Role of Information and Communication Technologies on Tourism: Nepal Case Study

Sameer Kharel*

ABSTRACT

Nepal's natural beauty and the Himalayas make it a well-liked tourism destination. The GDP of the country is heavily impacted by the tourism sector. Information and communication technology (ICT) is an efficient instrument for boosting the travel and tourism sector. The Nepalese government intends to fully digitize this industry as well. The goal of this research was to examine ICT use in Nepalese tourism sector. For the research, a thorough study of the literature was done along with interviews. Social media was discovered to be beneficial to the sector. According to the study, ICT use in tourism sector is proceeding per the Digital Nepal Framework (DNF), however, the speed of implementation appears to be slow and the full adoption of Industry 4.0 appears to be far off from the current situation.

Keywords: Tourism, TSMES, ICT, Industry 4.0, User experience (UX), DNF

* *Academic Head of IT, Global College International, Kathmandu, Nepal, sameer.kharel@gci.edu.np*

1. INTRODUCTION

Tourism is a service based industry. According to the United Nations World Tourism Organization (UNWTO), tourism is a social, cultural, and economic phenomenon that involves people traveling to locations outside of their normal surroundings for leisure, business, or professional reasons. The travel and tourism industry is one of the largest and fastest-growing sectors in the world (Sofronov, 2018). Travel or movement of people, whether inside their own nation or to other nations, is referred to as tourism. The term "travel" is thought to have first appeared in usage in the 14th century, according to linguists. As a composite industry, tourism includes a wide range of stakeholders, including the government and its agencies, the hospitality industry, travel agents, transportation companies, the food and beverage sector, and retailers, among others. With the development of technology, consumer interactions are changing for businesses in the travel and tourism sector. As a result, in order to increase operational effectiveness and satisfy customer expectations, the travel industry is implementing numerous technologies (Sofronov, 2018). The industry is anticipated to expand at a rate of 5.8% yearly and generate 126 million new employment over the upcoming ten years (2022-2032). In the Asia-Pacific area, where 77 million new employment and an annual growth rate of 8.5% are anticipated, optimism is even higher (Lama & Dhakal, 2022).

1.1 Tourism Brief History

Human evolution brought about the beginning of travel. Travel started with the ancient Romans, who embarked on leisure and study-based travel. During the Middle Ages, religious pilgrimages were a common form of travel, while the 17th century saw the rise of the Grand Tour for young European aristocracy. The Industrial Revolution and the development of railway networks in the 1840s transformed travel, making it more accessible and leading to the emergence of leisure travel. The middle of the 19th century marked the beginning of contemporary tourism, with the expansion of the middle class and the establishment of the first travel agency by Thomas Cook. The development of aviation after World War II and the advent of the internet and mobile apps have further facilitated travel, leading to the emergence of mass tourism in the 1960s. Throughout history, technological advancements and social changes have played a significant role in shaping the way people travel, making it more accessible and opening up new opportunities for exploration and discovery (Rodríguez, 2020; Šnajdar, 2020).

1.2 Tourism in Nepal

1.2.1 Impact of Lichchhavi and Malla Eras on Tourism

During the Lichchhavi period, there were significant advancements in art and culture, and the region attracted Chinese, Tibetan, and Indian visitors primarily for religious and commercial reasons. The Malla era also played a crucial role in attracting foreign visitors, particularly from China, Tibet, and India, due to the presence of sacred sites and commercial opportunities. At that era, the role of religious pilgrimages and trade in facilitating the growth of Nepal's tourism industry (Shrestha & Shrestha, 2012).

1.2.2 Influence of British and Rana Regimes on Nepal's Tourism

The signing of the Sugauli Treaty in 1816 A.D. between the Nepalese government and the British East India Company facilitated increased travel by British nationals to Kathmandu. The visit of Rana Prime Minister Jung Bahadur to Britain in the mid-19th century also increased awareness about Nepal in Europe. However, the Rana monarchy imposed a 104-year period of seclusion, limiting foreign access to Nepal except for small tradesmen and Indian pilgrims (Shrestha & Shrestha, 2012).

1.2.3 Tourism Development since the Establishment of Democracy

Tourism in Nepal has flourished since the establishment of democracy in 1950, with an increasing number of visitors traveling for trekking and climbing purposes. This growth has positioned tourism as a key source of foreign exchange revenues, employment opportunities, and economic development in Nepal. The findings emphasize the historical and contemporary significance of tourism in Nepal's development and highlight the role of historical periods, religious pilgrimages, and trade in shaping the nation's tourism industry (Shrestha & Shrestha, 2012; Kharel, 2019).

