

Chapter 5

Application of Innovative Technologies in the Tourism and Hospitality Industry of Bangladesh: The Present Scenario



Md. Ashikur Rahman Avi, Marufa Nasrin, and Azizul Hassan

Abstract Using innovative digital devices to accomplish maximum functions associated with tourism and hospitality is the key to the application of technology in the tourism and hospitality industry. Over the last decade, technology has played a very significant role in the hospitality and tourism industry and a technological revolution has been seen. The effective application of innovative technologies enhances operational performance, improves service quality and customer experience, at the same time reduces costs, automates operational tasks, and saves time. In Bangladesh, tremendous progress has been made by using technology in several sectors in the last couple of years but the technological application in the case of the country's tourism and hospitality industry is still at the nascent level compared to the world perspective, though the phenomenon is changing. Relying on secondary works of literature, this chapter aims to present the current scenario of innovative technology applications in the tourism and hospitality industry of Bangladesh. In addressing the chapter aim a theoretical link among tourism and hospitality, innovations and technology are explored first, and then the chapter focuses on describing the importance of technology applications, their implications in the industry, and finally, it highlights on the present state of technological applications from both the global and Bangladesh perspective. The chapter concludes by generating some suggestions for the stakeholders of the tourism and hospitality industry so that they can make the best use of technology in their field.

Keywords Technology · Tourism · Hospitality · Present · Bangladesh

Md. A. R. Avi (✉)

Department of Tourism and Hospitality Management, Pabna University of Science and Technology, Pabna, Bangladesh
e-mail: ashikur.thm.du@gmail.com

M. Nasrin

Department of Marketing, University of Dhaka, Dhaka, Bangladesh

A. Hassan

Tourism Consultants Network, The Tourism Society, London, UK

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Introduction

Significant innovations, including such high-speed trains, electrical energy, telephone, motor vehicle, aviation engine, television, and radio, etc., have had a prevalent effect on both the business, professional and daily life (Barwise et al., 2006). Since the development of the printing press, the Internet is considered an important innovation as well (Hoffman, 2000). A tech revolution has been seen worldwide since the introduction and implementation of Internet-based digital technologies in the product, service, and other commercial fields. In this modern technological world, the Internet is perceived as the most advanced and multi-layered tool used to exchange and disseminate information, expertise at the lowest possible cost. The vast intelligent design continued rapid development and innovation of the technology, particularly the Internet and cloud computing has changed the shape, policy, and practices of maximum industry around the world (Buhalis, 1998, 2003; Sheldon, 2004; Buhalis & Leung, 2018).

Digital Technological innovations are arising, interfering and influencing our lives in so many ways which denote that we are at the very beginning of a fourth industrial revolution, a new paradigm in which digitalization guides and affects societies, cultures, and countries in new and sometimes unpredicted ways (UNWTO, 2018). The technological revolution brought by the Internet and digital innovations have significant implications for the tourism and hospitality industry because of the positive integrated relationship among internet technology, tourism and hospitality (Buhalis & Law, 2008; Law et al., 2010; Aldebert et al., 2011; Buhalis & Jun, 2011; Navío-Marco et al., 2018). Over the 30 years, tourism and its associated industries have been closely linked to the progress of the Internet and technological innovations. The application of the internet and innovative technologies has added a new dimension to the modern hospitality industry (Sigala, 2018; Buhalis & Leung, 2018).

According to Garín-Muñoz and Pérez-Amaral's (2011) argument as an information-intensive industry, tourism can gain significant advantages from using the internet. It was suggested by Law and Jogaratnam (2005) that information and communication technology can transform the nature of tourism and hospitality offerings, businesses, and the competition, and it would be difficult for tourism and hospitality organizations to run and manage their information-intensive business if they fail to implement the right technological systems in their operational field. The advancement of digital innovative technologies has helped the global tourism industry move forward and in this present era, without the blessings of digital technology, tourism development can't be accomplished (Howlader, 2018a).

In 2018, realizing the potentialities and impact of innovative technologies on the tourism industry, the apex international organization of tourism United Nations World Tourism Organization (UNWTO) declared the world tourism day celebration theme as Tourism and The Digital Transformation (UNWTO, 2020). This chapter aims to present the extent to which Bangladesh, as a developing country, has applied innovative technologies in its tourism and hospitality industry since the announcement of UNWTO. In so doing, the chapter explores the theoretical link tourism and

hospitality, innovations and technology, discusses the importance of technology applications in the tourism and hospitality industry, and highlights on the present state of technological applications from both the global and Bangladesh perspective.

