

# Measuring Consumers' Continuance Usage Intention to Use Airline Websites in Saudi Arabia

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**Abstract:** Airline websites are the major online channel to provide quality services to their consumers. The main objective of this study is to analyze the factors which impact on consumers continuance intention to use airline websites in Saudi Arabia. A theoretical framework has been proposed using information system literature to check the continuance intention of consumers in the context of airline websites. The study implies the statistical tests and regression analysis approach to check the model's robustness. A theoretical model is proposed and hypotheses are developed to check the impact of perceived usefulness, satisfaction, confirmation, system quality and information quality on consumers continuance intention to use airline websites. Data was collected by administering a questionnaire and a valid response from 305 consumers was used in the analysis. Statistical tests are performed using SPSS and AMOS. The results of regression analysis show the profound impact of perceived usefulness, confirmation, satisfaction, service quality and information quality on the continuance intention to use the airline website. The results also confirm that consumers are willing to continuously use the airline websites if they found it easy to use and provide them all available services with high quality and data accuracy. This enhances the confirmation of consumers intents to use the airlines websites before they get the actual satisfaction after using it. This research gives theoretical confirmation and practical implications to airlines to design their websites. By inspecting the factors that positively contribute most in consumers' willingness to continuously use airline websites, the research enhances both theoretical and practical improvements in the field of information system continuance acceptance rather than one time use of new systems only. For airline industry this gives an insight to improve the strategies to provide useful and quality information to the consumers to continuously use their websites.

**Keywords:** airline websites, continuance usage intention, information systems, information quality, system quality.

## I. INTRODUCTION

Websites are one of the major channels for all companies to promote their products and services to their consumers digitally. With changing business environment from physical to digital setup, airlines are also providing profound services to their consumers globally through their websites [1]. Airline businesses need to compete their competitors via services provided through their web portals and provide all online transactions services to their consumers. An airline's website not only provides outright information and flexibility, but also provides online services and facilities their consumers to make online transactions [2]. Thus, the website, which only aims to company's data, is not treated as an online system because it does not give the information to its consumers to make online transactions. Airline website is an interface and attributes that satisfy the consumers demand and satisfaction by providing quality by connecting to a high level of usability and performance [3]. The consumers who purchase online are highly inclined towards

airline websites. This shows only the intention of consumers to use airline websites, but not the future continuance intention to use it [1]. Consumers in airline sector do not trust in using airline website because of lack of trust [1, 4, 5]. Consumers are hesitant to purchase to buy from website if they do not feel it good to use. Thus, effect consumers' willingness use airline websites in future [4]. Consumers are still disinclined to purchase from the website for which they are doubtful to use [6].

Previous studies in technology acceptance domain recurrently discuss early acceptance of new information systems; however, few studies discuss the continuance intention of consumers to use online systems particularly airline websites [1]. The early acceptance of a new information system is crucial for its success, but it is not the assurance for its long-term continuance use [7]. Consumers happy experience with the use of airline websites is the success for airline brands [8]. Past studies majorly focus on airline consumers satisfaction with its services, however less applications include data mining aspects to measure consumers satisfaction with airlines [9]. Thriving airline companies focused to provide their consumers unique and enjoyable experience to enhance their brand image [8]. The acceptance and continuation of these digital services in an online environment requires the strategies to operationalize all ways and means to well deploy the new online system. The acceptance and adoption of these online channels by consumers are pivotal and this intention to use online system is pre-adoption construct [10], which indicates consumers aim to use the new information system in the future. This pre-adoption is unsuitable for the research focus on the post-adoption studies [11] for the continuance intention to use information systems. This continuance intention is a more suitable construct for the information system success, where the value is given to the re-purchase intention of consumers, keeping the service quality of the airline's application [12, 13]. The information system success model [14] discusses the new dimensions of information system success and the satisfaction construct discussed the repeat purchase [15]. Continuance usage intention is required by firm's today as it gives a chance to keep your consumers intact longer with your business [16]. Only few studies investigated the contributing factor user's post-adoption behaviour [2, 7] particularly for Airline sector. The online consumers are still concerned about their security and confidentiality concerns, thus still hesitant to buy online [6]. The quality and usability of airline websites make it more successful to use [8]. This study also emphasizes to explore the factors that influence consumers' continuance usage intention to use airline websites. For this purpose, a theoretical framework in this research is proposed to measure consumers' continuance intention to use airline websites.