1.3 Tourism Small and Medium Enterprises (TSMEs)

Small and medium-sized enterprises (SMEs) have been found to play a significant role in the economic development of developing nations, with a specific focus on the tourism industry. The Nepali government's pro-business policies have allowed SMEs to thrive since 1990, contributing significantly to the country's economy. It is highlighted that SMEs account for 40-60% of Nepal's GDP and are responsible for a majority of trade and employment in the country (Khatri, 2020; Singh, 2015).

The impact of information technology (IT) on SMEs, specifically in terms of empowering them to participate in both local and international markets. The use of e-commerce models as growth strategies for SMEs and emphasizes the impact of ICT on decision-making in the tourism sector, leading to an increase in the number of tourists (Singh, 2018) (Lama & Pradhan, 2020; Wenan et al., 2019).

Furthermore, the importance of SMEs in the tourism industry, particularly in rural areas, despite challenges related to owner-managers prioritizing financial interests over environmental considerations. It highlights the significance of SMEs in driving growth in rural tourism in Malaysia and emphasizes the need for them to embrace new technology and digital marketing tools to remain viable in a globalized market (Shin et al., 2019).

Overall, the crucial role of SMEs in the economic development of developing nations, particularly in the context of the tourism industry, and emphasizes the importance of leveraging technology and digital marketing strategies for their sustainability and growth (Seow et al., 2020).

2. LITERATURE REVIEW AND HYPOTHESIS

2.1. The Importance of ICT in the Tourism Industry

The tourism sector has been utilizing ICT in that social media platforms have been used by small and medium-sized enterprises (TSMEs) as a means of leveraging information and communication technology (ICT) (Shrestha & Jeong, 2016) (Gössling, 2020). ICT is used by restaurants for a variety of operations-related tasks, such as marketing, menu creation, reservations, and guest loyalty programs.

2.2. Rising Customer Expectations and the Use of AI

Research indicates that the advancement of technology has led to a rise in complexity and elevated expectations from customers. Additionally, it's observed that the hospitality industry is rapidly adopting self-service technology and utilizing artificial intelligence (AI) in the form of robots and chatbots for travel. The integration of human-centered design (HCD) is recommended to promote user-friendly technology and foster trust between tourists and technology, as Industry 4.0 solutions often neglect a people-oriented approach and sustainability (Samala et al., 2020).

The tourism industry is recommended to place a stronger emphasis on integrating human-centered design (HCD) into studies of and assessments of technologically mediated tourist experiences. The purpose of HCD in this situation is to promote the agenda of technology that is user-friendly rather than computer-friendly by facilitating interactions and fostering trust between tourists and technology. The majority of Industry 4.0 solutions were not developed primarily to benefit tourists. 47% of people worldwide think that technology advancements are occurring too quickly and bringing about changes that they do not see as beneficial. It has been discovered that, in reality, Tourism 4.0 frequently neglects a people-oriented approach and a sustainability element in favor of concentrating on the effectiveness of cutting-edge technological advancements. As an illustration, some tourism marketers have quickly shifted to new virtual solutions to satiate people's desire for travel, such as virtual

museum tours and even a virtual reality concert in Helsinki that drew over one million spectators (Stankov & Gretzel, 2020).

Foreign tourists to the United States frequently express their unhappiness with language hurdles and seek out hospitality services that speak their language, are conversant with their culture, and understand local customs. By lowering common language barriers, Human-Computer Interaction (HCI) technology combined with good user experience may help visitors in their on-property experience. By equipping hotels with HCI tools like kiosks, you may enhance not only the guest experience but also the staff experience by allowing them to focus on more important, time-consuming duties. Hyatt Place has been utilizing technology, such as kiosks for check-ins and guest key retrieval, touch-screen tablets for food ordering, and direct room ordering for cable TV and new releases. Hotel visitors have the option of checking directly into their rooms without the need for additional human help thanks to self-service technologies like check-in kiosks (Fishbane, 2017).

H1: Has user experience been considered in the Nepali tourism sector?

2.3. ICT use in Developed Counties

Hossain and Khan conducted study on ICT usage and its effects on the London tourism sector. They observed the growth of the hotel business due to customer-used reservation and booking systems through e-Tourism, as well as the booking and reservation of airline tickets through the use of global distribution systems (GDS). It was shown that the majority of lodging providers are SMEs, with 95.5% of all businesses having fewer than nine employees. The results demonstrated that SMEs in the hospitality sector had difficulties implementing ICT because of a lack of ICT literacy, a lack of knowledge, and budgetary limitations to put such systems in place. They also face issues with costs and training. Although TSMEs find it difficult to compete with large, resourceful companies, Twitter, Facebook, and other social media platforms have made it possible for even small organization to reach out to potential clients. In order to draw more tourists to London, researcher also revealed that usability of websites and mobile apps might be improved (Khan & Hossain, 2018).

