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Managing Consumer Confusion in Online Tourism: The Impact of AI on Decision Postponement

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Abstract

Background: *Tourism companies are available online with abundant choices which lead to consumer's confusion.* **Objective:** *The study aims to understand and analyse the impact of consumer confusion leading to decision postponement with role of artificial influence using stimulus organism response [SOR] model.* **Methodology:** *Mixed method research with both qualitative and quantitative approach has been performed and analysis is carried out using SPSS 27 for factor analysis and Smart PLS 4 for measurement and path analysis. A total of 284 self-filled questionnaire responses were used for examining the consumer confusion.* **Results:** *Through stimulus organism response model; the antecedents, consequences, mediators, moderators and the application of constructs in various contexts have been reported. A framework along with the questions and scope for the future research has been proposed.* **Conclusion:** *The study enlightened on how AI lead travel sites and websites offer similar packages to the consumers with minimal to no differences driving to confusion, creating difficulty in adapting the destination choice which in turn leads to decision postponement. This study provides insightful information and awareness for travel/tourism companies, tourists and academicians on how confusion affects decision making.*

Keywords: Consumer confusion, decision postponement, artificial intelligence, destination choice, information and communication technology

Introduction

Advancements in the technologies has trans created and transformed the managerial style in business management. The advancements are observed in all sectors including tourism. Technology has brought the cost to a greater extent (Sharma et al., 2023) and this opportunity is well utilised by the travel companies in making their operations quick and reachable. Therefore, accessibility of information in the fingertips has driven the consumers not only to look up multiple choices but also compare packages offered by different tour operators, flight bookings, accommodation options and many more.

Consumer's confusion (Chauhan & Sagar, 2021) may be defined as "A state of uncertainty that results from information evaluation during the decision-making leading consumers to delay their purchase decisions, thereby losing revenue. Researchers have accepted the finding that real-life processing of information is limited by the cognitive load of people and the complexity of choice, at times mixed up and impossible for consumers to make rational decisions in purchase. The concept, defined as a disrupted psychological condition, impacts processing tasks that entail similar, over abundant, or ambiguous information in the evaluation of a consumer. The three-dimensional construct might be classified into

similarity, overload, and ambiguity. Despite (Shiu, 2021) the consensus of many scholars who believe that confusion often leads to negative outcomes such as dissatisfaction, distrust, and disloyalty that pushes consumers to avoid making a choice, individuals might instead persist in deliberation to avoid conceding to a decision. Consequently, they would delay the purchase until more external information is gathered.

When consumers delay their decision (Xue & Jo, 2024), they will have the opportunity to overcome confusion and make an informed purchase choice that satisfies their needs. So long as the information clarifies itself, becomes more consistent, and less overwhelming, decision postponement is an effective strategy for reducing consumer confusion. For example, when the confusion becomes unbearable, consumers deliberately delay their purchase, allowing them to narrow down their product options, compare alternatives, refine their purchase objectives, and assess the additional information gathered.

Recent studies (Gao & Zhao, 2020) have shown that decision postponement takes place from confusing situations like choice overload, similar alternatives, and uncertain information. Companies are forced to extend resources to foster a longer buying cycle to have the potential buyer/ consumer.

However, these consumers may end up not purchasing from the company as expected. This situation increases the chances of other competitors getting hold of the consumers. As a result, decision postponement can lead to reduced returns on investment and cash flow challenges, which can adversely affect the profitability of a company. Thus, it becomes essential to mitigate the impact of confusion on consumers' decision postponement. The study holds considerable significance in understanding how consumer confusion, fuelled by abundant online tourism options, affects decision-making behaviour. By applying the Stimulus-Organism-Response (SOR) framework, it demonstrates how similarity, overload, ambiguity, and over-choice confusion act as cognitive barriers that delay consumers' final choices. Importantly, the moderating role of artificial intelligence highlights how AI-enabled tools, such as personalized recommendations, chatbots, and automated comparisons, can partially mitigate confusion, thereby reducing decision postponement. This contributes both theoretically, by extending the SOR model into online tourism and AI-driven contexts, and practically, by guiding tourism companies to design user-friendly platforms that minimize consumer confusion.

