

ICT APPLICATIONS IN TOURISM AND HOSPITALITY INDUSTRY OF BANGLADESH: A RESEARCH REVIEW

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ABSTRACT

The ICT application in the Tourism and Hospitality Industry (THI) is not a new phenomenon in advanced countries. Despite having the immense importance of ICT in the tourism and hospitality industry, many countries are yet to reasonable use especially in developing countries like Bangladesh. Thus, this study is highly emphasized on exploring the usage patterns of ICT in THI. An extensive literature review has been done and content analysis techniques have been applied in this study to attain the research objectives. The analysis reveals that the ICT plays an important role in real-life of the tourism and hospitality industry. It is found that ICT is used for e-marketing, e-strategic management, ensuring security and rendering tourism and hospitality services which are also applicable in Bangladesh. In fact, the application should recognize five factors-Organizational, Technical, Economic, Environmental and Personal. The contributors of the study are expecting that the outcome of the study will help to construct a framework that could be supportive to improve the present condition of ICT application and will also open a new horizon for destination operators and policymakers for formulating effective tourism and hospitality development policies and strategies in tourism and hospitality industry of Bangladesh.

Keywords: *ICT Application, Tourism and Hospitality Industry, Literature Review, Content Analysis*

INTRODUCTION

The usage of ICT in communication network has changed our daily life. Digitalization, User Generated Content (UGC) and feedback, consolidation of other social media, global positioning of services and Artificial Intelligence (AI) play key roles for transfiguring citizens' experience into their consumption pattern, and sharing information. This is possible for having the positive effect of continuous advancements of ICT and smart devices (Silverio-Fernández, Renukappa, & Suresh, 2018) such as computers, databases, networks, Internet, wireless technology, Global Positioning Systems (GPS), smartphones etc. ICT presents innovative challenges and amenities for tourism and hospitality businesses (Law, Buhalis, & Cobanoglu, 2014) as well as all types of other businesses. The banking facilities, shopping facilities, healthcare services are now in fingertip that has a smartphone with internet accessibility. This is possible because of the rapid development of the Internet and Web 1.0, as well as the Web 2.0 or social media environment and it also makes revolutionized change in every aspect including tourism and hospitality industries (Buhalis et al., 2019). Nowadays, visitors have made pressure on tourism and hospitality managers for delivering smart services and enhancing service efficiency. Thus, it has become important to tourism and hospitality service operators addressing service reengineering in their operational and strategic management with the active support of ICT. But Bangladesh is still very early stage in adopting the revolutionary advantages of ICT in the tourism and hospitality industry although she has a significant contribution and huge prospects in the said industry.

According to the annual report of the World Travel and Tourism Council (WTTC), the total contribution of Travel & Tourism to GDP was 4.4% of total GDP; this sector supported by 3.9% of total employment (24, 14,400 jobs) in 2018 and at the same time Travel & Tourism visitor exports generated 0.8% of total exports (WTTC, 2018). In Bangladesh, the tourism and hospitality industry has emerged as a small but rapidly growing sector since the 1990s (Sardar, Hossain, Hossain, & Islam, 2020). In 2019, the industry contributed 1858.9 million jobs in Bangladesh which is 2.9% of total employment and the GDP contribution was 3% (WTTC, 2020b). Among the OIC member countries, in 2019 one million international tourists arrived in Bangladesh which produced \$0.4 Billion as receipt (SESRIC, 2020). The report of WTTC has described that domestic tourism is booming up in Bangladesh as the domestic spending was 96% and leisure spending was 88% in 2019 (WTTC, 2020a). The per capita income of Bangladeshi citizens is increasing (Kant, 2020) which motivates citizens to leisure and travel. In 17 April 2018, Deputy Inspector General (DIG) of Tourist Police Sohrab Hossain published statistical data collected from around 800 tourist spots in Bangladesh that the number of domestic has increased to 3.5 crore in 2017 while the number of foreign tourists has increased from 16,000 to 106,000 (Daily Star, 2018; Sardar, Hossain, Hossain, & Islam, 2020). The data have expressed the potentiality of booming up the tourism and hospitality industry. These tourists visit different destinations, stay in different

