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A study of Factor Analysis Approach of Consumer Awareness and Perception of Online Services Offered by Haryana Tourism Corporation Towards Achieving Sustainable Development Goals

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Abstract: The advent of digital technology has revolutionized tourism, particularly in promoting and managing tourist destinations. This study aims to assess consumer awareness and perception of the online services offered by Haryana Tourism Corporation (HTC), relating its findings to several United Nations Sustainable Development Goals (SDGs). By understanding these factors, HTC can enhance its digital presence and service quality to effectively meet consumer expectations, contributing to SDG 8: Decent Work and Economic Growth through sustainable tourism that drives economic development. Data were collected from 300 domestic tourists across key tourist destinations in Haryana, utilizing a combination of paper and online questionnaires. The analysis, supported by SPSS and AMOS, revealed moderate to positive awareness and perception of HTC's online services. The study identified key components impacting consumer satisfaction and perception, with a focus on enhancing service quality, accessibility, and usability—key elements of SDG 9: Industry, Innovation, and Infrastructure. The research further supports SDG 11: Sustainable Cities and Communities by advocating for improved digital tourism services that benefit both local communities and visitors. Ultimately, the findings provide a strategic foundation for HTC to optimize its digital platforms, ensuring a seamless and satisfactory user experience for tourists, in alignment with SDG 12: Responsible Consumption and Production and SDG 17: Partnerships for the Goals. Improved service quality and technological advancements can significantly boost consumer satisfaction, thereby contributing to the broader goals of sustainable and inclusive tourism development.

Keywords: consumer awareness, customer perception, online services, tourism, Haryana Tourism Corporation, HTC, EFA, CFA, factor analysis

1. INTRODUCTION

The rapid proliferation of digital technology has fundamentally transformed various sectors, including the tourism industry (Akhtar et al., 2021). The rise of online services has enabled tourism corporations to enhance their offerings, improve customer engagement, and streamline operations (Hadjielias et al., 2022). Haryana Tourism Corporation (HTC), a prominent entity in the Indian tourism sector, has embraced this digital shift by offering a range



of online services (Bhattacharjee, 2020). These services are designed to cater to the diverse needs of modern travellers, providing them with convenient, efficient, and accessible solutions (Kumar et al., 2020). However, the effectiveness of these online services hinges on consumer awareness and perception (Kaur et al., 2023). Understanding how consumers perceive these services and their level of awareness is crucial for HTC to optimize its digital strategies and enhance user experience (Raji et al., 2024).

The first objective of this study is to investigate the consumer awareness level of the online services provided by Haryana Tourism Corporation. Awareness is a critical factor in the digital domain, as it influences the decision-making process of consumers (Singh et al., 2023; Javed et al., 2022). Despite the availability of sophisticated online services, low consumer awareness can hinder their utilization. This study aims to gauge the extent to which consumers are informed about HTC's online offerings. It will explore various channels through which consumers might learn about these services, including social media, advertisements, word-of-mouth, and direct engagement with the corporation's digital platforms (Kaur & Singh, 2022). By identifying the current awareness levels, the study will provide insights into potential gaps and opportunities for HTC to enhance its marketing and communication strategies.

The second objective focuses on the consumer perception of HTC's online services. Perception plays a pivotal role in determining consumer behaviour and satisfaction. It encompasses various aspects, such as the usability of the services, their reliability, the security of transactions, and the overall user experience (Mamakou et al., 2024; Kaur et al., 2024a). Positive perception can lead to higher customer satisfaction, increased usage, and positive word-of-mouth, whereas negative perception can deter potential users and harm the corporation's reputation (Bhalla et al., 2024; Talwar et al., 2021). This study will delve into consumers' opinions and attitudes towards HTC's online services, examining factors such as ease of access, cost-effectiveness, reliability, privacy, and customer support. By analyzing these perceptions, the research aims to identify strengths and areas for improvement, offering actionable recommendations for HTC to enhance its service delivery.

In the context of the tourism industry, where competition is intense and consumer preferences are continually evolving, understanding consumer awareness and perception is indispensable. For HTC, which operates in a dynamic and competitive environment, leveraging consumer insights is essential to stay ahead. The digital services offered by HTC, including online hotel bookings, tour packages, event bookings, and customer support, represent a significant investment in technology and innovation (Nazneen et al., 2024; Kulshrestha et al., 2022). Ensuring that these services meet consumer expectations and are widely recognized by the target audience is key to achieving a high return on investment and sustaining competitive advantage.

This research focuses on evaluating consumer awareness and perception of the online services provided by HTC. The study not only seeks to understand consumer behaviour but also aims to contribute to the broader discourse on sustainable development. By aligning with the United Nations Sustainable Development Goals (SDGs), this research highlights the intersection between digital innovation in tourism and global sustainability objectives.

SDG 8: Decent Work and Economic Growth underscores the importance of sustainable tourism as a driver of economic prosperity. Enhancing online tourism services can create new job opportunities, promote local culture, and support economic growth in Haryana. Similarly, SDG 9: Industry, Innovation, and Infrastructure emphasizes the need for resilient and innovative digital infrastructure. By examining consumer perceptions, this study contributes to the development of robust online platforms that can enhance the tourism sector's competitiveness and sustainability.

Further, SDG 11: Sustainable Cities and Communities is particularly relevant to this research, as tourism plays a crucial role in the development of sustainable communities. Understanding and improving online services can lead to more responsible and community-friendly tourism practices. Additionally, this study touches upon SDG 12: Responsible Consumption and Production by advocating for the efficient use of resources and promoting consumer behaviors that support sustainability in tourism.

Moreover, the findings of this study will contribute to the broader discourse on digital transformation in the tourism sector. They will highlight the challenges and opportunities associated with implementing online services in a regional tourism context. By providing a detailed analysis of consumer awareness and perception, the research will offer valuable lessons for other tourism organizations seeking to enhance their digital capabilities.

The objectives of this study—examining consumer awareness and perception of HTC's online services—are critical for the corporation's strategic planning and service optimization. The insights derived from this research will not only help HTC improve its digital offerings but also contribute to the overall understanding of consumer behaviour in the digital age. As HTC continues to innovate and expand its online services, maintaining a keen focus

on consumer awareness and perception will be essential for achieving long-term success and delivering exceptional value to travellers.

2. REVIEW OF LITERATURE

The rapid integration of digital technologies in the tourism industry has transformed the way services are delivered and consumed. The literature on consumer awareness and perception of online tourism services is extensive and provides valuable insights into the effectiveness of these digital transformations. This review synthesizes key findings from previous studies to establish a foundation for examining the consumer awareness and perception of online services offered by Haryana Tourism Corporation (HTC).

