CHAPTER1

INTRODUCTION

1.1   Background of the Study

The aviation sector is irrefutably one of the key drivers of Indonesia's prosperity, by virtue of the fact that it integrates people and businesses across the globe, generates a tremendous amount of economic activity, and inevitably acts as a catalyst for job creation in the air transport value chain. Airlines, airport operators, airport on-site enterprises (restaurants and retail), aircraft manufacturers, and air navigation service providers reportedly employed around 190,000 people in Indonesia. Furthermore, the air transport industry is estimated to have supported a $9.4 billion gross value added contribution to Indonesia's GDP (Saxon, 2016).

In tandem with other Southeast Asian countries, over the past decade, Indonesia's aviation industry has recorded robust growth marked by the expansion of routes and increase in flight frequencies. Projected to grow at nearly 20% per annum for years to come, the country is currently ranked for having the second-fastest growing aviation industry in the world after China in terms of aircraft order and business value (http://www.gbgindonesia.com, retrieved on 20 February 2019). It is also expected to be one of the largest air travel markets in the world by 2034 (https://www.worldatlas.com, retrieved on 1 April 2019).

Being an archipelago comprised of 6,000 inhibited islands, Indonesia naturally depends on air travel for the mobility of its people and goods. Apart from the nation's unique geographical condition, the remarkable growth of Indonesia's aviation industry is underpinned by the country's consistently solid economic groth along with the burgeoning number of affluent and middle-class families (https://www.indonesia-investments.com, retrieved on 23 March 2019). Moreover, the growth is predominantly fueled by the proliferation of Low-Cost Carriers (LCCs), such as Lion Air, Citilink, and Air Asia, which entice consumers to purchase flight tickets with their irresistible low fares and thus skyrockets demand for domestic and international air travel (Perdana, 2013). Another main catalyst of the industry's growth is the gradual increase in the influx of foreign

visitors to Indonesia as portrayed in Figure 1.1. The growth is chiefly driven by the government's concerted measures to endorse new tourist destinations and develop critical infrastructures (http://www.theworldfolio.com, retrieved on 21 February 2019). Other contributing factors include FDI (Foreign Direct Investment) growth and increasing decentralization of the economy. All of the aforementioned factors have led and will lead to the rapid ever-increasing demand for air travel in Indonesia.
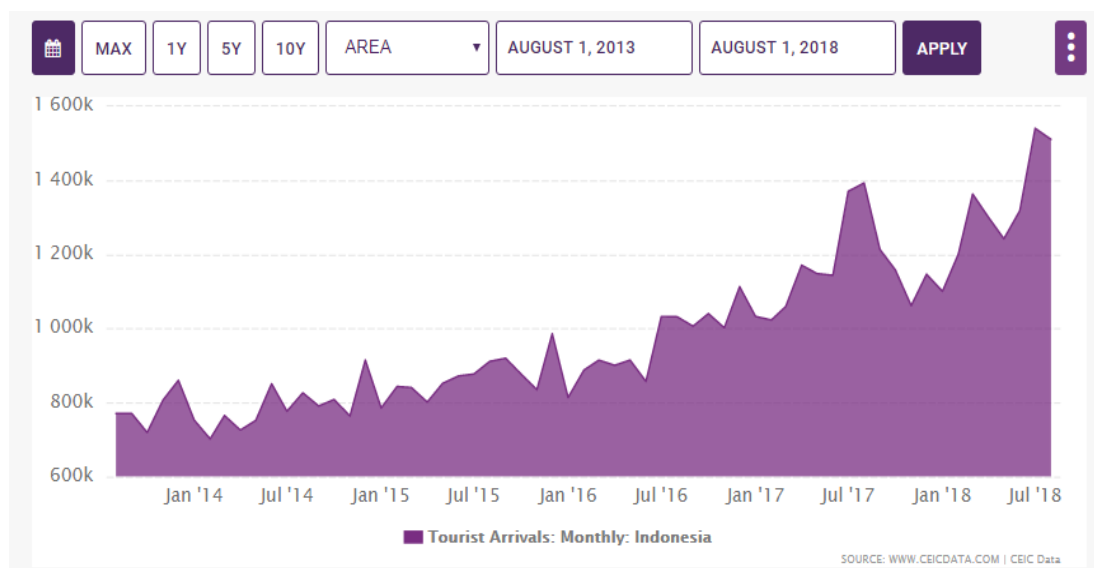

