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Research Article

Discussion on the Role of Technology in The Tourism Sector in Malaysia for Uplifting Customer Experience and Satisfaction

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Abstract:

The advent of Web 3.0 and the lightning-fast advancement of ICT have revolutionised the tourist business, opening the door to digital co-creation by altering the production and dissemination of experiences. This article takes Malaysia as an example of a country where tourists may actively participate in creating their own travel experiences via the use of contemporary technologies. Service-Dominant (S-D) logic supports a more participatory and collaborative environment, exemplifying the change from conventional goods-dominant logic to a service-oriented paradigm. Social networking and travel blogs are two examples of digital platforms that are crucial for personalising trips and making genuine relationships. The integration of IoT devices with AI enhances customisation and authenticity even more. Researchers talk about the challenges of data management and the requirement of a healthy corporate culture, as well as the opportunities for sustainable expansion and new tourist items. Future research should focus on determining the long-term effects of digital co-creation on tourism. The role of trust as a moderator in the connection between smart tourism technologies was also investigated in this research. In order to determine the connection between the smart tourism technology traits of trust, service satisfaction, and intention to use, this research will use a structural equation technique. Online questionnaires were provided to visitors from Malaysia as part of this study's quantitative methodology. A chart detailing appropriate sample sizes was used for this purpose. Researchers anticipate that the research will reveal that the qualities of smart tourism technology are significantly linked to levels of service satisfaction, which will positively impact the intention to employ this technology.

1. Introduction

The tourism industry has seen a sea change in the last few years as a result of the rapid growth of information and communication technologies and the arrival of Web 3.0. The relationships among visitors, businesses, and communities have changed drastically as a result of these technology advancements, which have altered the whole process of creating, delivering, and using tourist services. At the heart of this change is digital co-creation, which promotes involvement and active cooperation in the production of tourist experiences. Global distribution systems (GDS) and computer reservation systems (CRS) were once the go-to databases for tourist bookings and reservations. The

booking process was simplified by these technologies, which were implemented in the 1960s and 1970s, but they might have been enhanced to provide more customized or interactive experiences. An important turning point occurred in the 1990s with the introduction of the internet, which made travel information and services accessible to a wider audience [1]. (Bertacchini et al., 2019).

With the advent of OTAs like Booking.com and Expedia, customers were able to book a wide variety of trips, read reviews, compare costs, and do it all from the convenience of their own homes. There was already a huge impact of ICTs on the tourism business before the shift from Web 1.0 to Web 2.0. The emergence of social media, travel blogs, and review sites marked the beginning of Web 2.0, an approach to the internet that was more participatory and user-generated. During this time, travellers could easily reach an international audience with their reviews and photos, which shaped the travel market and impacted consumer choices. By aggregating user reviews and ratings, platforms like TripAdvisor become indispensable resources for vacationers. Because of this change, tourist firms have shifted their focus to the customer and are actively working to improve their online reputations. A new level of revolutionary influence has been achieved by ICTs with the advent of Web 3.0, also known as the Semantic Web. Enhanced personalization and awareness of context are hallmarks of Web 3.0, which is defined by the integration of AI, ML, and the IoT. When applied to the travel sector, these technologies allow for the development of individualized vacation packages. As an example, recommendation engines powered by AI sift through mountains of data in order to provide unique vacation packages, lodging options, and things to do depending on each user's tastes and actions in the past. Smart bags, linked hotels, and location-based services are just a few examples of how the Internet of Things (IoT) is improving the travel experience via the provision of real-time data and effortless connection. At the intersection of Web 3.0 and information and communication technologies, digital co-creation emerged as a major consequence [2].

