

# Assessing the effect of airport physical environment on passenger's satisfaction: a mediating effect of passenger's delight

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**Nur Aida Amani Baharuddin**

**Mazlina Mahdzar\***

Faculty of Hotel and Tourism Management,  
Universiti Teknologi MARA Cawangan Selangor, Malaysia

\*[nina@uitm.edu.my](mailto:nina@uitm.edu.my)

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## Abstract

In tourism development, the impact of demand for air transport by travelers is affecting new forms of tourism and new destinations. The airport is a consistent growth segment in the tourism industry and transportation. The objective of the proposed study is to investigate the influence of physical environment of the airport on passengers' delight and satisfaction. Studies on the physical environment impact on customer delight and satisfaction are still limited, especially in the context of international airports. In order to understand this phenomenon, the study examines the literature, raises issues and develops the framework within the research context. The study will opt a convenience sampling method, with a total of 400 sets of questionnaires will be distributed to local and international passengers at Kota Kinabalu International Airports (KKIA). This study provides theoretical basis for future research on the role of physical environment of international airports and its impact on passengers' emotions and behavior. It also assists international airport industry practitioners to better understand how airport physical environments affects passengers' experience and satisfaction.

## Keywords:

Physical environment, Passenger's delight, Passenger's satisfaction, International airports.

## 1 Introduction

Numerous travellers are now traveling through the air, and aviation liberalization has contributed plentiful to international tourism's booming. As indicated by Duval (2013); Bieger & Wittmer, (2006); Papatheodorou & Lei (2006); Warnock-Smith & Morrell (2008); Ioannides & Debbage (1997); Forsyth (2006), it is undeniable that aviation and tourism have a strong connection. In this sense, countless tourists, particularly on long-haul trips as well as for domestic movements in large countries use air transport to travel from and to their destinations (Bieger & Wittmer, 2006; Forsyth, 2006; Papatheodorou & Lei, 2006). The air travel industry has changed at an extraordinary level. As deduced by Bogicevic, Yang, Bilgihan & Bujisic (2013), the speedy increase in travel coziness and technology has amplified passenger expectancy in-airport experience. Air travellers today are vulnerable to various types of services that guide them to differentiate the performance of preferred carriers (Bogicevic et al., 2013).

As mentioned by Fodness & Murray (2007), the airport is a consistent growth segment in the industry of travel and transportation. For air travelers, the airport is not a destination. It is a transitional point. Airport passengers can be divided into different groups, such as arrival, departure, and transfer. Each group will have a diverse set of requirements when they use various facilities at the airport (Jin-Woo & Se-Yeon, 2011). Therefore, infrastructures of the airport are the first point of contact for travelers when setting foot at their holiday starting point. Thus, airport amenities provide them with the primary picture they will have about the quality of time they expect (Martín-Cejas, 2006). Chen & Chang (2005); Bogicevic et al. (2013); Martín-Cejas (2006) in their study categorize air travel into two parts: services in-flight and ground. In-flight services include clean and pleasant interior, seat comfort, good cabin equipment conditions, cabin crew's ability to handle unexpected situations, clear and precise cabin announcements, inspection of passengers' seat belts, in-flight entertainment materials and programs, in-flight snack service and the speed at which the in-flight snack service is provided (Chen & Chang, 2005). Meanwhile, ground services involve those when travellers are processed by airports that use numerous services such as information collection counters, booking and ticket purchases, check-in, passports and security during departure, and function of baggage claim, passport control on arrival and service of post-flight (Chen & Chang, 2005).

Functionality, layout accessibility facility aesthetics and cleanliness are the four main elements of the physical environment (Ali, Kim & Ryu, 2016; Moon, Yoon & Han, 2015). The physical environment is not only focused on the airport as Bitner (1992) posited that it also plays a role for restaurants, stadiums, retail outlets, banks, professional offices and more as it creates an apparent image and affects behaviour. Also, the physical environment has a legal effect on the emotions of the customer, such as arousal and enjoyable (Moon et al., 2015; Han & Ryu, 2009). On the other hand, Jin-Woo & Se-Yeon (2011) stressed that the quality of airport services is found to have a direct or indirect impact on value, satisfaction, airport image, and passenger behaviour.

