

Factors Affecting Customers' Behavior in Using Website Check-In Services for Domestic Flights in Vietnam

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ABSTRACT

Previous research studies on self-service technologies in the context of airport services have been limited, especially in Vietnam. In addition, most of the studies have mainly focused on a particular type of self-service technologies, for example, self-check-in at airport kiosks. This study extends the research topic on adopting technologies in the aviation industry by examining factors that affect passengers' behavioral intention towards self-service technology, particularly online check-in service on websites. Through a sample of 303 passengers having used online check-in service for domestic flights on airlines' websites, the partial least square structural equation model technique was used to analyze the data. The findings reveal that the more passengers perceived the ease of use and usefulness of online check-in service before flights, the more they tended to use it, which in turn affected their actual usage. Similarly, a person has a high level of subjective norms, when individuals' close relatives use online check-in services, their behavioral intention and actual usage will be further influenced. Furthermore, the more a person perceived the ease of use of an online check-in service, the more they perceived its usefulness. Implications for theory, practice, and future research are discussed.

KEYWORDS: Self-service technology, Technology Acceptance Model, check-in services, self-check-ins online.

1 Introduction

Self-service technology (SST) is a technological interface that enables businesses to communicate and provide services to customers independently without the direct involvement of service employees (Lin, 2011). In other words, the conventional service delivery system whereby consumers interact directly with frontline staff has been transformed into the interaction between consumers and self-service technological devices. Self-service technology is a business model that has been proven to have major benefits for customers and service providers (Abdelaziz, 2010). Due to the growing importance of self-service technologies at airports, researchers have sought to understand SSTs usage from passengers' perspective. Castillo-Manzano (2013) found that, at five Spanish airports, passengers frequently opt for the self-check-in service, either online or at a kiosk, whereas the use of check-in desks is not as popular. Lee (2014) reported similar results with their empirical analysis of self-check-in service at Singapore Changi Airport. Ku (2013) investigated the usage of self-service technology at a Taiwan airport. The results indicated that if self-service technology is easy to use, it can increase passengers' intention to use self-check-in kiosks. Gelderman (2011) collected data at a European airport and proposed that users' technology-related attitudes (customer need for interaction with employees, technology readiness) and other situational factors (perceived crowdedness) influence the choice of self-service technology usage. The empirical results also revealed that a critical obstacle to the success of self-service technology applications lies in

customers' adoption and usage of the technology. Moreover, their findings demonstrated that perceived crowdedness (waiting in lines for service with staff) significantly impacts the usage of self-service technologies, followed by the need for service-employee interaction.

Many researchers have investigated studies on users' acceptance of technologies since the advent of the Technology Acceptance Model (TAM) (Kaur S., 2013). TAM has proven reliable in studies related to technology acceptance. However, its cultural generalization remains controversial. Al-Gahtani (2007) doubted the practical application of TAM in Asian countries (e.g., Vietnam) because this model was mainly validated and examined in the context of Western culture. Previous studies on self-service technologies in the context of airport services are still limited, especially in Vietnam. Additionally, these studies have mainly focused on specific self-service technologies, such as self-check-in at kiosks (Ku, 2013). Based on diverse aspects of air travel services, this study examines airline passengers' attitude towards a type of self-service technology - online check-in on websites. Not just a tool for online check-in, the Website also offers other self-service options for passenger convenience. For example, seat preferences, printing or view of boarding passes, and purchase of additional services such as more baggage. The increasing trend of self-service technology usage in the aviation industry is likely to continue as it provides the infrastructure for greater efficiency in the aviation sector.