hotels, motels and expect smart ICT facilities. The increasing demand of sophisticated customers dominates tourism and hospitality managers to adopt ICTs for completing their business operations. If Bangladesh wishes to succeed and sustain in tourism competition with its neighboring countries, she has to concern about the present choice and tour planning behavior of the visitors/tourists. Bangladesh made ICT policy in 2009 (BTRC, July 2009) and ICT has been identified as an instrument of change in the policy. In the last 10 years, Bangladesh made huge contribution towards ICT. "Digital Bangladesh" is now not a slogan or dream, at present, it's the reality. Digital facilities are reached to the doorstep of the remote people through Post-E-Centre and Union Digital Centre. People are getting different digital facilities from the digital Centre. The ICT sector is growing at an estimated 20% per year. Now, the course ICT is mandatory in secondary-level education and has been heading to dramatic development. Different organizations (private and public) of Bangladesh are also enhancing their capabilities with the use of different hardware, software and other ICT facilities.

At present, tourists make the tour in a planned way such as firstly, they search for information about the desired destination and accommodation and then they try to communicate with the concerned authority and finally they reserve the destination or accommodation. From first to last the process is done through ICT (WTO, 2007). Tourism service providers make required information available in an online database and visitors communicate through technologies based on the information and make the planned tour. Tourists especially business travelers staying in the hotel and who need ICT facilities, fall into difficulties during their stay for lack of ICT facilities. Aristocratic visitors demand high technology and automated services in hotels. They favor accessing location-based information, accommodation bookings, check-in and check-out via mobile application (Wang, 2012). Service providers need to combine ICT to enhance the better experience of the customers and gain competitive advantage. In addition, service receiver from the globe could easily identify the industry services using global network and plug in the services through ICT that enhances operational efficiency (Quarshie & Amenumey, 2018). So, the tourism and hospitality service providers should design the services applying the ICT so that they may achieve the satisfaction of the customers. However, the pattern of such application is yet to explore in Bangladesh.

One-third population of Bangladesh lies in the youth groups (Matin et. al., 2019). This group has high craziness towards IT which also influences other age groups (Winarso, 2020). They are the early adopters of new technology and their craziness sometimes makes people surprised. In Bangladesh, the number of young tourists is increasing day by day (Parvez & Kashem, 2018) and their craziness towards tourism and technology forces destination operators to make the destination tech friendly. Unfortunately, destination operators have insufficient knowledge on the application of ICT (Quarshie & Amenumey, 2018). Hence, this study is considered for identifying the usage patterns and recognizing the factors of ICT application in the tourism and hospitality industry of Bangladesh.

RESEARCH GAP

Many theoretical and empirical studies (Hughes & Moscardo, 2019; Tichaawa, Mhlanga, & Sicwebu, 2017; Law et al., 2014) have been done focusing on the relationships between the ICT and tourism and hospitality industry development. Most of the studies (Patwary, Chowdury, Mohamed, & Azim, 2020; Ashari, Heidari, & Parvaresh, 2014; Bethapudi, 2013) conducted on the role of ICT in tourism and hospitality industry. ICT is remarkably progressed in Bangladesh and fundamental developments of ICT create the need for extensive research (Fan et al., 2019). However, very limited studies have done in Bangladesh focusing on both the ICT and development of tourism and hospitality industry e.g., the role of ICT to enhance tourism industry (Islam, 2012), the effect of ICT adoption in service sectors, the impact of social media on tourism industry growth (Karim, 2018), e-tourism ecosystem in Bangladesh (Hasan, 2012), e-tourism and innovative & sustainable approach to economic growth (Mowla, 2019), the prospect of the e-tourism ecosystem (Hasan, 2012). Thus, there is a scope to conduct a research investigating ICT adoption or application in individual phenomena (Camprubí & Coromina, 2016) that might be more effective for the industry. It is seen from the secondary information that no full-fledged study on ICT was conducted at all in the tourism and hospitality industry of Bangladesh even though it has huge significant impact on the GDP, employment generation and overall development of the country (Sultana, 2016). As such, it is urgent to conduct research on ICT application in the tourism and hospitality industry of Bangladesh that could find out patterns of application and factors that influence on ICT application of the industry. Thus, the present study has set up a couple of objectives-

- i) To figure out the usage patterns ICT in tourism and hospitality industry and
- ii) To recognize the factors those, influence the application of ICT in the tourism and hospitality industry in Bangladesh.