Ali et al. (2016) proposed that delight and satisfaction of passengers are influenced by the physical environment attributes at the international airport. These attributes of the physical environment were supported by other researchers in numerous types of services, namely restaurant, international airport, festival and etc. (Moon et al., 2015; Ryu & Han, 2011; Van Oel & van den Berkhof, 2013; Ryu & Jang, 2007 and Han & Ryu, 2009). In addition, all airports have the ultimate goal of customer satisfaction. Airport satisfaction will be low and passenger perceptions of airport facilities will be negative if airports cannot attend all services efficiently (Atalik, 2009). Wakefield & Blodgett (1999) also mentioned that the length of time that the customer wants to be in service is also positively impacted by the satisfaction of servicescape. Nevertheless, Ali et al. (2016) elucidated that studies on the physical environment impact on customer satisfaction and satisfaction are still limited, especially in the context of international airports. In order to fill the gap within this research area, this study will be carried out to investigate the relationship between airport physical environments and passenger delight and satisfaction at Kota Kinabalu International Airport.

### 1.1 Conceptual Framework

In the framework, there are four of elements of airport physical environment, namely layout accessibility, facility ambience & aesthetics, functionality, and cleanliness. Airport physical environment tends to lead to passenger's delight and influence passenger's satisfaction. Therefore, passenger's delight becomes the mediating variable (MV) while the passenger's satisfaction becomes the dependent variable (DV) and airport physical environment becomes the independent variable (IV) in this study. The framework of this conceptual study is diagrammed in Figure 1 below:

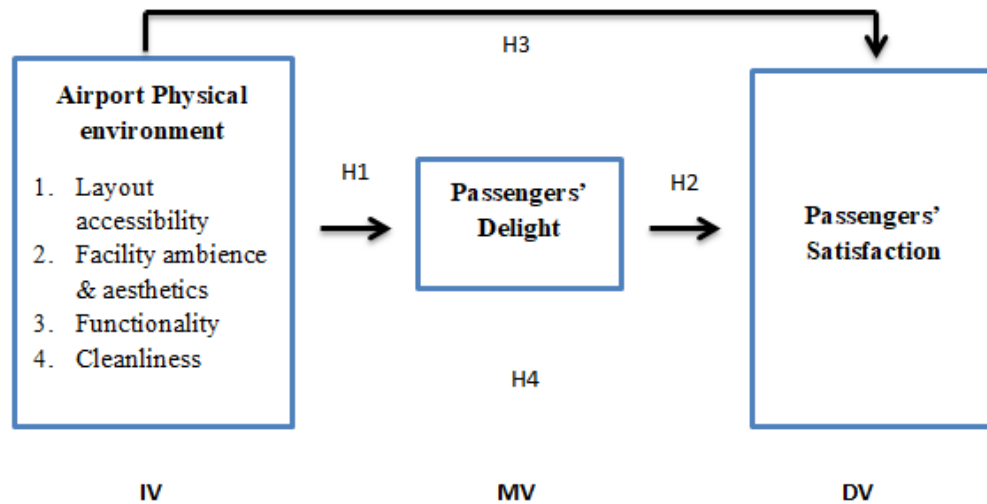


Figure 1: Conceptual Framework. (Adapted from Ali, Kim & Ryul, 2016)

