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# Airline E-commerce User Experience Experiment: An Investigation of Thai LCCs Passengers' Purchasing Behaviour among Different Online Platforms

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## Abstract

**Purpose:** This study examines the current state of the airline's e-commerce platforms and seek to identify their benefits and disadvantages in the aspect of user experience.

**Design/methodology:** The study commenced by first reviewing the literatures on actual sale figure from the studied Thai LCC, user interface (UI) and user experience (UX). It then proceeded to gather the empirical evidences using questionnaires from 135 active air passengers who have online purchasing experience. The composite findings from literature review and surveys were then used to design and apply for the final phase which is a series of in-depth interviews of air passengers on their usability test sessions and experts from the related industries. Coding and clustering wasutilised to analyse the qualitative data obtained.

*Findings:* The study examines the differences in online ticket purchasing platforms including airline's website, mobile-site and mobile application. The results identified five areas of factors: physical, trust, willingness to learn, context of use and adjustment. With regard to these factors, there are no single platform that outperform others. Airlines need to ensure that UX/UI of all platforms meet the users' requirements in all circumstances.

**Originality/value:** The study reveals the customer thinking processes on online purchasing behaviour. It focuses on web-usability and user experience of different booking platforms. The findings allow the subjected LCC to improve customer experience and optimise its platforms. The paper could also benefit other entrepreneurs who are in the related industry or similar contexts. In addition, the study of user-experience in the context of airline industry, particularly in the emerging countries like Thailand is limited.

Keywords: user-experience, e-commerce, purchasing behaviours.

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#### 1. Introduction

This study is the result of the consultation with the airline subject in this investigation. The direction from the management is to encourage users to switch from buying tickets on website (both desktop and mobile computers) to mobile application. It was perceived that easy access to mobile can generate more sale revenue as ticket purchasing can be made anywhere and anytime. A study by Pagiavlas, Stratmann, Marburger and Young (2005) suggests that mobile technology have long been a strategic tool for the airlines to earn more revenue. However, user experiences is the essential element to lure customers into using airline's mobile platform.

In Thailand, the National Statistics Office (2017) reported that there were 51.12 million mobile users and only 20.21 million computer users in the country in 2016 which makes a good case for the airline to push for mobile platform. For the airline in this study, it was reported that a total of 45.8% of ticket revenue were made from online channels. Of which, 28.6% were from website, 11% were from mobile application and 6% were from mobile website (See Table 1). It is interesting to note that mobile users appear to prefer to download the application rather than using mobile-web platform. In terms of year-on-year performance, all B2C (Business-to-customers) channels experience a decline. The management explains that it is a result of users switching to online travel agencies (OTA).

	YTD (Million)	%	YOY
Total Revenues	3,028	100%	
B2C	1,697	56.0%	-16.1% (Decrease)
Website	867	28.6%	-9.4%
Mobile	516	17.0%	-3.1%
Airport	200	6.6%	-2.4
Call Centre	95	3.1%	-1.1%
Counter Service	18	0.6%	-0.1%
B2B	520	17.2%	-0.4% (Decrease)
Thai Travel Agency	189	6.2%	-1.3%
International Travel Agency	74	2.4%	0.8%
Corporate	64	2.1%	0.2%
Domestic Group Ticket	111	3.7%	-0.3%
International Group Ticket	26	0.9%	0.0%
Member of Parliament	0	0.0%	-0.1%
Government Ticket	55	1.8%	0.3%
Event	0	0.0%	0.0%
Online Travel Agent (OTA)	808	26.7%	16.5% (Increase)
Others	3	0.1%	0.0% (Decrease)

Table 1. Revenue and Sale Proportion of Different Distribution Channels for 1st quarter 2018 (Amatayakul, 2018)

Consequently, it shows that online purchasing trend is likely to continue to dominate the airline industry. The recent shift toward OTAs means that airline must compete with these agencies. One of the ways is to improve user experience on its platforms. This study examines the current state of the airline's e-commerce platforms and seek to identify their benefits and disadvantages in the aspect of user experience.