ICT appears to be important for sustainable travel. Lee and colleagues have talked on how to manage crowded tourist areas in urban areas. Cities like Singapore, Seoul, and Dubai have invested in long-term smart tourism systems. During the COVID 19 pandemic, they also discussed the significance of augmented reality (AR) and virtual reality (VR) services (Lee et al., 2020). Since physical mobility and human contact were prohibited during the COVID-19 epidemic, the 3D virtual world Metaverse, which allows users to experience a social and economic environment identical to the real world, has recently attracted a lot of attention from the tourism sector (Um et al., 2022). The tourism sector has already embraced VR and AR. Both Tourism Australia (http://www.australia.com/) and Destination BC (http://

bcexplorer.com/) in British Columbia, Canada, offer fully interactive VR experiences on their websites (Yung & Khoo-Lattimore, 2017). Many hotels (e.g. www.showhotel.com) and destinations (e.g. www.virtualgettysburg.com) offering 'virtual tours' (Guttentag, 2010). With AR, museums can provide visitors enriched information in a more dynamic and creative way. Gaming, tourist education, destination marketing, and cultural heritage are just a few of the tourism sub-sectors that have used VR in various ways. The majority of scholars that study virtual heritage think that their work inspires people to visit the physical place by educating visitors and enhancing their experience there. When used as a methodological tool to examine the impacts of crowding in a restaurant, virtual reality was found to be effective at simulating controlled environments. Virtual reality is easily supported on social media sites like YouTube and Facebook. Future research on virtual tourism is crucial because of the advantages it could provide for people who are unable to travel due to physical limitations, financial hardships, or social stigma (Yung & Khoo-Lattimore, 2017; Guttentag, 2010). There are theme parks that offer virtual reality entertainment, and these theme parks can be located all over the world. For instance, the Australian amusement park Dreamworld has an attraction called "V8 Supercars RedLine" that is comparable to the Cyber Speedway in Las Vegas (Guttentag, 2010).

Korea uses AR and VR to promote tourism. In addition to enhancing customer experiences, AR and VR are employed for content marketing. For instance, to boost ticket or ancillary service sales, airlines have started deploying VR technology to show travelers the cabins in advance (Sofronov, 2018). Similar to Korea, Indonesia has employed virtual reality (VR) in marketing initiatives to create sensory experiences to entice tourists and affect customer decision-making processes, as well as to replace promotional tools like brochures. Club Med Bali, The Westin Resort, Bondalem Beach Club, and The Royal Santrian are just a few of the hotels in Bali that have employed virtual reality to advertise their events (Subawa et al., 2021). The researcher thinks that the concept of a smart city will encourage differently abled, elders, pregnant women, and those with visual, auditory, or cognitive impairments, to visit tourist destinations with ease (Lee et al., 2020).

2.4. ICT use in Developing Counties

Research on Ethiopia done by Wagaw and Mulugeta showed that people in tourism are still using traditional mediums like flyers (31%) and magazines (26%) to promote their business through they are aware of the positive impact of digital media. Research shows that website users are 23%, while social media and television/ radio users are 8% and 2%, respectively. Social influence (SI) and behavioral intention (BI) to use ICT in the tourism sector show a strong positive correlation. The result of the research indicated that there is also a strong positive association between perceived usefulness and behavioral intention to use ICT in tourism. That means tourism organizations are motivated to use ICTs when such technologies are easy to use letting them have more time for other activities (Wagaw

& Mulugeta, 2018).

Anand Bethapudi discovered that in India, social media platforms like Facebook, Twitter, and blogs have a significant impact on consumer outreach and brand development for hotels and restaurants. The majority of Indian travel, tourist, and hospitality businesses had websites, but most of them lacked apps. Most management authorities were found to be out of touch with modern technology. It was discovered that the country's Internet penetration rate wasn't satisfactory and that many organizations weren't using social media to expand their businesses. According to the research, core banking has a bigger role to play in financial transactions related to tourism. 98% of poll respondents concurred that an online reservation system is necessary to promote and sell goods and services. 89% of respondents concur that mobile commerce plays a significant role in the travel and tourism sector. 76% of those surveyed concur that the virtual tour serves as a marketing draw element online. The websites for the travel industry should be updated frequently. More options for B2C and B2B customers to use mobile phones as a payment method for bookings are required. Governments must ensure that high-speed Internet is accessible to the general public and is affordable (Bethapudi, 2013).

