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Impact of Perceived Ease of Use and Usefulness on the Online Experience: A Customer- Centric TAM Model Perspective for Aviation sector

Mahasweta Saha[1], Deepankar Roy*[2], Samrat Ray[3]

[1]Assistant Professor, National Institute of Bank Management (NIBM), Kondhwa, Pune-411048,
Email ID: mahasweta_saha@nibmindia.org
[2*]Associate Professor, National Institute of Bank Management (NIBM), Kondhwa, Pune-411048,
Email ID: d_roy@nibmindia.org
[3]Director, Academic Skill Development.
Email ID: samratray@rocketmail.com
Corresponding Author
Deepankar Roy,
[2]Associate Professor, National Institute of Bank Management (NIBM), Kondhwa, Pune-411048,
Email ID: d_roy@nibmindia.org

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KEYWORDS

Perceived Usefulness, Perceived Ease of Use, Online Experience, Customer satisfaction, purchase intention, TAM model.

ABSTRACT

Purpose- The aim of the study is to examine the impact of perceived ease of use (PEOU) and perceived usefulness (PU) of the AI applications introduced in the aviation sector on the online experience (OE) of the customers leading to customer satisfaction (CS) and resulting in purchase intention (PI) with mediating role of OE.

Design/methodology/approach- A conceptual model is developed to examine the impact of PEOU and PU on OE leading to CS and PI with mediating role of OE based on TAM model. 261 responses were obtained using a questionnaire and analyzed using Structural Equation Modelling (SEM) and Hayes Macros.

Findings- The results reveal that PEOU and PU have significant impact on OE. OE is found to have significant impact on CS and CS has a strong significant impact on PI. The indirect impact of PEOU on CS via OE, PU on CS via OE and is found to be significant proving strong mediating role of OE.

Originality- This study provides empirical evidence to all the direct and unique indirect relationships in the model. The mediating role of OE between two paths- PEOU and CS, PU and CS has not been explored in the previous studies. Previous studies have evaluated technology adoption using TAM model. This study evaluates the OE of the customers who are using AI applications for booking their airline tickets.

Practical Implications- The conceptual model can be used by the aviation industry marketers to evaluate customer's online experience and their satisfaction level. Based on the outcome, they may redesign and develop their online products and AI applications that are easy to use and useful for the customers. They may provide personalized solutions that are being used by customers for booking airline tickets.

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1. INTRODUCTION

AI tools and technologies including recommendation engines, chatbots, and virtual assistants, and dynamic algorithms enable businesses to offer customized experiences and increase operational efficiency (Rahman et al., 2023). Artificial intelligence applications are changing the approach of service industries, specifically aviation sector. AI based applications can personalize interactions, predict the customer preferences, improvise the service delivery processes. Using AI algorithms, huge amount of data can be analyzed for offering customized flight recommendations, managing bookings, assisting through chatbots, and providing real-time updates. Using predictive analytics, airlines can forecast preferences of customers and subsequently offer them customized travel options enhancing satisfaction and loyalty (Chakraborty et al., 2021). Customers may prefer booking from individual airline websites or travel booking websites while planning for a holiday. Technological advancements like artificial intelligence (AI) applications/smart assistants/virtual agents/chatbots that are available in the airline or the travel booking websites strongly affect the online experience of the customers. Ease and usefulness of the technological platforms (including AI applications) may improvise the online experience of the consumers. Further, variables like 'perceived ease of use' and 'perceived usefulness' associated with the technological advancements may impact the customer satisfaction and their purchase intention while booking their flights.

In this era of technology upgradation, it is important to explore the customer interaction with these advanced technologies specifically in the aviation sector. Also, it is worth exploring the technology adoption scenario amongst the customers that will drive their purchase intention.

Past studies have applied TAM model to investigate the factors that influence user intention to use any technology. TAM identifies the key factors behind the technology acceptance. Also, it provides strong theoretical foundation for exploring that how perceived usefulness, ease of use, satisfaction, influence user behavior including their purchase intention which is critical for the aviation industry in case of new AI-based applications like smart assistants, chatbots etc. This study is not limited to exploring technology adoption of AI applications in the aviation sector, however, our study has uniquely deployed TAM model to explore user behavior in terms of their online experience that drives their customer satisfaction leading to purchase intention.