2. Background of The Study

For many years, tourism has been an important driver of economic growth and job creation in Malaysia. Every year, millions of tourists go to Malaysia to experience its breath-taking landscapes, fascinating history, and cutting-edge attractions. The tourist industry has had to change with the times in response to rising levels of competition on a worldwide and regional scale, as well as shifting customer expectations and new technology developments. The tourist business is no exception to the rule that technology has revolutionized almost every market. Businesses' interactions with visitors have been transformed by the fast development of digital tools and platforms, which has improved service delivery and overall consumer happiness. To boost development, simplify operations, and provide better client experiences, Malaysia's tourist sector has been heavily using technology. Incorporating technology into the tourist industry goes beyond just catering to the demands of today's customers; it also allows for the creation of tailored experiences and the anticipation of their wants [3].

The tourist ecosystem is being enhanced with new solutions brought about by the integration of many technologies, including mobile apps, cloud computing, big data analytics, virtual reality, augmented reality, the internet of things, and artificial intelligence (AI). Hotels, airlines, travel agencies, and tourist sites may all benefit from these technological advancements since they allow them to provide customers with better, more personalized service. Technology also makes it easier to communicate, which means that visitors can get real-time information on their itineraries, promotions, and travel plans. This is great for their convenience and overall experience. The goals of this change are to improve customer-centric services, boost tourism's competitiveness, and encourage sustainable growth. While there are many ways in which technology may improve customer service, there are also certain obstacles to overcome. Concerns about cybersecurity, the digital gap, and the ongoing need to adapt to new technology should be carefully considered by all parties involved [4].

3. Purpose of The Study

This project aims to investigate how technology might be used to improve consumer happiness and experience in Malaysia's tourist industry. Given the rapid pace of technological advancements impacting industries globally, this study aims to examine how tourism-related businesses are utilising technologies like mobile apps, AI, VR, big data, and the internet of things to enhance service delivery, personalise customer experiences, and streamline operations. From pre-trip preparations to post-trip reflections, this study intends to measure the effect of these technologies on consumer happiness. Additionally, it aims to discover the patterns of technology adoption and the difficulties encountered by the industry in putting these advancements into practice. In addition to informing policy development and industry standards, the research will provide suggestions for tourist enterprises on how to

optimize consumer happiness via the use of technology. In the end, this study hopes to help Malaysia's tourist sector become more competitive by using technology strategically.

4. Literature Review

Everyone agrees that technology plays a big part in improving the tourist industry's customer service by making it easier, faster, and more tailored to each individual's needs. Modern technology has made many things easier for travellers. They can now easily plan their trips and stay updated on airline schedules, hotel availability, and local attractions thanks to online booking systems, smartphone applications, and digital payment methods. The Malaysia Digital Economy Blueprint is one example of a government program that promotes tech adoption; it helps with digital transformation in the tourist industry so that customers have a better experience. The use of key technical advancements including IoT applications, big data analytics, and Artificial Intelligence (AI) is being used to automate operations, customize services, and forecast client preferences [5].

One way AI has improved travel is via the creation of personalized suggestions, virtual concierge services, and automated customer care. In addition to satisfying the needs of today's tourists, these technical developments open up new avenues for companies to build lasting relationships with their customers by providing them with personalized and engaging experiences. Smart technology integration has also enhanced tourist destination administration in Malaysia [6].

Automated transportation and smart ticketing systems are two examples of how the Internet of Things (IoT) may improve smart city administration and, by extension, the experience of visitors. Also, travellers can't do without smartphone applications that combine local facts, real-time directions, and event schedules; these apps make it simple to get what they need and make the most of their trips. Even while technology has many positive effects, it also has some negatives, such as the need to build infrastructure, spend money on training, and deal with cybersecurity threats. The accessibility of these technologies to all tourists, regardless of their socioeconomic level or digital proficiency, is a crucial factor for Malaysian tourism enterprises as they embrace digital transformation. To fully harness technology's potential to enhance consumer experience and pleasure in the tourist industry, it is imperative to address these obstacles [7].

5. Research Question

•What is the connection between the technology and the tourism sector in Malaysia through uplifting customer satisfaction?