In marketing literature (Sharma et al., 2023), confusion/ consumer's confusion has been multifacetedly addressed. The similarity confusion is the tendency of consumers to perceive different products within a category as being visually and functionally alike. This situation arises because consumers often rely on visual cues such as images, colours, and designs when processing information. As a result, the similarity of these information sources can create confusion, ultimately influencing and altering consumers' purchase decisions. On the other side, online tourism comprises of information related to travel. To facilitate the travel needs (Xiang & Gretze, 2010), many platforms are made available with for information exchange through mediators like travel agents and travel companies, intermediaries for accommodation, transport and more. Technology seems growing enormously where in the interfaces like search engines, websites etc., provide quick information for all consumers i.e., travellers.

In the current environment people live in the state of sensory overload as social networking system has become part and parcel of their lives (Dang, 2020). With more availability and accessibility of information, consumers often find difficulty to choose and get confused amongst the alternatives. This also affects the information processing of the individuals and their decision making. As per Walsh and Mitchell (2010) consumer confusion is a state of awareness that an individual might experience when confronted with information which is similar, overloaded with over choice and ambiguous. The type of confusion occurs when people/ consumers share similar information through different sources and make themselves confused to identify accurate and reliable source (Walsh et al., 2010). Overload confusion occurs when there is abundancy of information where in over choice confusion occurs when the abundant information has abundant choices. Having limited cognitive abilities in consumers the confusions are felt when the information exceeds their threshold value (Edmunds & Morris, 2000). Ambiguity confusion (Wang & Shukla, 2013) may be due to misleading and unclear information which might have occurred due to complex usage of technological interfaces or mixed information upon the same destination.

Artificial Intelligence is a major tool in reshaping the Travel, Tourism and Hospitality industry. Tsaih and Hsu (2018) said, being an integral part of smart tourism technologies, AI helps in enhancing tourism experiences and assists tourists in planning itinerary. Technological breakthroughs in the recent past have had an impact on the tourism industry and led to innovations as per the choices and preferences of the tourists. AI is now being used in almost all sectors and hence tourism could not be an exception. It is closely connected to information-to-knowledge transformation, travel information search and retrieval, social media, social networking, social inspiration and many more (Zsarnoczky, 2017). Internet has created a boom in the sector of Tourism marketing and all the marketers from small scale to large enterprises has opted for the internet technology as one of their major marketing sources. A huge number of consumers are given an opportunity to interact with both the service providers and consumers in the form of company's offerings, customer satisfaction and feedback on the product (Kaur, 2017).

Stimulus Organism Response [SOR] is proposed by Woodworth in 1929 and was the first procedure to understand buyer behaviour of the consumer. This model is considered highly effective in understanding consumer decisions to accept and adopt a product or service, since it focuses on the cognitive appraisals of individuals, such as their concerns and enabling conditions. According to SOR; S refers to Stimulus received by a person, O persons' internal cognitive state and R is a behavioural response. Information Confusion with regards to the abundant data available on online tourism acts as a Stimulus. As the internal cognitive state of the person is affected by the external environment, it holds a variety of confusion such as similarity, overload, over choice, ambiguity acting as Organism leading to decision postponement as response. Artificial intelligence has penetrated, and technological advancements are being applied to handle the data and information which became a moderator/ meta cognitive element for this study.

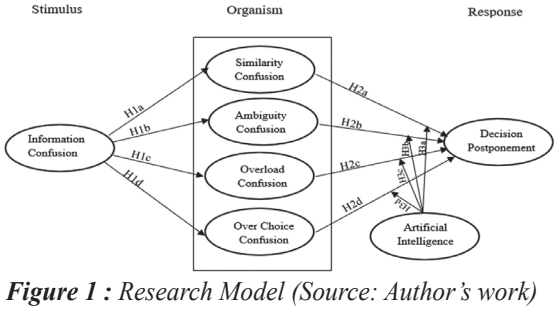

Figure 1 : *Research Model (Source: Author's work)*

H1: The information confusion as a stimulus has been categorised to similarity confusion (H1a), Ambiguity confusion (H1b), overload confusion (H1c) and over choice confusion (H1d), Information confusion shows a positive impact on H1a, H1b, H1c & H1d.

H2: The organism part comprising of similarity confusion (H2a), ambiguity confusion (H2b), overload confusion (H2c) and over choice confusion (H2d) are leading to decision postponement which is response.

H3: The role of moderator Artificial Intelligence is tested on the organism i.e., similarity confusion (H3a), ambiguity confusion (H3b), overload confusion (H3c) and over choice confusion (H3d). A mix of positive negative influence is observed where in overload choice is significantly contributed in mitigation/reduction of online tourism decision postponement.