## II. LITERATURE REVIEW

The information system success theories have been rooted in the formative work of [14] and extended by other researchers. However, the post-acceptance success model has been identified by [11] and stated that consumers' continuance usage intention and satisfaction is pivotal for the success of new information system. The study also applied technology acceptance model (TAM) developed by [17] to check the acceptance of new technology in different spheres and the system acceptance. Perceived usefulness and perceived ease of use are the major determinants of technology acceptance model to check the intention of users [10, 17]. In perspective of airline websites perceived usefulness and ease of use are major determinants for intention to use along with price, security, trust and privacy [18]. Technology acceptance model provides the best theoretical foundations for the researchers focusing in the field of user acceptance as success of new system based on user interface and functionality [19]. Confirmation and satisfaction are the pre and post state of happiness of consumers to use airline websites [8]. The early acceptance of new online system is quite evident but the continuance usage intention is still lacking [7] and airline websites face the same [2]. This study also uses the TAM as foundation along with Expectation Confirmation Model (ECM) which states that continuance use of the information system in long term is the success of new system rather than it is initial use [11]. Each construct is drawn from above theories and discussed in detail independently.

### 1. CONTINUANCE USAGE INTENTION

In information systems literature, system quality is a main factor which focuses new technology perception by users [20]. Information system success still depends on the continuance use of the system and

not only on its early acceptance [11]. It reflects the behavioral patterns of individuals for long-term use of the system [21]. Their updated IS success model [15] suggested the intention to use but did not discuss the post-acceptance stage of usage. Continuance usage intention is therefore, defined as primary dependent variable of this research. Consumers will continue to use airline websites or online systems if they find the information relevant and useful [18]. The new advancement in technology persuades consumers to make wise decision about their online purchase [8].

Perceived usefulness (PU) is a strong determinant of TAM that defines the user's early acceptance of new technology [10]. Many studies proved strong effect of PU on the acceptance of new information systems [1, 17, 22- 25], such as [26] partially validated the IS success model and proposed the perceived usefulness as a substitute to actual use, mentioning it as a behavioral intention to use the system. Thus, PU is the main predictor that satisfies consumers and generates their behavioral intention to use it in the long term. The relevance and useful information on the airline website persuade the consumers to make their online transactions [18]. In context of use of airline websites for ticketing in Saudi Arabia usefulness is the strong determinant [27]. Therefore, it is assumed that PU is a strong predictor of long-term use of airlines websites.

- H1. Perceived usefulness has positive impact on consumers' continuance usage intention to use airline websites.

## 2. SATISFACTION

Satisfaction describes the pleasure or disappointment with a new information system by directly comparing it with its expected level and showing a great correlation to use [28]. Satisfaction is the emotional status causing the disconfirmation of the performance expectation [29]. Satisfaction however, is the consumers perception that using a particular system or airline websites satisfy him with the service provider [30]. This study describes satisfaction as a constructive and delightful status of emotions resulting from using airline websites, which drives them to online re-purchase and hypothesize that.

- H2. Satisfaction has positive impact on consumers' continuance usage intention to use airline websites.