A conceptual model is developed with variables like perceived ease of use (PEOU), perceived usefulness (PU), online experience (OE), customer satisfaction (CS), and purchase intention (PI). Online experience has been scarcely used the previous studies. OE has been conceptualized based on the online search process. There are some direct relationships (PEOU-OE, PU-OE, PEOU-CS, PU-CS, CS-PI) and some indirect relationships (PEOU to CS via OE, PU to CS via OE) in the model. The results reveal that all the direct relationships are supported and the mediating role of online experience is supported. Online experience strongly mediates the relationships between PEOU-CS and PU-CS.

The outcomes of the study provide important theoretical and managerial implications. In previous studies, TAM model is deployed to examine any new technology adoption. However, this study explores the impact of TAM model constructs like PU and PEOU on the OE and satisfaction of customers which is a unique contribution and an extension of TAM model usage. This study assumes that if a user is able to adopt the technology based on its easiness and usefulness, then the user will have a satisfying online experience in booking the airline tickets. The aviation industry marketers may use this model to evaluate customer's online experience and their satisfaction level. Based on the outcome, they may redesign and develop their online products and AI applications that are easy to use and useful for the customers. They may provide personalized solutions that are being used by customers for booking airline tickets.

2. LITERATURE REVIEW AND HYPOTHESIS FORMULATION

2.1 Theoretical Foundation

Past studies have applied TAM model to investigate the factors that influence user intention to use any technology. A study by Al-Gahtani (2016) revealed that perceived usefulness, ease of use, and trust are important factors that influence user intention. TAM and value-based adoption framework has been used to explore the students' perception of chatbots in learning (Al-Abdullatif, 2023). The findings revealed that perceived usefulness and ease of use are important factors in influencing students' acceptance of chatbots. Hence, this study deploys perceived ease of use and usefulness of using AI applications in booking airline tickets.

A study revealed that TAM model can provide insights on the factors that strongly influence the user intention to use chatbots for booking airline tickets. The study results reveal that perceived ease of use and usefulness are important factors. TAM identifies the key factors behind the technology acceptance. Also, it provides strong theoretical foundation for exploring that how perceived usefulness, ease of use, satisfaction, influence user behavior including their purchase intention which is critical for the aviation industry in case of new AI-based applications like smart assistants, chatbots etc. By leveraging TAM, our study can examine factors that drive customer satisfaction resulting in purchase intention after adopting the AI based technologies for the booking of airline tickets.

2.2 Perceived Ease of Use (PEOU) and Online Experience (OE)

Perceived ease of use (PEOU) is defined as 'the degree of ease associated with consumers' use of technology (Davis, 1989). Consumers may adopt and enjoy using a new technology if they feel the new technology is effortless and comfortable (Davis, 1989). PEOU is all about how easy is to use a new technology (Davis, 1989). If the consumers find using technological advancements such as AI/Smart assistants/virtual agents/chatbots easy to use, then that will have a fulfilling and satisfactory online experience. Hence, we hypothesize that PEOU may significantly impact the online experience (OE) of consumers while booking flight tickets.

H1: PEOU significantly influences OE of consumers.

2.3 Perceived Usefulness (PU) and Online Experience (OE)

Perceived usefulness (PU) refers to the perception of the users (based on their beliefs) about the usage of technologies that may enhance their work performance (Davis, 1989). PU is defined as an increase in an individual's ability to perform work while utilizing a particular technology (Davis, 1989). The usefulness of a technological advancements such as (AI/Smart assistants/virtual agents/chatbots) may significantly improvise the online experience of consumers while booking airline tickets. Thus, we hypothesize that PU may strongly influence online experience of the consumers.

H2: PU positively impacts OE of consumers.

2.4 Online Experience (OE) and Customer Satisfaction (CS)

Online experience (OE) is conceptualized primarily based on the online information searching behavior of consumers based on Law et al. (2014). The online experience is measured using 7 items adapted from Lee et al. (2020). If a consumer finds hotel's webpage informative, enjoyable, easy to find and use, then the consumer will be satisfied. Thus, we hypothesize that OE may strongly influence the CS of customers.

