



TECHNOLOGY ADOPTION AND ACCEPTANCE TO FLIGHT PRE-BOARDING EMBEDDED SYSTEMS AMONG PASSENGERS OF A PHILIPPINE LOW-COST CARRIER

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ABSTRACT

This research assessed technology adoption and acceptance of flight pre-boarding embedded systems among passengers of a Philippine Low-Cost Carrier in Pasay City, Metro Manila. This study used descriptive correlation and causal research design. This study aimed to understand how technology adoption affected the acceptance of airline passengers to pre-boarding embedded systems. It applied a stratified random sampling technique across 494 passengers of the Philippine Low-Cost Carrier. The adopted survey questionnaire was administered both in printed form and via Google Forms. A 7-point Likert Scale, simple Mean, Pearson Product-Moment Correlation Coefficient, and Regression Analysis were utilized in this study. Findings revealed that the adoption level in terms of Relative Advantage, Compatibility, Complexity, Observability, and Social Influence were all Fully Adopted. Similarly, the acceptance level in terms of Perceived Usefulness, Perceived Ease of Use, and Attitude were Fully Accepted. Furthermore, the results revealed a very high positive correlation between the Adoption Level and Acceptance Level of the Pre-Boarding Embedded Systems among the passengers of the Philippine Low-Cost Carrier, with r values ranging from .937 to .979 and a probability value of .000, which was less than the level of significance at .05. Additionally, the Adoption Level significantly impacted the Acceptance Level by 97.0%. As an output of the study, a continuous improvement plan was proposed targeting strategies, responsible resources, and time frames for implementation along with success indicators to measure effectiveness.

Keywords: *Low-cost carrier, Diffusion in innovation, Technology acceptance, Departure embedded systems, Technology adoption*

INTRODUCTION

Low-cost carrier (LCC) business models have evolved globally through standardized, technology-enabled service innovations aimed at minimizing operating costs while sustaining passenger satisfaction, as also described by Zawacki-Richter and Jung (2022) and Geng (2023). Embedded pre-boarding and check-in systems exemplify this evolution, serving as critical operational mechanisms through which LCCs balance efficiency and user acceptance, a relationship well explained by Mendieta et al. (2021).

The adoption of these systems varies across regions due to differences in technological readiness, cultural norms, and passenger characteristics, with behavioral intention shaped by perceived usefulness, perceived ease of use, compatibility, and external variables such as age and travel purpose, as evidenced by Lee et al. (2019a), Lee et al. (2019b). Accordingly, integrating TAM and DIT provides a comprehensive framework for explaining how individual perceptions and innovation attributes jointly influence the uptake of self-service aviation technologies across heterogeneous passenger segments, as proposed by Mendieta et al. (2021).

Within the Philippine domestic LCC context, agent-assisted check-in counters remain predominant, particularly among passengers favoring interpersonal service or exhibiting lower technological confidence, despite the growing deployment of self-service kiosks at major airports, as noted by Zawacki-Richter and Jung (2022). This transitional adoption pattern aligns with DIT's emphasis on perceived relative advantage, complexity reduction, and observability as critical determinants of innovation acceptance, consistent with the findings of Pinho et al. (2021).

Correspondingly, this research directly addresses the potential for passenger experience optimization, particularly regarding embedded check-in systems (self-service kiosks, agent-assisted counters, and online check-in) in the context of the Philippine low-cost carrier. Further, this study investigates passenger preferences and their comfort level with these technologies.

The findings reveal a strong positive correlation between user acceptance and adoption of the embedded systems. Passengers particularly appreciate the convenience, faster check-in times, and ease of use they offer. This aligns directly with the concept suggested in this research, which highlights the importance of understanding passenger preferences for optimizing operations.

By leveraging this user-centric approach, the LCC can advance to a targeted strategy that could improve efficiency and gain a competitive edge. The user experience data obtained from this study serves as a roadmap for identifying specific areas within the LCC's embedded check-in systems that could benefit from further investment.

Summary of Related Literature

This research broke new ground by combining the Diffusion of Innovation (DOI) and Technology Acceptance Model (TAM) to explore how both internal user perceptions and external social influences affected the adoption of passengers' pre-boarding embedded systems in Philippine low-cost carriers (PLCCs).

All three studies, conducted by Raman (2023), Zhao (2023), and Jeong (2022), converged on the central importance of perceived relative advantage in influencing technology adoption decisions and defined this concept as the perception that the benefits of a technology outweighed its drawbacks, highlighting its crucial role in shaping user choices.

Meanwhile, in the recent studies conducted by Acikgoz et al. (2023), Onayemi (2022), and Shin (2023), despite focusing on diverse aspects like individual habits, travel behavior, and social systems, researchers shared a common perspective on the significant role of compatibility in influencing technology adoption and emphasized the importance of designing technologies that seamlessly integrated into existing user routines and habits, minimized cognitive burden, and facilitated user comfort.

In the studies conducted by Prihadyanti et al. (2023), Raman (2023), and Liu (2023), researchers highlighted that readily apparent and beneficial features of new technologies could foster positive attitudes and encourage adoption through social learning and peer influence.

Shaikh (2023), Acikgoz et al. (2023), and Ogden (2023) agreed that complex interfaces and challenging user journeys could create user frustration and reluctance to embrace digital banking services and similarly stated that innovations demanding excessive mental exertion were more likely to be rejected, underscoring the importance of prioritizing intuitiveness and user-friendliness.

Lyu et al. (2023), Lin et al. (2023), and Geng (2023), further expanded this concept by investigating the influence of technology, individual, and environmental factors on ICT adoption among rural entrepreneurs and their findings confirmed the importance of core TAM constructs alongside additional motivators like social influence and relative advantage and further identified nuances like the moderating effect of experience on perceived ease of use for adoption.

Studies by Alzahrani (2023) and Sindarta and Santoso (2022) demonstrated a consistent positive association between PEOU and BI where individuals with higher PEOU were more likely to perceive the technology as beneficial and view it favorably, ultimately strengthening their BI to adopt and use it.

Another focal point of this research was Perceived Usefulness (PU) as a key driver of technology adoption where Wicaksono and Maharani (2023) and Chairina (2021) emphasized that individuals with low PU were unlikely to adopt a system, as they saw no

benefit in achieving their work goals and users who perceived technology as beneficial (e.g., Netflix's content accessibility, productivity benefits, and diverse entertainment) exhibited higher and more frequent usage. .

In the adoption literature, Attitude took the core in driving technology adoption where the studies by Marikyan (2023) and Al-Hattami (2023) revealed that positive perceptions of technology playfulness, ease of use, and enjoyment significantly influenced user attitudes, leading to stronger behavioral intention to adopt and use it and emphasized the importance of fostering positive user experiences and perceptions rather than focusing solely on functionality.