## 3. CONFIRMATION

Confirmation of expectation also measures the satisfaction of the users before the actual use [31]. The expectation confirmation theory (ECT) suggests that satisfaction of user is highly influenced by the confirmation and expectation of the information system and determines the expectancy of subsequent real use of the system [32]. ECT offers the benchmark level, against which the users evaluate the confirmation to determine the evaluative satisfaction [11]. Confirmation is the state of happiness of the consumers before actually using the systems [30]. So, the users' perception of similarity with an expectation of airline websites and their real performance is considered as confirmation in this study and hypothesized as follows.

- H3. Confirmation has positive impact on consumers' continuance usage intention to use airline websites.

## 4. SYSTEM QUALITY

System quality (SQ) refers to the quality of information comprising data and software components. System quality deals with the comfort of using information system interface consistency [33]. In IS theories, system quality is defined in terms of reliability, availability, adaptability, and fast system response time [15]. Success of any online business based on the quality of website [8]. The attributes of the system quality are assessed by the consumers on attributes like complete and quick page upload, ease of use and friendliness of the system [8, 34]. Consumers enjoy to use the online system which provides them quality in terms of providing the complete comprehensive information [8]. System quality in this study is identified as major factor to impact on both consumers' satisfaction and consumers' intention to continuance use airline websites, and it is hypothesized as follows:

- H4: System Quality has positive impact on consumers' continuance usage intention to use airline websites.

### 5. INFORMATION QUALITY

With invention of the internet and then websites, information quality (IQ), got more consideration [35] and is indicated as description of information quality [36, 37]. Information quality impacts on consumers continuance usage intention of the system [15]. The quality of information is depending on the level to which users can easily understands the data provided on airline website [8]. The level of satisfaction of consumers are higher with the website which provides them complete, easy to understand and significant information [8, 36, 42]. Consumers prefer those websites which is updated and organized regularly.

In this study, information quality is a main indicator to measure customer satisfaction and continuance intention to use airline websites and hypothesized below.

- H5. Information Quality has positive impact on consumers' continuance usage intention to use airline websites.

Based on the literature review the following theoretical model is proposed to check the impact of all construct on consumer continuance usage intention to use airline websites.

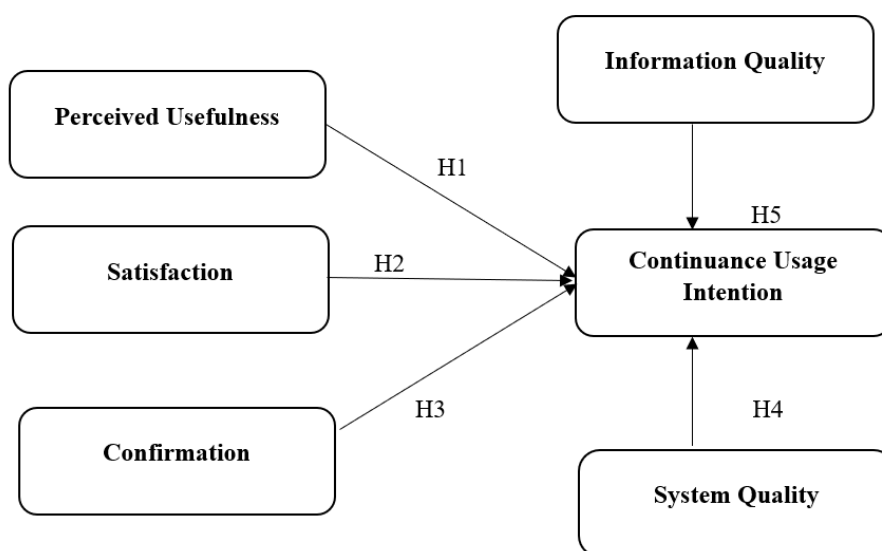


FIGURE 1. Proposed theoretical model.

### III. METHODOLOGY

The selected methodology for this research is quantitative and hypothetic-deductive to check the causal outcome of constructs on continuance usage intention of consumers to use airline website and a statistical questionnaire is developed to collect the responses. The questionnaire was developed using Likert scale having both nominal and ordinal scales where nominal scale was used for demographic characteristics of the respondents. All construct were adopted from previous literature and items were measured on a seven-point Likert scale where 1 measure strongly agree and 7 measures strongly disagree. Each construct item is modified in the context of airlines websites presented in Table 1.