Tourism, Hospitality and Technological Innovations

For many years, as a topic of interest, the discussion on the role of innovative technology applications in the tourism and hospitality industry is growing with importance. Ratten et al. (2019) identified two reasons behind this sensational growth: “firstly, the tourism industry has been the launchpad for new technological innovations that have created new markets and products; and secondly, the tourism industry has a large number of small-sized enterprises making it competitive and thus requiring constant innovation”. In this notion, the enterprises of tourism comprise accommodation service providers (hotels, motels, resorts, etc.), travel agencies and tour operators, national tourism authorities, government tourism authorities, and tourism and hospitality associated educational institutions. With the emergence of modern technology devices and innovations, the service quality in tourism has been shifted in parallel with those tourism enterprises.

The tourism and hospitality industries have accepted the changes brought by innovative technologies and widely implemented those to lower costs, improve operational efficiency and productivity and, most specifically, improve service quality and guest experience (Law et al., 2009). Technology applications usually encompass the use of internet applications and new media which are advent with the help of the internet such as social media, artificial intelligence, etc.

The Innovative Technologies Applied in the Tourism and Hospitality Industry Around the World

The integrated tourism-technology relationship has changed this sector in many ways (Tourism Review News, 2019). Not only to improve operational efficiencies but also to ensure guests’ or tourists’ safety and security, increase their level of experience and enhance satisfaction the innovative technologies are applied by most of the tourism and hospitality organizations across the world. Technological innovations such as the introduction of mobile or smartphone software apps, travelers’ biometrics recognition, E-room booking, or car rentals with Global Positioning System (GPS), and web solutions, etc. have generated a tremendous effect on tourism and hospitality industry worldwide. The following Fig. 5.1 lists the most applied innovative technologies in the tourism and hospitality industry around the world:

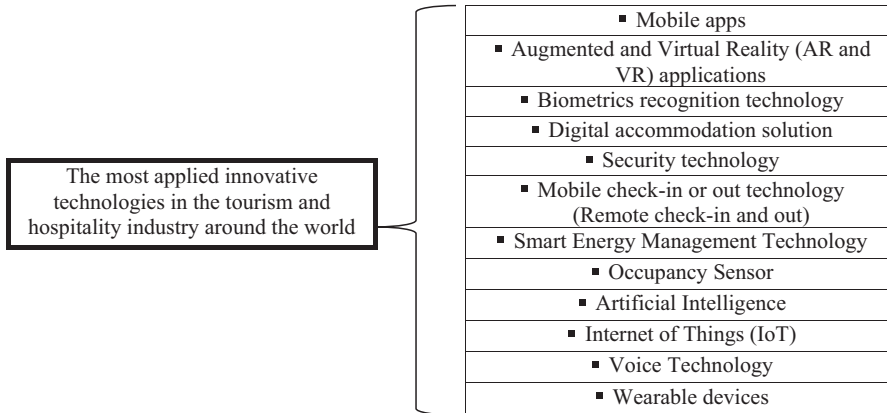


Fig. 5.1 Most applied innovative technologies in the tourism and hospitality industry worldwide. (Source: developed by the authors)

Mobile Apps

Mobile or smartphone-based software apps are one of the major segments of technological innovation that are used by most of the tourists worldwide. In 2019, a total of 204 billion mobile apps were downloaded by users around the world (Clement, 2019). Today tourists use software apps to choose a destination, collect destination information, book hotel rooms, book or buy air tickets, rent a car or taxi, shop, order foods, pay bill almost everything associated with travel and tourism.

Augmented and Virtual Reality (AR and VR) Applications

Application of Augmented Reality (AR) in the context of tourism industry examples are well found across the world (Jung et al., 2015; Hunter et al., 2015). As a part of smart tourism, AR is developed to provide information about destinations and attractions to the tourists and its application optimizes their satisfaction as well (Chung et al., 2015). The AR and VR technologies are applied in tourism and hospitality associated industries especially for content marketing and to enhance the tourists' or guests' experiences. For instance, many airline companies have already started utilizing VR innovation to display cabins to passengers in advance and thus attract them and boost ticket and additional services sales (Global Data, 2018).