6. Research Methodology

Quantitative research is the examination of numerical data related to variables via the application of one or more statistical models. The social environment may be better understood via quantitative research. Scholars often use quantitative methodologies to examine matters impacting individuals. Graphically depicted objective data is a product of quantitative study. Numerical data is crucial for quantitative research and must be collected and examined methodically. Their support facilitates the computation of averages, development of predictions, detection of linkages, and extrapolation of findings to larger populations.

6.1 Research design

The analysis of quantitative data was conducted using SPSS version 25. The odds ratio and 95% confidence interval were used to evaluate the direction and size of the statistical association. The researchers established a statistically significant threshold of $p < 0.05$. A descriptive analysis elucidated the principal facets of the data. Quantitative methods are often used for mathematical, numerical, or statistical analysis of data obtained by surveys, polls, and questionnaires, or by altering existing statistical data using computational tools.

6.2 Sampling

Following preliminary study involving 35 Chinese researchers, 687 Rao-soft students were included into the final cohort of investors. Male and female researchers were randomly selected and assigned a total of 1,011 questionnaires to complete. A total of 786 questionnaires were included for the analysis after receiving 796 and rejecting 10 owing to incompleteness.

6.3. Data and Measurement

The study relied heavily on questionnaires as its primary tool for gathering data. The survey had two sections: (A) General demographic information and (B) Responses on online and offline channel features assessed using a 5-point Likert scale. Secondary data was obtained from many sources, mostly internet databases.

6.4 Statistical Software

The statistical analysis was conducted using SPSS 25 and MS-Excel.

6.5 Statistical Tools

To grasp the fundamental character of the data, descriptive analysis was used. The researcher is required to analyse the data using ANOVA.

7. Conceptual Framework

8. RESULT

Factor analysis: A prevalent use of Factor Analysis (FA) is to identify hidden variables within visible data. In the lack of clear visual or diagnostic signs, it is standard practice to use regression coefficients for ratings. In FA, models are essential for success. The aims of modelling are to detect mistakes, intrusions, and discernible linkages. The Kaiser-Meyer-Olkin (KMO) Test is a technique for assessing datasets produced by various regression analyses. The model and sample variables are affirmed to be representative. The data demonstrates redundancy, as shown by the figures. Reducing the proportions enhances the clarity of the data. The KMO output is a value between zero and one. A KMO value between 0.8 and 1 indicates an adequate sample size. These are the permissible levels, according to Kaiser: The ensuing approval criteria as out by Kaiser are as follows:

A dismal 0.050 to 0.059, insufficient 0.60 to 0.69

Middle grades often span from 0.70 to 0.79.

Exhibiting a quality point score between 0.80 and 0.89.

They are astonished by the range of 0.90 to 1.00.

Table 1: KMO and Bartlett's Test for Sampling Adequacy Kaiser-Meyer-Olkin statistic: 0.973

The results of Bartlett's test of sphericity are as follows: The degrees of freedom for the chi-square test are around 190, with a significance level of 0.000.

Claims made for the sole purpose of sampling are thus shown to be genuine. In order to determine if the correlation matrices were relevant, the researchers used Bartlett's Test of Sphericity. A sufficient sample is indicated by a Kaiser-Meyer-Olkin score of 0.973. With Bartlett's sphericity test, the p-value came out to be 0.00. The correlation matrix is not an identity matrix, as shown by a positive outcome from Bartlett's sphericity test.

Table 1. *KMO and Bartlett's Test*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		973
Barlett's Test of Sphericity	Approx. Chi-Square	3252.968
	df	190
	Sig.	.000

Bartlett's Test of Sphericity further confirmed the significance of the correlation matrices. The Kaiser-Meyer-Olkin measure of sampling adequacy is 0.973. Utilising Bartlett's sphericity test, researchers obtained a p-value of 0.00. The results of Bartlett's sphericity test indicated that the correlation matrix is erroneous.