H3: OE positively impacts CS of consumers.

2.5 Perceived Ease of Use (PEOU) and Customer Satisfaction (CS)

Perceived ease of use (PEOU) is defined as 'the degree of ease associated with consumers' use of technology (Davis, 1989). Consumers may adopt and enjoy using a new technology if they feel the new technology is effortless and comfortable (Davis, 1989). PEOU is all about how easy is to use a new technology (Davis, 1989). If a consumer finds any technology/process/webpage/system to be effortless and ease of using the same to be good, then it may develop a feeling of fulfilment and satisfaction. Thus, we may hypothesize that PEOU may strongly influence CS of consumers.

H4: PEOU positively impacts CS of consumers.

2.6 Perceived Usefulness (PU) and Customer Satisfaction (CS)

Perceived usefulness refers to the perception of the users (based on their beliefs) about the usage of technologies that may enhance their work performance (Davis, 1989). PU is defined as increase in an individual's ability to perform work while utilizing a particular technology (Davis, 1989). If a consumer finds any technology/process/webpage/system useful then it may develop a feeling of fulfilment and satisfaction. Thus, we may hypothesize that PU may strongly influence CS of consumers.

H5: PU positively impacts CS of consumers.

2.6 Customer Satisfaction (CS) and Intention to Purchase (IP)

CS emerged as a dominant factor in marketing literature in the 1980s considered by firms and their managers (Anderson & Sullivan, 1993; Churchill & Surprenant, 1982) to gain competitive advantage (Müller, 1991; Rust & Zahorik, 1993; Tam, 2004). Oliver (1997) proposed that CS refers to the Customer' 's reaction based on the state of fulfillment vis a vis his/her judgment of the fulfilled state. If a customer is satisfied with the online experience with the hotel's webpage, then he/she may develop an intention to book the same. Thus, we hypothesize that CS may strongly influence the 'intention to purchase' of customers.

H6: CS positively impacts IP of consumers.

2.7 Impact of PEOU on CS via OE

If a consumer finds any technology/system/webpage related to the hotel booking process to be effortless and easy to use, then it may improve their online experience and increase CS. Further, we in sub-section 2.3, we have provided theoretical underpinnings of the positive direct relationship between OE and CS. Hence, we hypothesize that OE may mediate the relationship between PEOU and CS.

H7: OE may mediate the relationship between PEOU and CS.