Biometrics Recognition Technology

The introduction of biometric recognition technologies at the world's major airports, depending on the eyes or fingerprints, has helped make each trip incredibly easier and safer for the tourists. The Atlanta airport and the Delta airline company have already started an experimental implementation of such a project and through this technological innovation, tourists can travel without any documents as it needs biometric recognition only (Tourism Review News, 2019).

Digital Accommodation Solution

In the present world sharing economy is booming and apps based tech system like Airbnb is solving the accommodation problems for the tourists and contributing to sharing economy. By using the Airbnb platform, one can book different accommodations from the cheapest to the most luxurious ones to satisfy their need. It offers hotel rooms, resorts, motels, inns, hostels, private homes, apartment houses, and many more. In addition to these, a tourist can book the most varied experiences made available by the locals of a particular tourist zone to gather knowledge, experience, and enjoy the unique journey.

Security Technology

For assuring the safe and secure comfortable environment to the guests, nowadays most of the hospitality industries around the world are applying technological innovations in their operation area. Smart security technological innovations including mobile keys, upgraded monitoring systems, ultraviolet light technology, advanced firewalls, etc. are used most in the hospitality industry to reduce incidences of theft, assault, and data breaches involving sensitive information of the guests.

The use of Mobile keys for room entrance has added a new dimension to guests' security as this technology automatically alerts both guests and hotel management when someone tries to enter or get in the room (TOPHOTELNEWS, 2018). Most of the hotels around the world are upgrading the security monitoring system in their operation area. Many hospitality properties are expanding the number and locations of micro cameras, redesigning and maximizing the storing capacity of hardware devices, and using most advanced software that offers a low light vision to track those cameras so that face, movement, and color can be analyzed and recognized.

Even amid coronavirus health crisis across the world, to ensure safety and security to the guests' and employees, the most famous international hotel chain brand the Marriott is planning to use electrostatic sprayers to sanitize all surfaces of 7300 properties worldwide under its brand as well as the company is testing ultraviolet

light technology to sanitize keys for the property guests and devices shared by the associates (Travel and Leisure India, 2020). To combat cybercrime and protect guests' information, most of the hotels are trying to incorporate more innovative and advanced firewalls for limiting data access and securing mobile devices of the hotel employees (TOPHOTELNEWS, 2018). Similar to this, the Guy Harvey Resort of Florida has recently switched to Oracle's Opera Cloud to protect the data and information of the guests (Hertzfeld, 2020a).

Mobile Check-in or Out Technology (Remote Check-in and Out)

To provide personalized and hassle-free service to the guest, some hotels have started introducing mobile check-in and out facility. For instance, Remington Hotels is one of the largest independent hotel management companies in the United States having more than 90 hotels in the holdings has started providing the check-in via mobile phone choice to the guests, they ask for a protected digital key and proceed directly to their room on arrival (Hertzfeld, 2020b).

Smart Energy Management Technology

The application of smart energy management technology in the hospitality industry is the new trend. Using smart thermostats and occupancy sensor systems, and technologically advanced machine-learning techniques to analyze contemporary thermodynamics, local weather patterns, and peak usage loads, a smart energy management system optimizes real-time energy consumption. Attala (2019) claimed that the application of such technology reduces the hotel energy costs up to 20% and significantly increases the resale value of the property.

Occupancy Sensor

To enhance guests' experiences during their stay, the hospitality industry is using an occupancy sensor along with the guests' data. This technological innovation is used to better accommodate guests' needs and to automate guests' interactions while reducing hotel labor costs. Attala (2019) believes that applications of such technology enable hotels to estimate and personalize hospitality offerings and services relying on the guests' earlier visits and data.

Artificial Intelligence

Artificial Intelligence is behind many evolving technological applications in the tourism and hospitality industry all over the world (Global Data, 2018). Application of such technology automates operational systems, saves time, while improving service quality and organizational performance, and reducing costs. Hotel Bookings, Chatbots, Room service, and Data analysis are the key factors where the impact of artificial intelligence is significant in the tourism and hospitality industry (Bhagat, 2019).

