Journal of Smart Tourism

Industry Opinion and Case

Future of Virtual Reality and Metaverse in Hospitality and Tourism Management: An Industry Perspective

Jay Bhakta, ⒾⒹ Amanda Charreton ⒾⒹ, Anne Anoek de Rooij ⒾⒹ, Minwoo Lee* ⒾⒹ , Hubie Sangster ⒾⒹ, and Yingni Wang ⒾⒹ

Conrad N. Hilton College of Global Hospitality Leadership, University of Houston

Abstract

Digital transformation plays a critical role in making hospitality and tourism organizations create new business processes and customer experiences. The hospitality and tourism industry thrives on creating unique experiences by offering exceptional and innovative customer services through innovative digital technologies. Thus, this study provides an overview of the current use of these technologies in the hospitality industry and their potential advantages and opportunities. In particular, the metaverse and immersive virtual reality (VR) technology are gaining popularity in the hospitality industry, offering new opportunities for innovation and driving core values. This study discusses the current use of VR and metaverse and potential advantages and opportunities for researchers and practitioners in the hospitality and tourism context. Thus, we provide suggestions and implications for hospitality and tourism industry stakeholders to increase core values and business performance and create sustainable competitive advantages over other market players through VR and metaverse.

Keywords

Metaverse, virtual reality, service innovation, digital transformation, hospitality and tourism

1. Introduction

In the last few years, disruptive innovative technologies have significantly impacted the tourism, hospitality, and event industries (Lee et al., 2021). They have changed hospitality businesses, and value chains and have created new opportunities for how customers can experience technology-driven innovative services such as smart rooms, virtual reality, contactless services, and chatbots (Koo et al., 2022). Disruptive innovative technology refers to a new technological product or service that currently does not serve the needs of existing customers. It gradually emerges in new markets, eventually displacing established competitors. They are not a breakthrough innovation that makes the product better; instead, they transform products that historically are expensive into somewhat simpler and more accessible products that go after new markets by bringing a different package of performance attributes (Dogru et al., 2019). Despite the upcoming digital disruption in the hospitality industry, many major hotel chains have refused to see the potential threat of new players like Expedia or Airbnb. Guided by a strong belief in the growth rates in the traditional industry, hotel group leaders underestimated the rise of digitalization and its growth opportunities (Jelassi & Keller-Birrer, 2017). Only recently have companies in the industry looked into innovative technologies coupled with emerging trends, including VR and metaverse.

Metaverse is described as the connection of several digital platforms that create multidimensional online spaces in which people can interact in a more immersive way. It allows for new lifelike spaces that differ from traditional communication methods through social media platforms or video calls. Once inside metaverse, a new social experience is created; one can create their own avatar, game, shop, work, and meet with friends (Revfine, 2022). One of the major components of Metaverse is virtual reality (VR). VR is a computer-generated environment that allows users to feel completely immersed in their surroundings with objects and sceneries that appear realistic. With the help of a headset or helmet, a user can immerse himself in video games and different scenarios for training and commercial purposes. Nowadays, many sectors use this technology, including hospitality and tourism, general businesses, medicine, education, and the military (Iberdrola, 2022).

As VR and metaverse are increasingly becoming more popular in the context of hospitality and tourism, there is a need for firms to recognize the shifting environment in which they operate and, more specifically, the forces that are driving that change. Therefore, the current study aims to explore the impact and potential benefits of metaverse and how it can shape the industry's future. In particular, the current study addresses the following research questions:

1)   How can metaverse and VR enhance customer engagement and satisfaction in hopes of reaching positive behavioral outcomes such as customer retention, commitment, and advocacy?

2)   How can metaverse and VR enhance brand awareness, recognition, and loyalty?

3)   How can hospitality and tourism industry practitioners develop online marketing spaces and virtual beings that the consumers can benefit from a type of "try before you buy" marketing?

Seeing different hospitality products in VR or metaverse influences desire, can facilitate the purchase, and most importantly, make the consumers commit to the experience and the brand. Thus, the findings of this study help hospitality and tourism industry practitioners better understand the potential impact of this innovative technology and emerging trends. Hospitality and tourism management can assess the strategic role of VR and metaverse and analyze how they can transform organizations in terms of their distribution channels. To better serve customers' service expectations, VR and metaverse allow the creation of new avenues for firms to better connect with their consumers by customizing their services by impacting customers' cognitive, affective, emotional, social, and physical responses. Such automated personalization can lead to increased customer engagement and overall satisfaction (Lee et al., 2021). Furthermore, service providers utilize innovative technologies (i.e., Metaverse, VR) as competitive methods for firms to differentiate themselves from the competition and, in turn, increase core values and business performance. With VR and metaverse, hospitality companies can advertise their products or services with lower prices and a higher quality interest of consumers, increasing their sustainable competitive advantage.

2. Metaverse

2.1 What is Metaverse?

Technological innovations play a major role in today's changes. So far, three technological innovation waves have been determined, which started with personal computers, shifted to the internet and mobile devices, and are currently being built around immersive technologies such as virtual reality and augmented reality (Mystakidis, 2022). This fourth wave is expected to shift education, entertainment, business, and remote work to online work, which will happen with metaverse (Kamenov, 2021). According to Mystakidis (2022), metaverse is a post-reality universe that merges physical reality with digital virtuality. It has been built around the concept of combining virtual environments, people with virtual reality and/or augmented reality, with digital objects to create multisensory interactions. Metaverse first started as an online world with avatars that could teleport among these worlds. Metaverse of today consists of social and VR platforms for the open game world, multiplayer online video games, and augmented reality collaborative spaces (Recker et al, 2021). According to Hollensen et al. (2022), metaverse is being built around eight building blocks. The first one is Hardware, which is the software that delivers the experience. The second building block is networking, in which bandwidth, latency, and reliability are important. Bandwidth means how much data can be transmitted, and latency means how long the data travels from one point to another. The third building block is compute, which refers to the power of computing. Moreover, other building blocks are virtual platforms, interchange standards and tools, payments, content services and assets, and consumer and business behaviors.

2.2 Virtual Reality in Metaverse

The comprehensive use of VR is rapidly gaining popularity around the world. According to that artillery intelligence (2020), VR will be able to reach 70.2 million internet users in the United States by 2023. Outside of the gaming and entertainment industry, the sectors where VR had the most disruption are healthcare (38%), then, education (28%), and then workforce development and training (24%), and many others (Perkins, 2020). In the hospitality industry, virtual reality is frequently used, but not limited to, as a marketing tool to fulfill tourists' needs for tourism planning and management (Lee et al. 2020). In line with the rapidly growing trend of digitalization, hotel, restaurant, and airline companies see virtual reality as an innovative approach to better visualize their products and services in order to stand out from their competitors. In this way, VR also eases the customers'

uncertainty during their booking process. Nowadays, online and offline environments coexist, and customer demand is rapidly shifting (Zsarnoczky, 2018). The hospitality industry is eager to alter the traditional business model to become more technologically thrived. Although virtual reality has been growing and having a positive impact on various industries, its implication on hospitality remains to be determined due to the lack of operations.

