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Empirically Analysing the Factors Influencing the Organization's Adoption of an AI-Based Chatbot for Air Ticket Reservation

Sudati Kumari[1*], Totakura Bangar Raju[2], Shweta Agarwal[1]

[1] School of Business, University of Petroleum and Energy Studies (UPES), Dehradun 248007, India
[2] School of Maritime Management, Indian Maritime University (IMU), Chennai 600119, India

Corresponding Author Email: Sudati@ddn.upes.ac.in

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ABSTRACT

The aviation industry is experiencing a rapid digital transformation driven by globalization, technological advancements, and evolving customer expectations. Among these technologies, AI-based chatbots have emerged as a powerful tool to streamline operations, enhance customer service, and support internal business functions. However, their adoption in air ticket reservation services is still in its early stages. This study aims to provide innovative insights into understanding the factors that determine the adoption of AI-based chatbots for air ticket reservations from the organization's perspective. The study introduces two new constructs, diversity and sensibility, and conceptually integrates the "Technology Organization Environment" theory and the "Diffusion of Innovation" theory. Data from 154 respondents were modeled using PLS-SEM, suitable for models with many variables and small sample sizes. The finding reveals that the organization's technical capability is a key factor influencing the adoption. Diversity, referring to the chatbot's multifunctionality, promotes broader acceptance. Moreover, the impact of sensibility on adoption intention posits that a user-friendly design of the chatbot that enhances the "look" and provides a sense of human touch significantly increases the adoption intention. The relative advantage of AI-based chatbots on adoption illustrates that among all other ticket reservation channels, they prove to be the most efficient and profitable. Also, the complexity and government involvement were identified as relevant predictors of adoption. This study provides valuable insights for organizations and stakeholders and offers both theoretical and practical implications. The study concludes with limitations and proposes directions for future research.

1. INTRODUCTION

AI-based chatbots have been a major communication breakthrough in the aviation business. It is defined as a software that interacts with the user in either written or spoken dialogue through the use of artificial intelligence technologies [1]. Since 2016, AI-based chatbots have been used in various fields, like marketing, grocery e-commerce [2], health care, entertainment, education, airlines [3], and ticket booking [4].

To meet the technological advancements of the air industry, globalization of the aviation sector, growth in tourism through air, and increasing demand for air travel, the aviation industry has undergone a massive transformation [5-8]. Indeed, the overall aviation industry has improved itself through this technological innovation tool known as an AI-based chatbot. A report by Société Internationale de Télécommunications Aéronautiques (SITA) shows that by 2023, approximately 68% of airlines and around 42% of airports will implement AI-based chatbot services [9].

The aviation industry adopted AI-based chatbots for its internal communication [10], training [11], employee support, recruitment [12], query solving [13], baggage handling [14], guiding passengers at airports [14, 15], and for air ticket consultation [4]. It reduces the workload of customer service agents by 75% [16]. However, many other applications of AI-based chatbots are still at their early stage, particularly concerning the ticket reservation system, in spite of the fact that it is considered one of the important sources for revenue generation.

Literature depicts that research studies on AI-based chatbots in the air sector have primarily focused on their design [17], users' perception towards adoption [17, 18], employee perception towards acceptance and adoption [19], and organizational factors responsible for their implementation in different customer services [20]. Previous studies show that AI-based chatbots have been used for internal purposes, such as revamping employee communication [21], language training of cabin crew [11], managerial works [19, 22], etc, in the aviation industry. A report by Deloitte states that employees can dedicate only 1%, i.e., 4-5 minutes daily of their work time to learning. Indeed, the application of an AI-based chatbot can help utilize this limited time. Furthermore, Gartner's report posits that by 2022, 70% of the workers engaged in white-collar occupations will interact every day with an AI-based chatbot, leading to more investment by the organization in chatbot development and deployment [23]. The above literature depicts the importance of AI-based chatbots in the air industry. However, the ticket reservation, which is considered one of the important sectors for revenue generation in the aviation industry, has been overlooked, leading to the following gaps:

1) Limited studies have been done to analyse the factors responsible for the adoption of AI-based chatbot for ticket reservation from the aviation business perspective.
2) The perception towards the AI-based chatbot from the viewpoint of an air organisation has also not been explored.
3) The technical, organizational, and environmental factors regarding the adoption of AI-based chatbot have been overlooked in the literature involving the air industry.