## **1.2 Hypotheses Development**

### *1.2.1 Relationship between Physical Environment and Passengers' Delight*

The literature demonstrates customers using the physical environment in any real service settings as an indicator for evaluation (Lin & Liang, 2011). As noted by Bitner (1992), the emotional response, which in turn affects the behaviour, might be caused by the perceived servicescape. Moreover, the qualities of emotion arise from the environment are apprehended by two dimensions: pleasure-displeasure and stimulation's degree (i.e., excitement or the stimulation's amount) (Bitner, 1992). In other words, it is located in two-dimensional space that reflects the emotional response to it, environment whether man-made or nature. Research shows that behaviour related to the environment can be predicted based on emotional reactions measured in that dimension. To summarize findings, among the four elements of the physical environment of the airport, layout accessibility, facility aesthetics, functionality, and cleanliness are essential elements that affect pleasure (Ali et al., 2016; Wakefield & Blodgett, 1996; Lin & Liang, 2011; Moon et al., 2015). Thus, the assumptions which can be formed from this literature are as follows:

H1: There is a significant relationship between airport physical environment and passenger delight.

### *1.2.2 Relationship between Passenger's Delight and Passenger's Satisfaction*

The effect of customer delight on satisfaction is still limited in its study (Kim et al., 2015; Ali et al., 2016). Nevertheless, Kim et al.'s (2015) study reveals that delight in customer loyalty is also important to be understood by managers, not only customer satisfaction. They must take steps to ensure both customer satisfaction and joy, which can be influential in the creation of customer loyalty due to changes in the hospitality industry, which demands more than customer satisfaction management style. In general, the studies by Ali et al. (2016) and Lin & Liang (2011) have been contributing to investigate and confirm the significant relationship between positive emotions or passenger delight and passenger satisfaction. Hence, the related hypothesis is drawn as follows:

H2: There is a significant relationship between passenger delight and passengers' satisfaction.

### *1.2.3 Relationship between Physical Environment and Passenger's Satisfaction*

As indicated by Wakefield & Blodgett (1999) that satisfaction with servicescape also has a positive impact on the length of time that customers want to stay in servicescape and customer patronage intentions. Keeping customers in the facility as long as possible is a critical concern for recreational service operators, as customers may spend extra money on concessions and souvenirs, etc. Therefore, these servicescape factors are

found to affect the satisfaction of servicescape (Lucas, 2003). Similar to Lee et al. (2008) study revealed that basically, all festivalscape indications shown important indirect relationships with satisfaction and continuance loyalty. Furthermore, Ali et al. (2016) and Lin & Liang (2011) stated in their study that the service or physical environment does not only affect the emotions and behaviours of customers but also customer perceptions such as satisfaction. So, for this study, the subsequent hypothesis was formulated:

H3. There is a significant relationship between airport physical environment and passenger's satisfaction.

#### *1.2.4 Passenger's Delight as A Mediator between Physical Environment and Passenger's Satisfaction*

According to Moon et al. (2015), the results of the bootstrapping test, clearly show that emotional dimensions are partial mediators between some of the properties of the physical environment of the airport (e.g., facility aesthetic, cleanliness and layout accessibility) and customer satisfaction. Generally, the physical environment of the airport is found to be a vital factor in pleasure and pleasure; having a substantial impact on satisfaction. Similarly, Lee et al. (2008) stated that festivalscape is essential in driving positive emotions and patronage satisfaction. Also, the relationship between the physical environment, the delight of the passengers, and passenger satisfaction are supported empirically (Ali et al., 2016). These findings are in line with prior studies empirically indicating the physical environment impact on customers' emotions and satisfaction (Bitner, 1992; Moon et al., 2015; Wakefield & Blodgett, 1999). Additionally, the difference in the physical environment impact on passenger delight and satisfaction also shows that delight and satisfaction might be considered a dissimilar construct (Finn, 2005; Ali et al., 2016). Based on the literature, the following hypothesis is formulated:

H4. Passengers' delight mediates the relationship between airport physical environments and passengers' satisfaction.