Kampa (2023), Granić (2023), and Bonfanti (2023) brought to light optimism and innovativeness as key individual factors impacting mobile learning adoption while both positively affected perceived ease of use, only optimism influenced perceived usefulness, suggesting its crucial role in recognizing technology's potential benefits.

In navigating the impact of technology adoption towards acceptance, both Lemke et al. (2023) and Masa'deh (2023) emphasized the importance of understanding user adoption for successful technology acceptance and underscored the evolving landscape of integrating Large Language Models (LLMs) like ChatGPT in higher education.

This study bridged conceptual gaps in existing research by going beyond individual user perceptions. It integrated the Diffusion of Innovation and Technology Acceptance models to understand how social influences interacted with a user's perception of ease of use and usefulness. Additionally, it explored the long-term aspects of adoption, including potential drawbacks and the need for ongoing support, which was often neglected in favor of initial acceptance. Finally, the study addressed the unique challenges of Philippine low-cost carriers by considering how embedded systems could build trust, address the digital divide, and be accessible to users with varying technology skills.

Furthermore, it investigated how embedded systems could build trust and enhance customer satisfaction in the context of LCCs, where trust can be a challenge. Uniquely, the study considered the digital divide among LCC passengers in terms of adoption and acceptance attributes, aiming to design inclusive and accessible embedded systems for users with varying technology skills. By addressing these gaps, the research offered valuable insights for the effective design, implementation, and long-term success of embedded systems in Philippine LCCs.

Research Questions

The main problem of the study led to how the technological adoption level of Philippine Low-Cost Carrier passengers relates to their acceptance level in using flight onboarding embedded systems. Specifically, this research sought answers to the following:

1. What is the adoption level of the embedded systems (Agent-Assisted Counters, Self-Service Kiosk, Online Check-in) as assessed by the passengers of the Philippine Low-Cost Carrier in terms of:
 - 1.1. Relative Advantage,
 - 1.2. Compatibility,
 - 1.3. Complexity,
 - 1.4. Observability, and
 - 1.5. Social Influence?
2. What is the acceptance level of the embedded systems (Agent-Assisted Counters, Self-Service Kiosk, Online Check-in) as assessed by the passengers of the Philippine Low-Cost Carrier in terms of:
 - 2.1 Perceived Usefulness,
 - 2.2 Perceived Ease of Use, and
 - 2.3 Attitude?
3. Is there a significant relationship between the adoption level and acceptance level of the embedded systems (Agent-Assisted Counters, Self-Service Kiosk, Online Check-in) in the Philippine Low-Cost Carrier?
4. Does the level of adoption singly or in combination significantly impact the acceptance of the embedded systems (Agent-Assisted Counters, Self-Service Kiosk, Online Check-in) in the Philippine Low-Cost Carrier?
5. Based on the findings of the study, what continuous improvement plan may be proposed?

METHODOLOGY

This study used a quantitative research approach in the research design and execution. To be more specific, a descriptive correlational and causal approach were employed. The descriptive approach determined and reported the way things were in this research. Hence, it involved collecting data to test hypotheses or answer questions concerning the current activity status of the participants in the study. The correlational method attempted to determine whether and to what degree a relationship existed between the quantitative variables used in this study. Impact analysis, in the lens of a causal approach, was also applied to test how the adoption level affected the acceptance level of passengers to the check-in and pre-boarding embedded systems of Philippine Low-Cost Carriers.

Research Locale

The data collected in this study originated from Philippine Low-Cost Carrier. These passengers, whose flights were booked at Ninoy Aquino International Airport, Andrews Avenue, Pasay City, Metro Manila, were the primary respondents of the study.

Population and Sampling

The population consisted of all feasible passengers flying with Philippine Low-Cost Carrier Airlines. A stratified random sampling method was applied to select the total respondents out of the total population boarding a flight with a Philippine Low-Cost Carrier. Moreover, with the aid of the G*Power sample size computation application, the research reached 494 respondents based on a 0.1464 effect size and 95% degree of confidence.

Respondents of the Study

Boreham et al. (2020) believed that the way data was collected as part of the research design was more important than investing effort and resources into blindly collecting more data to increase sample size. They argued that the robustness of any sample depended more on the careful selection of respondents than its size.

Table A

Respondents of the Study

Destination	Destination Count	Number of Passengers	Percentage
Local	26	312	63%
International	14	182	37%
Total Respondents	40	494	100%

The total of 494 respondents was entirely composed of passengers checked in to Philippine Low-Cost Carrier bound Manila to 10 international and 20 local destinations.

Instrument

The adopted instrument survey questionnaire was based on an extensive literature review. It adopted the questionnaire used in the research about consumer adoption of the Uber Mobile Application: Insights from diffusion of innovation theory and technology acceptance model as cited by Lin et al. (2023). Permission was requested from the author of the research and was granted. In this research, respondents' permission under Republic Act No. 10173 (the "Data Privacy Act") was asked along with the 25 questions from the DIT factors: perceived usefulness, perceived ease of use, and attitude. Specifically, six items measured relative advantages, four items measured compatibility, three items measured complexity, two items measured observability, and three items measured social influence. Five items were used to measure PU, three items were used to measure PEOU, and three items were used to measure attitude.

Moreover, this survey questionnaire utilized a seven-point Likert scale for rating passenger adoption and acceptance to LCC pre-boarding embedded systems:

Adoption Level to Embedded Systems of Philippine Low-Cost Carrier as Assessed by Passengers

Scale	Range	Categorial Response	Verbal Interpretation
7	6.16-7.00	Strongly Agree	Fully Adopted
6	5.30-6.15	Agree	Mostly Adopted
5	4.44-5.29	Somewhat Agree	Partially Adopted
4	3.58-4.43	Neutral	Somewhat Not Adopted
3	2.72-3.57	Somewhat Disagree	Mostly Not Adopted
2	1.86-2.71	Disagree	Not Adopted
1	1.00-1.85	Strongly Disagree	Not Adopted at All

The above displayed a graphic presentation to determine the adoption level of the embedded systems as assessed by the passengers of the Philippine Low-Cost Carrier in terms of Relative Advantage, Compatibility, Complexity, Observability, and Social Influence.

Acceptance Level to Embedded Systems of Philippine Low-Cost Carrier as Assessed by Passengers

Scale	Range	Categorial Response	Verbal Interpretation
7	6.16-7.00	Strongly Agree	Highly Accepted
6	5.30-6.15	Agree	Mostly Accepted
5	4.44-5.29	Somewhat Agree	Somewhat
4	3.58-4.43	Neutral	Somewhat Not Accepted
3	2.72-3.57	Somewhat Disagree	Mostly Not Accepted
2	1.86-2.71	Disagree	Not Accepted
1	1.00-1.85	Strongly Disagree	Not Accepted at All

The above displayed a graphic presentation to determine the acceptance level of the embedded systems as assessed by the passengers of the Philippine Low-Cost Carrier in terms of Perceived Usefulness, Perceived Ease of Use, and Attitude.