According to Roy and Ahmed, ICT has helped Bangladesh's tourism sector operate more cheaply and attract more tourists. Through the Internet, customers can make hotel and ticket reservations. There is less need for middlemen because tourists may access the websites of various hotels, motels, airlines, destinations, and entertainment venues directly. Updated websites and lower Internet costs have been found to boost tourism (Roy & Ahmed, 2019).

2.5. ICT Use in Nepal

The significance of the Internet for the tourism business was mentioned by Shrestha and Jeong in their article. In contrast to metropolitan areas, they discovered that Nepal's rural areas have low Internet quality. Additionally, they noted the inadequate mobile connectivity in rural areas. Infrequent power supply, which they also discovered has made it difficult to utilize ICT, has become less of an issue in recent years, such as in November 2016. Lack of knowledge about Nepal for tourists appears to be a problem, however, the sources of such information are not made explicit. Additionally, according to researchers, not all tourism-related agency has a website, which makes it difficult for customers to obtain information. It hurts tourists due to information delays (Shrestha & Jeong, 2016).

It is abundantly obvious from various studies that ICT use benefits tourism sector. Research has also indicated that the hotel and lodging industries have data gaps (Shrestha & Jeong, 2016; Shrestha et al., 2021). A paucity of data-sharing mechanisms across significant industry participants, such as the transportation, lodging, and hospitality sectors, was discovered. Additionally, it was discovered that there is a lack of coordination between domestic

tourism, community-based tourism, the private tourism sector, and the Government of Nepal, which has led to a lack of knowledge about new tourist destinations among domestic and foreign tourists. Tourists don't seem to be getting enough first-hand information, it seems. The smart device has opened new horizons, but it is rarely discussed how it has altered the tourism industry. This industry appears to benefit from the development of ICT which has made it possible to go cashless (Shrestha et al., 2021). It was discovered that Nepal's tourism sector benefits from the Internet penetration rate. Only 2% of tourists learned about Nepal through travel and tour firms, whereas 62% of tourists learned about Nepal via the Internet. It was discovered that about 94% of tourists visiting Nepal utilize ICT, demonstrating the importance of high-quality websites in boosting tourism in the country. Booking hotels, booking flights, using email for communication, and accessing websites for information all appear to be significant uses of ICT. More than 50% of visitors thought that ICT had decreased the cost of a trip to Nepal, while the other 50% said it had had no impact at all (Wenan et al., 2019).

2.5.1 Role of Social Media in Tourism Industry

Social media has also been discovered to have a significant impact on Nepal's tourism sector. Beautiful images and videos published on social media have been seen to enhance the number of visitors to both established and emerging tourist locations (Sharma & Dhakal, 2020). During natural disasters, social media has been demonstrated to benefit the tourism sector. Information about natural disasters was found to spread more quickly through social media, such as Twitter, than through traditional media. It was discovered that social media played a beneficial part in increasing the number of tourists visiting Nepal. Many individuals working in the tourism industry are not aware of how to effectively use social media platforms to draw in potential youthful travelers. Additionally, it was discovered that the government of Nepal has difficulty efficiently utilizing ICT tools (Lama & Pradhan, 2018).

H_2: *Is social media equally relevant to increasing the number of tourists in Nepal and decreasing the overall cost of the tourism industry in the present context*?

3. METHOD

The aim for Nepal to become a digital nation has been a focus of the government for more than 15 years. Both the Digital Nepal Framework and the e-government master plan are in place in Nepal. ICT use in tourism, or e-tourism, has been covered in both reports. Its inclusion has inspired me to research ICT use in Nepal TSMEs and offer new information to this field.

The research was conducted in two phases:

To start, a thorough literature analysis was done to look into the effects of ICT use in the tourism industry.

Second, an in-depth interview was conducted with four people from the tourism sector. All four people have professional experience of more than ten years to twenty-plus years. The interviews were transcribed and analyzed. The purpose of the interviews was to explore the use and impact of ICT in Nepal tourism sector. Interviewees are coded as I1, I2, I3, and I4 respectively. I1 has more than 20 years of experience, I2 has 13 years of experience, I3 has 15 years of experience and I4 has 12 years of experience in the tourism industry respectively.