### **1.3 Significance of the Study**

The importance of this study is discussed from the academic and practical benefits to individuals and organizations. The study focuses on the relationship between the physical environments, passenger delight, and satisfaction. In term of academic contribution, the study could provide some theoretical knowledge for future research within the research area particularly due to the lack of similar research focusing on the physical environments, passenger delight and satisfaction in the context of international airport. Future studies may be replicated or extended to different airports in various countries. From a practical viewpoint, the findings of this study may assist international airport industry practitioners to better understand the perception of airlines passengers on physical environments of international airports and its impacts on passengers' enjoyment and satisfaction.

In the context of international travels, international airports are usually the first stop for tourists. Hence, airport designers and service providers need to understand the features of the environment that provide a powerful sensory and memorable experience for passengers. When passengers value the airport physical environment greatly, the level of passenger satisfaction can be improved by the physical environment as it can generate passengers' delight. Therefore, authorities of the airport ought to consider how the physical environment might create encouraging emotions, which might increase loyalty and satisfaction. Traditional airport design practices are based on standard formulas that calculate passengers and cargo traffic to improve transport efficiency (Bogicevic, 2014). The experience of the contemporary traveller goes beyond capability. Bogicevic (2014) indicated that a well-designed airport with stylish accessories poses a positive emotion to tourists, thus leading to recommending behaviour. However, tourists are most likely to recommend airports based on the internal attractions of the airport. Ali et al. (2016) stated that if the airports can be exciting and functional; using unique colours, attractive décor, and interior decorations that arouse a positive emotional state, it could result in passenger satisfaction with the airport. Additionally, higher satisfaction results in positive behavioural intentions (e.g., revisit, word-of-mouth positives, repurchase, and spend more money). Besides, the financial success of an airport may be contributed by the satisfaction among passengers (Ali et al., 2016).

## **2 Literature Review**

### **2.1 Physical Environment**

The physical environmental ability for business services such as hotels, restaurants, professional offices, banks, grocery stores, and hospitals affects behavior and creates an apparent image (Bitner, 1992)). There are four physical environment variables which have been selected for this study: facility aesthetics, cleanliness, layout accessibility, and functionality (Moon et al, 2015; Ali et al., 2016). Although previous studies have covered about how the physical environment affects many industries, especially in the multi-dimensional understanding of the physical environment but the airport and the airline industry does not benefit from the research (Ali et al. 2016). They mentioned that in several studies, four dimensions have been commonly proposed to assess the physical environment at the airport: accessibility of layouts, aesthetics of facilities, cleanliness, and functionality.

Various features of the physical environment of the international airport have been included in these elements. As stated by Ali et al. (2016), however, some of the researchers ignored the crucial elements of the following environment: passengers with special needs, signage, retail and dining options, aroma, baggage trolleys, power sockets, crowding, elevators, and electronic walkways and internet/Wi-Fi connectivity. Therefore, this study focuses on increasing existing scale, given the physical environment as a human-made physical arrangement that can be managed by airport management; this includes the four authentic characteristics (cleanliness, layout

accessibility, functionality and facility ambiance & aesthetics). This is because the existing scale has a limit to assess the physical environment of the international airport.

Physical environment dimensions; 1) accessibility of layouts refers to how the space relations between these elements and also the layout of furniture and equipment, service areas, and routes (Bittner, 1992; Wakefield & Blodgett, 1999; Ryu & Jang, 2007; Moon et al., 2015; Ali et al, 2016; Ryu & Han, 2011). The attractive and practical layout of the service can also facilitate the fulfilment of pleasure or hedonic requirements; 2) aesthetics of facility means architectural and interior design, as well as and décor that increases attractiveness of environment of the dining (Ryu & Han, 2011; Ryu & Jang, 2007), the servicescape (Wakefield & Blodgett, 1999) and physical environments of the airport (Moon et al, 2015; Ali et al, 2016). The ambiance elements are characterized as intangible environmental backgrounds such as music, lighting, smells, temperature and noise that non-visual sensors tend to be affected and customers may have an unconscious effect (Bitner, 1992; Lucas, 2003; Ryu & Jang, 2007; Ryu & Han, 2011); 3) Bitner (1992), Moon et al. (2015) and Ali et al. (2016) stated that functionality is defined as "to achieve the goals and capabilities of convenient machinery, equipment, and furniture layouts." In the industry of restaurant, functionality is as physical object capabilities (e.g., physical machinery, equipment, furniture, and facilities) to help customers experience a pleasant experience by performing their functions effectively (Moon et al., 2015); and 4) Cleanliness is a crucial part of the service, particularly in situations where is a leisure time service setting that must be spent several hours by the customer. Cleanliness and quality of service are often implicitly linked by many users (Wakefield & Blodgett, 1999; Lucas, 2003; Moon et al., 2015; Ali et al., 2016). As accentuated by Ali et al. (2016), the toilet's hygiene, food service area, and pedestrian route and exit at the airports have a positive impact on customer excitement.