Internet of Things (IoT)

Nowadays, IoT seems to have more potential to shape the upcoming years of the tourism and hospitality industry and its affiliated businesses. Realizing the potentials of IoT, the tourism service providers have begun to apply such innovative technology in their operational field. An example of Lufthansa, the flag carrier and largest German airline, is best suited here. This airline provides a link to its passengers on their mobile boarding pass through Lufthansa's software app. By using the link any passenger can track his/her luggage and thus Lufthansa reduces the anxiety and tension levels of the passengers related to their lost belongings.

Voice Technology

Voice-based technological advancement is another automated novelty that is implemented by many service providers of the tourism and hospitality industry since more and more guests or tourists have altered their searching style to voice interactions from typed-in search. Many famous chain hotels such as Kimpton Alexis Hotel, Westin Buffalo, and W Austin of Marriott International have started using such technology (Global Data, 2018).

Wearable Devices

Notwithstanding a slow start, wearable devices or wearable technologies are gradually being applied by most of the well-known tourism and hospitality allied businesses to offer their guests or tourists a much more customized and unique experience. For example, a wearable, customizable, Radio Frequency Identification (RFID) equipped Magic Band is installed by the Walt Disney Company, which is connected to the theme park facilities to minimize waiting times of the tourists as well as track their (tourists'/visitors') locations as well as activities. As claimed by

the Disney world, this Magic band is all in one device for the tourists through which tourists can enter the Disney parks, unlock the room of Disney Resort, and buy food and other products (Walt Disney World, 2020).

As well as the use of Smart Reserved Parking Sensor and software apps to allow guests to reserve parking places before their visit, Digital Reputation Management Technology to manage online ratings and reviews, and Loyalty-program management, etc. are reshaping the hospitality industry all over the world. In this vein, Buhalis (2019) also predicted that the tourism and its associated industries will be driven by a range of innovative technologies such as IoT, the Internet of Everything (IoE), fifth generation mobile network (5 G), RFID, wearable devices, 3D printing, Digital currency and payment system (Cryptocurrency, Blockchain), sensor and beacon infrastructures, prevalent computation, gamification as well as improved analytical capabilities supported by AI and Machine Learning (ML) over the next 75 years (2020–2095).

The Present Scenario of Innovative Technology Applications in the Tourism and Hospitality Industry of Bangladesh

Bangladesh has seen a boom in the use of the Internet riding on the back of massive growing mobile internet and the governmental initiative for digital Bangladesh (The Financial Express, 2020). This is the outcome of long term planning, continuous prioritization, and support from the governmental body. Especially the present government of this country has been prioritizing the technology sector since 2008 and has taken initiatives to build Digital Bangladesh with three stages (primary stage by 2021, secondary stage by 2030, and third phase by the year 2041) and timeframe (Halim, 2018). At present, the country has witnessed a massive boost in the number of mobile phone and internet users (The Financial Express, 2018) and tremendous progress has been made by applying technology in several sectors in the last couple of years. According to the latest statistics of Bangladesh Telecommunication Regulatory Commission (BTRC), the total number of Internet Subscribers has reached 99.984 Million at the end of February 2020.

Form the Table 5.1 it is apparent that the maximum number of internet subscribers is from the mobile internet category. So it is also evident that most of the peoples

Table 5.1 Number of internet subscribers in Bangladesh

S.L no.	Operator	Subscriber (million)
1.	Mobile internet	94.236
2.	WiMAX	0.005
3.	Internet service provider (ISP) + public switched telephone network (PSTN)	5.743
Total		99.984

(Source: BTRC, 2020)

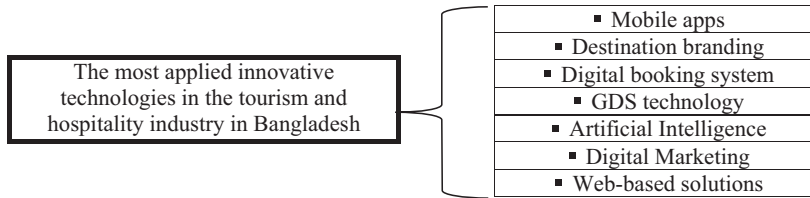


Fig. 5.2 The most applied innovative technologies in the tourism and hospitality industry in Bangladesh. (Source: developed by the authors)

of Bangladesh use the internet on their mobile or smartphone. BTRC (2020) also revealed that the total number of Mobile Phone subscribers in the country has reached 166.114 Million at the end of February 2020.