Therefore, the current study aims to fill this gap through the following:

1) Identifying the factors responsible for the adoption of AI-based chatbot for ticket reservation in the aviation sector.
2) Analysing how and at what level these factors are interrelated, while adopting an AI-based chatbot for air ticket reservation.
3) The research constructs a framework by integrating the factors of the "Technology, Organization, and Environment" (TOE) theory and the "Diffusion of Innovation" (DOI) theory, to understand the adoption from an air organisation perspective.

Thus, making it the first study, to the best of our knowledge, in this context.

2. LITERATURE REVIEW

AI-based chatbot is defined as a type of system that functions independently, learn and adjusts according to its users, responds according to the surroundings, and uses "natural language processing (NLP) and "machine learning" (ML) to interact with users, giving a customized, intelligent, and human like conversation to users [24]. A report shows that the AI chatbot is predicted to make a market of $36.87 billion by 2028 [25].

This rapid development of AI-based chatbot has led to their increasing adoption in different businesses [1]. In the aviation industry, many consumer-related services and organizational work were carried out through an AI-based chatbot [26]. In consumer-related services, the AI-based chatbot was used to solve queries [13], handle baggage [27], etc. A study illustrates the guidance imparted by an AI-based chatbot to the passengers at airports [15]. Surprisingly, AI-based chatbot have been found effective in tackling the emotions and misbehaviors of stranded passengers at the airport [28]. Indeed, the AI-based chatbot has been fruitful in upgrading the overall travel experience of the passenger [29]. An empirical study analysed the determinants affecting behavioral intention to use a chatbot for the consultation of air tickets, but the organizational aspects were not assessed [4]. Concerning organization-related tasks, AI-based chatbots have been beneficial towards the learning of the English language by the cabin crew members [11], but lack generalization. It has also been found to reduce the workload of customer service agents by 75% [30]. Studies have found that the AI-based chatbots lead to the minimization of business operational costs [24]. Hence, previous literature shows that numerous studies have been done to understand the design of the chatbot, the perception of users towards adoption, and the acceptance of AI-based chatbots for different organizational work. However, AI-based chatbot acceptance and adoption in ticket reservation activities from a business perspective has hardly been examined. There is a dearth of research concerning the ticket reservation system through an AI-based chatbot in an organizational context.

The study emphasizes the importance of understanding employee perceptions to facilitate the successful implementation of chatbot technologies in enterprises [19]. Utilizing a survey-based method, the study analyzes factors influencing employees' intentions to use an AI-based chatbot. The findings reveal that intrinsic motivation, particularly attitude, significantly impacts the intention to use an AI-based chatbot, while external influences have a lesser effect. Although this study understands employee intrinsic motivation and external factors influencing the AI-based chatbot adoption, one of the important intrinsic motivation constructs, i.e., hedonic motivation [31], which deals with fun, entertainment, pleasure, or enjoyment associated with using a system, has been overlooked. Literature shows that hedonic motivation acts as an important construct in shaping the adoption intention [32]. Moreover, the study has taken the perspective of almost all the industries, but the aviation industry has not been given enough focus, even though the aviation industry is considered a crucial driver in the economic growth of a country [33].

A study describes the different technological and emotional issues associated with the adoption of an AI-based chatbot from the manager's viewpoint [22]. The "technology acceptance model" (TAM) was used to cover the technological and emotional gaps. The finding indicates that subjective norms, compatibility, facilitating conditions, and trust have an influence on the manager's acceptance of an AI-based chatbot, technically and emotionally. However, this study did not explore the other aspects of technology acceptance, such as organizational characteristics like managerial support, technical capability, as well as environmental factors like government support and competitive pressure [34]. Hence, there is a need to understand AI-based chatbot adoption from an organizational and environmental standpoint.

It is evident from the previous literature that studies to comprehend the different factors influencing the air organizations' plans to adopt AI-based chatbots for ticket booking systems are limited. Therefore, it is necessary to empirically examine the factors behind the adoption of AI-based chatbots pertaining to ticket reservation within the aviation sector, in an organizational context. Moreover, the technological, organizational, and environmental aspects of a business must also be taken into consideration.

2.1 Theoretical framework and hypothesis development

Prior literature shows that one of the most used theories to understand the factors affecting an organization in the adoption of a new technology is the TOE [35]. The TOE framework assesses the technology in three contexts, namely, technological, organizational, and environmental, but it lacks specific insights into how organisations perceive a technology. This limitation of TOE is fulfilled by DOI by exploring how perception affects adoption. Moreover, the DOI theory even assesses the rate at which a technology is adopted [36]. Studies show that to predict adoption of technological innovation at the organizational level, the merged "DOI and TOE" is a commonly used framework [37]. The integrated framework of TOE-DOI not only provides a holistic view towards technology adoption, but the variables of both theories, when combined together lead to improvement in the accuracy of predicting the adoption behaviour [34]. Thus, the lack of empirical evidence on what factors should be taken into consideration when an airline firm decides to implement an AI-based chatbot for ticket reservation precludes building this research on these two theories. Moreover, the factors of these two theories would not only assess the "technological, organizational, and environmental" attributes but also the rate of innovation in the context of how, why, and what.