# 2. User Interface (UI) and User Experience (UX)

UI (user interface) and UX (user experience) are considered as framework, guideline and concept that could be employed to design and analyse the interactive product (Ruth, 2017). To begin with the UI design, the term is used to describe the design of visual interfaces and may include other senses such as aural and gestures

(Interactive Design Foundation, n.d.). In other words, UI refers to the design of screens, pages and elements that users see on the online platform such as buttons and icons (Lanoue, 2016). The UI is only a partial representation of the whole system that can be experienced by users but the remainders are hidden such as database (Lauesen, 2005). UX is broader than UI that focuses on the visual elements, UX includes all experience that users interact with all aspect of the company's products and services (Norman & Nielsen, n.d.). The International Standard Organisation (2010) defines the terms as "*the combined experience of what a user feels, perceives, thinks, and physically and mentally reacts to before and during the use of a product or service*". The successful UX design is to (1) comply with the requirements of users without causing distribution, and (2) create the product/service that match the users' demand (Norman & Nielsen, n.d.). Good UX/UI design enables the companies to potentially increase revenues through satisfying users' needs. If your online platform is easy and effective to use, it will contribute positively to your company (Tullis & Albert, 2008). Especially in the airline industry which is heavily relied on online purchasing as stated in the introduction. Most of the commercial airlines have their own web platform and online booking service since the end of 90s (Shon, Chen & Chang, 2003). This implies that the users might abandon the airline platform and seek alternative websites (Tullis & Albert, 2008).

#### 3. Methodology and survey design

The study commenced with the review of the sale performance and reports from the airline along with literatures on airline mobile commerce and user experience, the limited availability of studies in the area led to the empirical study. This section presents the methodology that is divided into: (1) online questionnaire (2) usability test and in-depth interview. It also suggests coding and clustering as the data analysis method. The first stage, in order to investigate user's opinion in their airline booking experience, online questionnaires were employed. A total of 135 respondents participated in the survey. They were recruited from university students in the field of design and hospitality management who have experience in online air ticket booking as the study intend to gauge the experience from the young user group. The second staged involved four participants from the questionnaires stage who were randomly selected to participate in the usability test. The participants were then briefed about the study and given a booking task; they were required to book a return flight through mobile application. Usability is defined as "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use" (Tullis & Albert, 2008). Another simple definition is by Krug (2000) which stated "Usability really just means making sure that something works well: that a person of average (or even below average) ability and experience can use the thing—whether it's a website, a fighter jet, or a revolving door—for its intended purpose without getting hopelessly frustrated". During the test, the representatives of young users were asking to perform a 'think aloud' which is to state their thought during the booking processes out loud. The screen and gestures along with voice were recorded for analysis. The results were reported to six industry experts. There were two web designers, two web developers and two airline managers, all experts had at least five years experience in their fields. The experts were then asked to review the mobile applications along with giving feedbacks based on their experience and to comment on the finding from the online questionnaire and usability tests. The in-depth interview was employed as a main data collection method in this stage as it allows researchers to fully acquire participants' experience and knowledge (Bryman, 2012). The voice recorded from four representatives and six experts were transcribed. Coding and clustering method was then use to analyse the transcripts obtained. The analysis method consists of (1) labelling tags, names, or descriptions with pulled out from the primary data sources and (2) categorising selected data into groups (Miles & Huberman, 1994).

As illustrated in Table 2, the four representatives of young users were selected as Sova and Nielsen (2003) discovered that 80% of usability problems could be found after carrying out the four-usability test. In addition, the 6 experts from related professions were review the platforms due to the limited number of user. Experts' opinions would discover usability problems that were not identified by the limited number of the participants (Maguire, 2001).