4. DISCUSSION AND RESULTS

Most of the time, it appears that developed and developing nations tourism sector use ICT in quite similar ways. According to a study of the literature, social media positively affects travel, and the Internet is essential for using social media. Developed nations are using industry 4.0 to control over tourism in specific locations. Social media has been a major factor in the tourism industry in Nepal. The four interviewees all concurred that social media has benefited the travel and tourism sector. Social media, like Facebook, is a helpful tool for promotion. I1 "*The tourism business in Nepal has benefited greatly from social media. TikTok, Facebook, and Instagram have all been crucial in drawing tourists. Social media has not only made it easy to connect with customers, but it has also assisted in cost savings. Social media is less expensive than traditional media. Since the majority of users only follow the tweets of celebrities, Twitter has not been deemed to be as useful as Facebook, Instagram, and TikTok. Therefore, while it is still possible for broadly public content to go viral on other social media platforms, it is unlikely to happen on Twitter. A lot of people create vlogs and upload them on YouTube. It has also been crucial in boosting tourism to uncharted and new locations*". I2 "*Social media has an advantage for Nepal. Facebook and TikTok are both widely used by domestic and international travelers*". I3 "*In the context of Nepal, social media has been crucial in promoting the country to the outside world or potential new tourists. Facebook, Instagram, and TikTok, in my opinion, have major responsibilities to play in the tourism sector. Facebook is a major source of questions. Facebook is beneficial for promotion. An important factor in the rise of Chinese and Indian tourists in Nepal has been Facebook advertising. TikTok aids in discovering new locations that the government or even seasoned travelers are unaware of. Overall cost reduction has benefited greatly from the use of social media. Social media and other ICT tools are being used by travel agents to connect with travelers. Because of ICT, travel companies are no longer required to have offices abroad or in nations where Nepal receives a sizable number of tourists. As a result, travel agencies' operating costs have decreased by at least 25% thanks to social media and ICT*". I4 "*In my opinion, ICT plays a crucial role in every*

industry. Without the use of ICT, our daily lives are inconceivable. Tourism and hospitality have grown significantly as a result of social media".

Smartphones, according to interviewees, have completely changed the tourism sector. Travelers can access information at any time. As smartphone usage increased, more businesses started offering their services via apps. Going cashless appears to rely heavily on apps. The tourism business appears to be impacted by several e-wallet apps like e-sewa, khalti, and various banking apps. According to interviews, there is much that can be done to improve the payment system; nevertheless, it is not just ICT that is to blame; the Nepali government's foreign exchange policy is also a contributing factor. Tourists will be motivated to travel more if these issues are remedied. Travel agents are mostly present on social media and websites, according to an interview, H2 has been received the proper consideration. They have realized that creating an app won't significantly aid their business because many of their consumers utilize various travel agencies for various vacations. Customers were discovered to utilize the app primarily in exchange for a discount before deleting it from their device after a while. According to the results of the interviews, H1 has not received the proper consideration. The results show the website and app are not user-friendly and do not place an emphasis on individuals with disabilities. The majority of tourists, it was discovered, book their rooms using booking.com. Tourism-related websites were found to be lacking in important information. I3 "*I think we still have many work to do. On most websites, inadequate information is provided. Still, there is no proper information about the immigration process. What tourists can do in Nepal and what they cannot do is not provided. Information about the culture and lifestyle of a particular geographical location has not been provided. Due to this, it will create confusion among tourists to prepare themselves before leaving for Nepal. Even some website does not provide reliable information.*" I1 "*Here we do not have an international gateway.*"

Interviews demonstrate the use of multimedia in the tourism sector. The idea of an Omni channel appears to be lacking in the Nepali tourism business. From the moment visitors arrive at Tribhuwan International Airport (TIA) until they depart the country, it is critical to offer a seamless customer experience. It is crucial to research the customer journey and develop the complete system using it. It was discovered that Archaeology Department in Kathmandu's durbar square provides audio describing the history and culture of the durbar square. The fact that tourists require tour guides to learn about Durbar Square suggests that it has a good effect on them. People with disabilities can benefit from it just as much. The interviewee believes that other tourist destinations should also offer this kind of audio facility. According to interviews, Nepal's oldest international airport is lacking in fundamental infrastructure. I3 "*TIA still does not use ICT effectively. Poor airport digital signage, such as*

the Flight Information Display System (FIDS). Internet users have no computers. There is a kiosk machine in the airport, however, it frequently malfunctions, especially in the arrivals area. The visa application form, acquiring a boarding pass, and pre-baggage checks go faster at the kiosk." I1 *"TIA is lacking a tube. Tourists have a horrible experience when there is no tube during bad weather in the airport. Although there is a tube at Pokhara International Airport, international flights does not operate frequently there. Although work has been done on infrastructure, which has to be considerably improved soon, Nepal organizations do not appear to be focusing on establishing websites that are accessible to people with disabilities."*