VR is defined as the sum of hardware and software that seek to perfect in creating sensory illusions of feeling being present in another environment (Horan & Mcdonnell, 1996). More specifically, there are three types of virtual realities. Non-immersive, semi-immersive, and fully immersive virtual realities. During non-immersive virtual realities, users are not directly interacting with the virtual environment, but their characters are, such as dota 2. Semi-immersive virtual realities are when the users are interacted with the environment, using a computer, or glasses, for example, a virtual tour. Fully immersive VR is when users can directly interact with the people or NPC in the virtual environment, using special gear such as headsets, controllers, and body sensors to create physical immersion and psychological presence (Pestek & Sarvan, 2021; Stars & Strikes, 2020; Zsarnoczky, 2018).

In the hospitality industry, VR is often used as a marketing tool to enhance communication with guests, bookings, and guest service. As early as 2014, Marriott launched a promotion event for their hotels by inviting newly married couples to participate in a VR simulation honeymoon trip to London. Inside the VR, there were clips of videos showing the beautiful landscapes of London, and more importantly, it visualizes the participant the detailed layouts of the Marriott hotels, including the bar, lobby, and guest rooms. The participants stated in the video that they were convinced to book their honeymoon trip to London, after participating in the VR simulation.

VR also stimulates people's desire for indirect, and immediate booking. An Australian airline company, Qantas, launched a video of a flight simulation video where the viewers can interact with the plane, by putting on a VR headset, it feels like the viewer is sitting inside an airplane, and looking out through the window. Once the airplane arrives, the VR takes the viewer to the hotel lobby for check-ins. The virtual experience simulation is advancing over time, and hotel and airline companies take the opportunity in using VR technology to encourage customers to book immediately through the direct channel.

Another great VR implication is the 3D virtual booking process simulation, where users can book their hotels, and car rentals, in a 3-dimensional environment. This technology is developed by Amadeus, an IT Spanish company based in Madrid. According to the video of Amadeus, the users were able to join the virtual space with a VR headset and swipe their virtual credit card to make the purchase. This innovative feature has not been vastly applied but can be perceived as a competitive feature to be applied in the future of the hospitality industry (Revfine, 2021).

The restaurant industry has been suffering from the covid pandemic, and many of them have experienced temporarily shut-down or permanent closures (Munjal, 2020). The future of the restaurant industry remains uncertain, with the technological implication of virtual reality, the restaurant can change their business model to survive in the hospitality industry. Virtual reality can enhance their online training with the staff so that they can work from home. The restaurant can also consider offering virtual tours of the kitchen space of the restaurant to give its customers a better idea of how their food is being made. Munjal suggested that restaurants can offer guests VR games while waiting at the table, to shorten their perception of waiting times. The restaurant can make the menus demonstrative with virtual reality, by showing videos of the ingredients and how their food was made, especially nowadays customers are more health-conscious.

2.3 General Applications in Metaverse

Metaverse is proposed to change the way how human beings connect and interact with each other (Donaldson, 2011). The more general application of metaverse now is related to the entertainment and video game industry (Boston, 2021). The top five games in metaverse for 2022 are Decentraland, The Sandbox, Axie Infinity, Illuvium, and LOST (Lielacher, 2022). Besides the entertainment and video industry, it has also been imagined to have a virtual workplace where meetings can take place, interaction with colleagues can be done and work can be executed (Bostoen, 2021; Heim 1998). Metaverse would also be helpful in the healthcare industry when for example helping disabled people that have trouble getting around, offering meditation services, stress management, and for virtual consultation services.

For example, Metaverse is currently active in the entertainment and gaming sector which games such as Minecraft, Decentraland, Second Life, and The Sandbox. Roblox is a leading Metaverse gaming platform that increased its users from 32.6 million in 2020, to 50 million in 2021. Roblox also partnered up with fashion brands such as Nike and Ralph Lauren to sell virtual clothes (Sawhney & Goodman, 2022). Nike created Nikeland on Roblox and created special Nike shoes that could be bought online, an example of Nikeland has been attached in the appendix, picture 1. Adair (2022) in Forbes mentions that the Gaming industry will aggressively expand and will include virtual concerts and monetizing virtual goods.

Adair (2022) in Forbes mentions that another big sector of metaverse is the media and entertainment sector, especially after the COVID-19 outbreak. Due to COVID-19, the online world became more popular, as people were seeking to connect, share experiences and tell stories which opened doors to Virtual Reality. An example of an entertainment and media company stepping into metaverse is Disney. Disney recently hired Apple's top gaming executive Mark Bozon, to be in charge of metaverse project where Disney is planning to connect the virtual world with the theme parks. Disney is not planning to completely go virtual, like Mark Zuckerberg is talking about with metaverse, but only create metaverse as a tool to enhance the customer experience and elevate their storytelling (Faughnder, 2022).

As Fashion brands participate in the gaming sector of Metaverse, it began to serve as a potential market for fashion brands as well. Brands such as Nike, Adidas, Gucci, Fila, Ralph Lauren, Louis Vuitton, Balenciaga, Forever 21, and Dolce & Gabanna (Slezak, 2022). The greatest reason for women shopping in the metaverse is status and metaverse creates greater equality for plus-size women, disabled people, and the LGBTQ+ community as it allows them to try clothing without boundaries.

An example of what Ralph Lauren did is attached in the Appendix, picture 5, where they introduce the winter fashion collection into Roblox, make avatars wear it, and provide a Ralph Lauren coffee house and ice-skating. This way, the younger generation becomes familiar with the brand (Slezak, 2022). Either all fashion brands create NFTs, clothing items, their own game, or their own land, like NikeLand. However, Adidas approached metaverse a bit differently as they acquired a virtual property in Sandbox, cooperated with cryptocurrency coin, and cooperated with Punks comic, and the Bored Ape Yacht Club, which generated $22 million revenue for Adidas, the cheapest Bored Ape costs thousands of dollars (Sawhney & Goodman, 2022). CBinsights (2022) mentions that the future of fashion may include double avatars, so brands will have to create real-life clothing items in metaverse. The idea behind it is that whenever someone buys new clothing in real-life, these items will be bought in metaverse as well. Blogs have been found about Adidas currently working on these digital twins, but nothing has been created yet (Mixson, 2022).

Shopping in metaverse is a hot topic, as there are 'Metamalls', clothing stores, supermarkets, and other stores. Samsung for example launched a digital store in early 2022 in Decentraland, for customers to earn NFT badges, and attend the virtual dance party. The goal of Samsung was to elevate its brand positioning and generate more retail sales (CBInsights, 2022). Moreover, the supermarket Carrefour launched a virtual copy in the platform Fortnite where avatars have to eat healthily to boost their "lives" again. By doing so, Carrrefour hopes to inspire young players to eat healthier, as this is the only way to recover in the game (Snoeck, 2021). Carrefour also hosted a recruitment event in which they did job interviews on metaverse as Carrefour wants to hire 3000 data specialists by 2026 (Hooi, 2022).