From customers' point of view, a website check-in service

can speed up check in process and bring flexibility to customers as they can conveniently access technology. By using computers, phones, tablets, airline passengers can book flights, buy tickets, check in and present their boarding passes without having to go to the airline offices or phone airline sales agents or check in directly in the airport terminals. All of these processes/facilities can be accessed 24/7 (24 hours a day, seven days a week) instead of being limited. However, the use of self-service technology by passengers (for example, self-check-ins online) instead of contacting service staff also leads to some concerns for airlines. Airlines often consider the interaction between passengers and service employees ("moments of truth") an important part of the service delivery process that often leaves a long-lasting impression on their customers. Is web check-in really what customers want, and will it reduce customer satisfaction if customers interact less directly with service staff? Also, can this self-service really reduce airport hassles? Although self-service technologies rather than directly manned check-in counters in airport terminals have been around for a while, the industry still has to work hard to convince passengers to self-check in on websites (Drennen, 2011, Yang, 2008). Not all customers are willing to accept this check-in method. Instead, there are still customers who value

traditional human interaction (between customers and employees) and are not willing to use self-service technologies (Considine, 2016).

Therefore, airline administrators need to understand what factors affect passengers' willingness to use self-check-in services on airlines' websites. Airlines, thereby, take appropriate measures to encourage passengers to be open and more willing to use web check-in services instead of suddenly eliminating manned check-ins. This study investigates factors influencing passengers' intention and actual usage of online check-in usage for domestic flights in Vietnam. Specifically, this study answers the question of whether perceived usefulness, perceived ease of use, and subjective norms can predict passengers' behavioral intention and actual usage of web check-in services based on the technology acceptance model (TAM) (Venkatesh, 2008). Particularly, the current study examines the impact of perceived usefulness, perceived ease of use, subjective norms on passengers' behavioural intention, and actual usage of online check-in for domestic flights in Vietnam. Figure 1 depicts our hypothesized model. In the following sections, we developed our hypotheses, followed by the method, results, and discussion. Finally, the limitation of the study was also demonstrated.