METHODOLOGY OF THE STUDY

This study is conducted based on existing literatures. To attain the research objectives this study has systematically reviewed the synopsis of several literatures in the field of tourism and hospitality. Following the three analytical steps (i) Identification of keywords (ii) Selection of source documents and (iii) Using identified keywords to obtain tourism and hospitality ICT research articles; which also adopted by Yuan, Tseng, & Ho (2019), this study reviewed the selected peer reviewed journal articles. The literatures were collected using the institutional access of Emerald, Springer and Willey publications. The Google Scholar database also produced peer-reviewed articles. The benefits of using the mentioned services are not only ease of use (Silverio-Fernández et al., 2018) but also access to quality peer-reviewed articles. The content analysis procedure is followed for reviewing the literatures. The analysis technique helps the researchers to develop themes and subthemes (White and Marsh, 2006) which are extensively used in social science and tourism research (Adeyinka-Ojo, 2018; Camprubí & Coromina, 2016). Through content analysis, once a theme was recognized, the recognized theme was also analyzed and utilized again for the development of new themes/subthemes. The following table represents the lists of the factors/themes/subthemes that are extracted from literatures.

Table: List of the Factors/Themes/Subthemes that Were Developed through Literature Review

Themes/Subthemes/Factors		References
E-Marketing/ Online Marketing	Website Marketing	Luna-Nevarez & Hyman (2012), Escobar-Rodríguez & Carvajal-Trujillo (2013), Jeong, Holland, Jun, & Gibson (2012), Grimm & Needham (2012).
	Social Media Marketing	Karim (2018), Wang, Lee, & Hua (2015), Hays, Page, & Buhalis (2013), Escobar-Rodríguez & Carvajal-Trujillo (2013), Hays et al. (2013), Law et al. (2014), Kwok & Yu (2013), Banyai & Havitz (2013).
	User Generated Content	Jalilvand, Samiei, Dini, & Manzari (2012), Jeong, Holland, Jun, & Gibson (2012), Rong, Vu, Law, & Li (2012).
E-Strategic Management	Decision Making	Spencer, Buhalis, & Moital (2012), El-Gohary (2012), Abou-Shouk, Megicks, & Lim, (2013).
	Employees Performance	Fuchs, Höpken, Föger, & Kunz (2010), Cheng & Cho (2011), Huh, Kim, & Law (2009).
	Service Operations	Salguero & Espinilla (2018), Law et al. (2014), Cobanoglu, Ayoun, Connolly, & Nusair (2013), Mills, Meyers, & Byun (2010), Keske & Smutko (2010), McCabe, Sharples, and Foster (2012).
	Distribution Management	Ruiz-Gómez, Rodríguez Fernández, & Navio-Marco (2018), Abou-Shouk, Megicks, & Lim (2013), Koo, Mantin, & O'Connor (2011), Berne, Garcia-Gonzalez, & Mugica (2012), Andreu et al., 2010), Kazandzhieva (2012), J. Kim & Tussyadiah (2013).
E-Security		Murphey (2020), Quarshie and Amenumey (2018), Ruiz-Gómez et al., (2018), Burgess, (2016), Kim & Tussyadiah (2013), Kim, Lee, & Chung (2013).
Guest Services		Dorcic, Komsic, & Markovic, 2019), Yu, Anaya, Miao, Lehto, & Wong (2018), Law et al. (2014), Buhalis & Wagner (2013), Kokkinou & Cranage (2013), Schroeder, Pennington-Gray, Donohoe, & Kioussis (2013), Sigala (2012), D. Wang, Park, & Fesenmaier (2012).
Organizational Factor		Boes et al. (2015); Dorcic et al.(2019); Quarshie & Amenumey, 2018; de Ávila (2011); Chevers, (2015); Ahmad and Scott (2019).
Technical Factor		Dorcic et al. (2019); Quarshie and Amenumey (2018), Ahmad and Scott (2019), Leung (2019).
Economic Factor		Quarshie and Amenumey (2018), de Ávila (2011), Dorcic, Komsic, and Markovic (2019), Ahmad and Scott (2019), Leung (2019).
Environmental Factor		Dorcic et al. (2019), Chevers (2015).
Personal Factor		Ávila (2011), Firoiu and Croitoru (2015), Salguero & Espinilla (2018), Lu, Mao, Wang, and Hu (2015), Yu et al. (2018), Firoiu and CROITORU (2015), Antonio (2011), de Ávila (2011), Ahmad and Scott (2019), Banyai and Havitz (2013), Hua (2020), Firoiu and Croitoru (2015), Blanco (2011), Antonio (2011), de Ávila (2011).