2.1.1 Innovation attributes

Innovation attribute explains the factors responsible for AI-based chatbot adoption from a technological aspect. Literature depicts that the theory of DOI has five constructs, but only three, i.e., complexity, compatibility, and relative advantage, have been used; the rest two, namely, trialability and observability, are removed as at the organizational level only the first three are relatedly consistent with adoption [34].

Complexity (CO)

It is the extent to which the innovation is identified to be hard to comprehend and understand [38]. The complexity of an AI-based chatbot system involves its lack of expertise in technology, the occurrence of high cost during its implementation, and its dearth of maturity. Indeed, a more mature new technology leads to its better implementation by the business. Studies show that less complex technology has a better adoption intensity [39]. Hence, literature shows that the construct complexity significantly influences the adoption [30, 39]. Thus, we hypothesize:

H1: CO significantly influences the adoption of AI-based chatbot by organization.

Compatibility (COM)

It is the degree to which the innovation and its capacity to deliver value and experience align with the organizational values, experience, and needs [38]. It explains the reconcilability of a system with the existing practices and technology. Recent studies in the field of technology adoption by organizations show the importance of compatibility in predicting the adoption [38, 40]. So, we hypothesized that:

H2: COM significantly influences the adoption of AI-based chatbot by organization.

Relative Advantage (RA)

It is the degree to which an innovation is regarded to be better than its forerunners. Literature depicts that a high RA means an innovation is providing more benefit to the organization [36, 40]. It has been considered an essential element to understand the adoption intention of new technology [37, 41, 42]. Hence, based on the above discussion, it can be hypothesized as follows:

H3: RA significantly influences the adoption of AI-based chatbot by organization.

Sensibility (S)

This study incorporates sensibility as a new construct to the theoretical model. Sensibility was found to conceptually align with TOE to understand the acceptance of innovation [38]. Sensibility explains the feature of an AI-based chatbot having characteristics of a human touch during interaction [43]. It deals with chatbots' dialogue, their language, and their tone, giving an impression similar to real people [44]. Literature shows that sensibility plays an important role in the adoption of AI-based chatbot [45-47]. In a study, it was urged to explore the sensibility aspect of AI-based chatbot [48]. However, limited studies have been done to empirically assess its impact on the adoption of AI-based chatbot. Therefore, the hypothesis:

H4: S significantly influences the adoption of AI-based chatbot by organization.

Diversity (D)

The study adds diversity as a new construct. Previous studies not only consider diversity as a crucial construct in predicting adoption intention [49, 50], but have also been found to validate the TOE framework [43]. Diversity concerning this study reflects how an AI-based chatbot can be used for a variety of purposes related to ticket reservation, in various fields, and for maximum functions [43]. A study presented the diverse nature of AI-based chatbot and their importance in today's era [51, 52]. Another study shows how a chatbot was able to handle different tasks and information effectively through its diverse nature [26]. AI-based chatbot diversity was found to be significant in explaining even the visual aesthetics responsible for adoption [53]. However, very limited studies have been done to empirically test its influence on adoption intention. Therefore, the research hypothesizes the following:

H5: D significantly influences the adoption of AI-based chatbot by organization.

2.1.2 Organizational capability

Organizational capability includes organizational resources, characteristics, structure, processes, and governance mechanisms that support the acceptance and application of technology or innovation. It comprises managerial support and technical capability.

Managerial Support (MS)

MS deals with providing resources, solving challenges, and creating a fertile ecosystem within the organization by the managers for their subordinates [54]. Indeed, MS is an influential factor during the adoption and implementation of a technology [55]. Previous studies show that MS significantly influences adoption [54, 55]. So, it can be hypothesized that:

H6: MS significantly influences the adoption of AI-based chatbot by the organization.

Technical Capability (TC)

TC refers to all the physical assets of an organization that are necessary for the implementation of an innovation [56]. It includes resources such as technical know-how and solutions, problem-solving techniques, and collaboration strategies that provide a stretchable and expandable foundation for carrying out a business application [57]. Previous studies show that TC is a key element in predicting the adoption of technology [56, 57]. Hence, leads to the formation of the following hypothesis.