After Apple's invention of the head-mounted display to make virtual meetings more realistic, metaverse started offering new opportunities for this (Coles, 2022). Virtual meetings could be a strategic priority as the CEO of Disney, Bob Chapek mentioned. It allows companies to brainstorm, talk and do conferences (CBinsights, 2022). A company currently adopting virtual meetings is Mytaverse, they started in 2020 and have a few clients like Pepsi, architect Zaha Hadid, and aviation companies such as Asian Sky group and Dassault (Kaminer, 2022). An example of the PepsiCo meeting in 2021 has been attached in the appendix, picture 3. Another general application of metaverse is with events. In 2020, the event industry lost $29 billion dollars due to COVID-19, which is why online events were hosted and Metaverse introduced these 3D concerts and events. Some artists that already did online concerts on Minecraft, Fortnite, and Roblox are Marshmallow, Arianna Grande, Justin Bieber, Post Malone, 21Pilots, and Travis Scott (CBInsights, 2022; EventX, 2022). In order to attend such an event, tickets have to be bought that start at around $30 to get in, depending on the location, the software must be installed, and an optional VR headset can be bought (Marr, 2022).

3. Metaverse in Hospitality and Tourism Management

3.1 Current Status Quo of Metaverse in Hospitality and Tourism

Metaverse is quite new in hospitality and does not have too many applications yet. Metaverse is still in its early stages for hospitality, however, there are some restaurants that filled in trademarks to enter metaverse. These are big restaurant chains such as McDonalds, Burger King, Chipotle, Wendy's, and Chick-fill-A (Petre, 2022). An example of how Chipotle entered metaverse is by creating a virtual restaurant for Halloween 2021, in which Chipotle gave away $1 million burritos to avatars in Roblox, that after could get a free burrito in the real world. Different ways for a restaurant to enter metaverse are by marketing, reservations, marketplaces, delivery, payments, QR codes, and memberships (Simoni, 2021). McDonalds's is currently advertising in metaverse, which is a cost-effective strategy compared to real-life advertisements. Additionally, McDonalds has trademarks McDelivery and McCafe, which could be ordered in metaverse during virtual concerts. Finally, McDonalds has applied for a virtual restaurant that offers real home delivery, so avatars would order online and get the food delivered to their real home (Fantozzi, 2022). Marr (2022) in Forbes also mentions that being in metaverse is an advantage for McDonalds' supply chain as it allows them to connect customer demand with stock levels. For example, it would help McDonalds' to predict customer changes in meatless options, healthier options, or other options that could be tested and measured via metaverse. Other examples besides restaurants being in metaverse are the two brands Budweiser and Stella Artois. Both brands collaborated with the platform ZED RUN, which is a horse racing platform in which customers could buy Budweiser beers with NFTs (Revfine, 2022). Budweiser and Stella are bridging the gap between brand marketing and the online world through this partnership (Hackl, 2021).

The first hotel that entered metaverse was the Social M hotel in May 2022 on the platform Decentraland, which is a creation of the Millennium Hotels & Resorts brand. The objective of this Social M hotel is to create connections, attract the younger generation, and sell virtual rooms (Thaler, 2022). Another brand that has built a hotel in metaverse is CitizenM in the Sandbox platform. CitizenM is aiming to build loyalty in the online world. Additionally, CitizenM will sell NFTs in the hotel that will take the form of free drinks, discounts, or rewards. The free drink can be collected at the real-world hotels' of CitizenM, and rewards can be redeemed at real-world locations. Finally, CitizenM is planning to finance a new physical hotel with all NFTs sold, upon which the buyers can vote for a new location (Globetrender, 2022a). Another example of the lodging industry in metaverse is the opening of RIU plaza Espana hotel in June 2022 on the platform Altspace (Tore, 2022). Also, Marriott Madrid Auditorium Hotel & Conference center joined metaverse in May 2022 with 900 rooms and an auditorium that could accommodate 2000 people (Sorrells, 2022). Marriott mentions in an interview that it is up to Marriott them to leverage the Marriott Bonvoy program and make members explore the combination of digital and real-life travel through NFTs (Lean, 2022). This Marriott Madrid auditorium hotel has been built on the platform RendezVerse, which is a special platform for hotels and events to replicate their hotels. Currently, three hotels have been built on this platform; JW Marriott Dubai, Atlantis The palm Dubai and Marriott Madrid. The aim of RendezVerse is to create a community among hoteliers and bring together MICE buyers, and service providers. On a consumer level, RendezVerse seeks to let customers book real-life hotels via metaverse and make them check the hotel and venues before booking a room. The goal of RendezVerse is to build 1000 hotels by the end of 2023 (Globetrender, 2022b).

By definition, tourism requires physical travel, which is why metaverse cannot replace tourism and travel, but enhance experiences, inspire tourism, and elevate business ideas. As the Tourism in metaverse is still in its early phase, there are only a few current applications. One of the examples that are currently applied is VR Tourism, where people can travel to other destinations through metaverse. Currently, this is only being used to either replace the need for tourism or enhance real-life experiences (Revfine, 2022). One example of traveling in metaverse is the First Metaverse city Seoul. The government has invested $2.8 billion in this project, part of Seoul's 2030 vision plan to make it a sustainable, safe, and futuristic city (Gaubert, 2021). The project is still being developed as it has run its first test run in August 2022, and the government aims to finish the project in 2023 (Park, 2022). The goal of this project is to boost 200 companies in metaverse, train 40.000 meta professionals, and aims to be the fifth largest metaverse market by 2026 (Ligon, 2022). Furthermore, there is a French artist who built his own virtual world on the platform Second Life, called Moyaland, shown in picture 4 in the appendix The virtual surface is 260000m2 and it includes museums, old village, chapel, university, hospital, tourist office and airport (SecondLife, 2022). The artist itself is also present on the platform and gives tours to the avatars whenever being online (Aidi, 2022). Theme parks and zoos are other tourism metaverse examples (Revfine, 2022). The first company that started building an online attraction park is Astroworld, which is a former Six Flags amusement park in Houston (Mitchell, n.d.). Another company that built a virtual attraction park is the South Korean Lotte World Adventure theme park, which built its park in metaverse in October 2021 (Park, 2021).

According to Novak (2017), recreation businesses are related to businesses that people do for enjoyment, rest, and relaxation. This may include movies, attractions, zoos, museums, and sports. As Disney will enter metaverse market, the attractions will be connected to the virtual world, however, this plan is still being developed (Faughnder, 2022). There's currently an NFT museum, which is the first block-chain-built museum, called Musee

Decentral (Cuseum, 2022). There are other ways how museums step into metaverse, by expanding the digitization of collections, museums are driving engagement through gamification by making visitors clear missions in metaverse world (Cuseum, 2022). KAWS and Serpentine Up museum in London opt for a hybrid strategy, where they connect the physical gallery with an online exposition in the game Fortnite including augmented reality experiences (He, 2022).

3.2 Future of Metaverse in Hospitality

As metaverse is a new concept for the hospitality industry, many potential benefits and opportunities are waiting to be explored. Today's biggest question is, how far will businesses go in metaverse, and will the popularity increase or decrease over time. For all industries applies that in the future, customers may want to pay with cryptocurrencies as metaverse is built around NNFTsand cryptocurrencies. Currently, metaverse is already implementing gamification in restaurants and connecting virtual restaurants with physical restaurants by offering vouchers to redeem in real life. Additionally, the restaurants that are currently established in metaverse increase their brand awareness and opt for more affordable marketing strategies.