Figure 1.1
The growth Indonesia's foreign visitors from August 2013-August 2018
Note. https://www.ceicdata.com (Retrieved on 3 March 2019)

The lack of airport infrastructure is currently considered as a nationwide issue that curbs the development of Indonesia's aviation industry. It has been reported that airports across the country are confronted by significant infrastructure challenges as they fail to keep pace with the soaring number of air travelers, with many international airports, including Soekarno-Hatta International Airport and Juanda International Airport operating at 200-300% beyond their handling capacity (https://www.clydeco.com, retrieved on 2 April 2019). As a result, these airports are experiencing landside congestion, subsequent delays, and long queues throughout the passenger travel cycle; for example, congestion at check-in areas, security screening, immigration control, boarding gate, transfer desk, baggage collection, and inbound customs. Furthermore, as depicted in

Figure 1.2, congestion normally intensifies and reaches its peak during *Lebaran*, the popular name for Eid al-Fitr in Indonesia, when Indonesia's biggest mass migration occurs. A plethora of published studies have investigated the adverse impacts of airport congestion and capacity shortages to the passengers and the airport itself. Airport congestion is proven to impose significant consequences on passengers' satisfaction and airport's overall attractiveness as passengers suffer valuable time losses (Giarmatzides, 2006). Owing to that fact, tough measures to tackle congestion is paramount for airports in Indonesia.

Figure 1.2
Congestion at Juanda International Airport during Lebaran 2018
Note.https://news.detik.com (Retrieved on 6 April 2019)

Airport expansion is a common endeavour to address growth in passenger traffic. However, this particular approach obviously requires substantial capital investments, vast areas of land, and formidable planning. Futhermore, from a financial standpoint, if airports possess the resources and space to expand, it would be more advisable for them to devote the valuable space for retail and other commercial activities to escalate the airport's non-aeronautical revenue. On that account, the airports need to find an immediate and more cost-effective alternative to address this problem.

According to Alexandre De Juniac, CEO of IATA (International Air Transport Association), the solution to alleviate congestion does not lie in more complex processes or larger airports, but in harnessing the power of new technology to streamline processes and enhance core business efficiency

(https://medium.com, retrieved on 5 April 2019). By employing various travel-related technologies, such as self-service technologies, biometrics, wearable technologies, and smartphone applications, not only that airports would be able to deliver operational efficiency, but they would also be able to provide passengers with a seamless travel experience and maximize aeronautical and non-aeronautical revenues. This particular statement has been proven by a handful of major airport hubs across the globe. Moreover, in the next few years, people would likely witness the deployment of industry 4.0 technologies, such as robotics, augmented reality, and Artificial Intelligence (AI) in several renowned airports across the globe, which would tremendously change the whole air travel experience (http://aerolatinnews.com, retrieved on 1 April 2019).

Figure 1. 3
Biometrics technology at Hartsfield-Jackson Atlanta International Airport
Note. https://www.afar.com (Retrieved on 6 April 2019)

The simplest and most widely adopted form of technology to support airport operations is no other than Self-Service Technology (SST). SSTs are broadly defined as technology-based interfaces that enable passengers to access services without the direct intervention of a customer service agent (Makarem et al, 2009, Meuter et al., 2000). SSTs permit customers to get proactively involved in co-producing the core service offering with the service provider, thus shifting the role of customers to 'partial employees' (Graf, 2007). SST has been around since the 1960s with its inception in the banking industry through Automatic Teller Machines (ATM) starting in 1967. With the advent of technology, the world has witnessed the penetration of SSTs across a variety of service industries, such as retail, hospitality, health care, and tourism, which has drastically modified the way service organizations interact with their customers and exponentially enhances efficiency (Wang et al., 2013).