Source: Authors - Developed for this study

FINDINGS FROM THE LITERATURES

The literature review found the usage patterns of ICT application in the tourism and hospitality industry. The findings showed ICT is used in various ways. It is used for providing guest services, guest security, informing about service and also for decision making. The literature also provided five factors- Organizational Factor,

Technical Factor, Economic Factor, Environmental Factor and Personal Factor that influence on ICT application in the tourism and hospitality industry. The details findings of the study are discussed in the following sections.

USAGES PATTERNS OF ICT IN TOURISM AND HOSPITALITY INDUSTRY

E-Marketing/Online Marketing

ICT is regarded as one of the most cost-effective marketing channels through which tourism and hospitality service providers reach the customers effectively and efficiently. This mode of marketing is called e-marketing or online marketing. There have several ICT-based techniques through which service providers performing their e-marketing activities. **Website Marketing** is one of them. The study of Luna-Nevarez and Hyman (2012) shows that informatory design simplicity and persuasive visualization of websites attract the target customers. It is also reducing the regional differences between the customers and tourism facilitators. A website usually emphasizes the customer needs (Escobar-Rodríguez & Carvajal-Trujillo, 2013) and promoting destination image. The study of Jeong et al. (2012) finds that website is so helpful for establishing cognitive and destination image. It has positive influence on brand attitudes and purchase intention. The contribution of website recognized itself not only as a marketing platform but also as a platform for establishing a business. Volunteers also use it as a reliable source for volunteering tourism services (Grimm & Needham, 2012).

Social Media Marketing is also another tool of e-marketing. It is considered as an important source of travel information and acts as a marketing tool of destinations (Wang, Lee, & Hua, 2015). International tourists rely on social media to seek solutions of various problems (Hays, Page, & Buhalis, 2013). The media is smart and cost-effective for gathering and disseminating of information of tourism and hospitality services to the seekers (Karim, 2018). At present, most of the tourism and hospitality organizations have their own Facebook, Twitter, YouTube or other social media applications that provide information about their related service offerings. The small size hotels use social media for informing customers about their services (Escobar-Rodríguez & Carvajal-Trujillo, 2013). The study of Hays et al. (2013) suggests the National Tourism Organizations (NTOs) and Destination Marketing Organizations (DMOs) use social media as an effective tool for covering maximum audiences with minimum resources. Thus, NTOs and DMOs need to develop extensive marketing tactics for capturing the benefits of using social media (Law et al., 2014). The promotional messages of social media such as Facebook that comprise with link proved as less communicative than the images and short tricky texts (Kwok & Yu, 2013). On the other hand, travel blog plays a key role for developing the thoughts, beliefs, attitudes and expectation of the tourists (Banyai & Havitz, 2013).

Another e-marketing tool which is known as **User Generated Content (UGC)** is also used for branding and running a business. This Electric Word of Mouth (eWOM) communication or UGC is an important influencing media as it forms the perception and trust of other potential visitors of a destination. Reservation and visiting intention of visitors are increased with positive reviews and high ratings. Jeong, Holland, Jun, & Gibson (2012) find that there has a positive influence of eWOM to the destination image, tourist attitude and travel intention. The positive eWOM constitutes with good service quality, satisfaction, a good atmosphere and reasonable price (Jeong, et al., 2012). Rong et al. (2012) inquire the content of eWOM relating the user behavior and find the shares and browsers are varied in terms of age, education level and income. So they suggest selecting the right e-vanguard and working with them closely as a technique of fruitful e-marketing mechanism.

E-Strategic Management

Every business wants to maximize their profit through performance upstreaming and customer satisfaction. Managers use ICT for increasing revenue, enhancing profit and financial performance. The study of Buhalis and Michopoulou (2011) reveals that ICT can be used by destination operators for fulling the customized demand at different segments. Managers of Small firms, who demonstrate proactive leadership, adopt ICT for decision-making (Spencer et al., 2012). Moreover, marketing and competitive advantages, supportive facilities for further development and benefits of efficient business operations, motivate small and medium-sized travel agents for decision making in adopting ICT in their business (Abou-Shouk et al., 2013).