H7: TC significantly influences the adoption of AI-based chatbot by the organization.

2.1.3 External environment

The external environment acts as a key construct in shaping organizational structure, action, and investments. It may include factors like competitive pressure, government involvement, and market uncertainty.

Competitive Pressure (CP)

CP is defined as the pressure that a company has due to its competitors [42]. It is a necessary construct, as it opens ways for new technology and innovation. So, every organization tries to maintain a competitive edge. Literature highlights that CP has a significant influence on adoption intention [39, 42]. Therefore, the following is structured.

H8: CP significantly influences the adoption of AI-based chatbot by organization.

Government Involvement (GI)

GI means the different policies and regulations made by the government to uphold security, privacy, social ethics, and related concerns [58]. The government provides support by giving tax advantages, funding, incentives, and resources to companies. Previous studies specify that GI is one of the vital characteristics of the external environment, as it influences the adoption of an innovation [41, 59]. Hence, the following is formulated.

H9: GI significantly influences the adoption of AI-based chatbot by organization.

Market Uncertainty (MUC)

MUC occurs due to shifts in product demand, competition in the market, changes in the loyalty of consumers, economic crisis, etc. Studies suggest that market uncertainty is a relevant attribute of the external environment and has a promising impact on the acceptance of AI-based chatbots [34, 60]. Accordingly, the following is structured.

H10: MUC significantly influences the adoption of AI-based chatbot by organization.

3. METHODOLOGY

The conceptual model developed to test the hypothesis is shown in Figure 1. The data and information were gathered from the managers and IT engineers of leading airline companies through an online questionnaire. This questionnaire involved items measuring all ten constructs (CO, COM, RA, S, D, MS, TC, CP, GI, and MUC) (Table 1). These items were taken from previous research studies and modified in the context of AI-based chatbot adoption for air ticket reservation. The measuring of these items was done through a 5-point Likert scale, reading from 1 as "Strongly Disagree" to 5 as "Strongly Agree". The final questionnaire was formulated after rigorous scrutiny by eight academicians and three industry experts. The pilot study considered a population size of 10. Results of the pilot study-initiated full-scale survey from October 2024 to January 2025. A total of 186 primary data were collected, out of which 154 relevant data were taken for the study. The sample size for the study has been adapted from the Asia social issues, which calculated the sample size for PLS SEM based on the proper solution and non-convergence method of Marsh et al. [61]. Indeed, this paper depicts that if the number of indicators per latent is between 3 and 12, the acceptable sample size is between 100 and 200 [62]. Therefore, the sample size of 154 is sufficient. Lastly, all these data were analyzed using SmartPLS v.4.1.1.1.

4. DATA ANALYSIS AND RESULTS

4.1 Measurement model

PLS SEM is a multivariate approach used for estimating multiplex relationships between the constructs and their indicators [30]. Literature shows that PLS-SEM is effective in predicting complex models having a large number of variables, even when the sample size is small [63, 64]. Indeed, referring to the previous studies, this research has also used PLS-SEM for analysing the data.

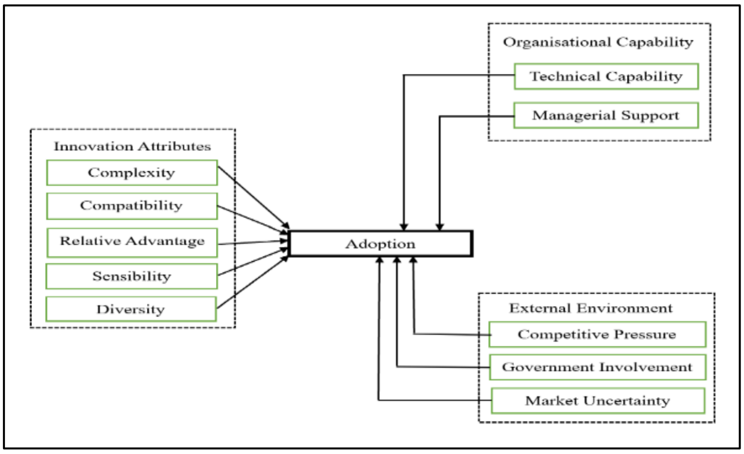

Figure 1. The conceptual model

Table 1. The constructs, their items, and operationalization

Constructs	Questionnaire	Mean	Standard Deviation	Factor Loadings	VIF
Complexity (CO) (α = 0.938, CR = 0.875, AVE = 0.890)	CO1. AI-based chatbot takes a lot of effort to handle an AI-based chatbot skillfully.	0.940	0.011	0.940	4.186
	CO2. It is difficult to understand the process of booking a ticket through an AI-based chatbot.	0.952	0.010	0.952	4.974
	CO3. Huge investments are involved in the implementation of an AI-based chatbot.	0.937	0.009	0.937	3.762