Code	Position	Participant's description
Dev-1	Platform development manager	Developer with at least 5-year experience
Dev-2	Platform development manager	Developer with at least 5-year experience
Des-1	Experienced designer	Platform designer with at least 5-year experience
Des-2	Experienced designer	Platform designer with at least 5-year experience
Air-1	LCC manager	Department director of the airline with 13-year experience
Air-2	LCC manager	Vice President of the airline with 5-year experience
User-1	Representative of young users	Young users (aged 18-22) whose preferred e-commerce platform is
User-2		desktop website.
User-3		
User-4		

Table 2. A list of participants

# 4. Research findings

This section provides composite findings from the two-stage study where various discussions and issues on user experience with the airline mobile application are presented below:

#### 4.1 Physical factors

The first issue emerged from this study is the information display and information input, it was found that desktop platform has an advantage when it comes to information display. Users find it easy to have all the information in one big screen in desktop rather than the segregated information and multi-paged display in the application. "I use desktop as the screen is nider, easier to read. When I use the mobile phone, the screen is narrow, I can't see everything. There is many information in the screen and I have to keep zooming in and out" (User-1).

Apart from receiving information, the physical factor also has an impact on navigating. The partial findings claimed that the navigation in the website is better than mobile devices. Desktop users reported that larger space means that there is more area to display information, images, texts and descriptions for the user to peruse and make a decision "I like desktop because it's easier, especially for air ticket. Based on my experience, in mobile you have to go through several pages to look at the fare. But when you use the desktop all the fare the taxes and expenses are in one page, on the right. Also, for payment" (User-3). All experts shared the same view; the expert stated that "Desktop give you a whole picture of the information at one glance" (Dev-2). Moreover, the large screen also affects the interface design. The expert (Des-2) presented that users usually feel familiar to things that they have regularly use. Designers should then place the interfaces (menu, back and confirm buttons) to the same position as it allows users to have a better navigating. For example, the hamburger menus are usually located on the right or left corners of the mobile screen as shown in Figure 2. The web programmer (Dev-1) agreed with this statement and revealed that the user interface design in desktop is more standardise than mobile web/application due to the large screen size. The UIs in mobile version is quite vary due to the small screen. For example, basket icons in desktop websites are usually in the right conner while they are placed in different locations in mobile. This because the UI designers have attempted to encourage users to perform the task. However, the two experts (Des-1 and Des-2) agreed the small screen could help some users to have a better navigation because users can concentrate in segregated information. Fear of making errors in terms of data input (typing and selecting) appears to be the reasoning behind the desktop preference. The findings from expert interviews and usability test was reported that airline booking processes have more information to consider and require to large amount of data input such as personal information, travel documents. "Booking flight tickets requires more information to be put in, especially the name. I made the errors of spelling names many times, even my own name" (User-3). Airlines generally impose financial penalties for errors which implies that users must exercise great care with the data. The expert (Air-1) also discovered that passengers found steps in booking with LCCs to be highly complicated because they have to choose extra services like luggages, foods and seats. Each of the item incurs extra cost and considerations from the user thus the booking processes are more complicated and prone with errors. During the usability test one of the tasks was to book for an in-flight meal and the user reported that "I didn't find the food selection initially, I have to go through the process a couple of times" (User-3).

## 4.2 Trust

Trust in e-commerce is divided into hard and soft trusts. Hard trust is the technical mechanisms make the system secure such as encryption and firewall whereas soft trust is the perceived security by the users (Head & Hassanein, 2002). Gefen (2000) stated that the trust itself is actually more important than the technology in e-commerce. Based on the division we report the trust issue as follow:

#### 4.2.1 Network performance and fraud

This section discusses issues related to trust by dividing into network performance, and fraud. Firstly, network performance was one of the deciding factors that influence users to use desktop version. As mentioned previously, the flight booking process is complex and requires users to complete a number of tasks including payment. Users' aim is to avoid making errors, the Internet connection disruption seems to be one of the main concerns. The design expert mentioned that "*many users prefer to book the flight on the desktop version as they believe that the Internet connection at home or workplace is more stable than mobile*" (Des-1). As stated in the introduction, the mobile application has generated more sale (11%) than mobile web (6%). All participants in the web development expert group agreed that users are likely to prefer the application as it is faster than the mobile web. The developer revealed that "*The application has pre-downloaded data installed in the users*" *mobiles and requires less data to be transmitted online*" (Dev-1).