According to interviews, Nepal's tourism and hospitality industries are not far behind develop countries in terms of the use of software. Software needs to be customized to meet user needs, it was discovered. The application of "smart parking" was determined to be necessary for managing parking spaces in hotels and restaurants. During an interview, it was discovered that the preservation of tourists' travel records is not done in the same way as it is in Europe or other develop nations. I2 *"Travel agencies in Nepal employ less software than those in Europe. They also record the flow of tourists. The travel histories of visitors are recorded in Europe. Ace Travel has been compiling data on past journeys. The majority of hotels utilize the software for routine tasks. Even two-star hotels have excellent ICT capabilities. To encourage more visitors to remain in Nepal, we should organize a night city tour."* I4 *"The Intellect data system (IDES) and OPERA software, which is utilized by the hospitality sector in developed countries, is also utilized in our industry. IDES and OPERA need to be modified to meet user requirements. The Marriott hotel in Dubai and Kathmandu, for instance, both use the same software. The system should be entirely keyless, as is common overseas. Only 75% of the rooms at our five-star hotels lack keys. For menu dockets, we should switch to tablets. Although I've seen evidence of robots being used to serve clients, I still feel that people cannot be replaced in the way we interact with them."*

According to interviewees, chatbot usage in the Nepali tourism sector is at a minimum. To give their customers a positive user experience, some businesses, including Buddha Air, have begun using chatbots and multilingual websites. It has been discovered that Buddha Air also offers its services via the app. The majority of the website was discovered to be in the English language, while the government of Nepal, namely ministries, uses two languages on their websites: Nepali and English. It appears that the tourism sector assumes that all domestic visitors are literate in English. In Nepal, there are no kiosks in hotels to provide a positive user experience. I1 *"I believe that the application of chatbots in the tourism business is minimal. Instead of AI chatbots, I have found businesses using Viber and WhatsApp. If I recall correctly, I've only encountered Buddha Air utilizing it. No agencies that I could find had used*

kiosks. The majority of the website is in English, and the ministry website offers both Nepali and English as language options. The website can be used to book tours." I3 *"The chatbox is rarely used. Only young entrepreneurs in the tourism industry are utilizing it. A few companies that use chatbots are Yatra Holidays, Guru Travels, Empire Travel, and Simrick Holidays. Kiosk usage at hotels has not come to my attention. Only Nepali and English are utilized on the website; other languages are rarely used. Tourism did not prioritize digitalization before COVID, but they are now investing in ICT."* I4 *"In Nepal, I haven't noticed the use of chatbots or kiosks. For check-in and check-out, hotels like Yak and Yati use card punch technology. All five-star hotels that I have visited have a point of service (POS). I've noticed that the majority of web pages are in English. The only personnel who should speak more than two foreign languages are those employed by the hotel."*

The literature on VR and AR suggests that the tourism industry has a lot of potential. As in the literature, interviewees did not express as much enthusiasm for VR and AR. The interviewees concurred that while VR and AR can be used for educational purposes, they cannot provide visitors with the same experience as when they arrive at the actual place. They concurred that it can be a good marketing tool. I1: *"I have not found VR being used in Nepal."* I2 *"I believe that VR is best used as a marketing tool. I do not believe virtual reality will take the place of the authentic experience that travelers have while traveling."* I3 *"I believe that using VR would inspire travelers to go there. It will aid with perspective-setting."* I4 *"I haven't seen any VR-related work."*

The interviewees concurred that government policies directly affect the travel and tourism sector. I1 *"The government increased the levy on airline tickets in this year's budget. The cost of tickets will go up, and the tourism sector may suffer as a result."*

5. CONCLUSION

One of the main contributions to Nepal's GDP is the tourism sector. ICT undoubtedly had a favorable effect on TSMEs, and Nepal needs to keep up with ICT development to attract more visitors. Social media has been demonstrated to positively impact on tourism sector. The development of websites and apps for the tourism sector revealed a lack of user experience (UX) focus. Relevant data are still in short supply. Software utilized in the tourism sector in Nepal needed to be adaptable to user needs. It was discovered that there appears to be a lack of data exchange amongst various stakeholders in the Nepal tourist sector. It was discovered that those working in the tourism sector thought VR and AR could only be used for marketing and education. To improve the tourism business in Nepal, government policies should be implemented in its favor.