The incorporation of SSTs in an airport is definitely not a new concept, as the industry has been experimenting with self check-in kiosks since the late 1990s (https://wdwayfind.com, Retrieved on 4 April 2019). Fast-forward to today, the concept of a 'smart airport', where self-service technology is introduced at every stage of the passenger journey, is already being implemented in several airports, such as Hamad International Airport, Qatar (https://futuretravelexperience.com, Retrieved on 4 April 2019). Despite the fact that self-service has become an international trend, airports in Indonesia are categorized as late adopters of SSTs. A prominent example would be Juanda International Airport (JIA), which has just started to utilize self check-in kiosks since September 2018.

Juanda International Airport (JIA) is an international airport which is located in Sedati, Sidoarjo. It is Indonesia's third busiest airport (following Soekarno-Hatta International Airport and Ngurah Rai International Airport), serving the second most populated city in Indonesia, Surabaya. As one of Indonesia's major aviation hubs, it accommodates estimatedly 53.400 passengers on a daily basis (https://ekonomi.bisnis.com, Retrieved on 6 April 2019). As

previously indicated, the airport has just unveiled its first ever self check-in kiosks, with 11 units in Terminal 1 and 5 units in Terminal 2 (https://juanda-airport.com, Retrieved on 1 April 2019). With the presence of such kiosks, passengers of Juanda International Airport are currently equipped with the ability to autonomously check-in and print their own boarding pass without the intervention of the airport staffs. The procedure is also pretty straightforward, as passengers are merely required to click on the airline that they are flying on, key in their booking code, and scan their passport if they are traveling overseas. However, when the self check-in is completed, passengers still have to queue up at individual airline desks to check-in their luggage, which is a major limitation of the machine.

Figure 1.5
Self check-in kiosks at Juanda International Airport Terminal 1
*Note.*http://www.mcojaya.com (Retrieved on 6 April 2019)

Year	Number of Passengers	Cargo (ton)	Flight Frequencies
2005	8,217,415	66,647	99,485
2006	8,986,650	71,574	91.209
2007	8,823,228	58,815	87,687
2008	9,122,196	62,289	69,726
2009	10,562,906	62,357	76,754
2010	12,072,059	76,774	84,958
2011	13,778,287	95,146	103,846
2012	16,447,912	102,133	141,365
2013	17,683,955	121,935	155,421
2014	13,406,206	92,439	117,825
2015	18,911,256	130,398	166,208

The implementation of self check-in kiosks would bring several distinctive benefits for Juanda International Airport. First and foremost, from a cost perspective, the airport would certainly experience dramatic cost savings. In 2006, David Weiss, CEO of Dataprobe, estimated that it merely costs $0.16 for airports in the United States to check-in a passenger with self check-in kiosks, opposed to $3.86 with a service employee (https://www.aviationpros.com, retrieved on 30 March 2019). In tandem with cost deduction, the airport would be able to benefit from 'free labor' and reduce staffing levels to perform mundane tasks and redeploy them to other pertinent or more complex functions (Kolah, 2011). In addition, according to a research by airport technology provider SITA, automated check-in kiosks are on average 25 percent faster than traditional service employees (https://www.smh.com.au, retrieved on 30 March 2019). This would result in more efficient processing of passenger movement and lower level of congestion, which would subsequently lead to higher rates of passenger satisfaction with the airport experience. According to JD Power's North American Airport Satisfaction Survey, passengers that report high levels of satisfaction at an airport tend to spend up to 45 percent more in retail shops, on average (https://www.jdpower.com, retrieved on 30 March 2019).

Another 'hidden' advantage of implementing self check-in kiosks is the increase in passengers' dwell time – the industry term for the amount of time available that can be spent shopping and dining before a flight departs (https://www.smh.com.au, retrieved on 30 March 2019). Every extra minute of dwell time could translate into extra retail revenue for the airport, thus it is essential for airports to encourage increased dwell time. In sum, self check-in kiosks drives resourcing and productivity improvements, capacity enhancements, and higher profitability for the airport.