Recently in Bangladesh, the tourism and hospitality industry has witnessed a great pace of change in line with the digital technology's proper innovations. The Government of Bangladesh (GoB) has also emphasized the application of digital technology for the development and promotion of tourism in Bangladesh. Following that the country's National Tourism Policy (NTP)-2010 also offers significant instructions for the use of digital technology in Bangladesh's tourism. In this context, the GoB has also allocated and increased the budget than the previous years (Howlader, 2018a). The following Fig. 5.2 shows the most applied innovative technologies in the tourism and hospitality industry in Bangladesh:

Mobile Apps

Over the last decade, the use of mobile software applications in the tourism and hospitality segment has gained extensive popularity in Bangladesh. Now tourists are using several types of mobile software apps. Software apps like Ghurbo, ShareTrip, and Amy are used by the tourists to plan their travel; Pathao.com, Uber, Lily, Shohoz, and OBHAI are assisting tourists to meet their quick transportation needs in the major cities in Bangladesh (The Daily Star, 2019). The transportation ticketing segment has also got the touch of technological innovation. Now any tourist is buying as well as booking the ticket of bus, train, airplane, and ship by using apps like Shohoz and BDTICKETS. Even the GoB has digitalized the ticketing system by introducing two apps namely Biman Bangladesh Airlines and Rail Sheba (The Daily Star, 2012), by using these tourists are purchasing or booking air and rail tickets respectively from any corner of the country.

Moreover, tourists are also availing the opportunity to manage their accommodation by using several apps in this country. Mobile software apps like Jovago, Airbnb, Booking.com, ShareTrip, and Ghurbo are assisting tourists to fulfill their accommodation demands. Through these apps, they are managing and reserving their suitable rooms from a wide range of categories and collections such as hotels, motel, private apartments, etc.

Additionally, there are so many software applications in Bangladesh to satisfy the tourists who need food and beverage items delivered at their doorsteps. According to the report of Dhaka Tribune (2019), due to the technological innovation applied in hospitality and food sector in Bangladesh and change in lifestyle of the customers, the online food business, particularly in the country's capital and a few other cities in the country, has seen a surprising rise. Hungrynaki.com, Uber Eats, Foodpanda, Pathao Foods are the most popular software applications that are used to order foods and beverages online. By using these software tourists are making the order for foods from the most famous restaurants and hotels, paying bills, and getting the ordered items delivered at their convenient place within the shortest possible time.

In Bangladesh, the technological innovations applied in the financial segment to help the tourists for completing the safest and quickest financial transactions with the border of the country are remarkable. Mobile or smartphone software applications like Bkash, Nagad, Rocket, Sure cash, MCash, Ucash, etc. can be called as the financial assistant apps for the tourists. Through these tourists are availing the facilities to send and receive money, pay bills, mobile recharge, purchase transportation and movie tickets and many more services as well.

Nowadays tourists are also taking emergency help from the law enforcement agency of Bangladesh and emergency service providers by using mobile applications. Through BD Police Helpline apps any tourist can easily inform and ask for help from the Bangladesh police department whereas BD 999 apps can be named as a digital security assistant for the country's citizen and tourist as it is the national emergency service app that alerts Bangladesh police too in case of emergency circumstances by sending text along with the tourist's location data and a short video clip.

Apart from the above mentioned, software apps like Chaldal.com, Sheba.xyz, Bikroy.com, Rokomary.com, Aarong, AjkerDeal, Evaly, Pickaboo, Shajgoj, and Daraz, etc. cater the online shopping needs of the tourists. By these software apps tourists are receiving the advantage of shopping grocery products, electronic appliance, apparel items, books, jewelry items, etc. and getting them delivered at their doorsteps. Besides, there are some mobile software apps also such as Bioscope, Bongo, Toffee, Prothom alo, The Daily Star, Bangladesh Pratidin, Kaler Kantho, Bangla Newspapers, etc. which are fulfilling the tourists' virtual entertainment needs.