ICT is also used for enhancing Employees Performance. Managers who use ICT in their hotel operations are positively different in terms of working performance and the transaction cost (Law et al., 2014). It also generates efficiencies and creates a new dimension of business operations for the organizations and stakeholders (Salguero & Espinilla, 2018). So the top-level management introduces ICT in service planning, service integration, control and automation (Cobanoglu et al., 2013). Recently tourism and hospitality business organizations are using biometric technologies in their service operations. It helps to enjoy the benefits of consumer satisfaction and operational efficiency (Mills et al., 2010). Fly Zoo hotel of Alibaba Group in China and Hennna hotel of Japan use robotic staff (AI) for cleaning the floor, serving food to the guest and guest in-

room services. The study on using Audience Response System (ARS) finds that it has huge potentiality for developing the tourism industry (Keske & Smutko, 2010). Again, the study of McCabe, Sharples, and Foster (2012) discover that Scenario-Based Design (SBD) develops destination services and satisfy customer needs. Emails inquiry are so common in this era of ICT and ICT sophisticated large tourism organizations respond quickly than the small organizations (Law et al., 2014).

The use of ICT in distribution management reduces the influence of travel agents and creates competitive advantage. Besides, hotel operators consider Online Travel Agents (OTA) as partners and OTAs formed strategic alliances using ICT for securing their competitive advantage (Abou-Shouk, Megicks, & Lim, 2013). The study of Koo et al. (2011) finds that airline companies sell their tickets solely through their websites but also formed an alliance with OTAs having high customer loyalty. ICT based relationship between travel agencies and suppliers satisfy customers and build loyalty (Ruiz-Gómez et al., 2018). They also communicate with the customers through online which increase online reservation and e-ticketing (Andreu et al., 2010). The use of ICT changes the channel structure (Berne et al., 2012) but the usage rate is low in developing countries compared to developed countries (Kazandzhieva, 2012; Kim & Tussyadiah, 2013).

E-Security

Murphey (2019) suggests investing more for ensuring security. ICT equipment are mostly used for security purposes. They work automatically with the help of computers and the internet. Security automation may call e-security. The most common e-security equipment is CCTV. It provides 24/7 nonstop surveillance which may easily detect any causalities. At present this equipment is widely used by every type of organization even as a home appliance (Burgess, 2016). The other types of e-security equipment such as luggage and body scanner, electric key card and locker, biometric access control are extensively used by tourism and hospitality service providers. When there has the use of e-security equipment for securing the tourism and hospitality installations, cybersecurity concern is growing up for securing the ICT-based services and customer information including the big data (Ruiz-Gómez, Rodríguez Fernández, & Navio-Marco, 2018). ICT is really blessing in this regard as it ensures network security (Quarshie and Amenumey, 2018). It is important for protecting the hotel's strategic information (Kim, Farrish, & Schrier, 2013). The trends of using advanced technologies in hotels force hoteliers to adopt advanced security measures. The security measures increase loyalty and trust of the tourists (Kim, Lee, & Chung, 2013).

Guest Services

The inter-activity between ICT and tourism & hospitality create new tourism products, process and create synergistic power and competitive advantage (Law et al., 2014). It also draws instant insights, impressive, customized and automated experiences of the guests (Buhalis et al., 2019). ICT is used for service and style improvements, service line extensions, major service innovations, process improvements, process line extensions and major process innovations. Thus, Guest/clients of smart hotels feel honored and excited interacting with new technology (Buhalis & Leung, 2018). The innovative and improved service reduces the waiting time (Kokkinou & Cranage, 2013), earned professional benefits and reduces risks (Sigala, 2012). Tourism service providers generally combine technology and knowledge for enhancing the tourist experience (Dorcic, Komsic, & Markovic, 2019). Online Reservation System (ORS) allows customers to penetrate the exact information about the availability of room or destination. The worldliness of ICT, accesses a guest/client to check-in and check-out from their room by clicking on the keyboard linked to the hotel's computer to the bedroom's television. Usually, customers look for Wi-Fi facilities in tourism and hospitality installations. Thus, tourism and hospitality service providers may satisfy customers by installing ICT services such as Wi-Fi/internet and cable television etc.