Compatibility (COM) (α = 0.800, CR = 0.897, AVE = 0.709)	COM1. AI-based chatbot for ticket reservation is compatible with the current software and hardware environment.	0.949	0.016	0.952	3.522
	COM2. The use of an AI-based chatbot is compatible with current business operations.	0.950	0.017	0.953	3.475
	COM3. AI-based chatbot for ticket reservation is compatible with the existing communication network ecosystem.	0.546	0.109	0.561	1.262
Relative Advantage (RA) (α = 0.828, CR = 0.897, AVE = 0.745)	RA1. Using an AI-based chatbot can increase revenue and profitability.	0.861	0.011	0.862	1.988
	RA2. AI-based chatbot is a more efficient and convenient method.	0.898	0.010	0.898	2.286
	RA3. AI-based chatbot helps in faster execution of actions and decision-making.	0.826	0.026	0.827	1.679
Sensibility (S) (α = 0.905, CR = 0.934, AVE = 0.780)	S1. The interaction with the AI-based chatbot feels similar to talking to real people.	0.921	0.015	0.921	3.962
	S2. The dialogues of the AI-based chatbot feel like real people.	0.930	0.027	0.930	4.347
	S3. The tone of the AI-based chatbot gives a similar impression to a real person.	0.828	0.027	0.829	2.260
	S4. AI-based chatbot's entire process has a resemblance to a human touch.	0.848	0.022	0.848	2.214
Diversity (D) (α = 0.892, CR = 0.933, AVE = 0.823)	D1. AI-based chatbot solves the other related user queries in addition to ticket booking.	0.934	0.020	0.934	3.462
	D2. AI-based chatbot can be used in other fields apart from ticket reservation.	0.898	0.021	0.898	2.614
	D3. AI-based chatbot inherits other functions apart from booking tickets.	0.888	0.021	0.889	2.446
Managerial Support (MS) (α =0.926, CR = 0.953, AVE = 0.871)	MS1. The managers explicitly demonstrate their approval of using an AI-based chatbot for ticket reservation.	0.918	0.014	0.918	3.193
	MS2. Managers are in favour of taking risks associated with the functioning of AI AI-based chatbot for ticket reservation.	0.952	0.009	0.953	4.848
	MS3. Managers can accept upcoming technology as a strategic core competence.	0.928	0.013	0.929	3.619
Technical Capability (TC) (α = 0.889, CR = 0.924, AVE = 0.752)	TC1. Your organisation has a standardized process for AI innovation relating booking system.	0.910	0.013	0.911	3.493
	TC2. Your organisation has all the necessary hardware/software to guard the systems and networks from intrusions.	0.903	0.014	0.904	3.270
	TC3. Your organisation is capable enough to rapidly amalgamating new technology related to AI.	0.768	0.039	0.769	1.681
	TC4. Your organisation's information technology strategies support new business strategies.	0.877	0.019	0.878	2.503
Competitive Pressure (CP) (α = 0.914, CR =0.946, AVE = 0.853)	CP1. The move by the aviation industry to include AI technologies for innovation has compelled your company to follow the trend.	0.917	0.014	0.917	3.421
	CP2. Adopting an AI-based chatbot for ticket reservation is useful for companies to reduce their dependency on the less profitable existing ticket distribution system used in the industry.	0.949	0.008	0.949	4.373
	CP3. There is fierce rivalry on the product/service quality for the ticket reservation system.	0.905	0.016	0.905	2.699
Government Involvement (GI) (α = 0.892, CR = 0.933, AVE = 0.824)	G1. Government policies and regulations are supportive of the utilization of AI-based chatbots for the ticket reservation system.	0.931	0.010	0.931	4.197
	G2. Government shares related information that helps in the implementation of an AI chatbot for ticket reservation for airlines.	0.940	0.011	0.940	4.581
	G3. Air companies have a good relationship with the government.	0.847	0.025	0.848	1.917
Market Uncertainty (MUC) (α = 0.920, CR = 0.949, AVE = 0.862)	MUC1. AI-based chatbot for ticket reservation has immense application prospects in the aviation industry.	0.922	0.014	0.923	3.133
	MUC2. The AI-based chatbot helps the company to impart customized products and services to tackle the growing requirements of customers.	0.941	0.020	0.941	3.871
	MUC3. The increasing demand for travel by airlines is easily met by an AI chatbot.	0.920	0.016	0.921	3.252