However, it is crucial to bear in mind that although the benefits of the technology are enticing, they can only be realized when and if it is widely diffused and used (Hall and Khan, 2002). Especially in the SST context, where firms cannot create the service without consumers' active participation,

involvement, and co-production (Bitner et al., 2010; Lin et al., 2007). Not to mention that passengers in Juanda International Airport are not mandated to use the kiosks. Instead, the usage is completely voluntary. Hence, if the technology is not extensively accepted by the passengers, it can be a significant drain of resources for the airport as the fixed cost of establishing and maintaining these hardware technologies are considerably high. Owing to that fact, the airport needs to attract an adequate group of consumers to justify the costs of implementation.

It is essential to note that before Juanda International Airport can actually reap the benefits of implementing self check-in kiosks, the willingness of passengers to try out and adopt the technology should be questioned since such service option requires many efforts from passengers and changes their behavior and habit to a certain extent. Moreover, passengers nowadays also show an increase willingness to embrace other check-in alternatives, such as online and mobile technology to check-in for their flight and retrieve their boarding pass. These and other factors may preclude the passengers from trying or using the technology.

Airports and other service providers must be aware that when changes in a service are instituted, a potentially significant portion of the consumer base that the change is alleged to benefit, will opt not to participate in the new service format (Langeard et al., 1981). Unlike the service provider, the service consumer may have no real compelling reasons to change to a technology delivered service. In fact, the very existence of the technology based service delivery option may be a cause for anxiety and stress for some consumers who are not comfortable with the technologies and their use (Mick and Fournier, 1998). According to Curran (2003), some consumers find newer technologies intimidating either because of the 'fear of the unknown' or due to the lack of comfort with technology. Furthermore, some consumers view the service encounter as a social experience and prefer to deal with people (Zeithaml and Gilly, 1987). To summarize, an inappropriate implementation of some technology-enabled encounters has a number of potential risks; those can impede customer access, frustrate and intimidate users, depersonalize the service encounter and create a distance between customers and service personnel (Walker and Craig-Lees, 2000).

Reinders et al. (2008) argued that forcing consumers to use SST, especially complex ones, may create hostile customers. Therefore, the operational desirability, gains and benefits of any employment of technology-based encounter need to be balanced against the perceptions and behavioural response of consumers. Service providers have to thoroughly explain the new procedures to consumers, highlighting the rationale and advantages of the technology from the customer's perspective as requiring much effort but less rewarded is most likely to meet stubborn resistance (Kim and Lee, 2014).

Consumer adoption is identified as a process, traditionally conceptualized as a sequence of steps in which the consumer passes from initial knowledge of an innovation, to forming an attitude towards it, and ultimately reaching an adoption decision (Saaksjarvi, 2003).   It is the key of successful technology implementation. As the advancement of technology continues to grow at an unprecedented rate, this particular topic has obtained considerable critical attention from many researchers and practitioners across a plethora of industries, because the introduction of technology does not automatically lead to usage. Many technological innovations are radical or really new to customers (Garcia and Calantone, 2002), and cause apprehension in those who lack sufficient experience with the technology. Customers' reluctance to adopt new technologies has become a hurdle for companies that want the full cost benefits of technological service innovations. Therefore, it is crucial to improve our knowledge on factors affecting customers' willingness to adopt new technologies (Walker et al., 2002).

However, most studies to date have been overly focused on the initial adoption of technology, while limited attention has been paid to investigate what happens subsequently (Fernandes and Pedroso, 2017). According to Rogers (1995), the process of innovation diffusion goes through six stages: awareness, investigation, evaluation, trial, *repeated use*, and commitment. As the process of innovation diffusion moves from initial trial, users' motivation, beliefs and attitudes may change over the time as users gain firsthand experience (Bhattacherjee and Premkumar 2004). Therefore, compared to initial adoptions, consumers' post-adoption behavior, especially their continued use of the

technology is more critical to service firms (Schuster et al., 2015). Perpetual and continued use is not only a necessary stage to customer commitment and loyalty (Bitner et al., 2002) but also a return of the substantial investment in the technology (Ashworth, 2010).Thus, it isimperative that we understand both the adoption and post-adoption behavior of consumers, particularly how service providers can stimulate consumers' continuance intention to utilize the technology. Continuance intention refers to the level of the strength of one's intention to continuously perform a specified behavior (Amoroso and Chen, 2017). In the information systems literature, continuance intention refers to the users' intention to continue using an information system after its initial acceptance (Bhattacherjee, 2001).