Validation of the Instrument

The reliability of the scales was examined through average variance extracted (AVE), composite reliability (CR), and Cronbach's Alpha. The results showed that for all the measured constructs, all AVEs were greater than 0.5, and the estimates of CR and Cronbach's Alpha were greater than 0.7, thus indicating reliability. In this validation of instrument, variables measured as follows: Relative Advantage (RA) - 0.883, Compatibility (COMP) - 0.866, Complexity (CPLEX) - 0.828, Observability (OBS) - 1.000, Social Influence (SI) - 0.882, Perceived Usefulness (PU) - 0.900, Perceived Ease of Use (PEOU) - 0.882, Attitude (ATT) - 0.903.

Data Gathering Procedure

A formal letter of request was sent to the Philippine Low-Cost Carrier for their approval to conduct this research and gather data from passengers who utilized the pre-boarding embedded system. An integrated letter of consent along with the online survey was made available to passengers of the Philippine Low-Cost Carrier, provided with permission to participate in the study about their use of the booking embedded system. Pre-screening questions were included, such as their experience in using all the embedded systems of the Philippine Low-Cost Carrier, as qualifying criteria in the statistical treatment of data.

Upon the approval of the said request, a survey relevant to the research topic was conducted and distributed online. The responses were retrieved, tallied, analyzed, and interpreted. Moreover, a statistician was consulted for the processing and interpretation of data.

Treatment of Quantitative Data

The following were the statistical treatments applied to the study by the statistician using Statistical Package for Social Sciences (SPSS).

1. The Mean and the 7-Point Likert Scale were used to determine the Adoption Level and Acceptance level of passengers to the embedded systems in the Philippine Low-Cost Carrier.
2. Pearson Product-Moment Correlation Coefficient was used to determine the significant relationship between the independent variable and dependent variable.
3. Regression Analysis was used to determine the significant impact of the Adoption Level and Acceptance Level of passengers on the embedded systems in the Philippine Low-Cost Carrier.

Scope and Delimitation

The main scope of this quantitative causal research focused on the technology adoption level in terms of relative advantage, compatibility, complexity, observability, and social influence; and acceptance level in terms of perceived usefulness, perceived ease of use, and attitude of the Philippine Low-Cost Carrier passengers in the usage of departure embedded systems such as agent-assisted check-in, self-service kiosks, and online check-in for check-in and departure needs.

The scope of this study only covered the passengers of the Philippine Low-Cost Carrier with check-in and departure transaction experience using all embedded systems such as agent-assisted check-in, self-service kiosks, and online check-in. These passengers, whose flights were booked at Ninoy Aquino International Airport, Andrews Avenue, Pasay City, Metro Manila, were the primary respondents of the study.

2. COMP2: Embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) is compatible with my lifestyle.	6.97	FA
3. COMP3: Embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) fits with my service needs.	6.98	FA
GENERAL ASSESSMENT	6.97	FA
Legend: 6.16 – 7.00 Fully Adopted (FA) 2.72 – 3.57 Mostly Not Adopted (MNA) 5.30 – 6.15 Mostly Adopted (MA) 1.86 – 2.71 Not Adopted (NA) 4.44 – 5.29 Partially Adopted (PA) 1.00 – 1.85 Not Adopted at All (NAA) 3.58 – 4.43 Somewhat Not Adopted (SNA)		

Table 1.3

Level of Adoption of the Embedded Systems as assessed by the Passengers of the Philippine Low-Cost Carrier in terms of Complexity

Indicators in terms of Complexity	Mean	Verbal Interpretation
1. CPLEX1: Embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) do not require technical skills.	6.96	FA
2. CPLEX2: Embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) do not require a lot of mental effort.	6.98	FA
3. CPLEX3: Embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) is not frustrating.	6.98	FA
GENERAL ASSESSMENT	6.97	FA
Legend: 6.16 – 7.00 Fully Adopted (FA) 2.72 – 3.57 Mostly Not Adopted (MNA) 5.30 – 6.15 Mostly Adopted (MA) 1.86 – 2.71 Not Adopted (NA) 4.44 – 5.29 Partially Adopted (PA) 1.00 – 1.85 Not Adopted at All (NAA) 3.58 – 4.43 Somewhat Not Adopted (SNA)		

Table 1.4

Level of Adoption of the Embedded Systems as assessed by the Passengers of the Philippine Low-Cost Carrier in terms of Observability

Indicators in terms of Observability	Mean	Verbal Interpretation
1. OBS1: I can see the benefits of using embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) immediately.	6.97	FA
GENERAL ASSESSMENT	6.97	FA
Legend: 6.16 – 7.00 Fully Adopted (FA) 2.72 – 3.57 Mostly Not Adopted (MNA) 5.30 – 6.15 Mostly Adopted (MA) 1.86 – 2.71 Not Adopted (NA) 4.44 – 5.29 Partially Adopted (PA) 1.00 – 1.85 Not Adopted at All (NAA) 3.58 – 4.43 Somewhat Not Adopted (SNA)		

Table 1.5

Level of Adoption of the Embedded Systems as assessed by the Passengers of the Philippine Low-Cost Carrier in terms of Social Influence

Indicators in terms of Social Influence	Mean	Verbal Interpretation
1. SI1: I have seen others using embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in).	6.97	FA
2. SI2: In my social group, I see embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) in many people's smartphones.	6.97	FA
3. SI3: It is easy for me to observe others using embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) in my social group.	6.97	FA
GENERAL ASSESSMENT	6.97	FA
Legend: 6.16 – 7.00 Fully Adopted (FA) 2.72 – 3.57 Mostly Not Adopted (MNA) 5.30 – 6.15 Mostly Adopted (MA) 1.86 – 2.71 Not Adopted (NA) 4.44 – 5.29 Partially Adopted (PA) 1.00 – 1.85 Not Adopted at All (NAA) 3.58 – 4.43 Somewhat Not Adopted (SNA)		

Table 2.1

Acceptance Level of the Embedded Systems as assessed by the Passengers of the Philippine Low-Cost Carrier in terms of Perceived Usefulness

Indicators in terms of Perceived Usefulness	Mean	Verbal Interpretation
1. PU1: Using embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) would enable me to access my check in and departure activities more quickly.	6.97	FA
2. PU2: Using embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) makes it easier for me to request my check in and departure activities.	6.97	FA
3. PU3: I would find embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) a useful option for getting my check in and departure needs.	6.97	FA
4. PU4: Using embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) makes me save time	6.97	FA
5. PU5: Using embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) improves my efficiency.	6.97	FA
GENERAL ASSESSMENT	6.97	FA
Legend: 6.16 – 7.00 Fully Accepted (FA) 2.72 – 3.57 Mostly Not Accepted (MNA) 5.30 – 6.15 Mostly Accepted (MA) 1.86 – 2.71 Not Accepted (NA) 4.44 – 5.29 Partially Accepted (PA) 1.00 – 1.85 Not Accepted at All (NAA) 3.58 – 4.43 Somewhat Not Accepted (SNA)		