It was discovered that most employees employed in Nepal's tourism sector are unaware of how ICT is now used in developed nations. Few interview subjects had never heard of http://www.welcomenepal.com. The chatbot's website integration did not go as expected. The website offers multilingual functionality in English and Nepal in most cases. Since the majority of tourists still originate in India, the absence of languages like Hindi could have a negative impact. It's possible that the website's creator presumed that all Indian visitors spoke and understood English. People in Nepal who work in the tourist sector seem to know less about the DNF and the e-government plan, even though e-tourism is one of the country's top priority industries. The use of chatbots, kiosks, and multilingual websites is also lacking in the tourism industry's commercial sector. A sufficient number of representatives from the tourism sector should work with the government to develop plans and policies that have direction attached to them. Numerous unfavorable issues of the tourism sector, such as the fact that "tourists to Nepal frequently complain about the lack of reliable, up-to-date information on tourist destinations, weather conditions, and activities available," were stated in DNF 2019, yet the situation is still the same. Although the kiosk was set up as part of DNF 2019, the services appear to be unreliable. International hotel chains were discovered to be adopting Industry 4.0, which in most instances seems to be lacking in Nepal-based tourism entrepreneurs. Nepal's tourist sector still has a ways to go before implementing the Internet of Things (IoT).

There are just four interviews in this study, and they are all based in Kathmandu. Future research will take into account additional interviews with a variety of tourism industry workers from various Nepali regions.

REFERENCES

Bethapudi, A. (2013). The role of ICT in tourism industry. *Journal of Applied Economics and Business, 1 (4-December),* 2013, 67-79.

Fishbane, E. (2017). Impacts of human computer interaction (HCI) on translation in the hospitality industry. *UNLV Theses, Dissertations, Professional Papers, and Capstones.* 3199. http://dx.doi.org/10.34917/13444907.

Gössling, S. (2020, December 30). Technology, ICT and tourism: from big data to the big picture. *Journal of Sustainable Tourism*, *29(5)*, 849–858. https://doi.org/10.1080/09669582.2020.1865387.

Guttentag, D. A. (2010, October). Virtual reality: Applications and implications for tourism. *Tourism Management, 31(5),* 637–651. https://doi.org/10.1016/j.tourman.2009.07.003.

Lama, A. K. (2022, June 27). *Future proofing tourism related small businesses in the Hindu Kush Himalaya - ICIMOD.* ICIMOD - International Centre for Integrated Mountain Development. https://www.icimod.org/article/future-proofing-tourism-related-small-businesses-in-the-hindu-kush-himalaya/.

Lama, S., & Pradhan, S. (2018). ICT usage for the post-disaster recovery in tourism: The 2015 Nepal earthquake. Enhancing resilience of nature, built and socio-economic environments. *Proceeding of ISCRAM Asia Pacific 2018 (K. Stock and D. Bunker, eds).*

Lama, S., & Pradhan, S. (2020). ICT in sustainable tourism: A systematic review. A*CIS 2020 Proceedings.*

Kharel, S. (2019). State of tourism development in Nepal with special focus on changing purpose of visit. *International Journal of Research in Tourism and Hospitality, 5(3).* https://doi.org/10.20431/2455-0043.0503001.

Khan, M. Y.H., & Hossain, A. (2018). The effects of ICT application on the tourism and hospitality industries in London. *SocioEconomic Challenges, 4(2),* 60-68. https://doi.org/10.21272/sec.4(2).60-68.2018.

Khatri, M. B. (2020, May 1). Small and medium scale enterprises and their role in employment generation in Nepal. *Tribhuvan University Journal, 33(1),* 129–140. https://doi.org/10.3126/tuj.v33i1.28688.

Lee, P., Hunter, W. C., & Chung, N. (2020, May 12). Smart tourism city: *Developments and Transformations. Sustainability, 12(10),* 3958. https://doi.org/10.3390/su12103958.

Rodríguez, C. P. (2020, June 16). Travelling for pleasure: A brief history of tourism | Europeana. https://www.europeana.eu/en/blog/travelling-for-pleasure-a-brief-history-of-tourism.

Roy, B., & Ahmed, S. (2019). Role of information and communication technology (ICT) in tourism industry: An empirical study in Bangladesh. *Journal of Business Studies, XL (2), August 2019.*

Samala, N., Katkam, B. S., Bellamkonda, R. S., & Rodriguez, R. V. (2020, April 24). Impact of AI and robotics in the tourism sector: a critical insight. *Journal of Tourism Futures, 8(1),* 73–87. https://doi.org/10.1108/jtf-07-2019-0065.