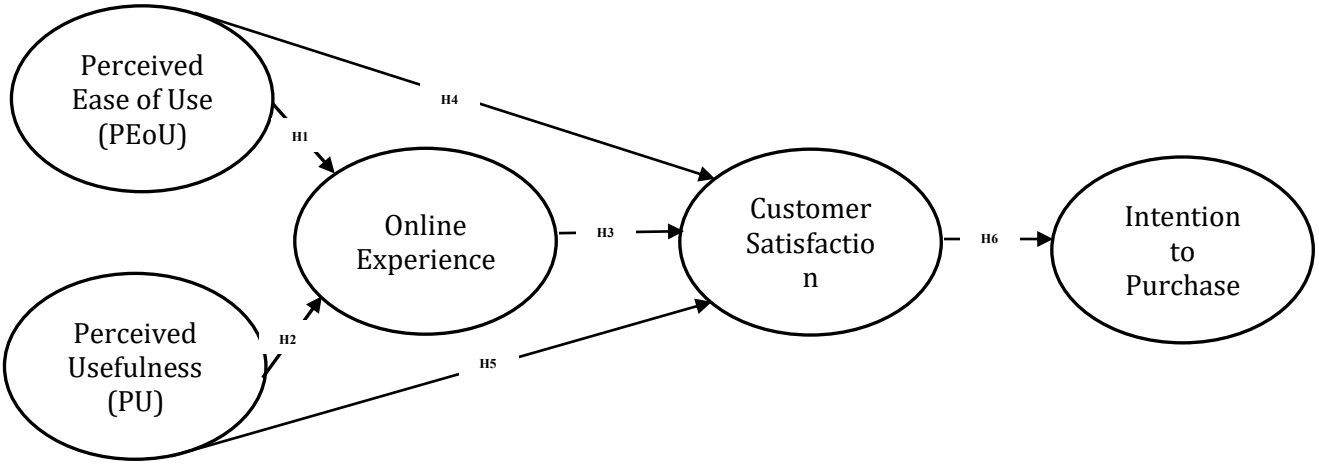
2.8 Impact of PU on CS via OE

If a consumer finds any technology/system/webpage related to the hotel booking process to be useful, then it may improve their online experience and increase CS. Further, we in sub-section 2.3, we have provided theoretical underpinnings of the

positive direct relationship between OE and CS. Hence, we hypothesize that OE may mediate the relationship between PU and CS.

H8: OE may mediate the relationship between PU and CS.

Conceptual Model



3. METHODOLOGY ADOPTED

Sample and Data Collection-

The sampling unit of this research work comprises the users who use technological advancements (AI/Smart assistants/virtual agents/chatbots) for booking flight tickets. We have considered the respondents from different parts of India. The questionnaires have been administered both in online and offline modes. A total of 263 respondents were involved to obtain the data. The demographic data of the respondents is given in Table 1.

Table 1: Demographic Profile

Variable	Description	Frequency (n=263)	Percent (%)
Gender	Female	161	61.21%
	Male	102	38.78%
Age (in years)	18-25	98	37.26%
	26-35	48	18.25%
	36-45	59	22.43%
	46+	58	22.06%
Education	Under-Graduation (UG)	98	37.26%
	Post-Graduation (PG)	134	50.95%
	Others (O)	31	11.78%
Occupation	Business Owner	32	12.16%
	Employed	97	36.88%
	Self Employed	2	0.76%
	Student	70	26.66%
	Retired	1	0.38%
	Others	61	23.19%

Measures

The first section of the instrument had respondent's demographic information and the second section had statements related to various constructs considered in the study. The respondents are requested to provide their ratings on a 7-point Likert scale. The perceived usefulness was measured using 4 items, was adapted from Oh et al. (2013), Davis (1989), Kaushik et al (2015), and Kim et al. (2009) and perceived ease of use having 4 items was adapted Oh et al. (2013), Davis (1989), and Kim et al. (2009). The customer satisfaction was measured using 3 items, was adapted from Ha and Janda (2008) and Sahadev and Purani (2008). The online experience was measured using 6 items which was adapted from Lee et al. (2020). The purchase intention was measured using 3 items, adapted from Gefen (2000) & Jarvenpaa et al. (2000).

Model estimation and results

We performed confirmatory factor analysis using IBM AMOS Version 22 to evaluate the measurement model. Using IBM SPSS Version 26 and Hayes Macros Version 3.5 (Model 2), the hypotheses were investigated.

Assessment of the Measurement model

It was determined whether the measurement model's convergent validity, internal consistency (composite reliability), and internal reliability (Cronbach's alpha) met the criteria. The construct validity was assessed using the factor loadings, average variance extracted (AVE), and Cronbach reliabilities (α). The convergent validity of the constructs was established by the composite reliabilities (C.R.) scores which are greater than the threshold of 0.7 & AVE values of all the constructs are greater than 0.5 (Hair et al., 1998) as shown in Table 2. As indicated in Table 2, each construct's Cronbach's alpha (α) coefficients were above 0.7, which was considered satisfactory (Nunnally and Bernstein, 1994). Further, the discriminant validity helped conclude that the factors are distinct.