AI based chatbot adoption (A) (α = 0.805, CR = 0.885, AVE = 0.720)	A1. The adoption of an AI-based chatbot for ticket reservation has already been endorsed by managers.	0.889	0.016	0.088	2.200
	A2. A financial budget has been approved for the implementation of an AI-based chatbot.	0.846	0.035	0.847	2.018
	A3. The organisation is likely to implement the utilization of an AI-based chatbot in the ticket reservation system in the near future.	0.807	0.033	0.810	1.481

Table 2. Fornell-Larcker criterion

Constructs	A	COM	CP	CO	D	GI	MS	MUC	RA	S	TC
A	**0.849**										
COM	-0.4	**0.842**									
CP	0.781	-0.33	**0.92**								
CO	0.698	-0.44	0.69	**0.94**							
D	0.82	-0.38	0.86	0.71	**0.91**						
GI	0.822	-0.43	0.7	0.74	0.75	**0.91**					
MS	0.777	-0.45	0.68	0.82	0.72	0.86	**0.93**				
MUC	0.716	-0.4	0.69	0.78	0.67	0.78	0.71	**0.93**			
RA	0.81	-0.37	0.81	0.7	0.75	0.78	0.7	0.85	**0.86**		
S	0.848	-0.49	0.69	0.84	0.73	0.82	0.87	0.75	0.75	**0.88**	
TC	0.84	-0.52	0.66	0.8	0.69	0.82	0.88	0.78	0.75	0.83	**0.87**

Note: Bold digits represent the square root of AVEs

Table 3. HTMT criterion

Constructs	A	COM	CP	COM	D	GI	MS	MUC	RA	S	TC
A											
COM	0.45										
CP	0.91	0.35									
C	0.8	0.46	0.75								
D	0.96	0.42	0.95	0.78							
GI	0.97	0.48	0.78	0.82	0.84						
MS	0.9	0.49	0.74	0.88	0.79	0.95					
MUC	0.83	0.45	0.75	0.84	0.74	0.86	0.77				
RA	0.99	0.42	0.93	0.8	0.87	0.92	0.8	0.98			
S	0.99	0.54	0.76	0.92	0.82	0.92	0.95	0.83	0.87		
TC	0.98	0.58	0.73	0.89	0.78	0.93	0.97	0.88	0.89	0.93	

The measurement model includes the calculation of reliability and validity. Cronbach's alpha (α), Composite Reliability (CR), and Average Variance Extracted (AVE) were used to attain the internal consistency and item reliability of each construct. Previous studies reflect that the CR and α values are supposed to be higher than 0.7. Furthermore, the value of AVE must exceed the critical value of 0.5 [65]. Table 1 displays that the values of α, CR, and AVE for all the constructs which is more than the threshold values. Hence, the reliability and internal consistency are established for all the constructs. The factor loading was used to measure the convergent validity of each construct. Moreover, it was verified through AVE values, which were found to be more than 0.5 [66]. Discriminant validity (DV) was gauged through Fornell & Larcker's criteria [65] and the Heterotrait-Monotrait Ratio (HTMT) criteria [67]. The result shows that the square root of each construct's AVE was more than any correlation with other constructs, leading to attainment of DV (Table 2) [65]. The literature indicates a value less than one (1) of HTMT, and considers DV as established [67]. Table 3 displays the value of HTMT for all the constructs below the critical value of 1. Hence, the results show that the DV is achieved.

4.2 Path structural model and test of hypothesis

The relevance of the model and hypotheses is tested through the path structural model. Furthermore, the result of PLS-SEM has been used to investigate the interrelation between the constructs. The hypothesis was tested using bootstrapping with 5000 iterations [68] (Figure 2).