Objectives:

- To examine the impact of information confusion on different dimensions of consumer confusion, namely similarity, ambiguity, overload, and over-choice confusion in the context of online tourism.
- To analyse the relationship between various forms of consumer confusion and decision postponement in tourism-related purchase decisions.
- To investigate the moderating role of artificial intelligence in mitigating the negative effects of consumer confusion on decision postponement.
- To apply the Stimulus-Organism-Response (SOR) framework in understanding how consumer confusion acts as a stimulus, influences cognitive states, and leads to behavioural responses in tourism decision-making.

Methodology

Research Design: The study adopted a quantitative research design using a structured questionnaire to measure constructs related to consumer confusion. The items were primarily adopted from existing literature, with slight modifications to align with current research objectives.

Locale: The research targeted frequent travellers who actively use the internet to book their travel necessities. Data collection was conducted online through a Google Form distributed via various social media applications.

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Sampling Design: A total of 365 responses were initially collected. After data screening, 284 valid responses were retained for the final analysis. The sample thus represents voluntary respondents who are regular internet users in the context of travel bookings.

Tools and Technique: The questionnaire comprised 27 items measured on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." The survey included demographic details followed by constructs capturing different dimensions of confusion—information confusion, similarity confusion, ambiguity confusion, over-choice confusion, overload confusion, artificial intelligence, and decision postponement.

Data and Statistical Analysis: SPSS 27 for factor analysis and Smart PLS 4 for measurement and path analysis.

Results and Discussion

Demographics of Respondents: Demographics (table 1) play a significant role in analysis. The study was performed over 284 samples out of which 185 were male and 99 were female contributing 65% and 35% respectively. It is observed that the maximum respondents were seen in between age of 31-50 years with 138 followed by 18-30 year with 103 and 43 respondents above 51 years contributing 36.2%, 48.5% and 15.3% respectively. The respondents who were using internet for tourism were highly educated i.e., done graduation, post graduation and more contributing 68% towards the study.

Table 1: *Demographics of Respondents*

Demographic Characteristics	N= 284	Percentage
Gender		
Male	185	65
Female	99	35
Age		
18-30	103	36.2
31-50	138	48.5
>51	43	15.3
Education		
High School or Less	127	32.0
Graduation	91	44.7
Post Graduation or more	66	23.3

Source: *Author's Work*

Factor Structure: To check the construct reliability (table 2) Cronbach's Alpha measures were measured for each construct. The Cronbach's Alpha score was observed to be > 0.7 for every construct which states that the data is highly reliable with the defined scales. The item in the study was amended to make the questionnaire fit into the current study. Exploratory Factor Analysis was performed with Principal component matrix for extraction and Varimax for rotation. The scale measures for factor loading have been set to 0.7 with 25 iterations. Using KMO Bartletts test, 0.924 measure of sample adequacy was achieved proving that the taken sample is adequate for the study. Principle component analysis extraction sum of squared loading is observed as 73.939% and kaiser varimax sum of squared loading is 73.939% stating a accepted correlation between variables and factors.

Table 2: *Construct Reliability & Validity- Cronbach Alpha Results*

Constructs/ Variables	Mean	Standard Deviation	Cronbach Alpha	Factor Loading
Information Confusion			0.931	
IC1: I often feel confused to choose tourism packages that fulfil my needs	4.211	0.685		0.927
IC2: Many Tourism websites make me confused to choose	4.165	0.767		0.922
IC3: It often makes me confused to buy packages		0.806		0.939
IC4: Sometimes I feel doubt on consistency of information provided in websites	4.151	0.753		0.918
	4.162			
Similarity Confusion			0.899	
SC1: Similarity in tourism websites often makes it difficult to detect and choose	4.222	0.653		0.919
SC2: Similar websites make me confused whether they are from same service providers	4.176	0.739		0.985
SC3: Packages in the advertisements look similar. I often can't distinguish with the package scores	4.162	0.784		0.973