Moreover, at the time of any crisis, tourists are used social media through their smartphones for seeking information and solving the problem (Schroeder et al., 2013). So tourism service providers should pay attention to social media and smartphones for designing the services according to the needs of the tourists. With the spread of COVID 19, health protocols have become a big concern in traveling. Comply with the present situation, "Fit to Fly" secure health passport named "V-Health Passport" has been launched by British cyber technology company VST Enterprises (VSTE). This app will provide the true information of the travelers about COVID 19 test results and vaccination details of the travelers. Demaitre (2020) also claimed that LG declared to invent a Robot which able to disinfect through Ultra Violet (UV) ray. They are planned to supply it for the customers of hotels and restaurants.

Mobile devices have become the most reliable travel partner in recent years. The use of smartphones becomes a habit (sometimes a bad habit) and impacts customers while traveling (Wang, Park, & Fesenmaier, 2012). Google Map application is popularly used in smartphones for tracking and selecting destinations and restaurants. In disaster situations such as earthquakes, mobile technologies provide safety solutions and disseminate safety confirmations to friends and family. Smart service providers carefully design and execute smartphones enable application to enhance competitiveness (Yu, Anaya, Miao, Lehto, & Wong, 2018). India develops a smartphone

enable app and website name "OYO" to locate all categories of hotels and lodging facilities in each province of the country. Customers/guests may book the room(s) in one click before visit the place. Trip Advisor is another popular app that gives reliable information to travelers about different cities, regions, hotels and restaurants. Again, there have other popular apps related to airlines, ride-sharing, food services such as Airbnb, Uber, Food Panda which provide tourism and hospitality services through the mobile application. These innovative mobile applications enhance experience of the customers of tourism and hospitality industry (Buhalis & Wagner, 2013).

FACTORS INFLUENCING THE APPLICATION OF ICT IN TOURISM AND HOSPITALITY INDUSTRY

Organizational Factor: Organizational factor is the internal environment of any organization which influences ICT application in the tourism and hospitality industry. Leader or top-level management influences on the decision of ICT application in the tourism and hospitality industry (Dorcic et al., 2019; Quarshie & Amenumey, 2018). The IT knowledge of the top-level management, other executives, organization size and financial strength also influence the application of tourism and hospitality organizations. The study of De Ávila (2011) mentioned that tourists are extensively using the ICT comparatively higher than the tour operators and the industry workforce. Sometimes it is seen that top management does not like to implement ICT in their hotel operations (Chevers, 2015). However, when they become conscious about the benefits of ICT application, they take initiatives to apply ICT in their business operations (Ahmad & Scott, 2019). It is seen that, small hotels fail to introduce the ICT in their service operations because of insufficient infrastructure (Ahmad & Scott, 2019). It is widely known that human capital, leadership and social capital are the three of the four pillars of smart tourism, and innovation itself is another pillar (Boes et al., 2015). Without these it is absurd to build a smart ICT-based tourism industry in Bangladesh.

Technical Factors: Technology-related variables constitute the technical factor. Technology adoption of any organization requires certain changes like infrastructural development, consistency, accessibility and operational capacity (Dorcic et al., 2019; Ahmad and Scott, 2019). In hotels, compatibility and accessibility impact ICT applications (Quarshie & Amenumey, 2018). Moreover, swift improvement and change of technology make the previous system outdated within one or two years which needs to be considered as an important variable of technological factor (Leung, 2019).

Economic Factors: Cost of hardware and software, ICT infrastructure, affordability of ICT equipment are constituted the economic factors (Quarshie & Amenumey, 2018). As the variables are related to investment cost, rate of return, it may call as economic factor. In recent years, hardware and connectivity cost remarkably reduced (Ávila, 2011) which is acting as an influencing variable of the economic factor. Dorcic et al. (2019) suggest increasing investment in advanced technology evolution for hotel operations. But the amount of investment depends on the size and involvement of the hotel. Small size hotels require a comparatively low budget than large establishment hotels (Ahmad & Scott, 2019). Whatever the size, the investment decision must be properly justified (Leung, 2019).

Environmental Factors: Variables that are uncontrollable for the users are called environmental factors. Government support, initiative of competitors, policy of other stakeholders etc. are the variables of environmental factor. The trust, overall value of information about the system, location and attractiveness of tourism destinations are other important variables of environment (Dorcic et al., 2019). The location and attractiveness of tourism destinations influence ICT application. Destinations and hotels which are located in urban communities get enough scope to apply ICT in their business operations (Chevers, 2015). Again, the application also depends on the service quality of the Internet Service Providers (ISP).