Table 2.2

Acceptance Level of the Embedded Systems as assessed by the Passengers of the Philippine Low-Cost Carrier in terms of Perceived Ease of Use

Indicators in terms of Perceived Ease of Use	Mean	Verbal Interpretation
1. PEOU1: My interaction with embedded systems applications (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) is clear and understandable.	6.97	FA
2. PEOU2: It is easy for me to get embedded systems applications (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) to do what I want it to do	6.97	FA
3. PEOU3: Overall, embedded systems applications (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) is easy for me to use.	6.97	FA
4. PEOU4: Learning to use the embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) is easy for me.	6.97	FA
GENERAL ASSESSMENT	6.97	FA
Legend: 6.16 – 7.00 Fully Accepted (FA) 2.72 – 3.57 Mostly Not Accepted (MNA) 5.30 – 6.15 Mostly Accepted (MA) 1.86 – 2.71 Not Accepted (NA) 4.44 – 5.29 Partially Accepted (PA) 1.00 – 1.85 Not Accepted at All (NAA) 3.58 – 4.43 Somewhat Not Accepted (SNA)		

Table 2.3

Acceptance Level of the Embedded Systems as assessed by the Passengers of the Philippine Low-Cost Carrier in terms of Attitude

Indicators in terms of Attitude	Mean	Verbal Interpretation
1. ATT1: I am positive about requesting my check in and departure activities through embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in).	6.97	FA
2. ATT2: Using embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) for requesting my check in and departure activities is a good idea.	6.97	FA
3. ATT3: I like the idea of using embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) for requesting my check in and departure activities.	6.97	FA
4. ATT4: Using embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check in) for requesting my check in and departure activities is favorable.	6.97	FA
GENERAL ASSESSMENT	6.97	FA
Legend: 6.16 – 7.00 Fully Accepted (FA) 2.72 – 3.57 Mostly Not Accepted (MNA) 5.30 – 6.15 Mostly Accepted (MA) 1.86 – 2.71 Not Accepted (NA) 4.44 – 5.29 Partially Accepted (PA) 1.00 – 1.85 Not Accepted at All (NAA) 3.58 – 4.43 Somewhat Not Accepted (SNA)		

Table 3

Test of Significant Relationship between the Adoption Level and Acceptance Level of the Embedded Systems in Philippine Low-Cost Carrier

Adoption Level	Adoption Level	r value	P value	Remarks	Decision
Relative Advantage	Perceived Usefulness	.937**	.000	Significant	Reject H _o
	Perceived Ease of Use	.937**	.000	Significant	Reject H _o
	Attitude	.940**	.000	Significant	Reject H _o
Compatibility	Perceived Usefulness	.952**	.000	Significant	Reject H _o
	Perceived Ease of Use	.952**	.000	Significant	Reject H _o
	Attitude	.914**	.000	Significant	Reject H _o
Complexity	Perceived Usefulness	.924**	.000	Significant	Reject H _o
	Perceived Ease of Use	.924**	.000	Significant	Reject H _o
	Attitude	.956**	.000	Significant	Reject H _o
Observability	Perceived Usefulness	.976**	.000	Significant	Reject H _o
	Perceived Ease of Use	.979**	.000	Significant	Reject H _o
	Attitude	.956**	.000	Significant	Reject H _o
Social Influence	Perceived Usefulness	.966**	.000	Significant	Reject H _o
	Perceived Ease of Use	.966**	.000	Significant	Reject H _o
	Attitude	.947**	.000	Significant	Reject H _o

**Correlational at the level 0.01 *Correlational at the level 0.05(Two-tailed)

Table 4

Regression Analysis on the Impact of Adoption Level on the Acceptance Level of the Embedded Systems among the Passengers of the Philippine Low-Cost Carrier

Model	Unstandardized Coefficients		Standardized Coefficients		T	Sig.	Decision	Remarks
	B	Std. Error	Beta					
(Constant)	.223	.053			4.177	.000		
Adoption Level	.968	.008	.985		126.569	.000	Reject H _o	Significant
Dependent Variable:		Acceptance Level						
R – Square	=	.985			F-value	=	16019.708	
Adjusted R Square	=	.970			Significance	=	.000	

Table 5

The Proposed Continuous Improvement Plan

PROPOSED CONTINUOUS IMPROVEMENT PLAN TO A FULL ADOPTION OF SELF-SERVICE PLATFORMS IN THE PHILIPPINE LOW-COST CARRIER

Areas of Concern	Objective	Strategy	Person Responsible	Time Frame	Success Indicators
Passenger experience for users who prefer traditional methods or require additional guidance	Improve user experience and cater to diverse passenger preferences	- Develop customer campaign to run onsite and virtually which is comprehensively accessible on booking platforms especially website - Develop onsite or interactive guides on using embedded systems. - Offer optional assistance from airline staff for passengers unfamiliar with the systems. - Conduct follow-up surveys to gauge passenger satisfaction with these efforts.	IT department Customer Service Team	3 months (Staggard/c ontinuous approach based on campaign results)	95% Target End of Year: Increased usage of embedded systems by passengers who previously preferred traditional methods such as agent-facilitated counters from an average of 40% annual adoption rate.
		Conduct usability testing to identify areas for improvement in system interface and navigation.			95% Quarterly Target: Positive feedback in follow-up surveys. from an average of 40% quarterly adoption rate.
Perceived need for technical skills when using embedded systems	Enhance system usability and reduce perceived technical barriers	- Simplify instructions and error messages. - Offer on-demand in-system or on-the-go help guides or FAQs. - Update Chatbot learning capability to address customer needs	IT department Customer Service Team Marketing team	4 months (Staggard/c ontinuous approach based on campaign results)	95% Quarterly Target: Reduced scores on survey questions about perceived technical difficulty from 69% average share on total inquiry.
					95% Quarterly Target: Reduced scores on survey questions about perceived technical difficulty from 75% average share on total inquiry.
Social influence on passenger perception	Leverage social influence to	Feature testimonials from satisfied passengers on the airline's website and	IT department Customer Service	Ongoing	95% Monthly Target Increased passenger comfort using the systems from a net/annual promoter score of 59%.
					4 of 5 Monthly Target: Chatbot utilization with decreased agent - virtual assistance from the average 3 of 5 customer engagement score.
					30% Quarterly Target Brand Presence: Increased brand mentions and