Secondly, mobile application has a less exposure to the risk of fake platforms. There are various fake airline websites in the world mostly posing as a genuine websites (Air-1). The experts (Dev-1, Des-1) present that the risk is reduce by the application because all application has to be reviewed by the media stores such as Google play and App store. The general public are also given an opportunity to review the application as well thus reducing the fraud risk significantly (Dev-1 and Des-1).

#### 4.2.2 User perspectives

Airline and web development experts agreed that the security and fraud prevention mechanisms are the same across the three platforms. The expert stated "We use exactly the same security system to all platforms. We have no access to passengers payment data as it is done though specialised third party which is the company called 2C2P in my airline case" (Air-2).

However, the research found that users perceived the level of security differently based on their previous experiences and attitudes. The participant (User-2) exhibited a strong preference on website security as stated in following statement "My family don't put credit card number in the apple stores or websites. I even go to the bank to transfer money. I don't trust the Internet. But for air ticket, I use desktop from home. It's my instinct that it's safer to use desktop. I don't really know why, but the information is clearer and when you type in the credit card number in I felt surer" (User-2). While another participant (User-3) saw no differences in security of the three platforms and mentioned that "I think they are all the same. When I buy things online I prefer to use credit card as it is easier than counter service" (User-4). The user experience expert (Des-1) concluded that the average users possess no web-security knowledges and tend to use their personal belief to form their attitude and behaviour on the online platforms' security.

A user (User-1) and an experts (Air-1 and Des-2) referred that the security features is the key to ensure the security of the online platforms. For example, the participant stated that "I have no fear about fraud because of the security features alike the OTP" (User-1). The use of the payment gateway enables the e-commerce platforms to be trustworthy. The airline expert mentioned "The main reason is we want to show to the customers that we will not store their sensitive information like credit card with us and remove the possibilities of data abuses or fraud" (Air-1).

## 4.3 Willingness to learn

Good UX/UI design enables the users to complete the complex tasks. Although all participants considered flight booking to be complicated, the findings from usability test showed that application used in study did not conform to the UX/UI best practice. Three examples of unsuitable UX/UI issues are displayed in the following paragraphs:

Firstly, all participants experienced difficulties in finding the 'next' buttons (Point B in FIgure 1). During the test, all of the users initially failed to locate the 'next' button as it was located on the top right corner. All users were at first looking at the bottom of the page (Point A in Figure 1). When inquired, both users and experts all

suggested that it is natural to look for the 'next' button at the end of the filled form. The expert (Des-1, Dev-2) suggest that the normal order of task if from top to bottom therefore It is counter-intuitive for the 'next' button to be at the top as shown in Figure 1.

	Actual Web Page		Recommended position from experts			
will Sketch	🗢 9:41 AM	\$ 100%		all Sketch 🗢	9:41 AM	¥ 100% 🔳
=	Low Fare Sear	ch Continue >	<b>B</b>	=	Low Fare Search	
One	Way Round Trip	ТНВ		One Way	Round Trip	ТНВ
From		Bangkok		From		Bangkok
То		Chiang Mai		То		Chiang Mai
Depa	rt	2 July 2018		Depart	2	2 July 2018
Retur	'n	5 July 2018		Return	5	July 2018
Ac	Accepting reservations through 30 March 2019			Accepting reservations through 30 March 2019		
Adul	t Child (2-11 yrs.)	Infant (< 2 yrs.)		Adult	Child (2-11 yrs.)	Infant (< 2 yrs.)
1	+ 0 +	0 +		1 =	0 +	0 +
	Have a Promotino Code?			Have a Promotino Code?		
		]			Continue	>

Figure 1. Comparison between the wireframe of actual web page and recommended position from participants (both experts and users)

Secondly, there were no back functions in some pages for android version as shown in Figure 2. During the user test, all participants decided to go back and redo some steps at one point or another. However, they found out that there was no 'back' button. Some attempted to click the 'hamburger' menu in which they were sent back to 'home' page and have to start the process all over again. This problem only exists in the android version of the application. "I think the problem was I got cut off from the application when I make a mistake and has to restart again. When I chose the priority seat and I wanted to deselected it so I decided to go back. I couldn't find the back button but then I got cut off from the booking process" (User-3).