Table 1. Measurement instruments.

Measures	No. of Item	Source
Perceived Usefulness	6	[17]
Confirmation	3	[11]

Satisfaction	3	[38]
Information Quality	5	[15]
System Quality	6	[12]
Continuance Usage Intention	5	[11]

The research questionnaire had two sections where the first one was used to obtain general information about internet usage and airline website experience followed by the demographic data of respondents include gender, education, age and income of respondents. However, the second section was based on the items selected for each variable construct used to construct the research framework of this study.

The data was collected through direct administration of questionnaire at Rafha domestic airport and King Khalid International Airport, Riyadh. The sample size was drawn from selected number of entire populations who use internet or airline websites to make their transactions online. As it is difficult to reach entire internet-based population so hand to hand data was collected from a respondent as a sample drawn from population who use Airline websites. Simple random sampling was used by collecting data for few weeks from both male and females who are experienced to use airline websites.

After collecting the responses, the data was statistically analyzing data using SPSS and AMOS. The validity of questionnaire items and test the measurement model was checked in pilot study. Demographic data of respondents is collected. After prescreening of questionnaire items, Confirmatory factor analysis is done for measurement model.

#### IV. RESULTS AND DISCUSSION

A pilot study is done to analyze any flaw in the research design or instruments of survey for final data selection. Total 60 questionnaires were distributed, out of which 53 were returned with the filled information. The response of filled questionnaire was 88.33%. and statistical test were applied using SPSS. Items were modified for each construct based on the results of a pilot study. While collecting data it was make sure that respondents must aware of using airline websites and understand the questions completely. Cronbach alpha ( $\alpha$ ) is used to measure the reliability of each construct and its item and is presented in Table 2. All obtained values are larger than the threshold value of 0.6 and show the high reliabilities of each construct used in the study.

**Table 2.** Reliabilities of measurement instruments.

Constructs	Cronbach's Alpha
Perceived Usefulness	0.947
System Quality	0.923
Satisfaction	0.884
Information Quality	0.907
Confirmation	0.865
Continuance Usage Intention	0.946

After prescreening, data was collected from 305 respondents, and they were asked to give their personal information related to the use of airline websites, frequency of travel and online booking through airlines websites. A hands-on data collection approach is used to collect data from Rafha and Arar domestic airports and King Khalid International Airport, Riyadh. All respondents were chosen carefully by asking the

questions, if they must be aware of the use of the internet and use of airlines websites. The demographic data of the respondents is presented below in Table 3.

**Table 3.** Demographic profile of respondents.

Variable	Category	Frequency	Percentage (%)
Gender	Male	183	60.0
	Female	122	40.0
Age	< 20	19	6.2
	20-25	100	32.7
	26-30	99	32.4
	31-35	44	14.4
	>35	43	14.0
Nationality	Saudi Arabian	106	55.8
	International	199	65.2
Monthly Income	<20000	110	36.0
	2000-4000	55	18.0
	4000-6000	61	20.0
	>6000	79	25.9
Experience	Less than 2 years	31	10.1
	2-5 years	103	33.8
Using Internet	>5 years	171	56.1
	Online	178	58.4
	Travel Agent	103	33.8
	From Both	24	7.9

The results of demographic data shows that 60% of male respondents and 40% of female participated in the survey. Most of the people aged 20-26 years i.e 32.7% followed by the age group 26-30 which is 32.4%. This shows the increase use of internet among young people. Most people use internet in this study were overseas with 65.2% and Saudi nationals were 55.8%. 25.95% of people have income ratio of more than 6000 SAR whereas 36.0% earns up to 20000 SAR. In terms of internet experience, it is evident that most respondents have more than 5 years are 56.1% which shows that respondents were fully aware of using airline websites. The respondent were asked about their preferred mode of airline transactions and 58.4% respondents answered for online transactions, 33.8% uses the travel agent whereas 7.9% respondents uses both channels to use airline services.