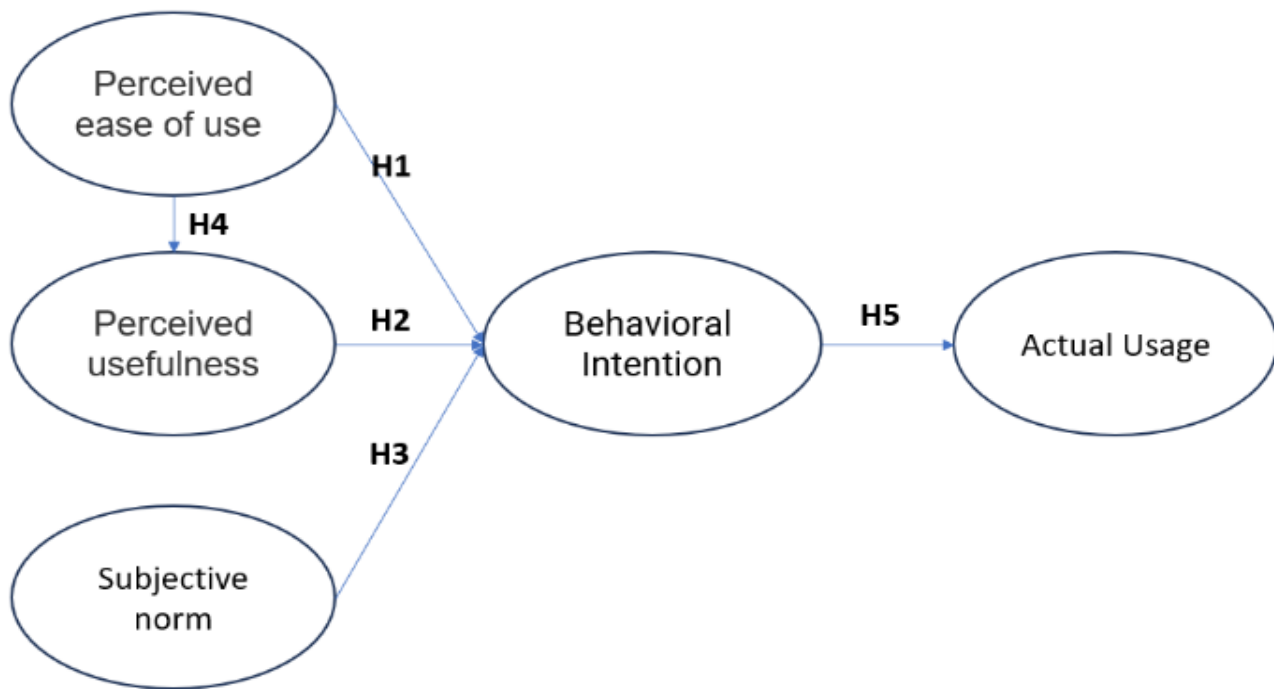


Figure 1. Conceptual model

2 Literature review and hypothesis development

2.1 The technology acceptance model

The Technology Acceptance Model (TAM) was initially developed by Davis (1989) to explain why consumers accept or reject computer systems. The basic TAM has five components: perceived usefulness, perceived ease of use, attitude, behavioral intention, and actual use (Davis, 1989).

Perceived usefulness is defined as the degree to which a person believes that using a particular system will enhance their

job performance (Davis, 1989). Perceived ease of use refers to the degree to which a person believes that using a particular system will be effortless (Davis, 1989).

Researchers have extended the basic relationships of TAM and have identified ten potential relationships (Perceived usefulness – Attitude towards technologies; Perceived ease of use – Attitude towards technologies; Perceived ease of use – Perceived usefulness; Attitude towards technologies – Behavioural intention; Intention of usage - Actual usage; Attitude towards technologies – Intention of usage; Perceived ease of use – Intention of usage; Perceived usefulness – Intention of usage; Perceived usefulness – Actual usage;

Perceived ease of use – Actual usage). These ten relationships have been widely examined in previous research. For example, Legris (2003) reviewed studies using TAM to explain the adoption of information technology in the workplace. Based on a meta-analysis of 22 scientific articles, they concluded that TAM empirically proved successful in predicting about 40% of technological system usage. Since self-service technologies rely heavily on accurate information technology, TAM has been employed as a theoretical model to examine consumers' acceptance of various types of technologies, e.g. self-service technologies in the areas of offline retail (Kaushik, 2015b, Kaushik, 2015a), mobile banking (Mortimer, 2015), hotel self-service kiosks (Lam, 2007), online government services (Chen, 2021), and entertainment media technology (Dogruel, 2015). TAM has also been applied to examine consumers' adoption of self-service technology at airports in the form of airport website usage (Choi, 2015), online ticket purchases, and kiosk check-ins (Ku, 2013). According to TAM, perceived usefulness and perceived ease of use are the two main determinants of consumers' acceptance of technology (Davis, 1989). Previous research has shown that these two determinants have a positive impact on attitudes (Amin, 2014) and behavioral intention (Choi, 2015).

2.2 Perceived ease of use, perceived usefulness and usage intention of web check-ins

This study uses the Technology Acceptance Model (TAM) which has been widely used in studies on the adoption of technology usage and relies on passengers' perspectives as the basis for the proposed hypotheses. Behavioural intention was defined as the strength of conscious planning to perform a defined behaviour (Keil et al., 2000). In the context of using self-service technology, perceived ease of use increases motivation and has the potential to increase intention of self-service technology usage (Wang, 2003). However, if self-service technology is complex, inconvenient, and difficult to use, it will prevent consumers from adopting it (Laukkanen, 2010). For instance, if the interface of the airline's check-in website is easy to use and understandable with intuitive, step-by-step instructions, it will positively affect passengers' usage intention. On the contrary, the interface and content design on the airline's Website are difficult to use, the options during the check-in process are confusing, lots of unnecessary and overlapping steps are required to perform, etc., may discourage passengers' usage intention. Therefore, this study postulates that:

H₁: Perceived ease of use has a positively direct impact on passengers' behavioral intention of web check-ins.

