Continue to Use Mobile Applications of Low-Cost Carriers

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Abstract— **The goal of this research is to determine how the firm reputation of a Low-Cost Carriers (LCCs) affects the compatibility and quality of a mobile device application. Increasing their firm reputation among passengers has become an important issue for LCCs; for an LCC to be successful, it must get rid of the impression of being cheap. In addition, LCC apps provide emotional support that is related to an individual's ability to recognize and describe his/her own or others' emotions. From the perspective of firm, LCCs need to understand the needs and analyze and behaviors of their passengers, who rely on extensive panels of instrumentation that must be checked regularly to detect updates on flights. Passengers face the same route with more than two LCC service competition. LCCs will create a process that could function as a model for their additional high-quality services.**

Keywords- low-cost carrier; apps; continue to us;, perceived compatibility

I. INTRODUCTION

The emergence of Low-Cost Carriers (LCCs) has been one of the most significant developments in the aviation industry in recent years [1][2]. Additionally, transportation providers, including LCCs, now utilize mobile technologies for activities as diverse as ticketing, reservation, customer relationship, and providing real-time travel updates for their passengers [3]. However, relatively little is known about the extent to which different business strategies have adopted and integrated apps into their businesses.

LCCs emphasize e-commerce as the main channel for sales. Passengers are given access to online services and brought into a physical environment, allowing them to purchase products online and at the same time receive the products or services in a real-world environment. LCCs' apps contribute to ease of use, improve search effectiveness, and save both time and effort [3][8]. From the perspective of service-dominant (S-D) logic, LCC apps provide the customer service as the primary value, in contrast to traditional products, which offer the firm reputation as the primary value. Passengers use LCC apps to facilitate the customer–firm interactions. On the other hand, LCC business models have changed by allowing passengers to engage more interactively than ever through the use of apps. In LCC apps with an excellent navigation system, the novel, interactive information, services, and tasks offered to passengers represent either totally new experiences; these include the use of LCC apps to know about the in-flight requirements or to market existing products/services in novel ways, such as by personalizing traditional products/services.

The goal of this research is to determine how the firm reputation of an LCC affects the compatibility and quality of a mobile device application. Further, this work aims to evaluate passengers' continued app usage considering the moderating effect of service process fit. A model of the continuous use of LCC apps is presented, which, along with the hypotheses, is tested by structural equation modeling. Following the above discussion of the motivation for this study, Section 2 of this report presents the theoretical background of the research. Section 3 then provides a review of previous works, and Section 4 discusses the research design. Finally, the research findings and conclusions are reported in Sections 5 and 6, respectively.

II. LITERATURE REVIEW

Based on the uses and gratifications (U&G) perspective and service-dominant logic (S-D logic), we examine three major classes of persuasion determinants that are directly related to the cognitive evaluation by passengers, namely, firm reputation, perceived compatibility, and confirmation of apps.

A. Firm reputation

Firm reputation refers to how customers view business services and engage in all activities, resulting in a more subjective impression of personal feelings and spread in the market stability. For LCCs, firm prestige is also based on passengers' past experiences with the airline, considering such factors as whether the LCC records the different needs of each passenger, actively cares for its passengers in a timely manner, and provides various service programs [7][11]. According to his or her relevant experiences and personal feelings, each passenger makes a comprehensive evaluation of the airline, and based on the consistent evaluation made by different passengers, the firm reputation is then created.

B.   Cognitive evaluation

Cognitive value for passengers in the purchase of products, comprehensive experience, the characteristics of the product, the need to pay the time and money to do comparison will impact passenger buying behavior. Cognitive evaluation occurs most frequently and most strongly during consumption [12]. The relationship between corporate reputation and cognitive evaluation has been previously pointed out; that is, in assessing corporate reputation, it is not only the subjective understanding of business characteristics that is considered but also the impact of these features on human cognitive evaluation.

In addition, the impact of word of mouth among passengers cannot be ignored in cognitive evaluation, because third-party opinions from outside the firm are more acceptable and believable to other passengers, especially those with experience who are more persuasive than the marketing of the company, and the effect of the web. Rational evaluation can be used as an important indicator of passengers' perceptions to determine the reputation of LCCs, which affects passengers' purchase decisions [9][13]. Thus, if the company has a good reputation, it will have a considerable competitive advantage. This leads to Hypothesis 1.
Hypothesis 1: The firm reputation of LCCs is positively associated with the cognitive evaluation of passengers.