The Kaiser Meyer Olkin test & Bartlette test is also performed to obtain the absolute results of factor analysis, check the variance among constructs, and check the sample adequacy of data. The obtained value for KMO is 0.937, which is above the recommended value for KMO i.e. 0.8 and 0.9. The value for Bartlett's test to check for specific data obtained as 0.000 shows that factor analysis can be done on the data, as displayed in Table 4.

**Table 2. KMO & Bartlett's Test.**

<b>KMO Measure of Sampling Adequacy.</b>		<b>.937</b>
Bartlett's Test of Sphericity	Approx. Chi-Square	6365.524
	df	300
	Sig	.000

In order to reduce number of items and to measure the relationship among the constructs, exploratory factor analyses with principal component analysis and varimax rotation analyze the underlying structure of measurement items for each construct presented in the exploratory factor analysis (EFA) model presented in Table 5.

**Table 3. Exploratory factor analysis.**

<b>Rotated Component Matrix<sup>a</sup> Component</b>						
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
CUI1		.800				
CUI2		.772				
CUI3		.769				
CUI4		.806				
CUI5		.812				
PU1	.790					
PU2	.772					
PU3	.804					
PU4	.807					
PU5	.828					
PU6	.807					
SQ1			.787			
SQ2			.784			
SQ4			.805			
SQ5			.819			
SQ6			.737			
IQ1				.725		
IQ2				.749		
IQ3				.819		
IQ4				.815		
IQ5				.820		
CON1						.896
CON2						.905



SAT1	.883
SAT2	.897

Extraction Method: principal component analysis. Rotation Method: varimax with Kaiser Normalization.  
a. Rotation converged in six (6) iterations.

Confirmatory factor analysis (CFA) is used to measure the model's reliability and validity and confirm the relationship among constructs. CFA has been done for all 6 variables, which are confirmation (CON), continuance usage intention (CUI), perceived usefulness (PU), information quality (IQ), satisfaction (SAT) and system quality (SQ). The modification indexes high covariance between measurement errors by high regression weights between the constructs should be eliminated [39, 40, 41]. Therefore, SQ3 and SAT3 were deleted from the measurement model as presented in Figure 2 to improve the value of modification indices.

