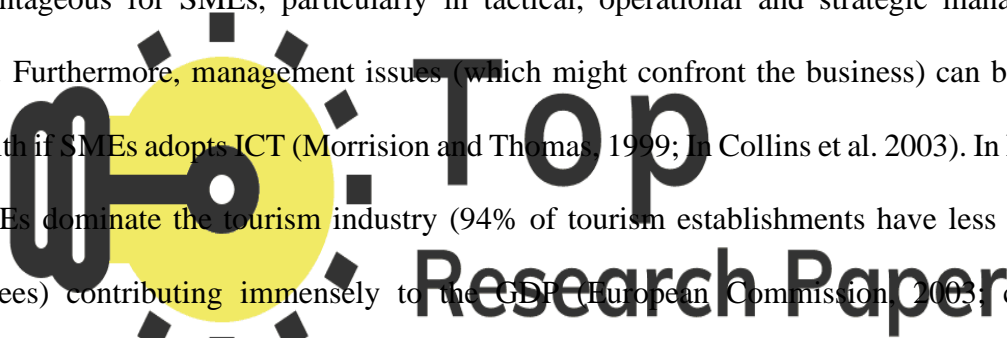ronic system, and among electronic systems"***. Stevenson (1997) described ICT as technologies which handle information and aid communication. Lee et al, (2003) described ICT as a tool which improves service quality, efficiency and increases competitive advantage and profitability (In Hitz et al, 2006). Heeks (1999) defined ICT as an electronic means of capturing, processing, storing and communicating information.

The increase in the level of competition has made organisation search for more effective business strategy. Today, there are various forms of ICTs some are widespread while others are less popular in-terms of usage. Therefore, the differences between firms may prompt various uptake of ICT. Current studies on ICT and SMEs focus on internet based technology and other network technologies. The development of network technologies has helped SMEs to transfer and share information. The micro firms adopt standalone ICT applications in order to meet specific business needs. Mitchell and Clark (1999) described word processing, financial management and producing account as the three most common used ICT applications in the SMEs (Galloway and Mochrie, 2005). The revolution of ICT particularly the internet has transformed the market place into an electronic hub (Bakos, 1991; In Buhalis and Kaldis, 2007). Electronic businesses influence collaboration, communication and commerce, thereby creating new opportunities as well as challenges.

There is no single definition for SMEs due to wide diversity of businesses. Preston et al. (1986) defined SMEs as firms which is independently owned and managed without being dominant in its field of operation. Most authors describe SMEs as organisation that achieves annual sales of less than £50 million and employs less than 250 employees (Analoui and Azhdar, 2003). The European Commission defined SMEs as a firm with: less than 40 million euro turnover; less than 250 employees (micro 0-10, small 11-50, and medium-sized 51-250); and less than a quarter of large firms. SMEs are characterized by their small size, seasonality, flexibility, independence and are mostly family owned (in Buhalis, 2003). In addition, Lim (2010) described SMEs *"as independent, non-subsidiary firms which employ less than a given number of employees. However, this number varies across different countries"* (William, 2000; In Lim, 2010). Olatokun and Kebonye (2010) regarded SMEs as the cornerstone of both developed and developing countries because it is a major driver of the economy (creating lots of job opportunities to the people).

In recent years, the SME's play a crucial role in ensuring economic development in developed and developing countries. For instance, SMEs in the UK accounts for nearly 40 percent of the country's GDP with an annual turnover of 1 trillion pounds, creating 12 million jobs to the people (Small Business Services, 2000; In Analoui and Karami, 2003). Despite such roles, they (SMEs) look vulnerable to rapid technological change, which creates lots of opportunities as well as threats to the existence of SMEs (Rathakrishnan, 2009). In a way, globalisation has not only affected SMEs competitiveness, but it also pose huge threats of survival for the weaker firms (i.e. they have had a deep thought of their production and marketing strategies). SMEs derive lots of opportunities from globalisation. Such opportunities include: the reduction of trade barriers (provides new foreign market opportunities for SME's thereby allowing important competitive stimulus); it creates international best-practice exposure to SME's (for example, with regard to ICT); it allows