Table 2: Reliability and Validity Estimates

Constructs	Standardized loading
Perceived Ease of Use (PEOU) (Cronbach alpha (α): 0.889, AVE: 0.661)	
PEOU1. Chatbots/smart assistants/any other AI technology requires little mental efforts to plan my travel.	0.793
PEOU2. It is easy to use Chatbots/smart assistants/any other AI technology for my travel plan and booking.	0.819
PEOU3. My interaction with chatbots/smart assistants/any other AI technology is clear and understandable for planning my tours.	0.787
PEOU4. Chatbots/smart assistants/any other AI technology is simple to use for travel planning and booking.	0.852
Perceived Usefulness (Cronbach alpha (α): 0.941, AVE :0.811)	
PU1. Chatbots/smart assistants/any other AI technology are useful for my travel planning.	0.826
PU2. Chatbots/smart assistants/any other AI technology for improve the efficiency of my travel planning.	0.890
PU3. Chatbots/smart assistants/any other AI technology improve my performance of travel planning (save time).	0.964
PU4. Chatbots/smart assistants/any other AI technology for improve the efficiency of my travel planning.	0.917
Online Experience (OE) (Cronbach alpha (α): 0.870, AVE :0.531)	
OE1. I have searched the Internet and look into the webpage before booking the flights.	0.592

OE2. I did not have any problems finding information about these flights before making decisions to book these flights.	0.636
OE3. Information on the airline's webpage was very helpful.	0.773
OE4. Information on the airline's SNS was very helpful.	0.815
OE5. The airline's webpage was easy to find and use.	0.881
OE6. I have enjoyed surfing the web and using latest technologies for gathering information about this flight.	0.682
Customer Satisfaction (CS) (Cronbach alpha (α): 0.862, AVE :0.693)	
CS1. I am satisfied with the airline webpage.	0.901
CS2. My purchases from this airline website are quite satisfactory.	0.883
CS3. I am very much satisfied with all the details given in the airline website.	0.700
Purchase Intention (PI) (Cronbach alpha (α): 0.778, AVE :0.500)	
PI1. I am likely to purchase on this airline website.	0.778
PI2. I am likely to recommend this airline website to my friends.	0.608
PI3. I am likely to make another purchase from this airline website if I need to book other flights.	0.857

Table 3: Measurement Model Evaluation: Discriminant Validity

	PEOU	**PU**	**OE**	**CS**	**PI**
PEOU	**0.813**				
PU	0.763	**0.900**			
OE	0.670	0.727	**0.729**		
CS	0.705	0.698	0.504	**0.832**	
PI	0.552	0.609	0.602	0.628	**0.707**

Assessment of the Structural model

Direct Effects

There is the positive association between PEOU and OE ($\beta_{PEOU\text{-}OE}$=0.448, p < 0.001). Hence, H1 was supported. The study results reveal that PU have a positive impact on OE ($\beta_{PU\text{-}OE}$=0.524, p<0.001). Hence, H2 was confirmed**.** The findings show that OE does have a significant positive impact on CS ($\beta_{OE\text{-}CS}$=0.835, p<0.001). Hence, H3 was supported. Additionally, the findings reveal that PEOU does have a significant positive impact on CS ($\beta_{PEOU\text{-}CS}$=0.167, p<0.001). Therefore, H4 was supported. Moreover, the findings reveal that PU does have a significant positive impact on CS ($\beta_{PU\text{-}CS}$=0.012, p<0.001). Hence, H5 was supported. The results reveal that CS have a strong positive impact on PI ($\beta_{CS\text{-}PI}$ =0.937, p<0.001). Hence, H6 was confirmed. The results are given in Table 4.

Mediated Effects

The mediation effects were evaluated using IBM SPSS version 26 and Hayes Macros version 3.5. (Model 4). We looked at the impact of two indirect paths: a) PEOU on CS via OE b) PU on CS via OE. PEOU has a significant (β=0.3542) indirect influence on CS via OE, with a CI of (0.2873, 0.4149) that excludes zero. Hence, H7 is supported. In addition to this, PEOU's direct impact on CS is supported (H4 supported). The effect of PEOU on CS via OE has a mediation ratio (PM) of 0.5734. As a result, OE acts as a partial mediator between PEOU and CS. Further, PU was found to have a substantial (β=0.3858)

indirect influence on CS via OE with a CI of (0.2977, 0.4785) that excludes zero. H8 is supported. Also, important is the direct impact of PU on CS (H5 supported). The effect of PU on CS via OE has a mediation ratio (PM) of 0.6547. As a result, this shows that OE acts as a strong mediator between PU and CS. The results are given in Table 4.