In addition, in the context of self-service technology application, perceived usefulness refers to an individual's subjective perception that using the technology will not only increase productivity, efficiency or work-related profits but also save time and money and ultimately improve quality of life (Davis, 1989). Previous empirical studies have shown that a significant increase in job performance due to the use of technology will make an individual in the workplace more inclined to adopt the technology. Similarly, if a self-service technology is cost-effective compared to the alternative, consumers will be likely to adopt it (Laukkanen, 2010). Thus, passengers will be more willing to use online check-in when they realize the realistic value based on the usefulness. For example, web check-ins at home can help passengers check-in online from 24 hours until 1 hour before the flights. They can check in for all passengers included in the booking simultaneously, selecting or changing their seat preference.

After completing the check-in procedure, passengers will receive their boarding passes via mobile devices or email. They can also send them to other passengers traveling with them directly to their emails. Once a passenger's boarding pass has been issued, they can access it offline. On the contrary, if airlines' websites do not have a wide range of options for passengers or make passengers worried that the provided barcodes can be declined at the airport security gate, it can make passengers less likely to use online check-in. Previous studies have provided evidence of the significant impact of perceived usefulness on behavioral intention to use (Davis, 1989, Pikkarainen, 2004, Venkatesh, 2008). Therefore, this study proposes the hypothesis as follows:

H₂: Perceived usefulness has a positively direct impact on passengers' behavioral intention of web check-ins.

Subjective norms refer to the belief that a person or an important group of people will approve and support a particular behavior. Subjective norms are determined by perceived social pressure from others on an individual to behave in a certain way. Subjective norms influence a person's motivation to conform to the views of those around them. Subjective norms become especially important in the early stages of self-service technology adoption when the people intending to use a new technology have little experience. When potential users do not have much experience using self-service technology, they are likely to consider the important people around them for information and evaluative signals (Gefen, 2000). In previous studies, subjective norms can influence the formation of a person's behavioural intention (Venkatesh, 2008). Therefore, the hypothesis below is proposed:

H₃: Subjective norms has a positively direct impact on passengers' behavioral intention of web check-ins.

Previous studies also show that perceived usefulness plays a mediating role in the relationship between perceived ease of use and behavioral intention of technology. In (Gefen, 2000), perceived ease of use did not directly influence the intention of using the Website to purchase products or services. Instead, perceived usefulness mediates between perceived ease of use and intention of web usage (Legris, 2003). When passengers realize that using web check-in service is easily performed with simple steps and not requiring skill, they will perceive the benefits in time. Instead of queuing at the airport and worrying about delays, online check-ins can be easily done and successful, thus making passengers perceive the benefits and increasing their intention and the actual behavior of using web check-ins. Therefore, the following hypothesis is proposed:

H₄: Perceived ease of use has a positively direct impact on perceived usefulness of web check-ins.

2.3 Behaviour intention and actual usage of using web-based check-ins

According to TAM, actual usage behaviour towards a technology is determined by a person's behavioural intention. The theory of planned behaviour proposes a positive interrelationship between behavioural intention and actual usage (Fishbein, 1975). Ajzen (1980) argued that behavioural intention strongly predicts actual behaviour. Previous research has revealed that behavioral intention positively and directly influences the actual usage of technological systems (Shih, 2009). Therefore, this study proposes that passengers' intention to use self-check-in services on websites positively affects their actual usage of using online check-in services.

H₅: The behavioral intention has a positively direct impact on actual usage of self-check-in on websites.

3 Method and measures

3.1 Participants and procedures

The data of this study was collected in Ho Chi Minh City. Specifically, respondents are passengers who have used the online check-in service on the website for domestic flights within a year. An in-depth interview with 12 passengers was conducted to test their understanding of the questionnaire, its clarity, and relevance before the formal survey. 350 questionnaires were sent to passengers who have used check-in services on airline websites within the past year. According to (Ali, 2019), the minimum sample size should be greater than

Table 1. Demographics

n=303	Frequency	Percent (%)
Gender		
Male	99	33
Female	204	67
Age		
< 25	185	61
25-35	54	18
35-45	49	16
>45	15	5
Education		
Highschool	7	2
Intermediates	27	10
Bachelor	251	82
Postgraduate	18	6
Number of times using the check-in service on the website		
1 time	59	19
2 to 5 times	178	58
More than five times	66	23
Number of flights taken		
1	85	28
2 to 5	175	57
6 to 9	34	11
Over ten flights	9	4