## **2.2 Passenger's Delight**

Customer delight is strong reactions, both positive and emotional (Oliver, Rust & Varki, 1997) or state of emotional (Füller & Matzler, 2008) for a pleasurable surprise (Gyung Kim & Mattila, 2013) emotional stimulation and enjoyment (Torres & Kline, 2013) to the product or service. Additionally, a very positive effect, emotion of delight combines surprises and excitement (Gyung Kim & Mattila, 2013; Kim, Vogt & Knutson, 2015), elation, adventure, or enthusiasm (Torres & Kline, 2013). In other words, delight refers to a state of deep emotion generally positive because of having one's expectations exceeding the level of surprise (Rust & Oliver, 2000; Finn, 2005; Barnes, Ponder & Dugar, 2011). Therefore, as mentioned by Magnini, Crotts & Zehrer (2011) and Crotts & Magnini (2011), customer or passenger delight can also be defined as a response that a customer can give when the service or product provides unexpected value or unexpected satisfaction as the customer uses and also experiences it. Moreover, the delight of neither the customer nor the passenger was conceptualized as different construction but closely related to customer satisfaction. Although generally exceeding the expectations of a person is considered to be customer satisfaction, customer satisfaction is mandated when customers receive positive surprises beyond

expectations (Magnini et al., 2011). Schneider & Bowen (1999) indicated that surpassing customer expectations create customer delight. Therefore, delight necessitates a stronger emotion and physiological state that is different from satisfaction (Torres & Kline, 2006).

### **2.3 Passenger's Satisfaction**

Individual perceptions of their expectations of product or service performance have defined customer satisfaction (Torres & Kline, 2006; Torres & Kline, 2013). Nonetheless, some researchers have further developed the concept or definition of customer satisfaction. The emotional response to the experience of this product/service comes from uncertain validation of consumer product or service performance and their performance expectations are also known as satisfaction (Kim et al., 2015; Hu, Kandampully & Juwaheer, 2009; Li, Ye & Law, 2013; Kim, 2011). According to Hu et al. (2009) and Li et al. (2013), they indicated that fulfilling customer needs and wants is an important customer satisfaction in the marketing concept. Indeed, it is in the midst of marketing concepts and marketing researchers reporting sturdy evidence of the repeat purchases is a positive effect on customer satisfaction, retention (Finn, 2006), loyalty (Lee et al., 2008; Kim et al., 2015), profitability (Amirreza, Mohammad & Gilani, 2013), the positive effect of word of mouth is helpful and also the utilization rate (Arnold, Reynolds, Ponder & Lueg, 2005). In the industry of services such as the airline industry and airports, the characteristics of its services require the expectations and needs of customers which need to be understood by managers, and the promise was fulfilled (Atalik, 2009). As stated by Naik et al. (2010), it has been revealed that understanding motivations, expectations, and desires all provide the basics in the best way to serve customers. It may also provide information on improvements like the business. This is due to air travelers are becoming more demanding and sophisticated and airports are sure of the airline's decision results which may be affected by them with better service or exceptional customer satisfaction levels being offered as "attractive" strategies drive marketing efforts to end users (Atalik, 2009).