Consumer Awareness in Online Tourism Services

Consumer awareness is a critical determinant of the successful adoption of online services (Goyal et al., 2023; Al Halbusi et al., 2022). Several studies highlight the importance of marketing communications in enhancing consumer awareness. The dissemination of information through various digital channels, such as social media, search engines, and email marketing, significantly influences consumer awareness of online tourism services (Kaur & Madaan, 2023; Kurdi et al., 2022). Online visibility, achieved through search engine optimization (SEO) and active social media presence, is essential for increasing consumer awareness (Alfania et al., 2023; Kaur, 2019).

(Nusairat et al., 2021) investigate the role of online reviews and user-generated content in shaping consumer awareness. They find that positive reviews and high ratings on platforms like TripAdvisor and Yelp can significantly boost consumer awareness and trust in tourism services. This is supported by (Nagina et al., 2024; Chen et al., 2022) who note that peer recommendations and reviews play a crucial role in the information search process, influencing consumers' awareness and decision-making.

Consumer Perception of Online Tourism Services

Consumer perception is multifaceted, encompassing aspects such as usability, reliability, security, and overall satisfaction. According to (Kaur et al., 2024b; Juwaini et al., 2022), the quality of electronic services (e-service quality) is a major factor influencing consumer perception. Their E-S-QUAL framework identifies four dimensions of e-service quality: efficiency, fulfilment, system availability, and privacy (Madaan et al., 2024; Bhalla et al., 2024). These dimensions are critical in shaping consumers' perceptions of online services.

Usability is a key factor in consumer perception, as highlighted by (Chan & Honey, 2022) A user-friendly interface, easy navigation, and quick access to information enhance the user experience and positively influence consumer perception. (Ongsakul et al., 2021) examine the usability of hotel websites and find that ease of use significantly affects consumer satisfaction and their overall perception of the service quality.

Security and privacy are also paramount in consumer perception of online services. A study by (Kaur et al., 2024c; Almaiah et al., 2022) underscores that concerns over the security of personal and financial information can adversely affect consumer perception. Trust in the service provider's ability to safeguard sensitive data is essential for positive consumer perception. This is further corroborated by (Bodimani, 2024) who emphasize the importance of building trust through robust security measures and transparent privacy policies.

Impact of Online Services on Consumer Behaviour

The impact of online services on consumer behaviour is well-documented in the literature. (Kawa & Zdrenka, 2024) highlight that the convenience and accessibility of online services lead to increased consumer satisfaction and loyalty. They argue that the ability to book hotels, purchase tickets, and access travel information online has transformed consumer behaviour, making it more dynamic and informed.

(Venkatakrisnan et al., 2023) explore the relationship between online service quality and consumer behaviour. They find that high-quality online services enhance consumer satisfaction, leading to repeat usage and positive word-of-mouth (Azhari et al., 2023). The study also suggests that consumer expectations of online services are continually evolving, necessitating ongoing improvements in service quality.

Challenges in Implementing Online Tourism Services

While the benefits of online tourism services are evident, there are also challenges associated with their implementation. (Musyaffi et al., 2022) identify several barriers to the adoption of online services, including technological limitations, lack of digital literacy among consumers, and resistance to change. They argue that for

tourism corporations to successfully implement online services, they must address these challenges through targeted training programs and user-friendly technologies (Li et al., 2023).

In the context of regional tourism, (Khan et al., 2020) discuss the specific challenges faced by tourism corporations in developing countries. These include limited internet penetration, infrastructural constraints, and cultural factors that influence consumer behaviour. The study suggests that tailored strategies that consider local contexts are essential for the successful adoption of online services in such regions.

The literature on consumer awareness and perception of online tourism services provides a comprehensive understanding of the factors that influence the adoption and effectiveness of these services. Key themes that emerge include the importance of marketing communications, the role of e-service quality, the significance of security and privacy, and the impact of online services on consumer behaviour (Al-Khayyal et al., 2020). Additionally, the challenges associated with implementing online tourism services, particularly in regional contexts, highlight the need for tailored strategies.

This review underscores the relevance of examining consumer awareness and perception in the context of Haryana Tourism Corporation's online services. By building on the existing literature, this study aims to provide valuable insights that can inform the strategic planning and optimization of HTC's digital offerings. As digital technologies continue to evolve, understanding consumer perspectives will remain crucial for enhancing service quality and achieving long-term success in the tourism industry.

Research Gap

Despite the extensive literature on consumer awareness and perception of online tourism services, specific gaps remain, particularly in the context of regional tourism corporations like Haryana Tourism Corporation (HTC). Much of the existing research focuses on global or national tourism entities, leaving a gap in understanding how regional corporations fare in the digital transformation landscape.

Firstly, there is limited research on the specific awareness levels of consumers regarding the online services offered by regional tourism corporations such as HTC. Studies tend to generalize findings across various geographical locations without addressing the unique challenges and opportunities that regional entities face. This includes understanding the effectiveness of HTC's marketing strategies in raising awareness and the channels through which consumers become informed about its online services

Secondly, while consumer perception of online tourism services has been broadly studied, there is a lack of targeted research examining how these perceptions are shaped in the context of HTC. Factors such as local cultural nuances, regional digital literacy levels, and infrastructural limitations are often overlooked. These elements can significantly influence consumer satisfaction and perception, necessitating a more localized approach to research.

Furthermore, there is a need for more empirical studies that explore the direct impact of consumer awareness and perception on the usage and success of online services offered by HTC. Existing literature tends to be descriptive, lacking in-depth analytical studies that provide actionable insights for regional tourism corporations.

Addressing these gaps is crucial for HTC to enhance its digital offerings and achieve greater consumer engagement and satisfaction. This study aims to fill these gaps by providing a focused examination of consumer awareness and perception specific to the online services offered by Haryana Tourism Corporation, thereby contributing to a more nuanced understanding of regional digital tourism dynamics.

3. RESEARCH METHODOLOGY

The present study employed a non-probability convenience sampling technique to collect data from domestic tourists visiting key destinations in Haryana, including Kurukshetra, Panipat, and Morni Hills. This approach was considered appropriate due to the exploratory nature of the study and the practical constraints associated with accessing a geographically dispersed tourist population. Respondents were approached at major tourist sites and invited to participate voluntarily in the survey.

To ensure methodological transparency, specific inclusion criteria were defined prior to data collection. Only those respondents were included who (i) were domestic tourists from states other than Haryana, (ii) had visited or were currently visiting Haryana for leisure, business, or pilgrimage purposes, and (iii) were above 18 years of age and capable of understanding the questionnaire. Both paper-based and online survey modes were used to improve response accessibility and participation.