Personal Factor: Personal factor combine the variables solely related with the users perceived benefits, ease of use, intention to apply and actual application (. Perceived benefits are the perception of the positive consequences of any action. In the case of ICT application, firstly organizations explore the competitive position, benefits and competencies of service providers (Ávila, 2011). In this study, perceived benefits are the perception about the benefits of ICT application. As mentioned above ICT application generates some benefits like ease of access, saves time, increase productivity and efficiency, provide better customer service, etc. ICT helps to dissolve the issues raised by the customers (Firoiu & Croitoru, 2015) which are a significant benefit of ICT application. The study of Firoiu and Croitoru (2015) found some other benefits of ICT application such as Customer Relationship Management (CRM), marketing strategy, mobile distribution, increase sales volume and

receiving feedback from customers. All these benefits impel service providers to apply ICT in their service operations.

Secondly, ease of use indicates easiness of ICT applications. The progress of ICT creates a smart environment that makes life easy and convenient (Salguero & Espinilla, 2018) and easily usable technology become popular among the users. Tourists frequently use mobile technologies and applications which is easy to use and compatible (Lu et al., 2015) as they want effective and efficient services, saving their time. Motivational cues of acquiring information and being confident also motivate tourists to use moveable ICT equipment like smartphones (Yu et al., 2018). Easy and fast hotel reservations satisfy clients and make them loyal (Firoiu & Croitoru, 2015) for positive experience. These increase reputation and brand image and also ensure return on investment. The positive experience also inspires others to use ICT which also impacts decision making and building loyalty (Antonio, 2011). For gathering the positive experience and ensuring ease of use, employees need to be trained up about how to use the ICT equipment (Ávila, 2011) and training will solve the difficulties dissolving the complexities of ICT application.

Thirdly, intention to apply indicates the desire for ICT application. Intention to apply grows among the users, who perceived the benefits and ease of use of ICT application. Even though understanding the benefits and ease of use, the user may not use because the use also depends on his/her intention (Ahmad & Scott, 2019). The constructive online reviews or electronic word of mouth communication (eWOM) build trust in technology and remarkably contribute to intention to apply (Hua, 2020). Travel bloggers also play a vital role to build trust and convert the seekers into bookers (Banyai & Havitz, 2013). So managers may recruit online ambassadors who will promote tourism destinations. Moreover, they may maintain regular contact with guests as a part of the customer loyalty program (Firoiu & Croitoru, 2015) which will also motivate them to use the ICT. When demand will grow among the customers or guests will create pressure to service providers to apply ICT in their business operations.

Finally, actual application is the final stage where users apply ICT in their business operations. If all things remain constant, the intention to apply converts to actual application. Tourists complete online booking when they feel all factors are in favor to them. At present, smartphones, laptops or tablets are widely used by tourists for searching, booking tour and accommodation facilities (Antonio, 2011). The tourism industry of other countries is widely using ICT (Ávila, 2011). So, there is no alternative without the application of ICT if we want to build a teach-friendly, more attainable, accessible and comprehensive, innovative and imaginative tourism and hospitality industry (Blanco, 2011).

APPLICATIONS OF THE STUDY

Fostering innovation and digital advances create opportunities for tourism to stand-in stakeholder participation, empowerment of the local community and proper utilization of resources. Fostering innovation is related the goal number nine (09) of Sustainable Development Goals (SDGs) (UN). The goal has eight (8) targets where target five (05) emphasizes on scientific research enhancement, motivating innovation and public-private research, particularly in developing countries. Facilitating sustainable development through enhancing technological and technical support in different sectors of least developed countries is the sixth (06) target of SDG. Target eight (08) demonstrates the open access to ICT and inexpensive internet access globally in LDCs by 2020, whereas target seven (07) emphasizes support in domestic technological development and research and innovation in developing countries. This study will significantly contribute to achieving SDG nine (09).