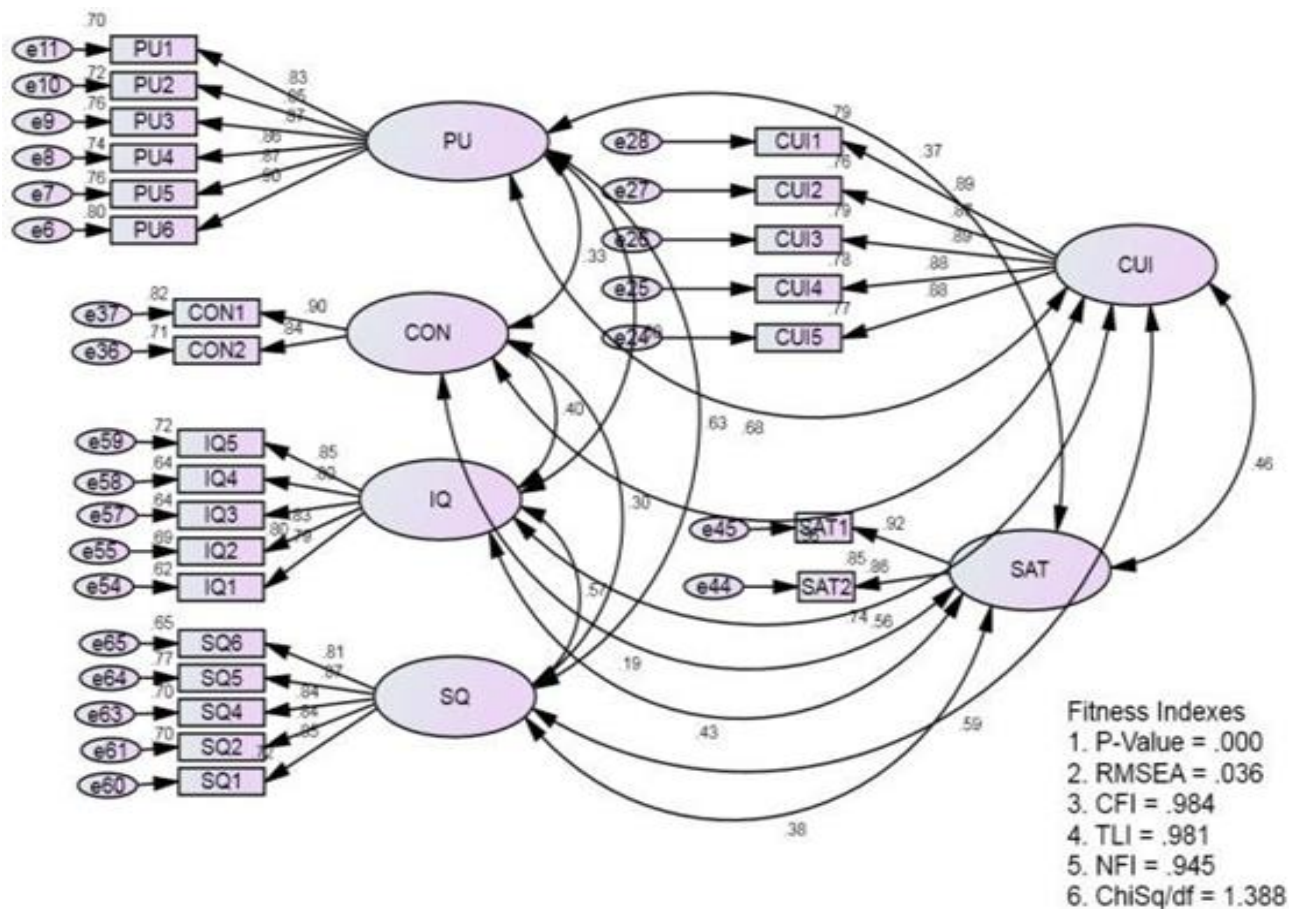


FIGURE 2. Measurement model.

The results of the CFA analysis for this study are within acceptable threshold values. The goodness of fit statistics is presented in Table 6.



**Table 6.** Measurement fit assessment for structural model.

	Absolute Fit Measures					Parsimony Fit Measure	Incremental Fit Measures	
	CMIN	df	CMIN/df	GFI	RMSEA	AGFI	CFI	NFI
Acceptable fit	-	-	<3	≥0.90	≥0.05	≥0.90	≥0.	≥0.
							90	90
	36						.98	.94
Obtained fit	0.9	260	1.38	.910	.036	.888	4	5
	77							

CMIN=minimal value for discrepancy, df=degree of freedom, GFI=goodness of fit, RMSEA=Root mean square error of approximation, AGFI=adjusted goodness of fit NFI=Normed fit index, CFI=comparative fit index

Convergent validity was measured due to high factor loading and average variance extracted was measured among variables. The threshold value of AVE at each construct e higher than 0.5 was obtained which explain that each construct had more than half of the variance for its measuring item. The results of the factor loading and AVE is presented in Table 7.