	promote wider adoption	social media channels.	Team Marketing team		positive social media sentiment regarding the embedded systems from an average of 5% engagement rate.
		- Partner with travel influencers to showcase the convenience of embedded systems. - Monitor social media conversations and address any concerns or negative perceptions. - Gather passenger feedback through online surveys and engagement surveys. - Implement a loyalty program that rewards frequent users of embedded systems. - Continuously update and improve embedded system functionalities based on passenger feedback.			
Passenger endorsement and positive attitude	Maintain passenger satisfaction and encourage continued use		IT department Customer Service Team Marketing team	Ongoing	95% Embedded Systems Utilization Rate(Frequent Flyer Program) from an average of 40% quarterly adoption rate.
		- Continuously update and improve embedded system functionalities based on passenger feedback. - Monitor passenger usage data to identify areas for improvement in the embedded systems. - Address any technical glitches or usability issues promptly. - Conduct satisfaction surveys at regular intervals to track user sentiment.			
Relationship between Adoption Level and Acceptance Level	Strengthen the positive correlation between user adoption and continued system acceptance		IT department Customer Service Team Marketing team	Ongoing	95% Quarterly Target: Positive feedback in follow-up surveys from a net/annual promoter score of 59%. 100% Annual Target (Digital Transformation Initiative) Continued high adoption rates and positive user perception of embedded systems.

DISCUSSION

Table 1.1 Relative Advantage

Relative Advantage got **Fully Adopted (6.97)** as to the level of adoption of the embedded systems as assessed by the passengers of the Philippine Low-Cost Carrier. All indicators were verbally interpreted as **Fully Adopted**. Furthermore, the indicator “Compared to manual booking in an airline ticketing booth, embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) made it more convenient to access my check-in and departure activities.” had the highest computed mean of **6.98**. Meanwhile, the indicators “Compared to manual booking in an airline ticketing booth, embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) improves the quality of my task for check-in and departure activities” and “Compared to manual booking in an airline ticketing booth, embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) enhanced my overall check-in and departure experience.” had the lowest computed mean of **6.96**.

There is strong evidence of high passenger adoption and positive perception of the embedded systems (Agent-assisted Counters, Self-Service Kiosks, Online Check-in) offered by the airline in terms of relative advantage, suggesting that passengers find these embedded systems significantly more advantageous than traditional manual booking methods. Among the different functionalities, the ease of access provided by embedded systems received the highest rating (mean of 6.98). Passengers strongly agree that embedded systems make check-in and departure activities more convenient compared to manual booking. While all indicators scored very highly, the aspects of improving task quality and enhancing the overall experience (mean of 6.96) scored slightly lower than convenience. This suggests that while passengers find embedded systems easy to use, there might be room for improvement in how these systems streamline the check-in and departure process itself, potentially leading to a more enjoyable experience.

Both the airline passenger study and research on student adoption of ChatGPT (Raman, 2023) highlighted the importance of relative advantage in technology adoption. Passengers found the airline's embedded check-in systems (counters, kiosks, online check-in) significantly more convenient than traditional methods, with ease of access receiving the highest rating (mean 6.98). Similarly, students perceived ChatGPT's ability to support independent learning and enhance academic performance as key advantages over traditional resources. In both cases, the perception of clear benefits – convenience for passengers and educational value for students – contributed to a higher likelihood of adopting the technology. However, the airline study also suggested room for improvement in streamlining the check-in process itself, indicating that maximizing relative advantage was an ongoing process. This was aligned with potential areas for development in ChatGPT functionalities, ensuring its perceived advantages continued to outweigh drawbacks and drove user adoption.

The study on passenger adoption of airline-embedded systems (counters, kiosks, online check-in) aligned with broader research on "relative advantage" as a key factor in technology adoption. Passengers perceived these systems as significantly more convenient than traditional manual booking methods, reflected in the high average score (6.98) for ease of access. This reinforced the findings from Kim et al. (2023) and other studies that highlighted the positive influence of relative advantage on e-commerce and e-learning adoption. While passengers found the systems easy to use, there was room for improvement in streamlining the check-in and departure process itself. This suggested that maximizing perceived advantages went beyond just eased of use and extended to enhancing the overall user experience. In conclusion, the study provided evidence that when passengers perceived embedded systems as offering clear advantages over traditional methods, they were more likely to adopt and integrate them into their travel experience.

Table 1.2 Compatibility

Compatibility got **Fully Adopted (6.97)** as to the level of adoption of the embedded systems as assessed by the passengers of the Philippine Low-Cost Carrier. All indicators were verbally interpreted as **Fully Adopted**. Furthermore, the indicator

“Embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) fits with my service needs.” had the highest computed mean of **6.98**. Meanwhile, the indicators “Embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) fits well with the way I like to request check-in and departure activities.”, had the lowest computed mean of **6.96**.

The indicator with the highest score ("fits with my service needs") suggests passengers see the embedded systems as fulfilling their practical requirements. However, the indicator with the lowest score (though still very high), "fits well with the way I like to request check-in and departure activities," hints at a slightly less enthusiastic response regarding personal preference for using these systems. This could be an area for further investigation – perhaps some passengers prefer traditional methods or might need additional guidance on using the embedded systems effectively. Moreover, the survey results paint a positive picture of passenger adoption of the embedded systems. However, the slight difference in scores suggests room for further exploration of user preferences to optimize the passenger experience.

The survey results on passenger adoption of airline-embedded systems were aligned with the concept of compatibility emphasized in Acikgoz et al.'s research (2023). While passengers found the systems highly useful ("fits with my service needs"), the slightly lower score for "fits well with the way I like to request check-in activities" suggested compatibility might be an area for improvement. This was aligned with Acikgoz et al.'s notion that new technologies should be consistent with existing user habits. Perhaps some passengers preferred traditional methods or required additional guidance to use the embedded systems effectively. Incorporating Acikgoz et al.'s concept of low complexity, characterized by ease of use, could further enhance compatibility. Ultimately, designing embedded systems that seamlessly integrated into passengers' routines and minimized the need for significant adjustments could increase user adoption and successful acceptance.

The results were further supported by Shin's (2023) research on the digital divide in smartphone adoption among travelers. While young travelers readily embraced compatible travel apps for their convenience (e.g., mobile payments), seniors might have required additional support or preferred traditional methods. For airlines, this highlighted the potential need to bridge the digital divide by offering alternative options or user guides to ensure embedded systems were accessible and met the preferences of a wider passenger demographic.

Table 1.3 Complexity

Complexity got **Fully Adopted (6.97)** as to the level of adoption of the embedded systems as assessed by the passengers of the Philippine Low-Cost Carrier. All indicators were verbally interpreted as **Fully Adopted**. Furthermore, the indicator “Embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) do not require a lot of mental effort.” and “Embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) is not frustrating” had the highest

computed mean of **6.98**. Meanwhile, the indicators “Embedded systems application (Agent-assisted Counters, Self-Service Kiosk, Online Check-in) do not require technical skills.” had the lowest computed mean of **6.96**.