What restaurants in the future could do is create 'Twin restaurants', where visitors are able to visit beforehand, take a look in the kitchen, and see how their meal is being prepared; so, restaurants show 100% transparency. This way, it will be easier for potential customers to make the decision to eat at the restaurant. Another option restaurants could do for the future is to allow customers to reserve a table at the restaurant in metaverse world. Moreover, McDonalds requested a virtual restaurant with home delivery, which has not been created yet (Fantozzi, 2022). This could be the outlook for more restaurants, making customers come to the restaurant virtually, where they can order their meal which will be delivered to their door. Other options are providing events at the virtual restaurant or cooking classes. This way, restaurants can entertain and educate visitors virtually, and make them purchase a ticket to generate extra revenues.

There are many opportunities for the lodging industry to take regarding metaverse. Doppler (2022) is mentioning that Artificial Intelligence could increase a hotel its bookings by 11%. Metaverse could be used as a promotional tool and a new sales channel. The first future change for hotels will be potential customers not looking at pictures and videos online anymore but getting a virtual tour of the hotel in metaverse to get an immersive experience of the hotel and to make booking decisions. Sorrells (2022) agrees that metaverse could serve as the 'test before buying' scenario. Therefore, optimizing their search engine within metaverse as could generate more revenue. Metaverse has an unlimited number of players, while hotels have a limited capacity, which is why some hotels could make more revenues in the virtual world compared to the real-life world. Another future aspect of hotels is customers being able to book the room via metaverse with NFTs, which customers can exchange with any of the hotels in the real world (Doppler, 2022). Moreover, Doppler (2022) mentions that metaverse will expand the customer experience by allowing customers to enjoy the hotel in metaverse after they have booked the hotel in real life. Hotels could for example give customers that bought the room in real-life, a month pass to the virtual 'Twin hotel', so customers visit the hotel double.

Another option for hotels to generate more revenue is through upselling rooms, innovative marketing promotions, and relationship marketing via metaverse. Hotels could make customers experience the upgraded room via metaverse, explore different services and get a menu of the restaurant. This experience will more likely make customers pay for an upgrade, rather than when they only see a picture of the room (Lacalle, 2022). Mogelonsky (2022) mentions that metaverse could be implemented for hotels to offer catalogues of experiences as a

post-gift. This means that a bride and groom for example could view their wedding back via metaverse. It allows customers to relive experiences that real life cannot offer. Moreover, hotels could offer special Metaverse amenities in the rooms including gaming equipment to explore metaverse with a VR headset. By doing so, it could become a new selling point that seals new reservations. Hotels also can use metaverse to elevate their loyalty program. Hotels could for example organize special events for loyalty members in metaverse. Moreover, special discounts, rewards, deals, and codes could be given to members in metaverse. This way, the loyalty guest experience is enhanced and it will make the loyalty program attractive for non-members (Lacalle, 2022).

Finally, to provide an insight into what future hotels will be doing in metaverse, Regal Hotels' idea can be a great example. Regal Hotels will create a Green city, including a hotel with a different concept than their current hotels. This virtual city will open in October 2022 in Sandbox and is called Meta Green. The vice chairman of Regal Hotels is mentioning that this concept should educate, inspire and catalyze the new generation on sustainability and support the circular economy. Hence, it collaborated with Hang Seng bank and retail brands to offer a shopping mall and has a partnership with Hong Kong University to educate visitors in the academy about sustainability (Lee, 2022). Hotels can also reduce labor costs by leveraging metaverse. This could be done by offering training on metaverse so employees will not need to travel, and no one has to be on-site to give the training. Another option is further automating the booking process, so front desk employees will not have to be present at the hotel (Ehotelier, 2022).

3.3 Future of Metaverse in Travel and Tourism

Metaverse could serve as an inspiration source for customers to pre-explore the trip they want to make. Customers could for example already travel to the destination, take transportation and explore the area so travelers can get acquainted with the journey and feel inspired for real-life travel (Revfine, 2022). Metaverse could serve as a tool to empower customers or planners to make better decisions by the information they receive via metaverse (Skift, 2022). Customers, for example, can experience the travel, or event, allowing them to access the information, so they can make a decision without regrets. Event planners could easily set up the event room in metaverse, to know what the best set-up for the event would be and increase the efficiency of logistics (Canzani, 2022). Metaverse offers more marketing and promotion benefits for the tourism industry as companies could show more immersive demonstrations of their products and services. Additionally, travel and tourism companies could host virtual events with NFTs as part of marketing initiatives (Weston, 2022). Another example to use metaverse is by upselling or selling premium seats in the airline industry. Airline industries could make customers experience the business class experience, hoping visitors will not get back to economy class (Gould, 2022). Airline companies such as Singapore airlines, Emirates, Qatar Airways, and Lufthansa are investing millions into metaverse, where they will allow loyal customers to collect points by using the online lounges and make purchases in the e-stores. The online collected points could then be redeemed for real-life business upgrades or discounts (Diana, 2022).

Another change metaverse could create is the shift from real-life travel agencies to virtual travel agencies. Travel agencies could meet their clients in the virtual world, discuss their travel needs, make them explore the travel, and eventually plan the perfect itinerary where the metaverse serves as a tool (Gould, 2022). Altogether, metaverse cannot fully replace tourism as it includes outdoor experiences, contact with other humans, and spiritual sensations, but it could promote locations or destinations that are unpopular and not easily accessible (Aidi, 2022).

It is unknown what the future holds for recreation in metaverse, however, it is important to consider that virtual experience might become a standard practice in entertainment and recreation (Cuseum, 2022). There are currently a couple of 'Twin Museums' in metaverse, and blockchain-built museums. So, if museums want to generate more revenues and enhance engagement, they should consider entering metaverse. Finally, museums could change the way how history is being taught by allowing visitors to put themselves in paintings or short documentaries rather than just showing paintings in real life (Parasol, 2022).

3.5 Challenges in Metaverse

Although metaverse offers great opportunities and innovative services in hospitality and tourism, there are several challenges and concerns that hospitality and tourism management need to address. Hollensen et al. (2022) mention that data privacy will be the biggest problem of metaverse, as it allows Facebook to collect even more personal data. Data collection and sharing personal data with other companies is a high risk. Moreover, communication within metaverse is based on virtual beings representing real people, and harassment and abuse could exist (CBInsights, 2022; Chesney et al., 2009).

Another challenge is legislation and the law of metaverse. Currently, the EU's General Data Protection Regulation is covering metaverse rules, but this has to be strengthened in the digital world. Special attention has to be focused on the ownership of digital assets (CBInsights, 2022). Furthermore, digital asset theft is another risk as these virtual avatars are investing real money to acquire assets, which could be stolen by hackers. Therefore, legislation should be created so victims can incur these losses (CBInsights, 2022).

Disadvantages regarding travel and tourism, as it might be an innovative idea to participate in virtual travel, but it also creates disconnection from people, experiences, and destinations. Metaverse and especially VR headsets are harmful to mental health, as they often cause nausea, dizziness, and motion sickness after using them for a long time. Also, head and neck fatigue are two common problems due to the weight of VR headsets (Pellas et al., 2021). Long Metaverse and VR use could also lead to addiction, isolation, body neglect, and abstinence from physical life (Slater, 2020).

4. Industry Case – Hilton x Oculus

Hilton, one of the world's largest hospitality companies, is utilizing Oculus as a business platform to virtually train its employees at all levels.