C.   Perceived compatibility

Compatibility refers to the extrinsic advantages of product or service consumption and usually corresponds to non–product-related attributes, especially user imagery. LCCs expect apps services to attract a large number of passengers who eventually become loyal to that mobile service; these passengers install the apps as a means to fulfill their communication and service requirements [6]. Previous research has shown that benefits exert an indirect positive influence on passengers' intention to use a mobile service by improving passenger commitment. However, reaping such benefits from apps services is possible only when the passengers are loyal to the mobile service. This leads to Hypotheses 2.
Hypothesis 2: The perceived compatibility of apps is positively associated with the cognitive evaluation of passengers.

D.   Confirmation capability of apps

Confirmation refers to a practical or technical advantage that users can obtain by using a specific product or service [14]. Apps enable passengers to make online reservations and to search for available trains according to departure/arrival station and date and time segment; this creates a good impression to those phases of the personal lifestyle where insignias are more valued.

Similarly, Apps can assist with the distribution of information across various units of the LCC and between different levels of passengers. Passengers are more willing to use apps when they recognize the tremendous value that can be obtained from their usefulness. This leads to Hypotheses 3.
Hypothesis 3: The confirmation capability of apps is positively associated with the cognitive evaluation of passengers.

E.   Continued usage intention

Continued usage reflects the motivational influences that drive an individual to perform a behavior [9]. From the LCC perspective, when a passenger has experienced finding inaccurate information on an app, his or her perception of the information quality of that website will certainly hamper his or her intention to use that website again when a similar need arises. In other words, the perception of whether a particular website is qualified to help with certain tasks will influence the continuance decision. Similarly, when a passenger feels that an app is cumbersome to use or that the staff behind the LCC website are unwilling to provide sincere help, he or she may prefer to use alternative online channels. This leads to Hypothesis 4.
Hypothesis 4: The cognitive evaluation of apps is positively associated with the continued apps usage intention of passengers.

F.   The moderating effect of service process fit

Service process fit refers to the configuration of technologies by which service providers sense and respond to the dynamic and complex needs of passengers through information technology or online [5][10]. LCCs should analyze passengers' experiences and problems and then respond and support their needs accordingly. Apps must conform to the needs of passengers based on integrated and reliable passenger information. Therefore, we argue that congruity must exist between what individuals search for and their evaluations of the apps. Hence, we propose that passengers use apps as a support instrument when they buy tourism products and that the service process fit of an app will moderate their evaluation toward the behavioral intention use the apps. This leads to Hypothesis 5.
Hypothesis 5: The service process fit moderates the effect of the cognitive evaluation of passengers on the continued usage of apps.

III.   METHODOLOGY

Stratified sampling was used in data collection, which was done through a field survey; we confirmed that the selected passengers had downloaded and used the

apps which they take LCC in advance, and then we asked them if they were willing to fill in the questionnaire; passengers that did not have LCC apps usage experience were excluded from the study.

We confirmed that the selected passengers had downloaded and used the apps which they take LCC in advance, and then we asked them if they were willing to fill in the questionnaire; passengers that did not have LCC apps usage experience were excluded from the study. A total of 1,500 passengers were invited based on the sampling strategy used in the airports; 888 of them completed the questionnaires (59.2% return rate). The questionnaires were developed based on a literature review on related topics.

IV. ANALYSIS AND RESULTS

The measurement items were taken from the literature, and the constructs in the study were measured with a multi-item scale; the internal consistency (Cronbach's alpha) of the construct was greater than 0.9 [15]. The LISREL 8.50 software was used in the analysis. An AVE estimate of 0.50 or higher indicates acceptable validity for a construct measure. The results show that the square root of all AVE estimates for each construct is greater than the inter-construct correlations, as shown in Table I, thus, discriminant validity is supported. The overall goodness of fit was assessed in terms of eight common model fit measures: GFI, 0.92; AGFI, 0.92; RMR, 0.051; RMSEA, 0.058; NFI, 0.92; PNFI, 0.72, CFI, 0.91; and PGFI, 0.66. The $\chi 2$ degrees of freedom ratio was 1.69. Overall, the data indicate a good fit for our hypothesized model, and the results provide meaningful support for the research hypotheses. Among the five hypotheses, five are fully supported.