Previous literatures have indicated that individual differences are crucial external factors that play an essential role in the implementation of any technological innovation across a wide range of disciplines (Wang et al., 2003). A number of authors have investigated the influence of individual consumer traits on the continuance intention of information systems, such as demographic factors (e.g. age, sex, and educational level), psychographic profiles (e.g. habits and hobbies), and personality traits (Agarwal and Prasad, 1999; Dabholkar and Bagozzi, 2002; Yi et al., 2006). According to Dabholkar and Bagozzi (2002), variation in consumer differences emerging from personality traits may be more pivotal than demographic or psychographic factors, because such variation is at the heart of consumer attitude formation and behavioral intentions. A previous study showed that the use of SST is heavily influenced by user personality traits, since personality affects the environment people choose and the speed with which they adapt to a new technology (Pocius, 1991).

It is beyond the scope of this study to review all psychological and personality-based predictor variables that have been tested in past studies. Hence, this study will focus on one focal construct, technology readiness, on which few studies exist so far. According to Yen (2005), not all consumers are equally ready to embrace SSTs. Some consumers exhibit anxiety (Meuter et al., 2003; Meuter et al., 2005; Parasuraman, 2000; Yen, 2005; Zeithaml et al., 2002), and studies have shown that some consumers are technophobes (Meuter et al., 2003) or technology

pessimists (Edison and Geissler, 2003; Modahl, 1999). Although SST service options deliver flexibility and time savings, some customers feel uncomfortable and frustrated in using them (Parasuraman, 2000).

In his seminal work, Parasuraman (2000) proposes the technology readiness construct, which measures consumers' prospensity to embrace and interact with new technologies. As Parasuraman (2000) points out, the influence of customers' overall technology readiness and individual technology readiness dimensions are both worthy topics for research. Technology readiness is a multifaceted construct shaped by mental enablers (optimism and innovativeness) and inhibitors (discomfort and insecurity) that collectively determine a person's tendency to adopt new technology (Wang and Sparks, 2014). The optimism dimension refers to a positive perception of technology and the notion that technology is advantageous in improving the efficiency of job and enhancing the lives of people both at work and at home (Alkhaffafet al., 2018). Meanwhile, innovativeness represents the degree to which a person is a trail-blazer in trying new technology-based products or services and a thought leader on technology-related issues (Lin and Chang, 2011). On the other hand, those who have the nature of discomfort often consider technology as complicated and difficult-to-use things (Walczuch, 2007), while insecurity is defined as the distrust of technology and skepticism about its ability to work properly (Parasuraman, 2000). Passengers of Juanda International Airport who exhibit higher levels of technology readiness would likely to be more receptive towards the new technology. In contrast, those with lower levels of technology readiness might be more reluctant to adopt the new technology.

The selection of this research topic is based on the significance of understanding the factors that lead to technology adoption, especially for developing countries, like Indonesia. It is irrefutable that Indonesia's technology development is relatively stagnant compared to other countries. In order to combat this problem, not only that new technologies should be introduced, but encouraging compliance towards those technologies is equally essential. Furthermore, Indonesia is renowned for embracing a collectivist culture, where values such as conformity, coordination, harmony, and sacrifices are upheld

(Hofstede, 1997). Relationships and social interactions are also highly valued. On the other hand, computer technologies, including the Internet, are perceived by collectivist cultures to be disruptive of the status quo and social structure. This indicates that in a highly collectivist culture, people have lower inclination to use new technology, which is blatantly different from individualistic cultures which emphasize autonomy, self-expression, and independence (Hofstede, 1984). Additionally, in studies reported to date, there is very limited empirical research regarding self-service technologies in Indonesia and very little is known about factors influencing Indonesian consumers' usage and evaluation of SSTs. Furthermore, there has been even less research examining consumers' readiness to use technology-based systems and its consequent influences on behavior.