4.1 Training New Hires

The goal of using such an innovative learning experience is to enhance the learning and development of all team members to improve overall hospitality service. During the onboarding process, new hires undergo a number of modules in which they learn about the physicality of all aspects of hotel operations, including guest check-in, room cleaning, and room service. Additionally, the new workers undergo guest interaction training. During this time, they are exposed to different VR scenarios in which they must adapt to challenging guest concerns. Whether at the front desk, during meeting room setup, or during departure, the new hires must assess when the situations are poorly managed and how they can be resolved correctly (Oculus Business, 2020). Guest interaction training is an efficient tool for the hotel to instill in its employees its core values and level of service by teaching the proper attitude and vocabulary expected.

4.2 Training Corporate

The corporate office makes daily decisions that directly impact the day-to-day operations of the employees working at the hotel. Since most of them have never even worked in a hotel, Hilton saw a need for the corporate team to learn and understand the complexity of working on the front lines and the ability to build bridges between its top and lower-level hotel teams. In VR training, corporate can experience the daily tasks and challenges of frontline workers and, in turn, help develop empathy and appreciation. According to Hilton, VR training helped change 87% of team members' behavior and satisfaction (Oculus Business, 2020). As a result of increased employee engagement and satisfaction, Hilton was awarded a #2 ranking in World's Best Workplace in Fortune magazine in 2020 (Fortune, 2020).

4.3 Benefits of VR at Hilton

Senior director of learning innovation, Blaire Bhojwani, claims that with virtual reality, the company could reduce its in-class training time from four hours to twenty minutes. Compared to traditional training and onboarding, such an innovative technology allows a more realistic training of employees at a bigger scale and lower cost (Oculus Business, 2020). This business case showcases how hospitality companies are using VR not only to increase customer engagement and satisfaction but for the development of their employees as well. From this type of training, employees at all levels can develop empathy for their guests' experiences, allowing them to provide the best hospitality service. According to Hilton, Virtual Reality is the future of learning, the best tool to simulate any experience, and the most efficient way to shape team behaviors.

5. Conclusion

5.1 Enhancing Core Values of Metaverse in Hospitality and Tourism

As metaverse comes to fruition through advancing technology, and as virtual reality expands to the masses through adoption, they will together offer many opportunities for driving innovative strategies within hospitality. This will in turn increase core values and business performance metrics which will lead to eventual sustained competitive advantages. In the following sections, we will identify the overlapping core values and business performance metrics as well as suggest how to increase them and create a sustainable competitive advantage.

The core value seen taking the most precedence within the space is privacy. With the semi-recent Marriott data breach in 2018, companies are scrutinized more than ever, and due to this especially focusing on the security of user information. In addition, with the many Facebook data controversies, people are becoming more cautious about the collection and selling of their data. With web 2.0 we see a greater emergence in the selling and collecting of data becoming more and more prevalent leading to more advocacy and actions from governments through various privacy acts. A simple example of this is the cookie tracking permission pop-ups which you must accept or decline to utilize the site.

The next core value on which the space places importance is decentralization. In order to create an ecosystem that is not controllable by a single entity, we see a focus on open-source software meaning other developers are able to view, modify, and update software for the benefit of the community to create the best future development of a project.

The last core value noticed was the importance of creating social value and inclusivity. The community of developers and users sees the importance of using digital technologies to improve people's lives instead of detracting from them and having these spaces serve as an escape from reality. Through interconnectivity and openness, we see people coming together to create communities that would be safe comfortable, usable, and understandable by all. Safety in this space is especially important due to its infancy and decentralization. However, these are being addressed through individual policies and self-report systems through sovereignty to prevent exploitation.

All these core values will hopefully prevent the space from becoming a red ocean space and will allow the space to not become a dystopia. Instead of users and developers focusing on building advantages over their competitors, these core values will hopefully allow for boundaries to only exist in the imagination so as to not limit their future thinking and innovation. This will allow the space not to be seen as saturated and rather focused on new wealth creation through the unlocking of new demand.

5.2 Creating Sustainable Competitive Advantages in Metaverse

Hospitality and tourism organizations have slowly been entering metaverse with the growth and development of digital technologies. Like any innovative technology, the initial iterations of the technology implementation are far from their full potential. After this initial incubation period, the technology tends to improve at an exponential rate and develop into a fully established market (Bower and Christensen, 1995). This is what is predicted of metaverse, and the opportunity within the space, as it represents a Blue Ocean full of new demand (Kim et al., 2022) It is important for traditional hospitality firms to enter the market early to grow with the technology and develop sustainable competitive advantages, whilst accessing new demand for hospitality in a virtual world. Hence, the following section outlines four key competitive advantages that can be sustained by traditional hospitality companies in metaverse.

First, metaverse gives hospitality and tourism service providers an opportunity to engage customers in experiential marketing. Guests can be provided with an immersive experience in a digital hotel, prior to booking the physical hotel. In this way, potential customers can take tours of the hotel, get a feel for the rooms, and understand what the brand can offer. This gives firms an opportunity to improve the guest booking experience, extending the customer journey, whilst improving marketing, brand loyalty, and recognition, and giving firms an opportunity to differentiate themselves from other players in the market. An example of this is Accor's new initiative 'AccorVerse', which is part of their 'Digital Transformation' (Jelassi & Martínez-López, 2020). The winners of this year's Accor's 'Take Off Challenge' were three students from Singapore who created a virtual space for future Accor customers and staff to experience everything Accor, from rooms to entertainment and gamification (Accor, 2022). In this way, Accor expanded its marketing outreach into metaverse to give it a sustainable competitive advantage.

Traditional hospitality and tourism firms can also use metaverse to improve their brand and destination presence. As discussed in the case of Nike and Adidas venturing into metaverse, it is important for the titans of industry to be part of such a rapidly developing market (Sawhney & Goodman, 2022). As with all innovative technology, the developments and improvements made to Metaverse technology are increasing at an exponential rate. It is important for leaders of industry to be a part of the market from the outset so they can grow and develop with the space. Then when the market is fully developed the first movers will have a competitive advantage over new entrants. One example of this is Marriott's presence in the NFT market. Marriott commissioned three artists to develop three NFTs for Bonvoy members (Marriott, 2021). These three artworks depicted the Marriott customer journey and represented the 'Marriott experience'. Not only is it an extension of their loyalty program but it also increases their brand presence through another marketing channel, representing an effective way for hospitality firms to gain a competitive advantage through metaverse.

Gamification is another way in which hospitality and tourism firms can achieve a competitive advantage in metaverse. Customers can become more engaged with brands through gaming interactions, which can also act as an extension of a loyalty program where players can game points or rewards. The 'Moxy Universe, Play Beyond' initiative is a good representation of this strategy (Marriott, 2022). Upon arrival at a Moxy in 2023 guests will be able to scan a QR code at the check-in, create their own avatar, and then explore the hotel interacting with different features which allow guests to like the content on social media, earn rewards in the hotel, and get to know their hotel more. The aim of this initiative is to improve the guest experience through greater engagement with the brand over the stay and to extend the loyalty program with rewards through greater interaction with the Moxy brand. It is through gamification initiatives such as this that sustainable competitive advantages can be built in metaverse.