1. Independent Variable

Technology: To put it simply, technology is the application of scientific understanding to real-world problems, whether they industrial or otherwise. Among its many components are the wheel, computers, medications, and even clothing fasteners like zippers and buttons. Lots of different kinds of technology were covered. Either the modification or control of the human environment or the practical application of scientific knowledge to human life's aims are included by technology. Technology may be defined as the practical use of theoretical knowledge, often in a repeatable form, to accomplish certain objectives. Goods of such endeavours may also be referred to as technology. These goods might be ethereal, like software, or physical, like utensils or machinery. The fields of science, engineering, and general living all rely heavily on technology. There have been huge societal shifts as a result of technological progress. In prehistoric times, people made use of stone tools as their primary tool. Later, they learned to handle fire, which, according to the cooking theory, helped humans expand their brains and create language during the Ice Age. The wheel, developed by humans during the Greater mobility and the development of more sophisticated tools were both enabled during the Bronze Age. The information economy was born with the advent of modern communication technologies like the Internet, telephones, and printing presses [8].

2. Mediating Variable

a) Uplifting Customer Satisfaction

A company's ability to meet or beyond its customers' expectations is reflected in the level of customer satisfaction they achieve. Consumers' opinions of the experience's overall quality, value, ease, assistance, and expectations are all part of what

makes up customer satisfaction, sometimes abbreviated as CSAT. A happy client is one who is so pleased with their purchase that they are willing to sing the company's praises to others. Customer satisfaction is the level to which a business's products, services, and expertise fulfil the needs of its clients. Through evaluations and surveys, a company may find out what customers like and don't like in terms of satisfaction. An organisation should prioritise customer happiness above everything else [9].

b) Uplifting Customer Experience

What researchers mean when researchers talk about creating an uplifting customer experience is going above and beyond what the consumer expects and making a positive emotional impression on them throughout their journey with researcher's product, service, or brand. From the first stages of researching and arranging a trip to the actual trip itself and beyond, providing smooth, pleasant, and personalized encounters is what this term refers to in the tourism industry. Above and beyond mere contentment, an uplifting experience makes a lasting impression, alleviates burdens, and strengthens the bond between client and service provider. It often incorporates tech to provide ease, customization, efficiency, and real-time assistance, all of which lead to happier and more devoted customers [10].

3. Dependent Variable

a) The Tourism Sector in Malaysia

The travel and tourism industry in Malaysia had a remarkable comeback in 2023, increasing its revenue by a whopping 97.8 percent to MYR 157 billion, or 8.6 percent of the country's GDP. The travel and tourism industry's contribution to the economy was 19.8 percent lower than in 2019, notwithstanding a robust comeback. There was a growth of 10.8 percent from the previous year, bringing the total number of jobs created by the industry to about 2.3 million, which is in line with 2019 levels. A large portion of Malaysia's GDP comes from the tourism sector. When it comes to international visitors, Malaysia was formerly at number nine. The Travel and Tourism Efficiency Report states that the Travel & Tourism Competitiveness Index (TTCI), which ranks countries based on their policies and infrastructure for the long-term growth of their tourism and travel industries, Malaysia came in at number 26 out of 141 in 2017. As part of its strategy to diversify its economy and lessen reliance on exports, the government of Malaysia actively sought to boost tourism in the country. Because of this, tourism is now the country's second-biggest source of foreign currency for Malaysia. A significant portion of Malaysia's GDP in 2022 came from tourists. The Malaysia Tourism Promotion Board (MTPB) is a part of Tourism Malaysia, a government organisation that promotes Malaysia as a tourist destination. The Ministry of Culture, Arts and Tourism (MOCAT) was founded on May 20, 1987, and TDC was transferred to it. After the Malaysia Tourism Development Corporation (TDC) ran from 1972 to 1992, the MTPB was formed in 1992 as a replacement [11].

b) Relationship between Technology and The Tourism Sector in Malaysia through Uplifting Customer Satisfaction