Although convenience sampling limits the generalisability of findings, efforts were made to enhance the representativeness of the sample by collecting data from diverse tourist locations and capturing respondents from varied demographic backgrounds. The final sample consisted of 254 valid responses after data screening, representing a heterogeneous mix in terms of age, occupation, and travel purpose. The demographic distribution indicates adequate variation, with respondents spanning multiple age groups (15–30, 31–45, and 46+ years) and occupational categories (homemakers, employed, and self-employed individuals), thereby providing a broad perspective on consumer awareness and perception.

Furthermore, to mitigate potential sampling bias, data were collected at different time intervals and locations, and respondents were assured anonymity to encourage honest responses. While the use of non-probability sampling may restrict statistical generalisation, the findings remain valuable for understanding patterns and trends in consumer awareness and perception within the studied context. Future studies may employ probability-based sampling techniques to further strengthen generalisability.

Since the data for this study were collected using a self-reported questionnaire, the possibility of common method bias (CMB) was examined. To assess this issue, Harman’s single-factor test was conducted using exploratory factor analysis (EFA) in SPSS.

All measurement items were loaded into an unrotated factor solution to determine whether a single factor would emerge or if one general factor would account for the majority of the covariance among the variables. The results indicated that the first factor accounted for less than 50% of the total variance, suggesting that common method bias is not a significant concern in this study.

Additionally, procedural remedies were applied during the data collection process to minimize potential bias. Respondents were assured of anonymity and confidentiality, and the questionnaire items were carefully structured to reduce ambiguity and social desirability bias. Therefore, both statistical and procedural approaches confirm that common method bias does not pose a serious threat to the validity of the findings.

Data Analysis Tools and Justification

The present study employed both SPSS (Statistical Package for the Social Sciences) and AMOS (Analysis of Moment Structures) to perform different stages of data analysis, ensuring methodological rigor and robustness.

SPSS was primarily used for preliminary and exploratory analyses, including data screening, descriptive statistics, reliability analysis (Cronbach’s alpha), and Exploratory Factor Analysis (EFA). These techniques were essential for identifying underlying factor structures, assessing internal consistency, and summarizing respondent characteristics.

AMOS, on the other hand, was utilized for Confirmatory Factor Analysis (CFA) to validate the factor structure identified through EFA. CFA enabled the assessment of construct validity, including model fit indices such as CMIN/DF, NFI, IFI, TLI, CFI, and RMSEA. The use of AMOS allowed for a more advanced structural validation of the measurement model, ensuring that the observed variables accurately represent the latent constructs.

The combined use of SPSS and AMOS is well-established in quantitative research, where SPSS supports exploratory and descriptive analysis, while AMOS facilitates confirmatory and model-based validation. This integrated approach enhances the reliability and validity of the findings by ensuring both data reduction and structural verification of constructs.

Measures

Table 1. General Examination

Variable	Sub-Variable	Code	Description
Consumer Awareness	General Awareness	CA1	I am aware of Haryana Tourism Corporation.
		CA2	I frequently visit the Haryana Tourism Corporation website.
		CA3	I have a high overall awareness of Haryana Tourism Corporation’s online services.

		CA4	Haryana Tourism Corporation effectively promotes its online services.
	Specific Service Awareness	CA5	I am aware of the online hotel booking service offered by Haryana Tourism Corporation.
		CA6	I am aware of the online tour packages service offered by Haryana Tourism Corporation.
		CA7	I am aware of the online event booking service offered by Haryana Tourism Corporation.
		CA8	I am aware of the online payment options available through Haryana Tourism Corporation.
		CA9	I am aware of the Haryana Tourism Corporation mobile app services.
		CA10	I am aware of the customer support chat service provided by Haryana Tourism Corporation.
		CA11	I am aware of the online feedback and review system of Haryana Tourism Corporation.
	Usage and Satisfaction	CA12	I have used online services offered by Haryana Tourism Corporation.
		CA13	The online services offered by Haryana Tourism Corporation are easy to use.
		CA14	I am satisfied with the online services provided by Haryana Tourism Corporation.
		CA15	I am likely to recommend the online services of Haryana Tourism Corporation to others.
Consumer Perception	Accessibility and Usability	CP1	The Haryana Tourism Corporation websites are easily accessible.
		CP2	The online tourism services provided are user-friendly, transcending boundaries of space and language.
		CP3	It is very comfortable to use the online tourism services offered by Haryana Tourism Corporation.
		CP4	It is easy to get familiar with these online portals.
		CP5	It is easy to find what I want on these portals.
	Service Quality and Reliability	CP6	The purchase system on the portals is stable and consistent.
		CP7	Online tourism services make deciding and finalizing plans hassle-free.

	CP8	The online tourism services provided are reliable, with a lower probability of errors.
	CP9	The efficiency of these services remains consistent all the time.
Cost and Value	CP10	These services are cost-effective because the interaction is directly with the company.
	CP11	Using online tourism services saves time and resources.
Privacy and Security	CP12	The privacy of personal information is well-maintained on these portals.
	CP13	Online tourism services provide secure money transactions.
	CP14	These portals clearly explain how user information is used.
Personalization and Customer Support	CP15	These portals give me individual attention.
	CP16	Online customer services or help on these portals is available all the time.
	CP17	These portals understand my specific needs.
	CP18	These portals are willing to customize their services for me.
Technological Advancements	CP19	Online tourism services are technologically advanced, offering facilities like online ticketing, hotel booking, and check-in with a single click.
	CP20	The promotional strategies for online tourism services are effective.
	CP21	The graphics on these portals are likable.

All measurement items were assessed using a five-point Likert scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

The Likert scale is widely used in tourism and e-service research to capture consumer attitudes, perceptions, and behavioural intentions in a structured and quantifiable manner (Likert, 1932; Hair et al., 2019). This scaling approach enables the transformation of subjective responses into measurable constructs suitable for statistical analysis.

Research Objectives:

- i. To explore the factors impacting consumer awareness level of online services offered by Haryana Tourism Corporation.
- ii. To explore the factors impacting consumer perception towards online services offered by Haryana Tourism Corporation.

4. RESULTS AND DISCUSSIONS

Demographic analysis, Reliability and validity analysis, descriptive statistics, exploratory factor analysis (EFA), confirmatory factor analysis (CFA) using SPSS and AMOS were the quantitative techniques used.

Demographic analysis

The demographic analysis of the study reveals significant insights into the age and occupation distribution of the respondents. The majority of respondents fall within the 31-45 age group (153), followed by the 15-30 age group (68), and the 46 and above age group (33). This indicates a predominant middle-aged participant base. Regarding occupation, homemakers constitute the largest group (99), followed by employed individuals (97), and self-employed/business owners (58). This diverse occupational representation highlights varied perspectives on the awareness and perception of Haryana Tourism Corporation's online services, offering a comprehensive understanding of consumer demographics. The graphical representation is given below of the performed study.