Table 4. Parameter estimates of the hypothesized models

Direct Effects

Estimated Path	Path coefficient (β)	p-value	Result
H1: Perceived Ease of Use⟶ Online Experience	0.448	***	Supported
H2: Perceived Usefulness⟶ Online Experience	0.524	***	Supported
H3: Online Experience ⟶ Customer Satisfaction	0.835	***	Supported
H4: Perceived Ease of Use⟶ Customer Satisfaction	0.167	***	Supported
H5: Perceived Usefulness⟶ Customer Satisfaction	0.012	***	Supported
H6: Customer Satisfaction⟶ Purchase Intention	0.937	***	Supported

Indirect Effects

Estimated Path	Effect		Confidence Interval		Result
		P_M	Lower limit	Upper limit	
H7: Perceived Ease of Use ⟶ Customer Satisfaction via Online Experience	0.3542	57.34%	0.2873	0.4149	Supported
H8: Perceived Usefulness ⟶ Customer Satisfaction via Online Experience	0.3858	65.47%	0.2977	0.4785	Supported

Total Effects

Estimated Path	Path coefficient	p-value	Result
H7: Perceived Ease of Use⟶ Customer Satisfaction via Online Experience	0.6177	***	Supported
H8: Perceived Usefulness ⟶ Customer Satisfaction via Online Experience	0.5893	***	Supported

Notes: *p<0.1; **p < 0.05; ***p < 0.01; n.s. refers to non-significant. 95% CI refers to the 95% Confidence Interval obtained using bootstrapping procedure (conducted with 5,000 sub-samples); "β" refers to the standardized path (beta) coefficient, "PM" refers to mediation ratio, indirect effect to total effect.

4. CONCLUSION

Theoretical Implications

This study is based on the context of the new technology development like AI applications that are being used by customers for booking airline tickets. The TAM model is deployed in this study to explore the role of the constructs-PEOU and PU on the online experience of customers. Second, the impact of PEOU on PU on customer satisfaction developing purchase intention for booking airline tickets is explored. TAM model is being extensively used in the previous studies for examining the user intention to adopt and use the new technologies in different industries. In the study, TAM model constructs like PU and PEOU is being used to affect the OE of customers and their satisfaction which is a unique contribution and an extension of TAM model usage. This study assumes that if a user is able to adopt the technology based on its easiness and usefulness, then the user will have a satisfying online experience in booking the airline tickets. The study findings are relevant in the context of huge technological development like AI applications-using chatbots, virtual, and smart assistants that are being used by customers for booking airline tickets.

Managerial Implications

The managerial implications for the airline industry marketers and product experts who are involved in developing the customer facing AI applications are many- the 'usefulness' and 'ease of use' of using any new technological applications are

important. If a customer finds any technology/system/processes/websites easy to use and useful, then their online experience will be improvised with increased rate of interaction. This will further increase their satisfaction levels and their purchase intention for booking airline tickets. Customers want hassle free services specifically planning for a holiday and booking airline tickets. Customers would like to get the best options in terms of availability and cost while booking airline tickets. The airline can develop their own competitive advantage if the technological applications are easy to use and provide hassle free online experience. Hence, the aviation industry marketers may use this model to evaluate customer's online experience and their satisfaction level. Based on the outcome, they may redesign and develop their online products and may provide personalized solutions that are being used by customers for booking airline tickets.

Limitations and Future Directions for Research

This research study significantly contributes towards the marketing literature; however, it has some limitations. The study confirms the strong impact of TAM model constructs- PEOU and PU on the online experience and satisfaction of consumers who are using AI applications and advanced technologies for searching and booking airline tickets. Further, mediating role of online experience is supported along with direct effect of customer satisfaction on the purchase intention of customers.

The study findings are primarily applicable in the aviation sector and its customers in growing markets like India. However, future studies may investigate the relevance of the proposed conceptual model and its hypothesis for specific online service industries and confirm the findings thereof. A total of 232 responses were obtained in this study, however, future research studies could consider a bigger sample for the generalization of the findings of the study.

Many consumers are reluctant in searching online information and performing online transactions due to the sense of risk, as they have to share their personal and financial information. Future studies may focus on the role of TAM constructs on trust and its impact on purchase intention

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