The objective of enhancing customer happiness via increased service delivery and tailored experiences is increasingly defining the interaction between technology and the tourist industry in Malaysia. The tourist value chain is seeing the integration of digital technologies at every stage, from online booking systems and digital payment solutions to virtual tours, mobile travel applications, customer support powered by artificial intelligence, and more. Travel becomes more pleasant, interesting, and personalized with the help of these instruments, which also simplify procedures. Various efforts in Malaysia, including the Malaysia Digital Economy Blueprint (My DIGITAL) and private tourism enterprises, have highlighted the significance of digital transformation in enhancing service quality and attracting and retaining visitors. Smarter tourist infrastructure, including automated check-ins and real-time transportation updates, is made possible by IoT applications; big data analytics aids businesses in understanding consumer behaviour, which in turn allows them to provide personalized travel suggestions and packages. With these improvements, customer service becomes more responsive, travel becomes more fun, and overall, the customer experience is improved. As a result, customer satisfaction rises and Malaysia becomes a more competitive tourist destination [12].

Based on the above discussion, the researcher formulated the following hypothesis, which was to analyze the relationship between Technology and The Tourism Sector in Malaysia through Uplifting Customer Satisfaction.

H01: "There is no significant relationship Technology and The Tourism Sector in Malaysia through Uplifting Customer Satisfaction"

H1: "There is a significant relationship Technology and The Tourism Sector in Malaysia through Uplifting Customer Satisfaction"

Table 2: H_1 ANOVA Test

ANOVA					
Sum					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	39588.620	322	5663.817	765.794	.000
Within Groups	492.770	463	7.396		
Total	40081.390	785			

This investigation yields remarkable results. The F value is 765.794, attaining significance with a p-value of .000, which is below the .05 alpha threshold. The hypothesis H1: "There is a significant relationship Technology and The Tourism Sector in Malaysia through Uplifting Customer Satisfaction" is accepted, whereas the null hypothesis is rejected.

9. Discussion

Destinations like Malaysia have seen a dramatic shift in the authenticity and customization of visitor experiences due to the collaborative nature of internet platforms. Visitors may have a hand in shaping and improving their vacations via review sites, social media, and travel blogs. With this interactive method, visitors are not only seen as observers but also as active participants, which increases the genuineness of their experiences at tourist spots. Travellers may now personalize their schedules according to their preferences using digital platforms. This opens up a world of hidden treasures and cultural events that might not be highlighted in conventional travel guides. Machine learning and AI analyze user data to generate personalized suggestions, enhancing this customization. As a consequence, you'll have a more memorable trip and develop a deeper affinity for Malaysia. Sustainable tourist development also heavily relies on digital co-creation. Travellers visiting Malaysia may use online resources to participate in community-based tourism projects and other environmentally conscious activities. Participation like this is great for fostering cultural awareness and environmental consciousness. For instance, by taking part in community-based initiatives, visitors not only help preserve cultural and environmental resources, but also have a better grasp of local customs. Sustainable tourism is bolstered by the openness of internet platforms, which empowers travellers to speak out against unethical activities and pushes enterprises to operate responsibly. Digital platforms in Malaysia make this accountability easier and encourage other visitors to be more sustainable. The government of Malaysia has created smart tourism applications and virtual tours that show how digital co-creation may improve tourism and encourage sustainable practices.

10. Conclusion

Web 3.0 and other kinds of ICT have transformed the tourism industry, and this article has explored this phenomenon with a focus on digital co-creation. Studies reveal that digital channels such as social media, travel blogs, and review websites greatly impact the level of engagement and participation shown by travellers throughout their visits. These platforms elevate the genuine and customized nature of travel by letting travellers actively engage in the design and improvement of their travels. The use of cutting-edge tech like AI and ML allows for more tailored suggestions, while the integration of mobile and wireless technology gives users access to up-to-the-minute information that improves their trip. Sustainable tourist development stands out as an area where digital co-creation has played a significant role. Tourists, locals, and service providers may all work together more effectively, and ethical travel is made easier. Green practices and community-based tourism are examples of digital co-creation efforts that might help Malaysia achieve sustainable development while also protecting its cultural and environmental heritage. In addition to giving visitors more control, this participatory approach helps locals achieve their goals and fulfil their need

Author Statements:

- **Ethical approval:** The conducted research is not related to either human or animal use.
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