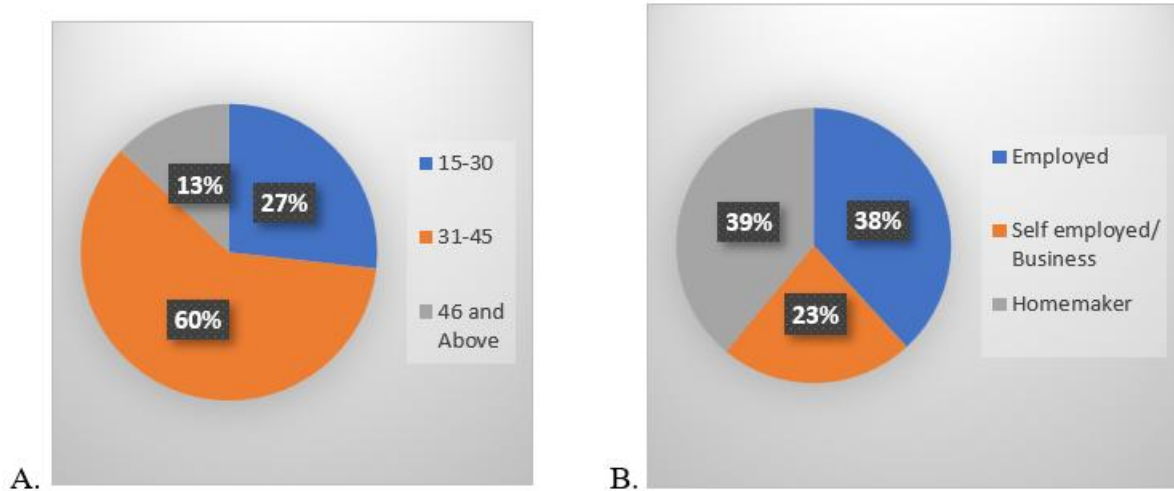


Fig 1. Demographic Graphical Representation

Reliability Analysis

Table 1. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.976	.976	36

The reliability statistics indicate an exceptionally high level of internal consistency for the scale used in the study. With a Cronbach's Alpha of 0.976 based on 36 items, the results suggest that the items within the questionnaire are highly correlated and measure the same underlying construct. A Cronbach's Alpha value above 0.9 is generally considered excellent, reflecting that the survey instrument is reliable and can be used confidently to assess consumer awareness and perception of Haryana Tourism Corporation's online services (Narvekar, 2022).

Descriptive Analysis

Table 2. Item Statistics

	Mean	Std. Deviation	N
CA1	3.26	1.244	254
CA2	3.34	1.265	254
CA3	3.39	1.242	254

CA4	3.30	1.333	254
CA5	3.27	1.263	254
CA6	3.35	1.175	254
CA7	3.24	1.242	254
CA8	3.24	1.244	254
CA9	3.28	1.323	254
CA10	3.33	1.235	254
CA11	3.35	1.270	254
CA12	3.30	1.263	254
CA13	3.19	1.362	254
CA14	3.34	1.268	254
CA15	3.43	1.223	254
CP1	3.30	1.294	254
CP2	3.29	1.279	254
CP3	3.30	1.269	254
CP4	3.30	1.219	254
CP5	3.28	1.207	254
CP6	3.30	1.287	254
CP7	3.34	1.272	254
CP8	3.37	1.238	254
CP9	3.33	1.279	254
CP10	3.29	1.236	254
CP11	3.35	1.264	254
CP12	3.27	1.248	254
CP13	3.31	1.277	254
CP14	3.35	1.282	254
CP15	3.07	1.351	254

CP16	3.15	1.260	254
CP17	3.12	1.303	254
CP18	3.11	1.242	254
CP19	3.22	1.228	254
CP20	3.11	1.273	254
CP21	3.19	1.275	254

The item statistics reveal the mean scores and standard deviations for each of the consumer awareness (CA) and consumer perception (CP) items. The means range from 3.07 to 3.43, indicating a moderate level of agreement across all items. The standard deviations, which range from 1.175 to 1.362, suggest a reasonable spread of responses around the mean, reflecting some variability in participant perceptions and awareness. Overall, the data suggests that respondents have a moderately positive awareness and perception of the online services offered by Haryana Tourism Corporation, with consistent responses across the different items (Sharma & Arora, 2023).

To provide a meaningful interpretation of the mean values obtained, the study adopts established benchmarks for Likert scale analysis commonly used in tourism and service research. Following prior studies (Hair et al., 2019; Sekaran & Bougie, 2016), the scale range is divided as follows:

1.00 – 2.33 → Low level of agreement

2.34 – 3.66 → Moderate level of agreement

3.67 – 5.00 → High level of agreement

Based on this classification, the observed mean scores ranging from 3.07 to 3.43 fall within the moderate category, indicating that respondents exhibit a moderately positive level of awareness and perception towards the online services offered by Haryana Tourism Corporation.

This interpretation is consistent with previous tourism and e-service studies, where mid-range mean values (approximately around 3) reflect moderate consumer perception and engagement levels (Parasuraman et al., 2005; Ongsakul et al., 2021). Therefore, the findings suggest that while users are reasonably aware and satisfied with the services, there remains significant scope for improvement to achieve higher levels of consumer engagement and satisfaction.

Segmented Analysis of Consumer Awareness and Perception

To provide deeper insights into consumer behaviour, a segmented analysis was conducted based on key demographic variables such as age and occupation. The findings indicate that consumer awareness and perception of online services are not uniform across all respondent groups.

In terms of age, respondents in the 31–45 age group demonstrated relatively higher awareness and more positive perceptions of Haryana Tourism Corporation's online services compared to younger (15–30 years) and older (46+ years) groups. This may be attributed to greater digital familiarity combined with higher travel engagement among middle-aged individuals.

Similarly, differences were observed across occupational groups. Employed and self-employed respondents exhibited comparatively higher usage and satisfaction levels with online services, likely due to greater exposure to digital platforms and time-saving preferences. In contrast, homemakers showed relatively moderate awareness and perception levels.

These variations highlight that digital awareness and perception are influenced by demographic characteristics, suggesting that a one-size-fits-all approach may not be effective. From a managerial perspective, Haryana Tourism Corporation should adopt targeted digital strategies, such as customized communication and user-friendly interfaces, to cater to different consumer segments more effectively.

Although the present study provides initial insights into segmentation, future research may incorporate additional variables such as education level, income, and travel frequency to further refine the understanding of consumer heterogeneity.

Objective 1: To explore the factors impacting consumer awareness level of online services offered by Haryana Tourism Corporation.