Bangladesh has made vision 2021 to develop the country as a resourceful modern economy through effective use of ICT. The vision includes five (05) sub-themes where expanding ICT and taking advantage to manage service industry is one of them. Service industry is one of them. Tourism and hospitality industry are mainly offering service to the consumer and it is urgent to have the research on service new innovations. The government of Bangladesh marked it as a development priority area under Vision 2021 and this industry creates new opportunities and promotes innovation. Research and development are the precondition to promote innovation. Created knowledge through research, supports an economy through technological innovations and application of innovative technology helps different sectors of the economy. This study will support the tourism and hospitality sector of Bangladesh through research and creating new knowledge. Again, Bangladesh Delta Plan (BDP) 2100 mentioned that series of baseline studies or researches will be conducted to find out the gap in different sectors of Bangladesh. The gap would be minimized through proper planning and implementation. This study is the justification under BDP 2100 as it will help to find out the gap between ICT application and the tourism and hospitality industry of Bangladesh. Moreover, there is limited number of studies in the use of ICT

and this study will overcome this limitation. Besides, it is a matter of hope that the research on the tourism and hospitality industry is growing but there have less dissemination and application by tourism and hospitality installations. Thus, this study will contribute to formulating an effective national policy by the proper utilization of ICT in tourism and hospitality industry.

This study will also contribute to the existing knowledge. The planners, policymakers, the concerned ministries, the national tourism organizations and other stakeholders within the industry will get pertinent information on the factors which influence the application of ICT in their business operations. Furthermore, this study aims to assist the policy makers of tourism and hospitality industry by providing essential information about ICT application in the industry. The information is vital as it will assist the service providers to take proactive and also active initiatives for applying the ICT in their business operations to promote service quality and productivity. Besides, this study will provide relevant information to tourism and hospitality organizations by demonstrating several areas where ICT is applied. It will also ascertain various types of ICT commonly employed in tourism and hospitality business operations. The perceived informed knowledge will motivate the managers and potential investors of the industry to adopt ICT in their business operations. Finally, despite contributing to existing knowledge, this study will open new avenues of research and will also constitute the foundation of future research related to the ICT and the tourism and hospitality industry of Bangladesh.

CONCLUSION AND FUTURE RESEARCH DIRECTION

ICT is now considered as one of the major parts of our everyday life. Our life is being automated with touch of ICT. The automation is the ultimate result of Fourth Industry Revolution (4IR-4.0). The 4.0 creates a smart environment where ICT innovations (technologies) not only automated the production but also can interact with each other like a human being. Dynamic society and globalization also make pressure for continuous development of the tourism and hospitality industry. The 4IR creates voluminous and unheard challenges, inimitable opportunities for the tourism and hospitality industry as well as other industries. Both the ICT and the tourism and hospitality industry are retained in growing stage in Bangladesh. To face the challenges and capture the innovative opportunities, tourism and hospitality service providers need to apply ICT in their service operations. There are a lot of scopes of such application. This study is highlighted that the application pattern is not only limited to render the tourism and hospitality services but also have enough scope to apply in performing the marketing, distribution, employee management and property management activities. Guest or customer security can also be ensured applying ICT. It is also found from the outcome of the study that the application of ICT in tourism and hospitality are influenced by organizational factor, economic factor, perceived benefits and perceived ease of use which can be addressed as controllable factors. Whereas, Technical factor, environmental factor, intention to apply and actual application which have also influenced on THI are considered as uncontrollable factors. Thus, the tourism and hospitality service providers need to associate both of the controllable and uncontrollable factors through proper use ICT. In a nutshell, whatever the factor whether it is controllable or uncontrollable, the service providers must consider those for applying ICT in tourism and hospitality industry of Bangladesh and for making the industry sustainable, unbeatable and worthwhile. Many developing countries like Bangladesh can achieve highest possible performance, operational efficiency and competitiveness in the tourism and hospitality industry by utilizing the opportunities of the ICT. Research on innovation and ICT in tourism and hospitality industry should also spread more to identify more opportunities and to provide the proper guideline. Even though it is expected right this stage that current study will act as a guideline for the practitioners, policy makers, academician, industry people and other stakeholders but it has few limitations.

Firstly, this study is conducted based on existing literature which are taken from the advanced culture as literatures on ICT application in the tourism and hospitality industry are rare in Bangladesh. So the factors which are responsible for ICT application may not work in Bangladesh properly. There could have some other factors which need to be explored. Finally, the tourism and hospitality industry is a large sector compositing several activities and services of several sub-sectors. Nonetheless, this study is focused on only tourism destinations and hospitality services of hotels. Thus, the result may not be generalized for all backward sectors. The future studies will be conducted considering the mentioned limitations. The future study will be quantitative in nature and data will collect through field study. There will also be an attempt to propose a new conceptual framework of ICT application in tourism and hospitality of developing countries like Bangladesh. Furthermore, the variables under each factor will be considered in the proposed conceptual framework in relation to the culture of Bangladesh.

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