Destination Branding, Digital Booking System and Application of GDS Technology

Bangladesh Parjatan Corporation (BPC), a constitutional authoritative body under the Ministry of Civil Aviation and Tourism (MoCAT) of Bangladesh, responsible for developing the tourism industry of the country, has started collaborating with the

a2i (Access to Information) project of GoB, in many programs such tourism destination branding, awareness creation campaign, the introduction of tourism channels in YouTube, etc. (Howlader, 2018a).

According to Howlader (2018b), with the help of digital technology BPC has introduced online booking and bill payment facilities for the tourists to the hotels, motels, and other lodging services managed by BPC itself. Additionally, BPC has successfully upgraded its websites to facilitate tourists' digital services. Now any tourists visiting any destination of Bangladesh can lodge their complaints and send feedback to the highest authority of BPC from anywhere as Grievances redress system (GDS) has been installed by BPC to accept complaints from the tourists and provide compensation to them. Furthermore, to resolve any problem confronted by tourists, many digital initiatives have been put in place.

Artificial Intelligence

The use of artificial intelligence (robot) in welcoming and delivering food services to the restaurant guest is also in practice in Bangladesh. In 2017, for the first time in Bangladesh, a robot restaurant was launched at the country's capital (The Daily Star, 2017) where two robots are installed to serve food to the tourists or customers (Dhaka Tribune, 2017).

Digital Marketing

The influence of digital technology on tourism promotion is well recognized in Bangladesh (Howlader, 2018a). Most of the public and private institutions linked with the tourism and hospitality industry use digital platforms such as the internet, web site and social networking sites such as Facebook, YouTube, etc. to promote and sell their offerings. Many public and private travel companies and tour operators are using digital platforms to sell their package tours as well. With the help of digital technologies, maximum hotels in Bangladesh are communicating with the guest and potential tourists. Especially the sales and marketing teams of the five-star category hotels are depending much on the email marketing, social media marketing, post boosting for promoting their packages and offerings to reach the customers (Sarker, 2017).

Web-Based Solutions

Over the last decade, Bangladesh has become successful to present a lot of web solutions for its citizen and tourists. For online medical items shopping tourists are using websites like www.lazzpharma.com, www.pharmacy.com.bd, www.

banglameds.com.bd, www.khidmatdrug.online, www.epharma.com.bd, www.ousud.com, and www.oshudhwala.com; for grocery items shopping www.shwapno.com, www.chaldal.com, www.meenaclick.com, www.khaasfood.com, www.othoba.com, www.evaly.com.bd, www.daraz.com.bd, www.ajkerdeal.com, www.bikroy.com, www.priyoshop.com, www.e-freshstore.com, www.amaderbazarbd.com, www.deshibazar.shop, www.myorganicbd.com, and eCourier.com; for buying fresh fish and meat items www.fishmart.com.bd, www.freshfishbd.com, www.getyourfish.com, www.shaksobji.com, www.mudiman.com/shop/meat-fish, www.deshifishbd.com, www.parmeeda.com/fish, and FishDhaka.com; to shop fruits and vegetable items www.deshibazar.shop/product-category/fruits-and-vegetables, www.mudiman.com, www.mudiman.com/shop/fruits, www.farmfreshorganics.com.bd, and www.parmeeda.com.

Conclusion

From the above discussion and comparison between exhibit 5.1 and exhibit 5.2, it is evident that the application of AR and VR technology, Biometrics recognition technology, Security technology, Mobile check-in or out technology, Smart Energy Management Technology, Occupancy Sensor, IoT, Voice Technology, and Wearable devices, etc. are completely absent in the case of tourism and hospitality industry in Bangladesh. Besides, it is also apparent that the country has made a massive development in mobile apps and web-based solutions segments within a very short time. But to minimize the gap and utilize technological innovations to get the maximum result in the tourism and hospitality field, Bangladesh has huge scope. The stakeholders of the tourism and hospitality industry in Bangladesh can implement AR, VR, and IoT technology in their business for promoting their offerings and to enhance touristic or guest experience. They (stakeholders) can introduce mobile key technology, biometrics recognition technology, ultraviolet light technology, advanced firewalls, and upgraded monitoring system to ensure guest and employee safety and security. Moreover, for improving guest experience and increasing business efficiency, the stakeholders can also use mobile check-in or out technology, occupancy sensor, voice recognition technology, and wearable devices as well as smart energy management technology in tourism and hospitality operations.

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