To explore the consumer awareness level of online services offered by Himachal Tourism Corporation, the researcher(s) employed EFA followed by CFA. The analysis is as follows:

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.969
Bartlett's Test of Sphericity	Approx. Chi-Square	2789.279
	df	105
	Sig.	.000

The KMO and Bartlett's Test results indicate the suitability of the data for factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.969, which is excellent and suggests that the sample size is sufficient and the data is suitable for factor analysis. Bartlett's Test of Sphericity has an approximate Chi-Square value of 2789.279 with 105 degrees of freedom, and a significance level of 0.000, indicating that the correlations between items are sufficiently large for factor analysis (Razali et al., 2024). These results confirm that the data is appropriate for further multivariate analysis, such as factor analysis.

Table 4. Communalities

	Initial	Extraction
CA1	1.000	.698
CA2	1.000	.647
CA3	1.000	.622
CA4	1.000	.640
CA5	1.000	.655
CA6	1.000	.656
CA7	1.000	.747
CA8	1.000	.652
CA9	1.000	.698
CA10	1.000	.612
CA11	1.000	.644
CA12	1.000	.638

CA13	1.000	.683
CA14	1.000	.679
CA15	1.000	.738

Extraction Method: Principal Component Analysis.

The communalities table presents the proportion of each variable's variance that can be explained by the factors extracted in the Principal Component Analysis (PCA). Initially, each variable has a communality of 1.000. After extraction, the communalities range from 0.612 to 0.747, indicating the amount of variance explained by the extracted factors for each item. High communalities (close to 1) suggest that a large portion of the variable's variance is accounted for by the extracted factors (Widaman & Helm, 2023). For example, CA7 has a communality of 0.747, meaning 74.7% of its variance is explained by the factors, while CA10 has 61.2% of its variance explained.

Table 5. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.422	62.813	62.813	9.422	62.813	62.813	5.152	34.348	34.348
2	.587	3.912	66.726	.587	3.912	66.726	4.857	32.378	66.726
3	.578	3.851	70.577						
4	.523	3.486	74.063						
5	.508	3.384	77.447						
6	.466	3.108	80.555						
7	.453	3.018	83.573						
8	.410	2.733	86.305						
9	.366	2.442	88.748						
10	.330	2.199	90.946						
11	.313	2.088	93.034						
12	.311	2.072	95.106						
13	.264	1.758	96.864						
14	.245	1.631	98.495						

15	.226	1.505	100.000						
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Extraction Method: Principal Component Analysis.

The "Total Variance Explained" table provides insight into the factor structure of the data based on Principal Component Analysis (PCA). The initial eigenvalues indicate the amount of variance each component explains. The first component has an eigenvalue of 9.422, accounting for 62.813% of the total variance. The second component has an eigenvalue of 0.587, explaining an additional 3.912% of the variance, leading to a cumulative variance of 66.726% when both components are considered.

In the "Extraction Sums of Squared Loadings" section, only the first two components are retained as they together explain 66.726% of the total variance, which is significant for a comprehensive analysis. This indicates that these two components adequately represent the data's underlying structure.

The "Rotation Sums of Squared Loadings" show the effect of varimax rotation, which helps in achieving a simpler and more interpretable factor structure. After rotation, the first component explains 34.348% of the variance, and the second component explains 32.378%, maintaining the cumulative variance at 66.726%. This redistribution of variance indicates that the two components have more balanced contributions to explaining the data variance, enhancing the interpretability of each factor.

While the extracted components explain a substantial proportion of the total variance (66.726% for consumer awareness and 64.092% for consumer perception), a remaining portion of approximately 33% of the variance remains unexplained. This unexplained variance suggests the presence of additional latent variables and external influences that were not captured within the scope of the present study.

In the context of online tourism services, consumer awareness and perception are complex and multifaceted constructs that may be influenced by several factors beyond those included in the current model. These may include socio-cultural factors, such as regional norms, language preferences, and cultural attitudes toward digital technologies, which can significantly shape user behaviour. Additionally, technological factors, including internet accessibility, device usability, and digital literacy levels, may also contribute to variations in perception and awareness.

Furthermore, psychological and behavioural aspects, such as trust, perceived risk, prior online experience, and individual innovativeness, may account for part of the unexplained variance. External environmental factors, such as government policies, promotional exposure, and competitive offerings from private tourism platforms, may also influence consumer responses.

Therefore, while the current model demonstrates strong explanatory power, the presence of unexplained variance indicates opportunities for further research to incorporate additional variables and dimensions. Future studies may employ more comprehensive models, including mediating and moderating variables, to capture these influences and enhance the overall explanatory capability of the model.

Overall, the PCA results suggest that the data can be effectively reduced to two main components that capture the majority of the variance, facilitating a more straightforward interpretation and analysis of consumer awareness of the online services offered by Haryana Tourism Corporation (Greenacre et al., 2022).

Table 6. Rotated Component Matrix^a

	Component	
	1	2
CA1	.762	
CA2	.601	
CA3	.658	

CA4		.717
CA5		.712
CA6	.697	
CA7	.784	
CA8		.621
CA9	.738	
CA10		
CA11		.615
CA12	.639	
CA13		.616
CA14		.684
CA15		.798

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

The two components identified in the rotated matrix represent distinct underlying dimensions of consumer awareness and perception regarding Haryana Tourism Corporation's online services. Component 1 appears to encapsulate general user satisfaction and ease of use, as seen from high loadings on items like CA1, CA7, and CA9. Component 2 seems to capture aspects related to specific service features and effectiveness, evident from high loadings on CA4, CA5, and CA15. This bifurcation provides a clearer understanding of the factors influencing consumer awareness, aiding in targeted improvements and strategic planning (Mengesha, 2024).

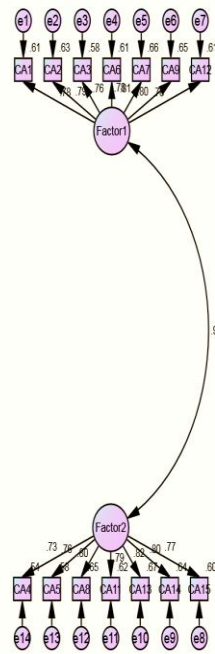


Fig 2. Confirmatory Factor Analysis Path Diagram for Consumer Awareness

The two identified components from the Principal Component Analysis (PCA) were confirmed using Confirmatory Factor Analysis (CFA) through AMOS. The CFA results indicate a good fit between the model and the observed data, suggesting that the identified factors are reliable and valid representations of the underlying constructs.

Table 7. Model Fit Results

INDEX	MEASURE
CMIN	116.322
DF	76
CMIN/DF	1.531
NFI	0.956
IFI	0.984
TLI	0.978
CFI	0.984
RMSEA	0.001

A CMIN/DF value of 1.531, which is below the commonly accepted threshold of 3, indicates a good fit. The NFI, IFI, TLI, and CFI values are all above 0.95, which further confirms the excellent fit of the model. These indices show that the model has a high level of explanatory power and captures the variance in the data effectively (Schuberth et al., 2023).