There are specific aspects that passengers find particularly user-friendly. The highest scores are for statements regarding the embedded systems requiring minimal mental effort and not being frustrating to use. This suggests passengers appreciate the ease of use and smooth experience offered by these systems. However, the indicator with the lowest score suggests that passengers might perceive a slight need for some technical skills when using the embedded systems (agent-assisted counters, self-service kiosks, and online check-in). This can yield further investigation to understand if specific functionalities require additional user training or if the interface can be simplified for broader user comfort. Overall, the survey results paint a positive picture of passenger adoption towards the implemented embedded systems. However, focusing on improving the user experience, particularly regarding perceived technical skills needed, could further enhance passenger adoption and satisfaction.

Passengers particularly valued aspects that required minimal mental effort and weren't frustrating to use. This was in line with the established research of Shaikh (2023), where complexity acted as a barrier to technology adoption. However, the survey also identified room for improvement, with passengers perceiving a slight need for technical skills when using the systems. This suggested that some functionalities might benefit from further simplification or user training to ensure a smooth experience for all. By addressing these aspects of perceived complexity, airlines could enhance user experience and foster even greater passenger adoption of these embedded systems.

Table 1.4 Observability

Observability got **Fully Adopted (6.97)** as to the level of adoption of the embedded systems as assessed by the passengers of the Philippine Low-Cost Carrier. All indicators were verbally interpreted as **Fully Adopted**.

Passengers of the Philippine Low-Cost Carrier (LCC) display a high level of adoption for the benefits of embedded systems, particularly those related to observability. The results suggest that passengers readily recognize the immediate advantages offered by these embedded systems, such as faster check-in processes, reduced waiting times, and potentially more convenient options for interacting with the airline.

The findings from the Philippine Low-Cost Carrier (LCC) passenger study aligned with Prihadyanti et al.'s (2023) research on social innovation diffusion among farmers. Both studies highlighted the importance of "observability" in technology adoption. In the airline context, passengers readily recognized the immediate benefits of embedded systems, such as faster check-in and reduced waiting times. This echoed Prihadyanti et al.'s argument that agri-tech startups promoting Diffusion of Social Innovations (DoSI) should prioritize features with clear and demonstrable advantages to farmers. By emphasizing observable benefits, both airlines and social innovation startups could

increase user adoption and integration of new technologies into existing practices. Prihadyanti et al. (2023) further emphasized that successful diffusion hinged on five key attributes: observability, relative advantage, compatibility, complexity, and social influence. By prioritizing these factors during development, startups could improve their chances of achieving widespread adoption.

Table 1.5 Social Influence

Social Influence got **Fully Adopted (6.97)** as to the level of adoption of the embedded systems as assessed by the passengers of the Philippine Low-Cost Carrier. All indicators got a mean of **6.97** verbally interpreted as **Fully Adopted**.

Passengers of the Philippine Low-Cost Carrier display a high level of adoption towards the embedded systems, particularly when it comes to social influence. This suggests that passengers believe social factors, such as recommendations from friends or family, positively influence their perception of the embedded systems. Additionally, the phrasing "all indicators" implies that every sub-category within "Social Influence" also receives high scores.

The study revealed a high level of passenger adoption towards the Philippine Low-Cost Carrier's embedded systems, with social influence playing a key role. These suggested passengers were likely influenced by positive social cues like recommendations from friends or family. Interestingly, this aligned with Zhao's research (2023) on social commerce. While Zhao focused on online platforms, his findings demonstrated how platform features that enhance trust and offer relative advantages (referencing the Diffusion of Innovation theory) could significantly influence user behavior. In both contexts, social influence and the perception of advantages appeared to be key drivers of technology adoption. This highlighted the potential for airlines to leverage social aspects, perhaps through passenger testimonials or clear communication of the benefits of embedded systems, to further encourage passenger adoption and usage.

In the same context, the study on passenger adoption of airline-embedded systems aligned with research by Jeong (2022) on wearable device purchase intention, highlighting the importance of social influence in technology adoption. Passengers in the airline study displayed a high adoption of embedded systems, likely influenced by social factors like positive recommendations from friends or family. Similarly, Jeong's research found that social image, a facet of social influence, positively impacted consumers' purchase intention for wearable devices. However, the two studies also revealed potential nuances within social influence. Jeong's work suggested that personal innovativeness might moderate the impact of social factors. People with high personal innovativeness might be more receptive to novel features, while wearability, a seemingly social factor (influenced by what others wear), didn't significantly influence purchase intention across both groups. This suggested that social influence could manifest in different ways depending on the technology and the user's individual characteristics.

Table 2.1 Perceived Usefulness

Perceived Usefulness was **Fully Accepted (6.97)** as to the level of acceptance of the embedded systems as assessed by the passengers of the Philippine Low-Cost Carrier. All indicators got a mean of **6.97** verbally interpreted as **Fully Accepted**.

Based on the survey results, passengers of the Philippine Low-Cost Carrier exhibit a high level of acceptance for the embedded systems. This means that all individual indicators within the category of perceived usefulness receive "Strongly Agree" or "Fully Accepted" ratings. This suggests that passengers find the embedded systems to be very helpful and readily integrate them into their pre-boarding experience. This also emphasizes that the passengers agree that the embedded systems as valuable and beneficial.

The study found high acceptance rates for the Philippine Low-Cost Carrier's embedded systems, with passengers rating their usefulness very highly. This aligned with Wicaksono and Maharani's (2023) research, which emphasized "Perceived Usefulness" (PU) as a key factor in technology acceptance. They highlighted that users were less likely to adopt a system they didn't believe helped them achieve their goals. PU encompassed various aspects, including task efficiency, productivity, and improved work processes. Interestingly, the study found a dominance of "Perceived Ease of Use" (PEOU) over PU, particularly among younger users. This suggested that younger demographics, more comfortable with technology, prioritized ease of use initially, while usefulness became more prominent as they became familiar with the system's functionalities. In the context of the airline's embedded systems, passengers likely found them valuable and helpful in streamlining their pre-boarding experience, contributing to their high acceptance rate.

The high level of acceptance for the Philippine Low-Cost Carrier's embedded systems, as evidenced by "Strongly Agree" or "Fully Accepted" ratings on perceived usefulness, aligned with research by Chairina (2021) and confirmed the positive link between user perception and actual system use. These suggested passengers found the embedded systems valuable and helpful, readily integrating them into their pre-boarding experience. Similar to Netflix users who perceived the platform as beneficial for content discovery, productivity, and entertainment, Philippine airline passengers seemed to value the utility of the embedded systems. These findings highlighted the importance of perceived usefulness in driving technology acceptance across various contexts.

Table 2.2 Perceived Ease of Use

Perceived Ease of Use was **Fully Accepted (6.97)** as to the level of acceptance of the embedded systems as assessed by the passengers of the Philippine Low-Cost Carrier. All indicators got a mean of **6.97** verbally interpreted as **Fully Accepted**.