Finally, hospitality and tourism firms in metaverse can sustain competitive advantages by improving the overall customer experience. Metaverse provides an opportunity for brands to interact more with guests over the entire guest journey and beyond that by becoming part of people's daily lives. As the popularity of metaverse develops and it becomes further integrated into our way of life, firms can engage with current and prospective guests more. Through the aforementioned strategies of immersive marketing, brand presence in metaverse, or gamification, the guest journey can be extended and touch points with guests increased. In this way sustainable competitive advantages can be built by improving brand loyalty, improving brand recognition, and marketing practices, allowing firms to differentiate themselves from the competition.

ORCID iD

Jay   Bhakta: https://orcid.org/0000-0001-8954-3367

Amanda   Charreton: https://orcid.org/0000-0002-4202-5885

Anne   Anoek   de   Rooij: https://orcid.org/0000-0002-8838-3127

Minwoo   Lee: https://orcid.org/0000-0002-4939-2936

Hubie   Sangster: https://orcid.org/0000-0003-1610-179X

Yingni   Wang: https://orcid.org/0000-0002-6977-8860

Conflict of Interest statement

The authors have no conflicts of interest to declare.

References

Accor (2022*). *Leading the future of hospitality at Accor: When innovation rhymes with next-generation*. https://www.hospitalitynet.org/news/4111424.html

Adair, M. (2022). Five industries that will be transformed by the metaverse. *Forbes*. https://www.forbes.com/sites/forbestechcouncil/2022/03/22/five-industries-that-will-be-transformed-by-the-metaverse/?sh=2e27e8a14e40

Aidi, N. (2022a, August 16). Tourism and metaverse: Towards a widespread use of virtual travel?. The conversation. https://theconversation.com/tourism-and-the-metaverse-towards-a-widespread-use-of-virtual-travel-188858

ARtillery intelligence (2020). *VR usage & consumer attitudes, wave IV.* https://artilleryiq.com/reports/

Bostoen, F. (2021). Epic v apple: Antitrust's latest big tech battle royale. *European Competition and Regulatory Law Review, 5*(1), 79-85.

Bower, J. L., & Christensen, C. M. (1995). Disruptive Technologies: Catching the Wave. *Harvard Business Review*, 43.

Canzani, M. (2022). Metaverse will transform the tourism industry. *The Cryptonist.*https://en.cryptonomist.ch/2022/08/13/metaverse-transform-tourism-industry/

CBInsights (2022). Metaverse of madness: 13 big industries the rise of virtual worlds could disrupt. https://www.cbinsights.com/reports/CB-Insights_Industries-Disrupted-Metaverse.pdf

Chesney, T., Coyne, I., Logan, B., & Madden, N. (2009). Griefing in virtual worlds: Causes, casualties and coping strategies. *Information Systems Journal, 19*(6), 525–548.

Coles, T. (2022, May 13). Top 10 industries profiting from the metaverrse*. IT Pro Today*. https://www.itprotoday.com/it-operations-and-management/top-10-industries-profiting-metaverse

Cuseum (2022). Will museums find a place in metaverse. *Cuseum*. https://cuseum.com/blog/2022/3/7/will-museums-cultural-institutions-find-a-place-in-the-metaverse

Diana, C. (2022*). Six ways metaverse will impact travel and hotels. *Traveldine*. https://www.traveldine.com/six-ways-metaverse-will-impact-travel-and-hotels/

Dogru, T., Mody, M., & Suess, C. (2019). Adding evidence to the debate: Quantifying Airbnb's disruptive impact on Ten key hotel markets. *Tourism Management, 72*, 27–38. .

Donaldson, G. (2011). *Teaching Scotland's Future: Report of a review of teacher education in Scotland*. Scottish Government (Scotland).

Doppler, D. C. (2022, June 2). Hospitality in metaverse, it's not what you thought it would be*. Hospitalitynet*. https://www.hospitalitynet.org/opinion/4110813.html

Ehotelier (2022, February 18). What will metaverse mean for the hotel industry? https://insights.ehotelier.com/insights/2022/02/18/what-will-the-metaverse-mean-for-the-hotel-industry/

EventX. (2022, June 20). Virtual concert in metaverse: The future of the musical industry. *Event, X*. https://www.eventx.io/blog/virtual-concert-in-the-metaverse-the-future-of-the-musical-industry

Fantozzi, J. (2022). Why every restaurant operator should care about NFTs and metaverse right now. *Nation's Restaurant News*. https://www.nrn.com/technology/why-every-restaurant-operator-should-care-about-nfts-and-metaverse-right-now?utm_source=dlvr.it&utm_medium=twitter

Faughnder, R. (2022, April 28). Disney 'Metaverse' begins to take shape*. Techxeplore*. https://techxplore.com/news/2022-04-disney-metaverse.html

Fortune (2020, February 18). 100 Best companies to work for. https://fortune.com/ranking/best-companies/2020/

Gaubert, J. (2021, November 11). Seoul becomes the first city to enter metaverse*. Euronews*. https://www.euronews.com/next/2021/11/10/seoul-to-become-the-first-city-to-enter-the-metaverse-what-will-it-look-like

Globetrender (2022a, May 19). M SOCIAL and CITIZENM build hotels in metaverse*. Globetrender*. https://globetrender.com/2022/05/19/m-social-citizenm-hotels-metaverse/

Globetrender (2022b, June 23). Rendezverse lets hotels build'digital twins' in metaverse*. Globetrender*. https://globetrender.com/2022/06/23/rendezverse-hotels-digital-twins-metaverse/

Gould, L. (2022, April 20). How Will metaverse Change the Future of the Travel?. *BusinesstravelerUSA*. https://businesstravelerusa.com/news/how-will-the-metaverse-change-the-future-of-the-travel/

Hackl, C. (2021, June 18). Stella Artois gallops into metaverse with horse racing NFTs. *Forbes*. https://www.forbes.com/sites/cathyhackl/2021/06/18/stella-artois-gallops-into-the-metaverse-with-horse-racing-nfts/?sh=514455d7b8b5

He, Y. (2022). Museums are not history. They're embracing gamification, NFTs, and metaverse. *Fortune*. https://fortune.com/2022/04/28/museums-history-gamification-nfts-metaverse-tech-art-yizan-he/

Heim, M. (1998). *Virtual realism.* New York: Oxford University Press.

Hollensen, S., Kotler, P., & Opresnik, M. O. (2022). Metaverse–the new marketing universe. *Journal of Business Strategy, 2*(3), 22-24.

Hooi, M. (2022, May 20). Supermarket carrefour is now holding job interviews in metaverse. *The mediaverse*. https://themediaverse.com/supermarket-carrefour-is-now-holding-job-interviews-in-the-metaverse/

Horan, P., & McDonnell, C. (1996). An application of desktop virtual reality to the hospitality industry. *Articles*. Paper 3. http://arrow.dit.ie/dmcart/3

Iberdrola, C. (n.d.). Virtual reality: Another world within sight. https://www.iberdrola.com/innovation/virtual-reality

Jelassi, T., & Keller-Birrer, V. (2017). AccorHotels' digital transformation: A strategic response to Hospitality Disruptor Airbnb. IMD -7-1915. *Harvard Business Review*.