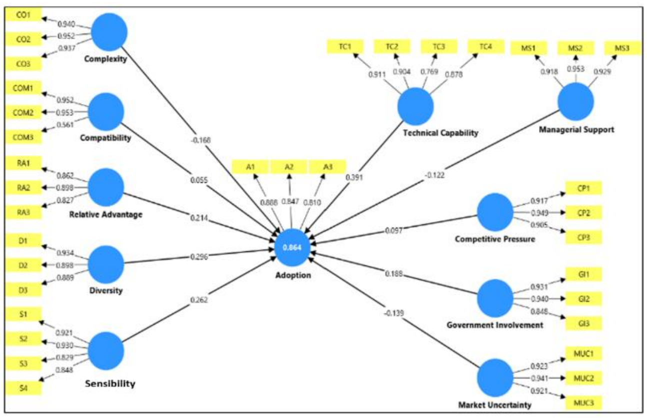

Figure 2. The path structural model

The result of bootstrapping is shown in Table 4. The result shows that for innovation attribute the CO (β = -0.168, p = 0.043), RA (β = 0.214, p = 0.043), S (β = 0.262, p = 0.010), and D (β = 0.296, p = 0.001) were found significantly influencing the adoption of AI-based chatbot from firms' perspective except COM (β = 0.055, p = 0.131). Hence, the accepted hypotheses were H1, H3, H4, and H5, and hypothesis H2 was rejected.

Between the two organizational constructs, the first one, i.e., TC (β = 0.391, p = 0.001), tends to influence the adoption, but MS (β = -0.122, p = 0.226) was found insignificant to the adoption of AI-based chatbot for ticket reservations, leading to acceptance of hypothesis H6 and rejection of hypothesis H7, respectively.

GI (β = 0.188, p = 0.032) was the only construct of the external environment that was found to influence the adoption. Thus, hypothesis H9 is accepted. The rest two, i.e., CP (β = 0.097, p = 0.263) and MUC (β = -0.139, p = 0.128), were found to have no significant influence on the adoption of AI-based chatbot for ticket reservation from the firm's perspective. So, both hypotheses H8 and H10 will not be accepted.

Table 4. Path structural analysis

Hypothesis	Path	β value	P value	Decision
H1	CO–> A	-0.168	0.043	Significant
H2	COM–> A	0.055	0.131	Not significant
H3	RA–> A	0.214	0.043	Significant
H4	S–> A	0.262	0.010	Significant
H5	D–> A	0.296	0.001	Significant
H6	MS–> A	-0.122	0.226	Not significant
H7	TC–> A	0.391	0.001	Significant
H8	CP–> A	0.097	0.263	Not significant
H9	GI–> A	0.188	0.032	Significant
H10	MUC–> A	-0.139	0.128	Not significant

5. DISCUSSION

The study assesses the variables that contribute to the adoption of AI-based chatbots for air ticket reservations from the organization's perspective. The study has integrated two very prominent theories of technology adoption, TOE and DOI. Moreover, two new constructs, namely sensibility and diversity, were added to the model. This research shows that among the ten attributes, six factors, namely, complexity, relative advantage, sensibility, diversity, technical capability, and government involvement, directly influence the adoption of AI-based chatbots for air ticket reservation activity. Thus, making this study the first one in this context, as per our knowledge.

5.1 Innovation attributes

Diversity (β = 0.296) had the highest beta value in comparison to the rest of the constructs of innovation. This newly added construct was seen to significantly influence the intention to adopt an AI-based chatbot for ticket reservation, from an organisational perspective. It highlights the fact that diversity is not only a centre construct to invest in, but it can also be used for other purposes associated with ticket booking tasks, including any query, visual appeal, discounts, or vouchers [49, 50]. The next construct that was found to dominate the adoption intention was sensibility, having slightly less beta value than diversity (β = 0.262). It was also found to significantly impact the intent to adopt an AI-based chatbot for ticket reservation. This significant relationship reflects that an AI-based chatbot for air ticket reservation inherits a feeling similar to a human interaction. Furthermore, its language and tone give an impression of interacting with real people [45, 46]. The air companies should invest in features such as their appearance of dialogs, tone, language, etc., for more adoption. Sensibility was followed by relative advantage, with the beta value of 0.214, and was notably impacting the adoption of AI-based chatbot [38, 40]. It reflects that an AI-based chatbot is more advantageous to the organization than it supplants, such as websites, apps, or other sources. It highlights the fact that ticket reservation through an AI-based chatbot can bring more monetary benefits to the firm than any other source of ticket reservation. Lastly, the attribute complexity (β = -0.168) was found to have a negative beta value and consequently influenced the adoption. The result aligns with previous literature [30]. This means that a less complex technology has a better adoption intensity. It reflects that the AI-based chatbot is not a very simple technology to integrate. It requires a lot of operations and structural changes before its implementation. Since AI-based chatbots have recently been introduced to the aviation sector for ticket booking, it may appear to be difficult for employees from a non-technical background to understand. The companies should invest in the technological aspects of AI-based chatbots and provide training to employees. Surprisingly, compatibility (β = 0.055), the only construct of innovation, was found to be insignificant to adoption intention. The results don't align with previous literature [38, 40]. Nevertheless, there are studies in the literature showing the nonsignificant influence of compatibility on the adoption [69]. The probable reason for this could be the fact that the systems that are developed in today's era are plug-and-play systems, so there are no compatibility issues.