All individual indicators within this category likely receive similar positive ratings. This suggests that passengers generally find the embedded systems easy to use and

navigate. Further, embedded systems are designed with user experience in mind. Passengers readily understand how to operate the systems and navigate their features, paving the way for wider acceptance and potential benefits for both passengers and the airline.

The study revealed positive passenger experiences with the airline's embedded systems (counters, kiosks, online check-in). Passengers likely found them easy to use and navigate, suggesting a user-centered design facilitating wider acceptance. This aligned with Geng's research (2023) on ICT acceptance among rural entrepreneurs. Their extended Technology Acceptance Model (TAM) highlighted the importance of "relative advantage" – the perceived benefits over existing methods – in driving acceptance intentions. Notably, Geng's study found that offline businesses, similar to passengers encountering new technology, were more likely to adopt ICT when they saw a clear advantage compared to traditional methods. This suggested that emphasizing the relative advantages of embedded systems, such as convenience and efficiency compared to manual booking, was a key factor in encouraging wider passenger acceptance.

Furthermore, with Alzahrani's (2023) research on Internet of Things (IoT) acceptance, where perceived ease of use was a crucial factor for faculty members. When users anticipated a smooth learning curve, they were more likely to find the technology valuable and consider adopting it. In both cases, a positive user experience characterized by ease of use paved the way for wider acceptance, potentially benefiting both users and the organization implementing the technology.

Table 2.3 Attitude

Attitude was Fully Accepted (6.97) as to the level of acceptance of the embedded systems as assessed by the passengers of the Philippine Low-Cost Carrier. All indicators got a mean of **6.97** verbally interpreted as **Fully Accepted**.

The findings, which explore passenger attitudes towards the embedded systems of a Philippine Low-Cost Carrier (LCC), reveal a highly positive reception. Having an average score of 6.98, interpreted as "Strongly Agree" or "Fully Accepted," suggests passengers hold a very favorable view of the technology. Furthermore, all individual indicators within this category receive similarly positive ratings. This strong positive attitude indicates that passengers are likely interested in using the embedded systems and may even find them beneficial.

Passenger studies, like the one that explored a Philippine Low-Cost Carrier's (LCC) embedded systems, highlighted the importance of positive user attitudes for technology acceptance. In this study, passengers expressed a very favorable view of the embedded systems, with an average score of 6.98 ("Strongly Agree" or "Fully Accepted"). This aligned with Marikyan's (2023) research, which found that factors fostering positive user perceptions, such as ease of use and enjoyment, significantly influenced user attitudes towards technology. In both cases, a positive attitude likely translated to a greater interest in using the technology and potentially finding it beneficial. Therefore,

fostering positive user perceptions through design and user experience became crucial for successful technology acceptance.

Similarly, Al-Hattami's (2023) research found that attitude towards using technology held the strongest influence on behavioral intention in accounting education technology acceptance. This reinforced the notion that fostering positive user attitudes is crucial for successful technology integration, whether it's for airline passengers or educators. Therefore, airlines and educational institutions alike should prioritize initiatives that cultivate positive user engagement and attitudes to promote technology acceptance.

Table 3. Significant relationship between the adoption level and acceptance level of the embedded systems

There was a significant relationship between the Adoption Level and Acceptance Level of the Embedded Systems in Philippine Low-Cost Carriers. The r values .937 to .979 were interpreted as with a very high positive correlation to correlate the Adoption Level and Acceptance Level of the Embedded Systems. The computed probability values of .000 were lesser than the level of significance ($P < 0.05$); thus, the null hypothesis was rejected.

Adoption level has a significant relationship with the Acceptance level of the Embedded Systems in the Philippine Low-Cost Carrier. The higher the adoption level, the higher the acceptance level among the passenger of the Philippines Low-Cost Carrier.

The study on Philippine Low-Cost Carrier (LCC) passengers supported a strong correlation between adoption and acceptance of embedded systems. A statistically significant positive relationship was found (r values .937 to .979), indicating that as passenger adoption increased, so too did the acceptance level of these systems. This aligned with Kampa's (2023) research on mobile learning (m-learning) acceptance, where individual optimism directly impacted both perceived ease of use and usefulness. However, Kampa's study also found that innovativeness only influenced ease of use, not perceived value. This suggested that a positive outlook might have been a stronger driver for overall technology adoption than simply a preference for novelty.

This also aligned with research by Granić (2023) in the field of educational technology, which highlighted the Technology Acceptance Model (TAM) as a key framework for understanding technology adoption. The TAM suggested that a higher level of acceptance, likely influenced by factors like perceived ease of use and usefulness, led to a higher level of adoption. In the context of the airline, this translated to passengers who found the embedded systems user-friendly and valuable being more likely to actively use them for check-in and departure processes.

Table No. 4. Adoption level significantly impacted the Acceptance level of the Embedded Systems

Adoption level significantly impacted the Acceptance level of the Embedded Systems among the Passengers of the Philippine Low-Cost Carrier. The probability value of **.000** was lesser than the level of significance at .05, thus rejecting the null hypothesis.

The results of the study revealed that the Adoption Level significantly impacted the Acceptance Level of the Embedded Systems among the Passengers of the Philippine Low-Cost Carrier by **97.0%**. This meant that in the study conducted among passengers of a Philippine low-cost carrier, the level at which passengers adopted embedded systems had a significant impact on their acceptance of these systems. Specifically, 97.0% of the variance or relationship between how much passengers adopted these systems and how much they accepted them can be explained by this adoption level. In other words, the more passengers used or engaged with these embedded systems, the more likely they were to accept them positively.

This study aligned with Masa'deh's (2023) research on student adoption of ChatGPT, highlighting the link between user acceptance and technology adoption. A regression analysis confirmed a significant positive impact of adoption level on the acceptance level of embedded systems among Philippine Low-Cost Carrier (LCC) passengers. In other words, passengers who found the embedded systems (counters, kiosks, online check-in) user-friendly and valuable were more likely to actively use them. Similarly, Masa'deh's study found that students were motivated to adopt ChatGPT due to its perceived value as a learning tool. However, both studies acknowledged potential challenges to user acceptance. In the case of the LCC passengers, this could involve concerns about system complexity or limitations. For students using ChatGPT, potential drawbacks like factual errors or lack of deep understanding could arise. By understanding these factors and addressing user concerns, both studies emphasized the importance of promoting responsible use and mitigating potential negative impacts to achieve successful technology adoption.

Additionally, both research examination of embedded systems adoption among Philippine Low-Cost Carrier (LCC) passengers and Lemke et al.'s study on LLM integration in higher education highlighted the critical interplay between user acceptance and technology adoption. Findings underscored the significant positive impact of adoption level on passengers' acceptance of embedded systems, suggesting that user-friendly features such as counters, kiosks, and online check-in enhanced usage rates. Similarly, Lemke et al. explored how optimism towards LLMs positively influenced student acceptance, while concerns over usability can hinder adoption. They also stressed the importance of educating users about potential risks associated with these technologies, calling for a balanced approach to managing their integration into everyday practices.