access to niche market; it brings about possibilities of exploiting economies of scale; it allows optimal market segmentation; and sharing of costs e.g. finance cost (OECD, 2004a, 2004b; OECD, 2008; cited in Lenihan et al, 2010). Globally, the SMEs lack expertise and resources to follow ICT development (Levi and Powell, 2000; In Buhalis and Kaldis, 2007). ICT provides new tools and opportunities to SMEs which fosters their expansion in the foreign market (Piscitello and Sgobbi, 2004). SMEs should implement the most appropriate technology that will meet the needs of their business. The integration of technology into the business process is advantageous for SMEs, particularly in tactical, operational and strategic management aspects. Furthermore, management issues (which might confront the business) can be easily dealt with if SMEs adopts ICT (Morrision and Thomas, 1999; In Collins et al. 2003). In Europe, the SMEs dominate the tourism industry (94% of tourism establishments have less than 10 employees) contributing immensely to the GDP (European Commission, 2003; cited in Badnjevic and Padukova, 2006). The implementation of ICT in organisations (SMEs) brings about cost reduction and increases productivity level (Lymer et al, 1997; In Alam and Noor, 2009). Lauder and Westall (1997) stressed that ICT enhances the following: cheap and faster communication; better customer and supplier relations; better access to information; effective and efficient marketing; quality development of products and services (In Alam and Noor, 2009). According to Chong et al (2009) the adoption of ICT enable business competition on a global scale with improved efficiency and fostering supplier and customer relationship (In Alam and Noor, 2009). Despite these benefits, most SMEs are still not making full potential of the advantage of ICT. The major concern is the limited adoption of ICT innovation in SMEs which raises eyebrow about their readiness to adopt ICT as a business tool (Buhalis and Khaldis, 2007) identified some barriers which mitigate such reluctance, it include: lack of being aware of the potential benefit of ICT, lack of easy to use technologies, lack of resources and lack of skilled workers. Kapurubandara (2009) pointed

out that previous studies (Chen, 2003; Mehrtens et al. 2001) identified barriers that affect SMEs adoption of ICT. They grouped the factors into three major categories namely: cost and return on investment; firm/organisation characteristics (level of technology usage in the organisation); and owner/manager characteristics (Jacovou et al, 1995; In Olatokun and Kebonye, 2010). Furthermore, OECD (1998) identified factors such as lack of awareness, shortage of skills and resources, security, limited knowledge, set-up cost and pricing issue etc. as a major barrier for ICT adoption in SMEs. However, Kamel (2010) argued that cost related to ICT usage in (SMEs) is no longer seen as a barrier rather, it is seen as an investment for the future.

A wide range of catalyst (push and pull factors) determines SMEs propensity to adopt ICTs. The push factors include external forces which prompts SMEs to adopt ICT in order to avoid potential threats. The pull factor on the other hand provides incentives for firms to adopt ICT in order to gain potential benefits. Therefore, the difference between the push and pull factor is SMEs willingness to adopt ICT (Buhalis, 2003).

ICT adoption within the hospitality and tourism industry started in the early 70s and it has been rapidly evolving over the years (Collins and Cobanoglu, 2008; In Gretzel et al, 2010). The hospitality and tourism being a profit driven industry depends so much on ICTs because it contributes towards profitability. Moreover, Buhalis and O'Connor (2005) argued that such profitability can be successfully accomplished through driving increases in awareness, revenue, promotion, reduction in production and operating costs. The long-term success of the service industry (e.g. the hospitality and tourism industry) depends heavily on the degree of how internal efficiency (i.e. the cost effectiveness of resources adopted) and external efficiency (the ability of generating revenue through promptness, punctuality and convenience) can be improved (Gronroos and Ojasalo, 2004; In Gretzel, 2010). The hospitality and tourism industry has seen rapid development and commercialisation of the