3.2 Measures

Perceived ease of use was assessed with three items; *Perceived usefulness* was measured using two items, and *Subjective norm* was assessed with two items. All items measured constructs were developed by (Venkatesh, 2008), using a 5-point Likert scale with 1 = total disagree to 5 = total agree. An example item of Perceived ease of use is "Using the self-service check-in on websites requires little effort". An example item of Perceived usefulness is "Using the self-service check-in on websites enables me to accomplish boarding more quickly". An example item of Subjective norm is "People who influence my behaviour think that I should use the self-service check-in on websites."

Behavioural intention was assessed with three items developed by (Kuo, 2013) with 1 = totally disagree and 5: totally agree. An example item was "I will use self-service check-in on websites rather than manual methods to complete my boarding process."

Actual usage was measured by four items, developed by Yun et al. (2011), also using a 5-point Likert scale with 1 = total disagree to 5 = total agree. An example item was "I am using self-service check-in on websites in general use".

4 Data analysis

4.1 Measurement model

ten times the maximum number of inner or outer model links pointing at any latent variable in the model. Accordingly, the minimum sample size in this study should be 30. Three hundred ten surveys were collected from passengers, and 303 were retained for data processing after eliminating surveys with missing answers or answers in the pattern. Thus, this sample satisfied the minimum sample size requirements. Regarding the number of flights taken to date, 57% of participants have taken from 2 to 5 domestic flights, and 28% of respondents have used air transportation services once. Only 3% of survey participants have used air transportation services more than 10 times (Table 1).

This study analyzed the data using partial least square structural equation modeling (PLS SEM). We first assessed the measurement model, including constructs' reliability, convergence, and discriminant validity. For the reliability of constructs, Cronbach's alpha and composite reliability (CR) were tested. Based on Table 2, Cronbach's alpha and CR value of all constructs are greater than 0.7. Thus, the reliability is verified. Next, factor loading and average extracted variance (AVE) were evaluated for convergent validity. Based on Table 2, all factors loadings of items were more than the threshold of 0.5. In addition, the AVE values of the research concepts are greater than 0.5. In other words, the constructs explained more than 50% of the variance of its indicators. Therefore, the convergent validity of all constructs was verified.

The HTMT values were used to evaluate the discriminant validity of constructs. Its values should be less than 0.85 to verify the discriminant between constructs. The authors also use the "bootstrapping" technique with 5000 samples. If any HTMT confidence interval (significant level 5%) contains the value 1, the construct's discriminant validity cannot be satisfied. Table 3 shows that all HTMT values are much smaller than the threshold of 0.85. In addition, because the confidence interval of HTMT values did not include value 1, the discriminant validity is confirmed.

Table 2. Reliability and convergence validity of constructs

Constructs	Indicators	Mean	Reliability		Convergence validity	
			Cronbach's Alpha	CR	Loadings	AVE
Perceived ease of use	PEOU1	4.419	0.780	0.859	0.902	0.781
	PEOU2	4.389			0.907	
	PEOU3	4.271			0.841	
Perceived usefulness	PEU1	3.997	0.798	0.798	0.908	0.832
	PEU2	3.950			0.916	
Subjective norm	SN1	3.650	0.826	0.840	0.916	0.851
	SN2	3.617			0.930	
Behavioral intention	BI1	3.947	0.834	0.844	0.834	0.750
	BI2	4.201			0.873	
	BI3	4.106			0.891	
Actual usage	AU1	3.888	0.840	0.840	0.812	0.676
	AU2	3.640			0.855	
	AU3	3.934			0.806	
	AU4	3.799			0.815	

Table 3. Heterotrait-Monotrait Ratio (HTMT)