Jelassi, T., Martínez-López, F.J. (2020). AccorHotels' Digital Transformation: A Strategic Response to Hospitality Disruptor Airbnb. In: *Strategies for e-Business*. Classroom Companion: Business. Springer, Cham. https://doi.org/10.1007/978-3-030-48950-2_25

Kamenov, K. (2021). Immersive Experience—The 4th wave in tech: Learning the ropes. https://www.accenture.com/ gb-en/blogs/blogs-immersive-experience-wave-learning-ropes

Kaminer, R. (2022, August 4). Mytaverse brings businesses into metaverse by building immersive digital environments. *RefreshMiani*. https://refreshmiami.com/mytaverse-brings-businesses-into-the-metaverse-by-building-immersive-digital-environments/

Kim, C., Mauborgne, R., & Olenick, M. (2022). Meta: Facebook's pivot to metaverse. A path to dystopia or blue ocean utopia? *Blue Ocean.* https://www.blueoceanstrategy.com/teaching-materials/meta-facebook-pivot-to-metaverse/#:~:text=In%20October%202021%2C%20Facebook%20changed,or%20some%20form%20of%20dystopia

Koo, C., Kwon, J., Chung, N., & Kim, J. (2022). Metaverse tourism: Conceptual framework and research propositions. *Current Issues in Tourism*, 1-7.

Lacalle, E. (2022, July 19). What is metaverse, and how does it affect the hotel industry? *Mews*. https://www.mews.com/en/blog/metaverse-hotel-industry

Lean, M. (2022). Mariott and metaverse: NFT's check-in to hotels. https://www.buro247.my/lifestyle/technology/marriott-and-the-metaverse-nfts-check-in-to-hotels.html

Lee, M., Ahn, J., Shin, M., Kwon, W., & Back, K.-J. (2021). Integrating technology to service innovation. *Journal of Hospitality and Tourism Technology*, *12*(1), 19–38.

Lee, M., Lee, S. A., Jeong, M., & Oh, H. (2020). Quality of virtual reality and its impacts on behavioral intention. *International Journal of Hospitality Management*, *90*, 102595.

Lee, Z. (2022, April 28). Asian billionaires' hotel groups build virtual lands in Decentraland and the sandbox's metaverse. *Forbes*. https://www.forbes.com/sites/zinnialee/2022/04/28/asian-billionaires-hotel-groups-build-virtual-lands-in-decentraland-and-the-sandboxs-metaverse/?sh=2c1a4fb47942

Lielacher, A. (2022, August 20). The top 5 metaverse games to play in 2022. *Cryptonews*. https://cryptonews.com/exclusives/top-5-metaverse-games-play-2022.htm

Ligon, C. (2022, May 25). Why is South Korea Throwing Money at metaverse? *Coindesk*. https://www.coindesk.com/layer2/metaverseweek/2022/05/25/why-is-south-korea-throwing-money-at-the-metaverse/

Marr, B. (2022b, July 27). The world of metaverse entertainment: Concerts, theme parks, and movies. *Forbes*. https://www.forbes.com/sites/bernardmarr/2022/07/27/the-world-of-metaverse-entertainment-concerts-theme-parks-and-movies/?sh=824920e65311

Marriott (2021). Marriott Bonvoy logs into metaverse with debut of travel-inspired NFTs. https://news.marriott.com/news/2021/12/04/marriott-bonvoy-logs-into-the-metaverse-with-debut-of-travel-inspired-nfts

Marriott (2022). Let's play! Augmented reality takes off at Moxy hotels with the "Moxy Universe, Play Beyond" Asia Pacific campaign. https://news.marriott.com/news/2022/07/12/lets-play-augmented-reality-takes-off-at-moxy-hotels-with-the-moxy-universe-play-beyond-asia-pacific-campaign

Mitchell, B. (n.d.). Astroworld to return as virtual theme park in metaverse. *Blooloop*. https://blooloop.com/theme-park/news/astroworld-virtual-theme-park-metaverse/

Mixson, E. (2022, June 23). How Adidas is owning the digital transformation game. *Intelligent Automation Network*. https://www.intelligentautomation.network/transformation/articles/how-adidas-is-owning-the-digital-transformation-game

Mogelonsky, A. (2022, May 9). Ways that hotels can make money from metaverse. *Hospitalitynet*. https://www.hospitalitynet.org/opinion/4110124.html

Munjal (2020, December). Applications of virtual reality for restaurant brands. https://www.forbes.com/sites/forbesbusinesscouncil/2020/12/14/applications-of-virtual-reality-for-restaurant-brands/?sh=2ea6e3da4295

Mystakidis, S. (2022). Metaverse. *Encyclopedia, 2*(1), 486–497.

Novak, P. (April 14, 2017). What are the 4 segments of hospitality. *Hospitalitynet*. https://www.hospitalitynet.org/opinion/4082318.html

Oculus Business (2020). Hilton case study: Building empathy to enhance hospitality. https://business.oculus.com/case-studies/hilton/

Parasol, M. (2022, April 10). Museums in metaverse: How Web3 technology can help historical sites. *Cointelegraph*. https://cointelegraph.com/news/museums-in-the-metaverse-how-web3-technology-can-help-historical-sites

Park, D. (2021, October 21). South Korean theme park Lotte World opens on Metaverse. *Forkast*. https://forkast.news/headlines/south-korea-lotte-world-zepeto-metaverse/

Park, D. (2022, August 31). South Korea's capital city launches first stage of "Metaverse Seoul". *Forkast*. https://forkast.news/headlines/south-koreas-capital-city-launches-first-stage-of-metaverse-seoul/

Pellas, N., Mystakidis, S., & Kazanidis, I. (2021). Immersive virtual reality in K-12 and higher education: A systematic review of the last decade scientific literature. *Virtual Reality, 25*(3), 835–861.

Penfold, P. (2009). Learning through the world of second life—A hospitality and tourism experience. *Journal of Teaching in Travel and Tourism*, *8*(2-3), 139-160.

Perkins, C. (2020). 2020 Augmented and virtual reality report. https://www.perkinscoie.com/en/ar-vr-survey-results/2020-augmented-and-virtual-reality-survey-results.html

Pestek, A., & Sarvan, M. (2021). Virtual reality and modern tourism. *Journal of Tourism Futures, 7*(2), 245-250. .

Petre, H. (2022, May 5). Tech tracker: Restaurants enter metaverse*.* Retrieved from https://www.nrn.com/technology/tech-tracker-restaurants-enter-metaverse.

Recker, J., Lukyanenko, R., Jabbari, M., Samuel, B. M., & Castellanos, A. (2021). From representation to mediation: A new agenda for conceptual modeling. *Research in a digital world. MIS Quarterly, 3(1), 1-6.*

Revfine (2021). How virtual reality (VR) can enrich the hospitality industry*.* https://www.revfine.com/virtual-reality-hospitality-industry/

Revfine (2022). Metaverse opportunities for the hospitality industry. *Revfine*. https://www.revfine.com/metaverse-hospitality/

Sashi, C. M. (2012). Customer engagement, buyer-seller relationships, and social media. *Management Decision, 50*(2), 253–272. .