ICT which has influenced organisations (hotels, restaurant etc.) to adopt these technologies (Hoontrakul and Sahadev, 2007). ICT is seen as a single force which affects change in the hospitality industry (Connolly and Olson, 2000; Hoontrakul and Sahadev, 2007). Wiig (2003) described the tourism sector as one of the most important sectors which applies ICT. The tourism industry relies so much on information, service and reliability which could be achieved with the help of ICT. Furthermore, ICT can reshape the structure of the tourism industry through the creation of opportunity in reducing transaction and distribution costs (Wiig, 2004). In addition, globalisation is constantly changing the supply and distribution chains in the hospitality and tourism industry, thereby creating lots of opportunities as well as challenges for SMEs. According to the OECD (2008) SMEs within the tourism and hospitality industry have more opportunities to reach the international market through wider usage of ICT and lower transportation costs. ICT adoption has brought lots of advantages and challenges to the hospitality industry. The hospitality and tourism industry develop ICTs in order to streamline operating procedure and to attract new customers on a global scale (O'Connor and Frew, 2000; Cline, 2001; In Collins et al, 2003).

Most SMEs feel reluctant to introduce new technologies into their business, and as a result become increasingly marginalised due to the following:

Perceived benefits: there are many benefits available to a firm if it adopts ICT. Alam and Noor (2009) stressed that "***the greater the benefits perceived by SMEs the higher the possibility of adopting ICTs***". Sakai (2002) stressed that the extensive use of ICT creates new technologies and ideas for small business in order to generate profit. ICT increases information speed and reliability as well as transactions for both business-to-business as well as business-to-customer (OECD, 2004; In Alam and Noor, 2009). Also, ICT contributes to the overall growth of SMEs in a long-term. Premkumar and Roberts (1998) stressed that the primary purpose why SMEs adopt ICT is associated to their perception of potential benefit

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ICT will bring to their business. Such benefits include better customer and supplier relationship, cheaper and faster communication, product and service development, more efficient and effective marketing and better information and training (Lauder and Westall, 1997). Other benefits ICT can bring to SMEs include: link to global supply and outsourcing opportunities; reduces production wastages; improves inventory management system; introduces new payment method with e-commerce (APDIP, 2005). However, with these perceived benefits, most SMEs are still not taking advantage of ICT.

Also, most SMEs employees lack the skills and expertise required to use ICT in their business (Cragg and King, 1993; MacGregor et al, 1996; In Alam and Noor, 2009). Reynolds (1994) argued that SME owners adopt sophisticated technologies only when they are familiar with the basic ones. He further went on to ascribe that lack of employee knowledge might hinder the adoption of technology, particularly when the owners feel such technologies can only be used by specialist staff.

In addition, perceived cost plays a crucial role for SMEs in determining the adoption of technologies in their business. The cost of implementation of ICT into small business requires huge start-up capital. SMEs face difficulty in formulating their innovative strategies due to lack of resources as well as technological incompetence (Tidd, 1997).

Lastly, (external pressure) the pressure from business partner has a strong influence on firms to adopt ICT. Kirby and Turner (1993) argued that the adoption of ICT by a major customer/supplier can influence small business owner decision to adopt. Small business might be force to use ICT in order to compete with large companies (Poon and Swatman, 1996; In Alam and Noor, 2009).
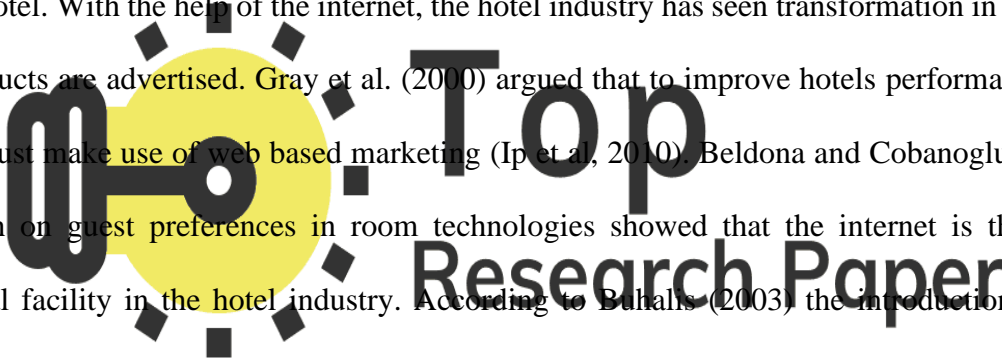
The work of (Buhalis and Main, 1998; Evans and Peacock, 1999; Tag and Louvieris, 2004) concluded that the tourism and hospitality industry particularly the hotel sector have been