	PEOU	PEU	AU	BI
PEU	0.721			
AU	0.490	0.397		
BI	0.414	0.366	0.729	
SN	0.321	0.246	0.301	0.388

PEOU: Perceived ease of use

PEU: Perceived usefulness

AU: Actual usage

BI: Behavioral intention

SN: Subjective norm

4.2 Hypothesis testing

Hypothesis H1, H2, and H3 assumed that perceived ease of use, perceived usefulness, and subjective norm positively and directly impact employees' behavioral intention. Based on Table 4, the direct effects of subjective norms, perceived ease of use, and perceived usefulness on passengers' behavioral intention to use online check-in services on websites are all statistically significant at the 5% significance level (with $\beta = 0.24$; $\beta = 0.182$; $\beta = 0.153$, respectively). In addition, the confidence interval of the coefficient does not contain the value 0. In other words, hypothesis H1, H2, and H3 was supported.

Table 4. Coefficient and its confidence intervals

	β	2.5%	97.5%	p-value
H1. PEOU -> BI	0.182**	0.046	0.312	0.007
H2. PEU -> BI	0.153*	0.026	0.280	0.018
H3. SN -> BI	0.240***	0.127	0.353	0.000
H4. PEOU -> PEU	0.597***	0.515	0.680	0.000
H5. BI -> AU	0.533***	0.441	0.629	0.000

*, **, ***: significant at 5%, 1%, 0.1%

Hypothesis H4 proposes that perceived ease of use positively and directly affects perceived usefulness. The results of Table 3 show that this relationship was supported with $\beta = 0.597$, p-value < 1%, and the coefficient confidence interval does not contain the value "0" (0.515; 0.680). Finally, this study proposes that behavioral intention positively impacts passengers' actual usage of online check-in services on websites. The results show that this hypothesis was supported ($\beta=0.533$, p-value < 1%), and the coefficient confidence interval does not

contain the value "0" (0.441; 0.629).

6 Practical implications and future research directions

6.1 Practical implications

The results of this study have shown that usefulness will increase passengers' intention to use the check-in service on the website. This result emphasizes the importance and necessity of designing the check-in channel's system, interface, and content through airlines' websites. From there, it meets the requirements of ease of use. In addition, airlines need to invest in ensuring the quality and diversity of services on the online check-in service. For example, using the check-in service on the website not only helps customers quickly and easily complete check-in procedures but also ensures accuracy and does not cause problems when checking in on the website. When airport security staff cannot scan the QR code obtained from check-in on the passenger's website, this experience can hinder them from using this service later. In addition, videos simulating check-in instructions on the website should also be invested in to help passengers using this service for the first time feel more confident, thus making it seem easier to use and encouraging them to use the check-in service on the website. Some additional features should also interest passengers when surfing on the check-in website, such as supporting passengers in changing seats they have booked or changing classes directly on check-in websites. As a result, customers will overcome the barriers of insecurity and lack of extended services when using the check-in service on the website - services that traditional check-in services with employees always fulfill.

In addition, airports and airlines should also develop effective strategies to encourage consumers to use self-checkout. First, the findings showed that attitude and perceived usefulness significantly influence intention. Therefore, airport and airline managers should emphasize that online check-in services can help consumers avoid long lines, which can save a lot of time. Furthermore, a reward system can be implemented to encourage passengers to use online check-in services in the future. For example, a certain amount spent using an online check-in service will grant the customer many points that can be redeemed (Koay, 2021).

6.2 Future research directions

The study is not without its limitations. First, this study mainly sampled passengers who had used the online check-in service on the website in Ho Chi Minh City. Future studies should sample passengers in different geographical areas in Vietnam, allowing this research to be expanded in other contexts and with larger sample sizes to generalize the research results.

Second, the context of this study is limited to online check-in services. Further studies could expand the comparison of passengers' technology adoption between different types of self-service technology (e.g., check-in kiosks or mobile check-in apps) to better understand passengers' attitude and behavior toward adopting various technologies, thus proposing appropriate management implications.

Finally, this study used a cross-sectional survey, thus leading to the potential for common method variance bias. Future research could collect time-series data to estimate better the associations between variables in the TAM technology acceptance model, helping to explain the cause-and-effect relationships in the model better. In addition, minimize any potential common method variance bias.

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