1.2 Research Problems

Based on the background of the study, research problems consist of the following:

1. Does technology readiness have a significant impact on the perceived usefulness of self check-in kiosks at Juanda International Airport?
2. Does technology readiness have a significant impact on the satisfaction of self check-in kiosks at Juanda International Airport?
3. Does technology readiness have a significant impact on passengers' continuance intention to use self check-in kiosks at Juanda International Airport?
4. Does perceived usefulness have a significant impact on the satisfaction of self check-in kiosks at Juanda International Airport?
5. Does perceived usefulness have a significant impact on passengers' continuance intention to use self check-in kiosks at Juanda International Airport?
6. Does satisfaction have a significant impact on passengers' continuance intention to use self check-in kiosks at Juanda International Airport?

1.3 Research Objectives

In general, the aim of this particular research is to identify the antecendents which determine the continuance intention of self check-in kiosks at

JuandaInternational Airport. In addition, the specific objectives of this research are as follows:

1. To examine the influence of technology readiness towards the perceived usefulness of self check-in kiosk at Juanda International Airport
2. To examine the influence of technology readinesstowards the satisfaction of self check-in kiosk at Juanda International Airport
3. To examine the influence of technology readiness towards the continuance intention to use self check-in kiosk at Juanda International Airport
4. To examine the influence of perceived usefulness towards the satisfaction of self check-in kiosk at Juanda International Airport
5. To examine the influence of perceived usefulness self check-in towards the continuance intention to use self check-in kiosk at Juanda International Airport
6. To examine the influence of satisfaction towards the continuance intention to use self check-in kiosk at Juanda International Airport

1.4   Research Contributions

1.4.1   Theoritical Advantages

This research enriches and broadens the existing theory about technology adoption behavior that is connected with variables such as continuance intention, satisfaction, perceived usefulness, and technology readiness. Furthermore, this research also provides deeper understanding about the relationship between technology readiness and continuance intention.

1.4.2   Empirical Advantages

1.4.2.1 For Juanda International Airport

The findings of this study would provide valuable insights for Juanda International Airport about the factors which stimulate the continuance intention of its self check-in kiosks. This would enable the airport to design strategies to effectively boost continuance intention.

1.4.2.2 For the researcher

This research deepens the researcher's knowledge about technology adooption, particularly continuance intention and its significance for companies working in the service sector.

1.5 Research Limitations

Firstly, the model is solely evaluated in a single airport, which limits generalizability. Secondly, the study examined a limited set of variables suggested by the service marketing and information systems literature. There can conceivably be other potential predictors of continuance. Ease of use was not incorporated into the model, but may be useful in explaining continuance where there are competing channels.

1.6 Research Outlines

The research is segmentized into five chapters as follows :

Chapter I

In essence, the first chapter outlines the background of the study, the problems that are being addressed by the researcher, the relevance of the research, as well as the aims and contributions of the research.

Chapter II

This chapter identifies, evaluates, and synthesizes the relevant literature within the field of the research in order to gain a broader view of the field. The chapter illuminates how knowledge has evolved within the field, highlighting what has already been done, what is generally accepted, what is emerging, and what is the current state of thinking on the topic. Furthermore, this chapter explains the theories that apply to the research problems, why they are relevant, and how the modeling efforts address the hypothesis to be tested.

Chapter III

The third chapter states the overall methodological approach which is being used by the researcher. Moreover, this section also defines how the researcher collected

and generated data, where the research was conducted, and what basic parameters were put into place to ensure the relative objectivity of the results.

Chapter IV

This chapter deals with data presentation, the statistical analyses, and interpretation of the research findings.

Chapter V

This chapter summarizes the research as whole and the conclusions to be drawn. In addition, the last chapter also includes the recommendations made by the researcher for future research.