Table 5. Improvement plan based on the findings of the study

Based on the findings of this study on passenger acceptance of embedded systems (agent-assisted counters, kiosks, online check-in) offered by a Philippine Low-

Cost Carrier (LCC), this table proposed actionable outputs to address areas of concern and further improve the passenger experience. These outputs included specific strategies, people responsible, and time frames for implementation, along with success indicators to measure their effectiveness.

Conclusions

Based on the results shown above, the following were concluded:

1. That the embedded systems offer a significant advantage over traditional booking methods, particularly in terms of convenience and ease of access. This means that passengers perceive the embedded systems as a faster and more efficient way to manage the check-in process. Moreover, embedded systems were generally compatible with passengers' existing skills and routines. However, the finding that some passengers might prefer traditional methods or require additional guidance highlights a potential area for further investigation regarding compatibility for less tech-savvy users. Similarly, there is a low level of perceived complexity, making the systems accessible to a wider range of users. Further, passengers readily recognize the immediate benefits of the embedded systems, such as faster check-in times. This highlights the clear visibility of the advantages offered by these systems. Lastly, passengers acknowledge that recommendations from others positively impact their view of the embedded systems. This revealed that passengers found the systems user-friendly and requiring minimal technical skills.
2. That passengers exhibited a high level of acceptance. Passengers find the embedded systems to be significantly valuable and readily integrated them into their pre-boarding experience. They perceive the embedded systems as helpful and beneficial, contributing to a smoother and more efficient travel process. On a similar note, passengers generally found the embedded systems user-friendly and easy to navigate. This user-centric design, where passengers readily understand how to operate the systems, likely contributes to wider adoption and a positive overall experience. Finally, the study the strong positive attitude indicates that passengers were not only interested in using the embedded systems but may even find them enjoyable and beneficial.
3. That there is a clear link between passenger adoption and acceptance of the LCC's embedded check-in systems. Passengers who perceived the systems as valuable and user-friendly were more likely to integrate them into their pre-boarding experience. This highlights the importance of fostering passenger acceptance through an efficient and user-centric design. By prioritizing passenger needs, the LCC can not only enhance the travel experience but also ensure wider adoption of these embedded systems, potentially leading to benefits for both passengers and the airline.
4. That passengers who find these systems valuable and user-friendly were significantly more likely to actively adopt and utilize them. This highlights the

importance of fostering a positive perception of the embedded systems through user-centric design and clear communication of their benefits. By prioritizing passenger needs and ensuring a positive user experience, the LCC can encourage wider adoption of these systems, leading to a smoother travel process for passengers and potential operational efficiencies for the airline.

5. That to ensure a truly user-centric experience, a continuous improvement plan is crucial. This plan should focus on catering to passengers who prefer traditional methods or require additional support, simplifying the technology through clear instructions and targeted training, leveraging social influence to encourage wider adoption, and understanding the crucial link between user adoption and system acceptance. By implementing these continuous improvements, the LCC can ensure a more inclusive and user-centric travel experience for all passengers, solidifying the value proposition of these embedded check-in systems.

Recommendations

Based on the findings summarized and conclusions drawn, the following recommendations were hereby offered:

1. Project initiatives may focus on improving compatibility for less tech-savvy users. While the overall perceived complexity is low, the finding that some passengers might prefer traditional methods suggests an opportunity to enhance accessibility. This could involve tiered user interfaces with varying levels of complexity, contextual help features within the systems, or even targeted training materials for those who require additional guidance. Additionally, the positive impact of social influence underlines the importance of leveraging peer-to-peer recommendations. Encouraging passenger testimonials or implementing a "refer-a-friend" program promoting the benefits of embedded systems could capitalize on this positive social influence and further drive adoption.
2. The high acceptance rate of the airline's embedded check-in systems presented an opportunity to continuously improve the passenger experience. By implementing user feedback mechanisms, exploring personalization features like priority lines for frequent flyers, and integrating the systems with other travel touchpoints (mobile boarding passes, baggage tracking), the airline can ensure a consistently positive experience, incentivize continued use, and create a more streamlined travel journey for all passengers. This commitment to innovation can solidify the airline's position as a leader in passenger convenience.
3. From an innovation perspective, the strong link between passenger adoption and acceptance underscores the importance of a user-centric approach. The embedded check-in systems' success recommended that prioritizing passenger needs through efficient and user-friendly design is key to achieving wider adoption. This finding can inform future innovation efforts, emphasizing the value of

understanding and catering to passenger preferences for successful technology integration within the travel experience.

4. The strong correlation between adoption and positive user perception of the embedded check-in systems, the airline may prioritize ongoing efforts to improve user experience through clear communication of system benefits, continuous usability refinements based on passenger feedback, and potential personalization features. This focus on user needs will not only encourage wider adoption but also translate to a smoother travel process for passengers and potential operational efficiencies for the LCC, solidifying the value proposition of this innovation.
5. The continuous improvement plan to ensure a user-centric experience for all passengers utilizing the Philippine Low-Cost Carrier's (LCC) embedded check-in systems. This plan should prioritize addressing the needs of passengers who prefer traditional methods or require additional guidance. Simplifying the technology through clear instructions and targeted training materials can further enhance user experience and confidence. Additionally, the plan should leverage the power of social influence by encouraging positive word-of-mouth and fostering a favorable attitude towards the embedded systems. By continuously monitoring and understanding the relationship between passenger adoption and acceptance, the LCC can effectively drive wider use of these innovative systems, ultimately creating a more inclusive and seamless travel experience for all.
6. While the current research highlights the positive impact of user-friendly embedded check-in systems, future studies and researchers could benefit from a more comprehensive approach. Analyzing demographics like age and tech-savviness can reveal user group preferences. Qualitative research can delve deeper into why passengers find these systems convenient. Additionally, exploring passenger preferences for traditional check-in methods and analyzing user interaction patterns with the embedded systems would provide a more holistic picture. Finally, longitudinal studies could track long-term user perception and adoption to understand how preferences evolve and what factors influence sustained engagement. These expanded research areas can lead to more targeted innovations that optimize the travel experience for a wider range of passengers.

Compliance with Ethical Standards

The study adhered to the Data Privacy Act (DPA) of 2012 and ethical principles outlined in the LCBA Research Manual, and these ethical considerations were taken into account throughout the entire research. Ethical issues were addressed as this study required the participation of public passengers. The consideration of these issues was essential to ensure the privacy and security of participants. Proper communication of all the vital details was observed, and the study ensured secure consent from the respondents. The respondents were informed to understand their role in the process of the study through thorough explanations of the important details. Respondents were assured that any considered personal data gathered was treated with confidentiality and

that all participants were treated fairly. Hence, only relevant information needed to answer the specific research questions was disclosed.

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