Seow, A. N., Choong, Y. O., & Ramayah, T. (2020, July 31). Small and medium-size enterprises' business performance in tourism industry: the mediating role of innovative practice and moderating role of government support. *Asian Journal of Technology Innovation*, 1–21. https://doi.org/10.1080/19761597.2020.1798 796.

Sharma, G., & Dhakal, P. (2020, May 25). Influence of information and communication technology (ICT) in tourism sector: A descriptive approach. *Scientific Review*, *65*, 36–40. https://doi.org/10.32861/sr.65.36.40.

Shin O. K, Weng C. N, & Dawood, S. R. S. (2019) Challenges facing small and medium tourism enterprises: A case study in kuala sepetang. ICH 2019 *International Conference on Humanities.*

Shrestha, D., & Jeong, S. R. (2016, December 31). An ICT framework for tourism industry of Nepal: Prospect and challenges. *Journal of Internet Computing and Services, 17(6)*, 113–122. https://doi.org/10.7472/jksii.2016.17.6.113.

Shrestha, D., Wenan, T., Rajkarnikar, N., & Niroula, S. (2021). Analysis of ICT infrastructure and tourism informational Needs: A case study of Nepal. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3984232.

Shrestha, H. P., & Shrestha, P. (2012, November 9). Tourism in Nepal: A historical perspective and present trend of development. *Himalayan Journal of Sociology and Anthropology*, *5*, 54–75. https://doi.org/10.3126/hjsa.v5i0.7039.

Singh, S. K. (2018). Role of ICT in entrepreneurship development and employment generation: Nepalese scenario.

Singh, S. M. (2015, November 19). Micro and small and medium enterprises in Nepal:

Ways to grow and globalize. *Nepalmynepal.* https://nepalmynepal.wordpress. com/2015/11/19/micro-and-small-and-medium-enterprises-in-nepal-ways-to-grow-and-globalize/.

Šnajdar, T. G. (2020, January 31). History of travelling: How people started to travel - culture tourist. *Culture Tourist.* https://culturetourist.com/cultural-tourism/history-of-travelling-how-people-started-to-travel/.

Sofronov, B. (2018, December 18). The development of the travel and tourism industry in the World. Annals of Spiru Haret University. *Economic Series, 18(4),* 123–137. https://doi.org/10.26458/1847.

Stankov, U., & Gretzel, U. (2020, July 25). Tourism 4.0 technologies and tourist experiences: a human-centered design perspective. *Information Technology & Tourism, 22(3),* 477–488. https://doi.org/10.1007/s40558-020-00186-y.

Subawa, N. S., Widhiasthini, N. W., Astawa, I. P., Dwiatmadja, C., & Permatasari, N. P. I. (2021, January 12). The practices of virtual reality marketing in the tourism sector, a case study of Bali, Indonesia. *Current Issues in Tourism, 24(23),* 3284–3295. https://doi.org/10.1080/13683500.2020.1870940.

Tarutė, A., & Gatautis, R. (2014, January). ICT impact on SMEs performance. *Procedia - Social and Behavioral Sciences*, *110*, 1218–1225. https://doi.org/10.1016/j. sbspro.2013.12.968.

Um, T., Kim, H., Kim, H., Jungho Lee, J., Chulmo Koo, C., & Chung, N. (2022).Travel incheon as a metaverse: Smart tourism cities development case in Korea. *Information and Communication Technologies in Tourism 2022, (*226–231).

Wagaw, M., & Mulugeta, F. (2018, October 24). Integration of ICT and tourism for improved promotion of tourist attractions in Ethiopia. *Applied Informatics, 5(1).* https:// doi.org/10.1186/s40535-018-0053-x.

Wenan, T., Shrestha, D., Deepmala Shrestha, D., & Jeong, S. R. (2019). Attitude of international tourist towards ICT and digital services in tourism industry of Nepal. *Proceedings of 2019 International Conference on Advanced Information Science and System (AISS'19).* Singapore, 6 pages. https://doi.org/10.1145/3373477.3373487.

World Bank. (n.d.). *World bank SME finance: Development news, research, data.* https://www. worldbank.org/en/topic/smefinance.

Yung, R., & Khoo-Lattimore, C. (2017, December 28). New realities: A systematic literature review on virtual reality and augmented reality in tourism research. *Current Issues in Tourism, 22(17),* 2056–2081. https://doi.org/10.1080/13683500.20 17.1417359.