**Table 7.** Results of Average Variance Extraction (AVE).

Construct	Items	Factor Loading	Chronbach's Alpha	CR >0.70	AVE >0.50
Perceived usefulness	PU1	0.845	0.947	0.948	0.759
	PU2	0.85			
	PU3	0.87			
	PU4	0.87			
	PU5	0.875			
	PU6	0.895			
Continuance Usage Intention	CUI1	0.80	0.946	0.945	0.778
	CUI2	0.85			
	CUI3	0.88			
	CUI4	0.884			
	CUI5	0.880			
Confirmation	CON1	0.890	0.865	0.865	0.702
	CON2	0.831			
Satisfaction	SAT1	0.90	0.884	0.884	0.829
	SAT2	0.884			
System Quality	SQ1	0.852	0.923	0.923	0.730
	SQ2	0.851			
	SQ3	0.85			
	SQ4	0.843			
	SQ5	0.864			
Information Quality	IQ1	0.80	0.907	0.907	0.754
	IQ2	0.817			
	IQ3	0.819			
	IQ4	0.820			
	IQ5	0.854			

The discriminant validity results were discussed in Table 8. The inter-constructs correlation squared estimates were smaller than the values of corresponding AVE of the constructs, which showed the high discriminant validity of constructs of the model.

**Table 8.** Results of discriminant validity.

Correlations Squared	1	2	3	4	5	6
1. PU	<b>0.870</b>					
2. CUI	0.660	<b>0.880</b>				
3. SAT	0.324	0.414	<b>0.910</b>			
4. SQ	0.615	0.595	0.320	<b>0.851</b>		
5. CON	0.321	0.326	0.136	0.276	<b>0.831</b>	
6. IQ	0.456	0.522	0.322	0.519	0.384	<b>0.830</b>

All hypotheses shows the significant results and supported (H1, H2, H3, H4, H5) with significance level ( $\beta_{H1b} = 0.38, P < 0.001$ ;  $\beta_{H2a} = 0.168, P \leq .001$ ;  $\beta_{H3a} = 0.212, P \leq .001$ ;  $\beta_{H3b} = 0.176, P < 0.05$ ;  $\beta_{H4b} = 0.155, P < 0.05$ ;) and presented in Table 9.

**Table 9.** Hypotheses results.

Hypothesis	Hypothesized Path	$\beta$ value	P value	Results
H1	CUI <--- PU	.385	***	Supported
H2	CUI <--- CONF	.168	***	Supported
H3	CUI <--- SAT	.212	.002	Supported
H4	CUI <--- SQ	.176	.008	Supported
H5	CUI <--- IQ	.155	.006	Supported

The results show the significance of perceived usefulness on continuance usage intention to use airline website. This shows that consumers preferred to use those system which is useful to increase the performance of the system. The results ( $\beta_{H1b} = 0.38, P < 0.001$ ) are consistent with adopted methodology for this research and consistent with the finding of previous research [2, 18, 19]. Also, the results stated that consumers are willing to use those airlines for their online purchase which will be useful for them in terms of their transactions [18, 27]. Confirmation is the state of consumers satisfaction before the start of services and the results ( $\beta_{H2a} = 0.168, P \leq .001$ ) stated that if consumers find system useful and their expectation meets, then they are willing to use the system thus supported [30]. Satisfaction also shows the significant results in this study and as suggested in the methodology provides significant results ( $\beta_{H3a} = 0.212, P \leq .001$ ). Consumer feeling of thrilled and excitement in using airline website is also evident from the previous results [30] and consumers are willing to continuously use the airline websites if they find it joyful. The consumers pre and post response of how happy they are using airline websites is evident from the results of this study with the significant result of confirmation and satisfaction as stated in the objective of the study. System quality ( $\beta_{H3b} = 0.176, P < 0.05$ ) is quite evident in supporting the methodology of this research. The result shows that consumers are willing to use if the airline websites follow the complete attribute of the system in terms of ease of use and complete information. Thus, supporting the results of previous studies which states system quality as the strong determinant of continuance usage intention [2, 8]. Information quality is the consumer level of understanding with the level of airline website shows the strong support with continuance usage intention ( $\beta_{H4b} = 0.155, P < 0.05$ ). Information quality is the value provided by the airline websites in terms of data quality, reliability and accuracy is quite evident and supported the previous studies [36, 8, 2].