The RMSEA value of 0.001 is exceptionally low, indicating a very close fit of the model in relation to the degrees of freedom. Typically, RMSEA values less than 0.05 are considered indicators of a good fit, making this result particularly strong.

Overall, these model fit indices suggest that the two components identified in the PCA are well-supported by the CFA, validating the structure of the data. This confirmation through CFA enhances the credibility of the study's findings regarding consumer perception and awareness of Haryana Tourism Corporation's online services. It provides a solid foundation for further analysis and interpretation, ensuring that the observed relationships are not due to random variation but are representative of the underlying constructs being measured (El-Den et al., 2020).

Objective 2: To explore the factors impacting consumer perception towards online services offered by Haryana Tourism Corporation.

To explore the consumer perception of online services offered by Himachal Tourism Corporation, the researcher(s) employed EFA followed by CFA. The analysis is as follows:

Table 8. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.964
Bartlett's Test of Sphericity	Approx. Chi-Square	3730.061
	df	210
	Sig.	.000

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.964, indicating that the sample size is more than adequate for factor analysis, as values above 0.9 are considered excellent. Bartlett's Test of Sphericity results in a Chi-Square value of 3730.061 with 210 degrees of freedom and a significance level (Sig.) of 0.000. This highly significant result ($p < 0.05$) confirms that the correlations between the variables are sufficiently large for factor analysis. Together, these tests indicate that factor analysis is appropriate for exploring the factors impacting consumer perception of online services offered by Haryana Tourism Corporation (Jangra et al., 2021).

Table 9. Communalities

	Initial	Extraction
CP1	1.000	.673
CP2	1.000	.645
CP3	1.000	.609
CP4	1.000	.634
CP5	1.000	.617
CP6	1.000	.661
CP7	1.000	.595
CP8	1.000	.607
CP9	1.000	.664

CP10	1.000	.617
CP11	1.000	.619
CP12	1.000	.636
CP13	1.000	.642
CP14	1.000	.599
CP15	1.000	.668
CP16	1.000	.661
CP17	1.000	.627
CP18	1.000	.681
CP19	1.000	.661
CP20	1.000	.663
CP21	1.000	.680

Extraction Method: Principal Component Analysis.

In Principal Component Analysis (PCA), communalities represent the proportion of variance in each original variable (CP1 to CP21) that is explained by the extracted components. Initially, each variable is assumed to explain 100% of its own variance (initial communalities), but during extraction, PCA redistributes this variance across the extracted components. The extraction communalities indicate the proportion of variance in each variable that is accounted for by the components extracted in PCA. Higher extraction communalities suggest that the component captures more variance from the original variables, thus contributing more significantly to the underlying structure or pattern identified by PCA (Dash et al., 2022).

Table 10. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.019	52.473	52.473	11.019	52.473	52.473	8.339	39.712	39.712
2	2.440	11.618	64.092	2.440	11.618	64.092	5.120	24.380	64.092
3	.621	2.958	67.050						
4	.597	2.841	69.891						
5	.562	2.674	72.565						

6	.538	2.562	75.127					
7	.493	2.345	77.473					
8	.475	2.261	79.733					
9	.466	2.218	81.951					
10	.420	1.999	83.950					
11	.402	1.914	85.864					
12	.388	1.850	87.713					
13	.366	1.742	89.456					
14	.349	1.661	91.117					
15	.315	1.500	92.617					
16	.302	1.440	94.057					
17	.277	1.318	95.375					
18	.272	1.294	96.670					
19	.255	1.212	97.882					
20	.234	1.114	98.996					
21	.211	1.004	100.000					

Extraction Method: Principal Component Analysis.

The table on Total Variance Explained through Principal Component Analysis (PCA) provides insights into the distribution of variance across components that potentially influence consumer perceptions of online services by Haryana Tourism Corporation. The initial eigenvalues show the total variance present in the dataset, with the first component explaining 52.473% and the second 11.618%, totalling 64.092% cumulatively. As additional components are considered, the percentage of variance explained gradually diminishes, suggesting that the first few components are most crucial in capturing the underlying dimensions shaping consumer perceptions. The rotation sums of squared loadings illustrate how these components are structured post-rotation, aiding in identifying clear factors influencing consumer attitudes towards online services. This analysis helps prioritize which aspects of service delivery are most influential in shaping overall consumer perception and satisfaction (Uzir et al., 2021).

Table 11. Rotated Component Matrix^a

	Component	
	1	2
CP1	.767	
CP2	.762	

CP3	.719	
CP4	.767	
CP5	.722	
CP6	.802	
CP7	.741	
CP8	.707	
CP9	.756	
CP10	.753	
CP11	.767	
CP12	.759	
CP13	.747	
CP14	.740	
CP15		.762
CP16		.786
CP17		.741
CP18		.805
CP19		.769
CP20		.768
CP21		.785

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

The Rotated Component Matrix obtained from Varimax rotation with Kaiser Normalization reveals the pattern of loadings for each original variable (CP1 to CP21) across the extracted components. Component 1 shows strong loadings (.707 to .805) for variables related to a specific set of consumer perceptions, likely encompassing aspects such as service quality, reliability, and satisfaction. Component 2 exhibits significant loadings (.722 to .786) for variables that may represent different dimensions, possibly involving aspects like accessibility, ease of use, and customer support in online services provided by Haryana Tourism Corporation.

The rotation enhances interpretability by maximizing the variance of squared loadings within each component while ensuring orthogonality between components. This structured approach helps identify distinct factors shaping consumer perceptions more clearly than in the initial unrotated solution. Overall, the rotated component matrix highlights specific dimensions of consumer perception that Haryana Tourism could prioritize to enhance online service offerings effectively, based on how these variables cluster and contribute to the overall consumer experience (Kumar & Bakshi, 2023).