TABLE I MODEL ESTIMATION

	FR	PCO	Con	CE	SPF	CUI	AVE
FR	0.714						0.51
PCO	0.487	0.843					0.71
Con	0.251	0.307	0.943				0.89
CE	0.456	0.407	0.290	0.781			0.61
SPF	0.442	0.480	0.295	0.471	0.938		0.88
CUI	0.451	0.231	0.326	0.364	0.441	0.872	0.76

The main diagonal shows the square of the AVE (averaged variance extracted).
Significance at p <0.05 level is shown in hold.
FR stand for firm reputation, PCO for perceived compatibility, Con for confirmation, CE for cognitive evaluation, SPF for service process fit, CUI for continued usage intention.

The results indicated a good fit, overall, and the data indicate a favorable fit for our hypothesized model. Table II shows the structural model shows all hypotheses are accepted.

TABLE II HYPOTHESES AND RESULTS

	Hypothesis	T-value	Results
H1	Firm Reputation -> Cognitive Evaluation	4.5**	Supported
H2	Perceived Compatibility -> Cognitive Evaluation	11.75***	Supported
H3	Confirmation -> Cognitive Evaluation	6.92**	Supported
H4	Cognitive Evaluation -> Continued Usage Intention	15.63***	Supported
H5	Cognitive Evaluation* Service Process Fit -> Continued Usage Intention	3.93*	Supported

p<.05, *p*<.01, *p*<.001

V. CONCLUSIONS AND IMPLICATIONS

The use of structural equation modeling to test the theoretical model of continuous usage could lead to a better understanding of the nature and determinants of choices and decisions related to LCCs. The present study focused on continuous LCC apps usage by applying a multidimensional measure of factors that influence continuous usage, with the said measure being both intuitively appealing and reliable. The analysis of the measurement model indicates that the proposed metrics have an acceptable degree of validity and reliability.

First, increasing their firm reputation among passengers has become an important issue for LCCs; for an LCC to be successful, it must get rid of the impression of being cheap. As the LCC increases its service quality, for example, by improving the punctuality rate of flight, the mechanical maintenance, and the image formed by word of mouth, its reputation will become satisfactory to passengers; accordingly, the LCC will improve its business performance, market share, shareholder returns, and passenger service.

Most passengers believe that LCCs focus on cost-oriented segmentation; however, given the growth of the LCC market, LCC need to boost their reputation and gain passengers' recognition. As the LCC increases its service quality, for example, by improving the punctuality rate of flight, the mechanical maintenance, and the image formed by word of mouth, its reputation will become satisfactory to passengers

Second, the interface design of the apps provide a personalized presentation that reflects the preferences of the passengers. Moreover, emotion-related compatibility can be characterized as a combination of psychological tool demands and the tasks to which passengers can decide for themselves how to do their usage behavior. Thus, LCCs should enhance the design of their apps to attract more passengers to use them.

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own or others' emotions. Moreover, emotion-related compatibility can be characterized as a combination of psychological tool demands and the tasks to which passengers can decide for themselves how to do their usage behavior. Thus, LCCs should enhance the design of their apps to attract more passengers to use them.

Third, the confirmation capability of apps that work in dynamic environments continually monitor systems; LCCs have been described as producing a broad range of service quality improvements. LCCs need to analyze the needs and behaviors of their passengers, who rely on extensive panels of instrumentation that must be checked regularly to detect updates on flights. Similarly, keeping an open channel for communication with passengers, providing information during periods of apps usage, and encouraging two-way communication lead to higher passenger satisfaction. Thus, the provision of service processes in the apps makes passengers experience the value of apps usage.

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Finally, service process fit in operations is necessary to make apps functions consistent with the service-oriented work process. Similarly, LCCs can create a process that could function as a model for their additional high-quality services. For example, the system can automatically generate the two-dimensional bar code for baggage within the apps, and the apps can record the baggage weight information for passengers, which will help passengers in the fare on the expenditure judgement. In addition, LCCs can estimate the overbooking by applying system analysis, as well as develop a unique overbooking and transit service strategy.

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