## V. CONCLUSION

This study shows the substantial contribution in previous information system literature to show the impact of defined construct on consumers' continuance usage intention to use airline websites. As previous studies are mostly validated and tested for internet banking and e-government websites, this study conducted in Saudi Arabia to check how many users are willing to continuously use airlines websites. It is shown that airlines websites were negligible because previous research rarely studied customer post-adoption and focused mainly on just early adoption of new system. The measurement model shows significant results that prove the significance of collected data. Technology acceptance model mainly focuses on two dimensions of perceived usefulness and perceived ease of use [17] to measure the adoption of new system in many contexts. However, it is incorporated with many added variables to check in different settings. This study implies the same by adding the construct of confirmation and satisfaction along with information quality and system quality [11]. As there is a lack of research to check the website features of airline websites, particularly in Saudi Arabia, the finding of this study's contributes in the existing theory and develops the literature in this area. Over-all, the results of the study show the positive significant impact on consumers' willingness to continuously use the airline websites. Thus, this study makes a noteworthy contribution in the existing theory and expand the researcher's understandings regarding the importance of selected variables for airline websites.

The major limitation is that the proposed model was tested with already established constructs from two well-accepted theories; more variables need to be added to prove the significance of the study and re-validate the model in other information system context. Adding more external variables to the model may provide more significant results. Also, the measurement model alone is not sufficient to check the robustness of the model and hypothetical results should be checked using structural equation modeling. The results indicated that the model needs to be re-test and validated by adding more variables in new cultural settings other than Saudi Arabia and new information systems other than Airlines websites.

The practical implications of this study states that perceived usefulness, satisfaction, information quality and system quality positively influence continuance intention of the consumers towards the use of airline websites. This helps the airline websites to formulate strategies which can help the airlines to improve their services and website experiences. This study highlights the importance of perceived usefulness and consumer satisfaction and accessibility in consumers continuance intentions to use airlines websites. The user-friendly interface of the website drives the consumers to continuously use the airline websites. The confirmation and satisfaction states also occur if the airline companies make their websites easy to use and full of information with all contents available on it.

Given the substantial impact of information quality and system quality airlines should arrange all the contents available on the airline websites with ease of use and accuracy of valuable information, shapes the consumers behavioral intention to use the airline websites. Airline companies must ensure that websites are accessible all the way by consumers and provide all valuable information so that a sense of strong satisfaction must be generate among consumers, to ensure their return again and again on website.

The limitations of the study are that it should be added more variable which are crucial for consumers to use airline website. The current study, due to lack of time and budget did not cover many major aspects of consumers continuance usage intention to use airline websites. However, the future research can be more focused with more added variables in another cross-sectional research. This study is confined only for Saudi Arabian airline websites, the future research suggests the testing of new variables like trust, security, value of consumers given to use airline websites in other countries to confirm the results of this study. In future, more external variables should be added to the model and check the hypothetical relationship of the construct using structural equation modeling.

It is vital to accept the limitations of this study to be taken into consideration the direction of future research. The study only confined for Saudi Arabian airline websites, so the future research can be expanded to other Gulf regions to validate the results of this study. This study adopts only quantitative approach, and data was collected only through administering the questionnaire. Future research may also add qualitative approach by interviewing the focused groups to understand the more accurate perspective of consumers

about airline websites quality attributes. This study implies the simple random sampling technique which could possibly affect the generalizability of the research outputs; therefore, future researches suggest to adopts random sampling technique.

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### Author Contributions

All authors made an equal contribution to the development and planning of the study.

### Conflicts of Interest

The authors declare no conflicts of interest.

### Data Availability Statement

Data are available from the authors upon request.

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Not applicable.

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