Ambiguity Confusion			0.869	0.863
AC1: I often feel that websites should provide more information	4.127	0.879		0.896
AC2: I often feel the necessity to have a customer service support for clarifications on Tourism packages	4.190	0.750		0.840
AC3: I feel uncertain about essential features while purchasing packages	4.194	0.742		
Overload Confusion			0.872	
OLC1: There are many tourism websites. It often creates challenge in selecting one among the other	4.155	0.833		0.942
OLC2: There are lot of Tourism Packages. I often get confused to choose one that fulfil my need	4.194	0.723		0.929
OLC3: Many websites look alike. It is challenging to differentiate	4.215	0.707		0.907
Over choice Confusion			0.893	
OCC1: Sometimes it is hard to choose among various choices	4.204	0.732		0.855
OCC2: Many packages confuse me to choose	4.151	0.797		0.885
OCC3: Many websites confuse me to choose	4.222	0.669		0.970
Artificial Intelligence			0.948	
AI1: It feels good to see personalised recommendations	4.204	0.908		0.722
AI2: it is easy to compare multiple websites and make solutions using AI's Consistent information	4.176	0.950		0.744
AI3: AI shows the packages and prices with multiple choices on the same page	4.236	0.871		0.637
AI4: It is comfortable and easy as Chat bots and virtual assistants provide quick support services	4.229	0.950		0.656
AI5: AI helps me find the great deals at best prices on preferred timelines	4.183	0.965		0.742
AI6: I often feel it useful to find customer feedback and place information in AI integrated solutions	4.169	0.938		0.787
AI7: It is easy to make itinerary using AI by adding route maps, places to visit and nearby scenic locations.	4.176	0.972		0.734

Decision Postponement			0.923	
DP1: Postponing my decision to purchase a tourism package allows me to gather more information and make a better-informed choice	4.190	0.917		0.750
DP2: Delaying my decision to purchase a tourism package helps me explore better options and make a more satisfying choice	4.201	0.939		0.696
DP3: Having a wide variety of tour packages available allows me to take more time to select the option that best suits my preferences	4.190	0.884		0.691
DP4: Postponing a planned tourism package purchase allows me to gather more information and make a better travel decision	4.123	0.945		0.757

Source: *Author's Work*

The moderating role of Artificial Intelligence in table 2, Cronbach's Alpha for Artificial Intelligence is observed as 0.948 that infers the data is highly reliable for the study. The model summary results show a statistical significance of <0.001 which is <0.05 stating the data is significant. The correlation that is described as a common tool for analysis simple relationships amongst variables is measured as R. The R value in model summary is observed as 0.884 with all the predictors of confusion in organism segment giving a strong positive correlation. Cronbach's Alpha for Decision Postponement is observed as 0.923 which infers the data is highly reliable for this study with factor loadings >0.6.

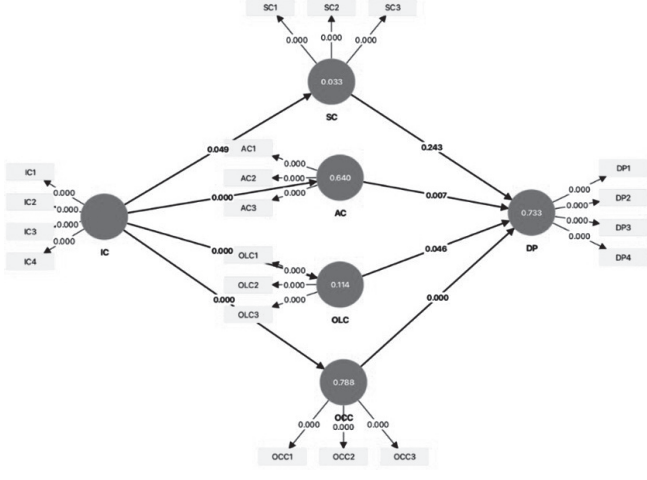

Figure 2: *Model Bootstrapping before Moderation – Smart PLS 4.0 Output*

Source: *Author's Work*

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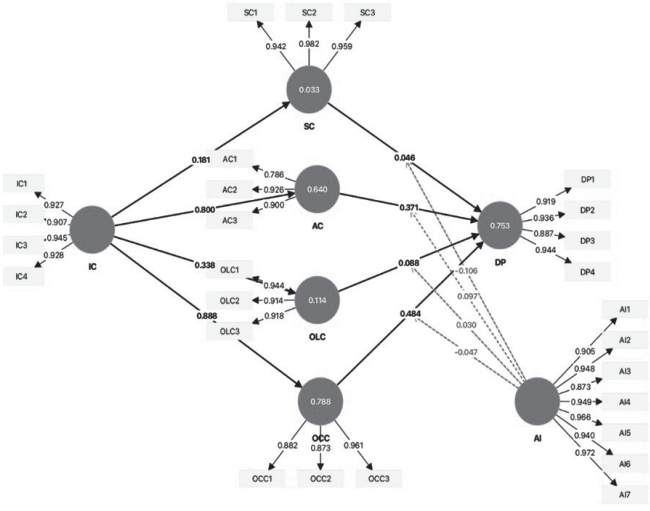