The third UX/UI issue is information visualising. The composite findings from questionnaires and interviews discovered that booking application could not entirely deliver the information to users. The first mistake is the users were not aware that the ground transfer is include in the iliternary. As seen in the Figure 3, the questionnaire respondents were asked to buy a return ticket to Samui Island which involved a transfer to ferry service in one ticket. It was found that 20.7% of the respondents were not aware that they have to transfer to Samui with a ferry service. It was reported that the icon in the web platform were too small while the application version is larger and easier to spot "*The application presentation may be clearer in terms of flight connection as they are clearly marked with ferry and car connection signs which is better than the web version where those icons are far too small"* (User-2).



Figure 2. Wireframes of the two web pages without back buttons



Figure 3. The result drawn from online questionnaire

The second mistake is at the insurance purchasing stage. The airline adopts the 'opt-out' policy whereby the travel insurance is already added to the ticket. Passengers who do not wish to purchase the service must 'click' the item out. It was found that 11.1% of the questionnaire respondents were not aware that there is a travel insurance already included in the ticket (Which means that they had unwittingly purchase the insurance). It is in fact a common technique by airlines to earn extra revenues as reported by an airline expert (Air-1).

Despite a number of UX/UI problems appeared in this study, the findings from interviews with users found that all users still accept these flaws. The participant stated "*I cannot find the back button at first but I have to learn to live with it if I want to book the ticket. It is not ideal but acceptable*" (User-3). In addition, the questionnaire respondents gave an average score of 4.26 out of 5 for the booking experience satisfaction. During the usability test, all of

the participants made a number of mistakes but they express willingness to learn and use it for the next time. *"It's my first time, it is a bit complicated but I think next time would be better"* (User-2). An expert also discovered that the airline booking system is considered as a 'tool' therefore users understand that it may be more complex. The users are also willing to redo their booking when their mistakes were made as the higher objective of using the platform is to obtain an air ticket. Unlike other platforms such as games where people will not tolerate any flaws. In addition, the participants perceive that it still is the most convenient method of obtaining the flight ticket than other distribution channels such as call centre and travel agent (User-1).

#### 4.4 Context of use

This study found that the decision to use any given platform is highly dependent on the context and the circumstances of the users are facing. First is the user's intention. The booking behaviour can be differentiated into two major types; fare exploring and booking. The first type is those who are exploring for fares of different airlines. These users are more likely to use the mobile platforms as they can conduct fare and flights research anytime and anywhere before making a booking later. The second type is those who already know the flight and intend to purchase the ticket. These users will be more likely to use the website for booking. 'When I start planning a trip with a group of friends, I like to search for fares using the mobile first to gather the information. Then I will book using the website later as I think there's less room of errors for website' (User-1). "I still feel more confident using desktop, so after I look for the fares, I would go home or find a desktop computer and book the ticket" (User-2).

This leads to the second issue in terms of context; venues and urgency. The two factors have a strong influence in the platform decision. Being outside and in an urgent need to obtain a ticket is a key driver to push users to mobile platform. This may come in the form of urgency of the trip purpose, or the promotional price where users might think it will run out. For example, the participant (User-2) normally prefers to use website version for online purchase but the user mentioned that "I could book air ticket through my mobile device if I am in rush and need to do it right away" (User-2).