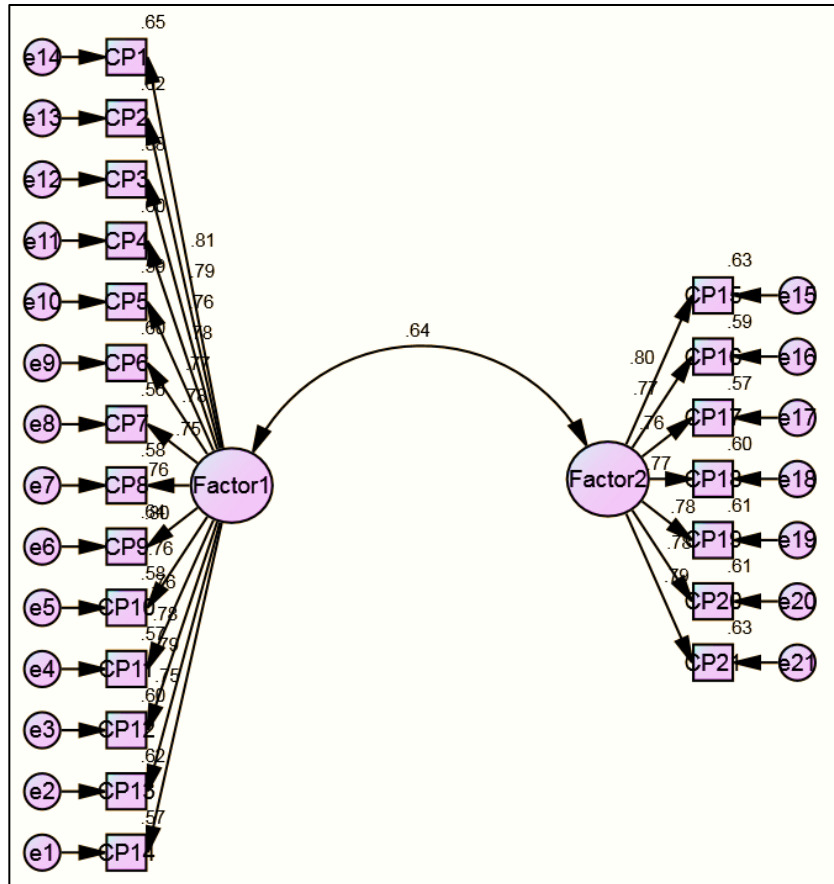


Fig 3. Confirmatory Factor Analysis Path Diagram for Consumer Perception

The two identified components from the Principal Component Analysis (PCA) were confirmed using Confirmatory Factor Analysis (CFA) through AMOS. The CFA results indicate a good fit between the model and the observed data, suggesting that the identified factors are reliable and valid representations of the underlying constructs.

Table 12. Model Fit Results

INDEX	MEASURE
CMIN	258.292
DF	188
CMIN/DF	1.374
NFI	0.933
IFI	0.981
TLI	0.976

CFI	0.981
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The Confirmatory Factor Analysis (CFA) conducted in AMOS has confirmed the structural validity of the two-component model derived from the initial Principal Component Analysis (PCA). The model fit indices provide strong evidence that the proposed model effectively represents and explains the underlying dimensions of consumer perceptions towards online services offered by Haryana Tourism Corporation. The CMIN/DF value of 1.374 indicates that the chi-square value relative to the degrees of freedom is reasonably close to 1, suggesting a good fit of the model to the data. The NFI (Normed Fit Index) of 0.933 compares the proposed model with a null model and shows a good fit, with values closer to 1 indicating better fit relative to the baseline. Similarly, the IFI (Incremental Fit Index) of 0.981 demonstrates a high level of fit by evaluating the improvement over a null model. The TLI (Tucker-Lewis Index) of 0.976 also supports a strong fit, with values approaching 1 suggesting a good fit of the model to the observed data. The CFI (Comparative Fit Index) of 0.981 compares the proposed model with a null model and similarly indicates that the model explains the data well. The exceptionally low RMSEA (Root Mean Square Error of Approximation) value of 0.001 indicates an exceptionally close fit of the model to the covariance structure of the data. Collectively, these indices validate that the two identified components effectively capture the key dimensions influencing consumer perceptions. This confirmation through CFA enhances confidence in the identified components' ability to represent and explain consumer attitudes towards Haryana Tourism Corporation's online services, supporting strategic decision-making and improvement efforts aimed at enhancing consumer satisfaction and service quality in the online domain (Kotler et al., 2023).

Linking Empirical Findings with Sustainable Development Goals (SDGs)

While the study initially establishes a conceptual linkage between online tourism services and Sustainable Development Goals (SDGs), a deeper analytical interpretation of the empirical findings provides more concrete evidence of these contributions. The factor analysis results derived from EFA and CFA offer measurable insights into how specific dimensions of consumer awareness and perception align with and support SDG targets.

Firstly, the identified factors related to accessibility and usability (CP1–CP5) and general awareness (CA1–CA3) demonstrate a direct contribution to SDG 9: Industry, Innovation, and Infrastructure. The moderate to high factor loadings and mean scores (ranging between 3.07 and 3.43) indicate that users perceive HTC’s digital platforms as reasonably accessible and functional. This reflects the strengthening of digital infrastructure and the adoption of innovative service delivery mechanisms in tourism. Improved usability and digital reach contribute to building resilient infrastructure and fostering innovation in service ecosystems.

Secondly, the factors associated with service quality and reliability (CP6–CP9) and usage and satisfaction (CA12–CA15) substantiate contributions to SDG 8: Decent Work and Economic Growth. The extracted components explaining over 64% of total variance suggest that efficient and reliable online services enhance customer satisfaction and repeat usage intentions. This, in turn, can stimulate tourism demand, increase service transactions, and indirectly support employment generation and economic activity within the tourism sector.

Further, the dimensions of cost-effectiveness and time efficiency (CP10–CP11) align with SDG 12: Responsible Consumption and Production. The findings indicate that respondents perceive online services as resource-saving and efficient, reducing the need for physical interactions and paperwork. This promotes more sustainable consumption patterns by optimizing resource utilization and minimizing operational inefficiencies.

Additionally, the factors related to privacy, security, and transparency (CP12–CP14) and customer support and personalization (CP15–CP18) contribute to SDG 11: Sustainable Cities and Communities. Reliable and secure digital tourism services enhance user trust and improve the overall tourism experience, which is essential for developing inclusive, safe, and sustainable tourism ecosystems at the regional level.

Finally, the integration of multiple service dimensions—such as technological advancement (CP19–CP21) and promotional effectiveness—reflects alignment with SDG 17: Partnerships for the Goals. The digital transformation of tourism services necessitates collaboration between government bodies, technology providers, and service stakeholders. The empirical results indicate that such integrated efforts are perceived positively by users, thereby reinforcing the importance of multi-stakeholder partnerships in achieving sustainable tourism development.

Overall, the empirical findings of this study move beyond descriptive associations and provide measurable evidence that digital service quality, accessibility, efficiency, and user satisfaction are critical drivers in advancing multiple SDGs. The factor structure and variance explained by the model quantitatively support the role of digital

tourism services in fostering sustainable economic growth, innovation, responsible consumption, and inclusive community development.

5. CONCLUSION

This study delved into consumer awareness and perception of online services offered by Haryana Tourism Corporation, employing robust quantitative methods including demographic analysis, reliability analysis, exploratory factor analysis (EFA), and confirmatory factor analysis (CFA).

The study revealed a predominant participant base in the 31-45 age group, comprising mostly homemakers, employed individuals, and self-employed/business owners. This demographic diversity provided comprehensive insights into varied perspectives on Haryana Tourism Corporation's online services.