very keen to adopt information technology (Duffy, 2010). Gretzel (2010) described ICT as the (single) greatest force which brings about change in the hospitality and tourism industry. The hotel industry adopts ICT because it provides additional value to customers, and the belief that ICT helps in business expansion (Hoontrakul and Sahadev, 2007). The work of Cobanoglu et al. (1999) stressed that the adoption of ICT in hotel promotes differentiation, builds loyalty among clientele, and increase customer satisfaction (In Gretzel, 2010). Another author (David et al, 1996) argued that productivity is the chief reason why hotels adopt ICT (Sirirak and Islam, 2010). With the help of ICT, the hotel industry is able to collect detailed information about customers (e.g. the online reservation allows customers to state their preferences when booking). However, independent properties and SMEs are the most vulnerable and weakest in the hotel industry (Buhalis, 2003). High level of competition may result in hotels use of technological facilities to attract guests and to increase hotel efficiency (Hoontrakul and Sahadev, 2007). In a competitive market, hotel guest became selective in their choice (Janes and Wisnom, 2003; In Gretzel et al, 2010). Over the years, there has been increase in ICT investment in Hotels due to the search for more competitive advantage in order to meet customer expectation and increase competition. Majority of hotels adopt ICT to cope with the rapidly changing environment and from a manager's point of view, ICT is a key success factor for enhancing the performance of hotels (Sirirak and Islam, 2010). Although, the adoption of ICTs requires huge investment and small hotels lack such resources to invest paving way for large hotels to be more inclined (Hoontrakul and Sahadev, 2007). Moreover, small hotel perceive the investment on new technologies as risky, therefore they prefer to wait till the technology becomes stabilized before they invest in it.

The way hotel markets its website determines the success of internet booking, this is seen as a luxury most small independent hotels cannot afford (Buhalis, 2003). According to Lee et al, (2003) ICT is applied in two different levels in the hotel industry: at the managerial and

operational level; and for in-room guest services. The technologies introduced in hotel rooms (e.g. plasma TVs, temperature control, fax machines, printers etc.) have greatly improved in-room services as well as providing new opportunities for entertainment (Lee et al, 2003; In Gretzel et al, 2010). Small independent hotels lack the expertise and resources required to adopt ICT (Buhalis, 2003). Some of the ICT applications which have been introduced to the hotel industry include: internet, computer reservation system, intranet, e-mail, web application, and electronic transaction (Sirirak and Islam, 2010).

This essay focused more on the internet being the most popular technologies being adopted by small hotel. With the help of the internet, the hotel industry has seen transformation in the way its products are advertised. Gray et al. (2000) argued that to improve hotels performance, the hotel must make use of web based marketing (Ip et al, 2010). Beldona and Cobanoglu (2007) research on guest preferences in room technologies showed that the internet is the most essential facility in the hotel industry. According to Buhalis (2003) the introduction of the internet in the 1990s have had huge impact not just on the hospitality and tourism industry alone, but in all industries (e.g. with the internet, hotel industry is able to sell inventory online). Collins et al. (2003) described the internet as one of the most successful channels of distribution adopted by customers to make reservations, compare prices and research for the best travel/room options. Current estimates show that there are 35,000 websites from which guests can book a (hotel) room (Pizman, 2010). The adoption of the internet can help small (independent) hotel confront its marketing challenges, particularly if they develop accurate and credible website to market, convey clear information, promote online search engines and distribute the products they offer as well as reducing prices on procurement (Buhalis, 2003; Collins et al, 2003; Pizman, 2010). However, Law and Liang (2005) pointed out that the work of website is far beyond being a platform for facilitating transaction and sharing information, but it also enhances service quality. The adoption of internet creates lots of