The third issue is the frequency of use. Frequent travelers are more likely to use application as they found it worthwhile to download the application. The user told that "my family fly frequently with this airline. Along with the flight booking, I also utilise the application for boarding pass and checking flight status when I need to pick up my parents" (User-3). There was an argument on the case of less frequent travellers. In term of using mobile, two designers agreed that booking through the mobile web version is more convenient as users are not required to download any application. The experts (Des-1 and Des-2) have the same agreement that it is difficult to encourage users to download the application if they do not intend to use it frequently. "It seems hard to ask people to download an application as many users already have a lot and the mobile storage is limited" (Des-2). Another designer also agreed and added "booking through the mobile site is easier than downloading the application as they can access the booking system straightaway" (Des-1). However, other three experts argued that mobile application is more desirable. Dev-1 stated "users are only required to download the application once. In order to make a booking, users generally access the system at least twice: exploring the fare and booking" (Dev-1). The airline expert also agreed and shared the view that "customers need to consult various people such as family, friends and colleagues before making a booking. For example, if you are a solo traveller for business. You need to check your flight time first and confirm it to your work partner at the destination then you go back and book again" (Air-2). Dev-2 revealed that both channels are quite similar in term of accessibility but the application provides more benefits such as push notification, reminder, and promotion.

## 4.5 Adjustment and benefits (operator issues)

In the perspectives of the operators, there are two areas of concerns. The first one is the booking platform adjustments. It was reported by expert (Air-2) that website for both desktop and mobile version are much easier and cheaper to make an adjustment because the application has to be done by a third-party company. Minor changes can quickly be done in-house. It is easy to put on functions and advertisements on the website. Dev-1 also agreed and added that "the adjustment of the application is more time consuming as the new version must be approved by the media stores" (Dev-1). In addition, any changes in website will update immediately while the updated application required users to redownload before charges will take effect (Dev-2).

Secondly, opportunities for online marketing activities, the findings from interviews with experts discovered that mobile application is more desirable than others due to a better potential in marketing communication. The

industry expert revealed that "the application enables the airline to directly communicate with the personalised message to the customers. For example, the airline utilises the application to notify users of flight delay and personalised deals based on flight history" (Air-1). Dev-1 suggested that the airline can obtain more personal data about the users from application than website. Because, an application is attached to a single device where the airline can use the location data and many more at their advantages whereby the web data generally only yield IP address.

# 5. Conclusions

Initial aim of this research is to assess pros & cons between the three platforms in order to identify the strategy for influencing users to utilise airline's mobile application. This study has identified physical and trust as the major factors. For physical factors, screen size and data input are the deciding factors for users to prefer the desktop over mobile platforms. Larger space on website allows a clearer presentation and comprehension of the booking information thereby reducing the chance of committing mistakes. Mobile platform also has an advantage in terms of navigation as it presents the segregated information where users can concentrate at the divided tasks and information. Secondly, trust issue where the users' representatives reported to have confidence in using the airline platforms. The first consideration for trust is the connectivity which depends on the Internet connection. A more serious consideration for users is the security issue. Some participants exhibited different levels of confidence among the three channels. However, the majority of participants place equal confidence in all platforms. Unexpected issue manifested during the usability test is users' willingness to learn. Given issues of usability problems, the users showed that they were willing to use to the application. The airline booking was considered as a tool so users were willing to accept some flaws in terms of UX/UI and learn to use the system. This gives airline an advantage over other platforms for example online games where the users are expected to have a lower level of tolerance to flaws. The final key finding and the most influencing factor in platform choice decision is the context of use. Despites different pros and cons in each aspect, the circumstances facing the users is the deciding factor. This could be location and urgency which means that users are willing to forgo their preferences and use other available platforms that are most suitable to the prevailing situations.

To sum up, the study shows that there is no single platform that outperform others. Airlines need to ensure that UX/UI of all online channels conform to the best practice for the customers in every context. However, it is not illogical for the airline to promote mobile application as a distribution strategy given its advantages in direct communication with users along with data collection capability.

In terms of limitations of this study, the samplings and the hypothetical nature of this study were the two restrictions. In terms of sampling, the study did not specify the purpose of travel during sampling therefore it was unable to identify the any differences to the attitude of travellers on different travel purposes (leisure, business and VFR) that may exist. Secondly, the participants were asked to perform a booking for a hypothetical trip which may not reflect the actual behaviour when the actual booking is made. These limitations occurred as the study is subject to time and resource constraints.

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