5.2 Organizational capability

Among the two constructs of Organisational capability, the first one, i.e., technical capability, shows its influence on adoption of AI-based chatbot for ticket reservation [56]. TC (β = 0.391) had the highest beta value among all ten constructs impacting the adoption. This means that it is the most critical factor affecting organizational adoption [57]. Furthermore, it highlights that the air companies should have all the physical assets, the technical knowledge, a problem-solving technical process, and a technically sound infrastructure for the adoption and implementation of an AI-based chatbot for ticket reservation services. Another construct, i.e., managerial support (β = -0.122) was found not to facilitate the adoption of AI-based chatbot for ticket reservation. The result contradicts the previous literature [54, 55]. The possible reasons for this could be that, since this technology is in an early stage, so many times the expert often plays the role of manager also. Therefore, the role of the construct MS becomes insignificant.

5.3 External environment

Government involvement was found to have a positive beta value (β = 0.188). The finding validates the previous literature of GI being a very important construct for adoption [58]. It is the only construct of the external environment that had a significant impact on the adoption of AI-based chatbot from the firms' perspective [41, 59]. Since aviation is a heavily government-regulated industry. It has to abide by government rules and regulations for both its national and international operations. Therefore, any implementation of new technology or changes, or scalability should take place within the scope of the government. Unexpectedly, the other two constructs, namely, competitive pressure (β = 0.097) and market uncertainty (β = -0.139), were both found to be insignificant to aviation organization adoption of AI-based chatbot for ticket reservation. The results of both these constructs are not consistent with earlier literature [39, 42, 60]. The probable reason for this could be that in the airline industry there are a smaller number of players, leading to less of negligible competitive pressure. Since this is the era of globalisation, every country depends on each other for their trade, economy, and an organization cannot operate in a closed environment irrespective of market conditions.

6. THEORETICAL AND PRACTICAL IMPLICATIONS

This study contributes to the available literature on AI-based chatbots regarding the aviation industry. It is one of the first studies to explore the adoption of chatbots for ticket reservation from the organization's perspective, as per our knowledge. Furthermore, the two new constructs, namely sensibility and diversity, were empirically validated with the two prominent adoption theories (DOI and TOE), adding to the limited literature available.

The AI-based chatbot for air ticket reservation is in the nascent stage. The results would help organizations and technology providers to deploy AI-based chatbots more efficiently and effectively. This study highlights the fact that an AI-based chatbot is the most profitable channel for ticket reservations compared to other channels. Therefore, companies should focus on building a sound technical infrastructure. This study also emphasises on implementation of AI-based chatbots considering government policies, as this can safeguard the companies from facing any legal and ethical issues, such as data breaches, privacy concerns.

7. CONCLUSIONS

This study is one of the first attempts to comprehensively understand the different organizational factors impacting the adoption of AI-based chatbots for ticket reservation in the air industry.

The result shows that technical capability ($\beta = 0.391$), with the highest beta value, is the most critical factor influencing the adoption. Results suggest that the organizations should focus on acquiring and implementing all the physical assets, technical knowledge, problem-solving technical process, different technical collaborations, and including additional features for a technically sound infrastructure for the adoption and smooth functioning of the ticket reservation services through the AI-based chatbot.

Diversity, sensibility, relative advantage, government involvement, and complexity were also found to significantly influence the adoption. Thus, this significant relationship of the constructs on adoption intention substantiates that improving the multifunctionality of AI-based chatbots, features such as quick query solving, acceptance of all payment methods, customized services, ancillary services, etc., in the same dialog box, can increase the productivity of employees.

Furthermore, identifying the key qualities of AI-based chatbots, such as their language, tone, appearance, etc., that impart the impression of a human touch during the ticket booking interface can motivate the employee towards adoption. Additionally, the study highlights the fact that an AI-based chatbot is the most profitable channel for ticket reservations compared to other channels. So, focus should be on building a single system that is easily accessible, saves time and money for the organisation. Lastly, the findings indicate that maintaining a good relationship with the government can be fruitful for the air organizations.

The study validates the novel integrated framework of TOE-DOI, adds to the literature of diversity and sensibility, and provides valuable information required by air companies for the acceptance and implementation of AI-based chatbots for their ticketing reservation activities.

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