benefits as well as challenges to small hotels. Some of its benefits include: increases sales and reservation, saves cost and time, fosters relationship between the hotel and its client, it improves customer service, enhances quick and fast delivery of information. However, the internet being a main source of information for guest, pose huge threat to small hotels because (nowadays) majority of guests rely on consumer-generated media (e.g. TripAdvisor, Expedia) before booking a particular hotel (a bad review by a guest is there for all to see). Other challenges include: high cost of investment, cost incurred in training staff, increases managerial complexity, issues of security and confidentiality, cost incurred in maintenance and so on. In a view to better understand the influence of internet on small and medium hotels, this essay cited The Lumley Castle Hotel in Duhram as a case study. The hotel prides its internet as a competitive advantage used in promoting itself to the public (looking at its website, it has got attention to detail). Recently, the hotel completed a major investment programme aimed at providing free unlimited WiFi (wireless) internet service access to its guests. The IT manager (Mohammad Ahmed) of the hotel described the introduction of the WiFi service as "*a wider plan to enhance their range of services to guest*". This investment has contributed immensely in improving the hotels room sales. Furthermore, the hotel (Lumley Castle) works closely with Express IT in order to provide the Fibre Optic backbone, hardware, software, structured cabling and IT management services for the entire network infrastructure.

In addition, the property management system (PMS) is the main software technology utilised in the hotel industry and it works with other systems used in the hotel (Lee et al, 2003; In Hitz, 2006). In the hotel industry, the central reservation system (CRS being the most effective) and other intermediary websites like revenue management system (RMS) and global distribution system (GDS) are usually integrated with the PMS. With RMS, the hotel industry is able to forecast and optimise revenue from room sales. Today, most hotel

reservations are made through electronic reservations via GDS (Sabre, Galileo and Worldspan), CRS and other online intermediaries (Lee et al, 2003; In Hitz, 2006). The GDS is seen as an important tool for attracting customers because it serves more than 50 000 travel agents worldwide, and with 85 percent of small hotels not making use of the GDSs, this is seen as a major limitation for those hotels not listed (Werthner and Klein, 1999; Collins et al, 2003). However, few (small) hotels adopt this GDS. Their unwillingness to use GDS might be because they want to encourage direct transaction between customers and their website (Ip et al, 2010)
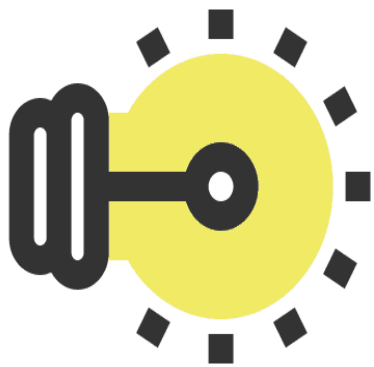
Conclusion

There has been an unprecedented revolution in the hospitality and tourism industry due to the rapid development of ICT. The hospitality industry being service based rely so much on the use of ICT, but it is inevitable that some (small) hotel owners fail to acknowledge the potential benefits ICT can create to their business. However, to ensure profitability and competitive advantage (in the current business environment) hotel owners/managers must ensure that they channel their time, efforts and resources into adopting new technologies. However, there are some challenges attributed to the adoption of ICT which hotel managers should not overlook. For example (Carol and Siguaw, 2003; In Ip et al 2010) pointed out that too much reliance on online intermediaries can lead to reduced room rate thereby affecting hotels profitability.

Till date, some (small) hotels feel reluctant to adopt ICT to their business and in bid to eradicate this difficulty this essay recommends that hotel owners should encourage cooperation with IT managers in order to catch-up with up-to-date information thereby increasing hotels efficiency and productivity. However, most (small) hotel manager/owner shy away from investing in ICT due to the capital involved, rather than having that purview, they should consider the payback ICT can bring.

Lastly, hotel managers generally must ensure that the ICT raised challenges are turned into opportunities in order to enhance their innovation and competitiveness in the market.

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