Figure 3: *Model after Running PLS SEM with AI as Moderator- Smart PLS 4.0 Output*

Source: *Author's Work*

Partial Least Square Structural Equation Modelling [PLS- SEM] was executed in Figure 1 with Information Confusion [IC] as independent variable leading to Similarity Confusion [SC], Ambiguity confusion [AC], Overload Confusion [OLC], Over Choice Confusion [OCC] driving towards Decision Postponement [DP]. After successfully running PLS Bootstrapping, it was observed, all P values as 0.000 which is <0.05 infers the significant relation amongst items in each variable. Co-efficiency of determination was observed by R square value which is 0.733 for the above table. When converted to percentage, the value is 73.3%. In Figure 2, with the introduction of AI as a moderator, the R square value observed a slight improved to 75.3% infers that there is a positive influence of AI regarding decision postponement. The item significance was maintained same as 0.000 after successful bootstrapping upon introducing AI as a moderator.

Standard Root Mean Square Residual [SRMR] value used to measure the model absolute fit was observed as 0.179 which was between 0 - 0.8 inferring a good model fit. Normed Fit Index [NFI] is to measure how well a model fit the data by comparing chi-square value to null chi-square value. The NFI was observed as 0.702 which was close to 1 inferring good model fit. The Chi-Square association amongst the variables was observed as 1603.07.

The findings reinforce prior literature indicating that consumer confusion is a multidimensional construct with negative outcomes such as dissatisfaction, distrust, and decision avoidance (Walsh et al., 2010; Shiu, 2021). The study confirms that similarity, overload, and ambiguity confusion significantly drive decision postponement, in line with (Gao & Zhao, 2020), who showed that confusing alternatives prolong the buying cycle. However, this research extends understanding by integrating artificial intelligence as a moderating factor. The results show that AI applications do not eliminate confusion but play a significant role in reducing overload and simplifying choice structures. This aligns with recent perspectives that AI enhances tourism experiences by aiding itinerary planning, offering personalized deals, and streamlining decision-making (Tsaih & Hsu, 2018; Zsarnoczky, 2017). The SOR model has proven to be a suitable lens for examining these relationships, illustrating how stimuli shape cognitive states, which ultimately affect behavioural responses.

The quantitative analysis confirmed that information confusion positively influences the four major dimensions similarity, ambiguity, overload, and over-choice confusion. In turn, these dimensions significantly contribute to consumers' decision postponement when booking tourism packages. Partial Least Square Structural Equation Modelling (PLS-SEM) revealed a strong explanatory power, with an R^2 value of 73.3%, which increased to 75.3% after including AI as a moderator, indicating its positive moderating effect. Factor analysis validated the measurement scales with Cronbach's alpha values above 0.7, ensuring reliability. The study also reported good model fit indices (SRMR = 0.179; NFI = 0.702). Overall, it establishes that consumer confusion is a key psychological barrier in online tourism, but AI-driven interventions can help reduce its adverse effects, thereby enabling consumers to make more confident and timely decisions.

Although this study makes significant contributions, it also opens pathways for future research. The present work is limited to frequent travellers using online booking platforms; future studies could extend the scope to include infrequent travellers, first-time tourists, or those relying on offline channels to capture a more holistic view of confusion in tourism. Longitudinal studies could examine how consumer confusion evolves over time, particularly with the increasing integration of generative AI tools and immersive technologies like augmented reality (AR) and virtual reality (VR) in tourism marketing. Cultural and demographic variations may also be explored by comparing samples across different

countries or regions, as cultural orientations may shape how consumers process abundant information. Beyond decision postponement, additional outcomes such as consumer trust, satisfaction, or loyalty could be examined to understand long-term behavioural consequences. Finally, future studies can integrate qualitative approaches, such as interviews or focus groups, to uncover deeper psychological mechanisms behind confusion and its mitigation through AI-driven solutions.

Conclusion

Artificial Intelligence is widely being used in tourism sector. The study found that confusion occurred due to similarity, over choice, overload and ambiguity impacts the consumers cognitive state internally leading to decision postponement. With involvement of Artificial Intelligence, there seem a reduction in information overload helping the consumers/travellers to enhance their online tourism thereby reduction of tourism decision postponement. As this study opted for a moderation of Artificial Intelligence, researchers must focus on smart tourism technologies and other aspects regarding consumer confusion outcomes. Huge scope is seen as there are very few studies performed on confusion and consumers' confusion specially in tourism sector.

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