Sawhney, M., & Goodman, P. (2022). Nike tiptoeing into metaverse*. Northwestern | Kellogg.* https://www.kellogg.northwestern.edu/faculty/research/researchdetail?guid=feb080cf-aa02-11ec-91cc-0242ac160003

SecondLife places. (n.d.). Moyaland. https://places.secondlife.com/regions/39437/moya

Simoni, S. (2021, November 1). Restaurants, welcome to metaverse*. Thespoon.* https://thespoon.tech/restaurants-welcome-to-the-metaverse/

Skift (2022). How travel brands can build for metaverse now to drive travel discovery*. Skift*. https://skift.com/2022/08/01/how-travel-brands-can-build-for-the-metaverse-now-to-drive-travel-discovery/

Slater, M., Gonzalez-Liencres, C., Haggard, P., Vinkers, C., Gregory-Clarke, R., Jelley, S., ... Silver, J. (2022). The ethics of realism in virtual and augmented reality. *Frontiers in Virtual Reality, 1,* 1.

Slezak, G. (2022, March 31). The 11 most important fashion brands in metaverse and what they offer*. LinkedIn*.

https://www.linkedin.com/pulse/11-most-important-fashion-brands-metaverse-what-offer-gaby-k-slezák/?trk=articles_directory

Snoeck, J. (2021, July 5). Carrerfour dives into the world of Fortnite*. Retaildetail*. https://www.retaildetail.eu/news/food/carrefour-dives-world-fortnite/

Sorrells, M. (2022, May 20). Hotels develop virtual reality twins in metaverse*. Phocuswire*. https://www.phocuswire.com/hotels-metaverse-development-virtual-reality-twins

Stars, & Strikes (2020, December). Different types of virtual reality. https://www.starsandstrikes.com/blog/different-types-of-virtual-reality.

Thaler, S. (2022, May 10). See inside the first hotel in metaverse. *Bizbash.* https://www.bizbash.com/event-tech-virtual/event-tech-tools/article/22223124/see-inside-the-first-hotel-in-the-metaverse-m-social-decentraland

Tore, O. (2022, June 22). Hotel RIU plaza Espana opens in metaverse*. Ftnnews*. https://ftnnews.com/technology/44254-hotel-riu-plaza-espana-opens-in-the-metaverse

Weston, G. (2022, August 17). Metaverse tourism – Everything you need to know*. 101blockchains*. https://101blockchains.com/metaverse-tourism/

Zsarnoczky, M. (2018). The digital future of the tourism & hospitality industry. https://www.researchgate.net/profile/Martin-Zsarnoczky/publication/325989297_The_Digital_Future_of_the_Tourism_Hospitality_Industry/links/5b32220f0f7e9b0df5cbf032/The-Digital-Future-of-the-Tourism-Hospitality-Industry.pdf

Appendix

Picture 1: NikeLand (Aidi, 2022)
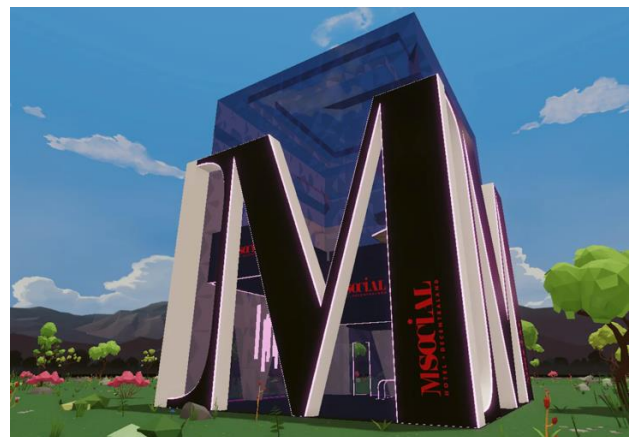
Picture 2: Social M Hotel (Thaler, 2022)

Picture 3: PepsiCo Conference (Kaminer, 2022)

Picture 4: MoyaLand (Secondlife, 2022)

Picture 5: Ralph Lauren in Metaverse (Slezak, 2022)

Author Biographies

Jay Bhakta is a graduate of EHL Business School with a Master's in Global Hospitality Business. His interests lie in hospitality asset management, development, and operations. He has achieved proficiency in hospitality analytics through his Certification in Advanced Hospitality and Tourism Analytics (CAHTA) offered by Smith Travel Research (STR) and his Certification in Hotel Industry Analytics (CHIA) offered by the American Hotel & Lodging Educational Institute (AHLEI). His writing was previously published by Hospitality Financial and Technology Professionals (HFTP) as the 1st Place winner of the Fall 2022 Blog Competition with his article titled "Glamping Hospitality: Low Development Costs, High ADRs and Incredible Valuations".

Amanda Charreton is a graduate of a Master's degree program in Global Hospitality Business from three world-leading hospitality management schools over three continents: Ecole Hôtelière de Lausanne, The Hong Kong Polytechnic University, and Conrad N. Hilton College at the University of Houston. She is currently the Assistant Front Office Manager at Kona Village, a Rosewood Resort on the big island of Hawaii set to open in the summer of 2023. As a trilingual student with strong interpersonal skills and work ethic, she received professional certificates in mastering industry analytics with STR and valuating hotels with HVS. She also won a blog competition, publishing her work on the use of VR training in the industry on Hospitality Financial and Technologies' information channels.

Anne Anoek de Rooij had obtained the bachelors degree from Tio University in Amsterdam in Business Administration. After that, she continued her master degree in Global Hospitality business. During this master degree, Anne had obtained multiple certificates: CHVSC, CAHTA, and CHIA. Currently, she is a marketing manager but options are being explored.

Minwoo Lee, Ph.D. is an Assistant Professor of Business Analytics at the Conrad N. Hilton College of Global Hospitality Leadership at the University of Houston. His areas of expertise are innovative technologies, digital transformation, persuasion and decision-making, big data and business analytics, and machine learning in the hospitality and tourism context. He received over 12 research awards at international conferences and major journals, including the Journal of Hospitality and Tourism Technology Paper of the Year Award, ICHRIE Research Award, and leading international conferences. He has published more than 100 refereed publications including journal articles, book chapters, and conference proceedings in the hospitality, tourism, and information systems areas. He serves as an Associate Editor of Journal of Hospitality and Tourism Technology and an Editorial Board Member for International Journal of Contemporary Hospitality Management, Tourism Economics, and Journal of Smart Tourism. He also leads the Data Analytics and Service Innovation Lab (http://www.thedasil.com).

Hubie Sangster has an MSc in Global Hospitality Business from Ecole hoteliere de Lausanne, Hong Kong PolyU School of Hospitality and Tourism Management and the Conrad Hilton School of Hospitality Leadership at the University of Houston. Currently he works for restaurant concept developer H-Hospitality in Amsterdam and wishes to pursue a career in F&B with the aim to establish his own restaurant empire.

Yingni Wang is currently working as the Guest Service Coordinator at the Commodore Perry Estate, one of the properties from the Auberge Resorts Collection located in Austin, Texas. She received her BA in Psychology and BS in Cognitive Science at the University of California- Santa Cruz. Then she obtained her MSc in Global Hospitality Business at the École hôtelière de Lausanne, where the program collaborated with the Hong Kong Polytechnic University and the Conrad N. Hilton College of Global Hospitality Leadership.