The survey instrument demonstrated exceptional internal consistency (Cronbach's Alpha = 0.976), indicating high reliability across all 36 items measuring consumer awareness and perception.

Mean scores (ranging from 3.07 to 3.43) indicated a moderate level of agreement among respondents regarding awareness and perception items. Standard deviations (ranging from 1.175 to 1.362) reflected reasonable variability in participant perceptions, underscoring a generally positive sentiment towards Haryana Tourism Corporation's online services.

Through EFA and CFA, the study identified two key components: general awareness and specific service awareness. These components collectively explained 66.726% of the variance, highlighting factors such as accessibility, service quality, cost-effectiveness, and technological advancements that significantly influence consumer awareness.

EFA and subsequent CFA validated two distinct components influencing consumer perception: service accessibility and usability, and service quality and reliability. These components, supported by strong model fit indices (CMIN/DF = 1.374, RMSEA = 0.001, NFI = 0.933, IFI = 0.981, TLI = 0.976, CFI = 0.981), indicated robustness in capturing consumer perceptions effectively.

6. IMPLICATIONS OF THE STUDY

Managerial Implications

The study of consumer awareness and perception of online services offered by Haryana Tourism Corporation (HTC) presents several critical managerial implications. Firstly, the findings will provide HTC's management with a clear understanding of how well their online services are known among consumers. Management can invest in more aggressive digital marketing campaigns, leveraging social media platforms, search engine optimization (SEO), and online advertisements to boost visibility (Aklima, 2023). Targeted marketing efforts can be devised to reach specific demographics that exhibit lower awareness levels, ensuring a more efficient allocation of marketing resources.

Secondly, understanding consumer perception allows HTC to fine-tune their service offerings. Positive perceptions highlight areas of strength that can be further emphasized in marketing communications, while negative perceptions indicate aspects requiring improvement (Ibrahim et al., 2020). For instance, if users find the online booking system cumbersome or the customer support inadequate, HTC can prioritize these areas for development. Investing in user-friendly website interfaces, robust customer support, and secure transaction processes can enhance overall user satisfaction and loyalty (Hanif et al., 2024).

Moreover, the study can inform HTC's strategic planning and decision-making processes. Insights into consumer behaviour and preferences enable HTC to align their services more closely with market demands. HTC can allocate resources to develop and promote their mobile applications. Additionally, understanding the specific needs and preferences of different consumer segments allows for the customization of services, enhancing the overall user experience.

The study's findings also have implications for operational efficiency. By identifying which services are most valued by consumers, HTC can streamline operations to focus on these areas, potentially reducing costs and increasing profitability (Hadjielias et al., 2022). For example, if online tour packages are particularly popular, HTC can allocate more resources to developing diverse and attractive tour packages. This focus on high-demand services ensures that HTC's offerings remain competitive and appealing in the market.

Social Implications

The social implications of this study are equally significant. Firstly, enhancing consumer awareness of HTC's online services can contribute to the broader goal of digital inclusion. As more consumers become aware of and use digital services, it can foster greater digital literacy and comfort with online transactions among the general population (Nikou et al., 2022). This is particularly relevant in a region like Haryana, where digital literacy levels may vary widely. By promoting the use of online services, HTC can play a role in bridging the digital divide, ensuring that a broader section of the population benefits from the convenience and efficiency of digital transactions.

Secondly, improved consumer perception and satisfaction with HTC's services can enhance the overall tourism experience in Haryana. Satisfied tourists are more likely to share their positive experiences with others, either through word-of-mouth or online reviews (Kankhuni & Ngwira, 2022). This can contribute to a positive image of Haryana as a tourist destination, potentially attracting more visitors to the state. Increased tourism can have a cascading effect on the local economy, benefiting businesses, and creating job opportunities in sectors such as hospitality, retail, and transportation (Kariyapol & Agarwal, 2020).

Additionally, by addressing the specific needs and preferences of different consumer segments, HTC can ensure that their services are inclusive and accessible to all. For example, services that are easy to use for people of all ages and backgrounds can promote tourism among diverse demographic groups, including senior citizens and people with disabilities. This inclusivity can enhance social equity, ensuring that the benefits of tourism are widely shared.

Finally, the study can have implications for policy-making and governance. Insights from the study can inform government policies related to tourism development and digital transformation. For example, the findings can highlight areas where government support is needed, such as improving digital infrastructure or providing training programs to enhance digital skills among the population. By aligning their strategies with government initiatives, HTC can contribute to broader socio-economic development goals, promoting sustainable and inclusive growth in the region.

In conclusion, the study of consumer awareness and perception of online services offered by Haryana Tourism Corporation has far-reaching managerial and social implications. For HTC, the findings provide actionable insights to enhance marketing strategies, service quality, and operational efficiency. For the broader society, the study promotes digital inclusion, enhances the tourism experience, and supports socio-economic development. By leveraging these insights, HTC can not only improve its own performance but also contribute positively to the community it serves.

7. FUTURE SCOPE OF THE STUDY

While the present study provides valuable insights into consumer awareness and perception of online services offered by Haryana Tourism Corporation, certain limitations open avenues for future research.

Firstly, the study is geographically confined to the state of Haryana and focuses exclusively on domestic tourists. This restricts the generalisability of the findings to a broader tourism context. Future research can address this limitation by conducting comparative studies across different states or regions in India, which would enable a more comprehensive understanding of regional variations in digital tourism adoption. Additionally, extending the scope to include cross-country comparisons can provide global insights into how digital tourism services are perceived in different socio-economic and cultural settings.

Secondly, the present study does not include international tourists, whose expectations, digital behaviour, and service perception may significantly differ from domestic visitors. Future studies should incorporate overseas tourists to examine variations in awareness, usability perception, trust, and satisfaction with online tourism platforms. This would help tourism organizations design more globally competitive digital services.

Furthermore, the study adopts a cross-sectional research design, capturing consumer perceptions at a single point in time. Given the rapidly evolving nature of digital technologies, future research may employ longitudinal studies to track changes in consumer awareness, perception, and usage behaviour over time. Such an approach would provide deeper insights into digital adoption trends and the long-term effectiveness of online tourism initiatives.

In addition, future research may incorporate a wider set of variables such as educational background, income level, and travel frequency to better understand consumer segmentation and behavioural differences. The integration of advanced analytical techniques, such as structural equation modelling with mediating and moderating variables, can further enhance the robustness of findings.

Finally, emerging technologies such as artificial intelligence, virtual reality, and blockchain offer promising avenues for enhancing digital tourism services. Future studies can explore the role of these technologies in shaping

consumer experience, trust, and satisfaction, thereby contributing to more innovative and sustainable tourism ecosystems.

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