## **3 Methodology**

### **3.1 Sample and Data Collection**

Quantitative research design will be used for this study. Furthermore, to obtain a large number of respondents, this design is considered appropriate. The study will be cross-sectional in which the data will be collected once within a period of time. The population and the sample of the study will be those passengers who use facilities and services at KKIA. In 2018, the number of passenger movements at KKIA was 8,622,488 (MAHB, 2019). In terms of sample size, calculation was made by using Raosoft sample size calculator. Based on margin of error of 5%, confidence interval of 95%, population size of 8,622,488 and response distribution of 50%, the minimum sample size for the study is 385 respondents (Raosoft, 2004). The questionnaires will be distributed by using a convenience sampling method. According to Sekaran & Bougie (2016), convenience



sampling refers to members of the population who are conveniently available to collect information. Perhaps, the best way to get some basic information quickly and efficiently and the most usually used during research phase in research project is convenience sampling (Sekaran & Bougie, 2016).

Questionnaires will be divided into four main sections, namely, Part I, II, III and IV. Part I consists of the demographic section such as gender, age, ethnicity, yearly travel frequency and traveling with. Part II consists of the physical environment from the perspective of layout accessibility, facility ambiance & aesthetics, functionality, and cleanliness which are adapted from Ali et al. (2016), Ryu & Han (2011), Bogicevic et al. (2013) and Chumakova (2014). Part III consists of passenger's delight adapted from Ariffin & Yahaya (2013) and Ali et al. (2016), and Part IV adapted from Ali et al. (2016), Ryu & Han (2011) and Moon et al. (2015) is about the passenger's satisfaction. 5-point Likert scale questionnaire will be used which is designed to examine how strongly the respondents agree or disagree with the question regarding the physical environment, passenger's delight, and passenger's satisfaction.

### **3.2 Data Analysis Plan**

For this study, SPSS version 25.0 will be used to process descriptive analysis, reliability and validity analysis on collected data and to evaluate sample demographics profile and internal consistency of construction. According to Sekaran & Bougie (2016), reliability analysis is to ensure consistent measurement over time and across a range of items in the instrument and also a measure of the extent to which it has no bias (error-free). For validity analysis, there are two types of validity that focus on validity analysis. First, their ability to the external environment (external validity) and second is the internal validity of the cause-and-effect relationship validity issue (Sekaran & Bougie, 2016). They also mentioned that for clarity, researchers can test the validity test under three broad titles: the validity of the criteria, the validity of the construct and the validity of the content.

In order to analyze the data for current research, Structure Equation Modeling (SEM) will also be used. The SEM technique is an extension of the existing statistical method in this study. Also, as accentuated by Garson (2015) and Ali, Rasoolimanesh, Sarstedt, Ringle & Ryu (2018), SEMs are also important to investigate the relationship between independent variables, dependent variables, and indirect relationships using mediators. Not only to test simple direct relationships. The mediator variable slightly absorbs the exogenous effects of endogenous construction in the PLS path model can define mediation (Hair, Sarstedt, Hopkins & Kuppelwieser, 2014). The alternative to traditional SEM is the partial least-squares structural modeling (PLS) that can be used to model causal relationships between variables (do Valle & Assaker, 2016; Hair et al., 2014; Hair, Ringle & Sarstedt, 2011). Meanwhile, the main objective of this study is to investigate empirically on the relationship between the physical environment of the airport and the satisfaction of passengers and passenger satisfaction. Hence, PLS-SEM is considered an appropriate analysis method to analyze the data for this research.

## 4 Conclusion

As the study is still under investigation, essential academic contributions to existing knowledge bodies will be achieved by testing hypotheses and verifying whether they are supported or denied as well as by linking the findings with empirical evidence taken from literature. The results of this study are expected to provide further support for the previously proposed propositions and to increase the knowledge available on the topic research of physical environment, delight and satisfaction of passengers.

## 5 About the author

Nur Aida Amani Baharuddin is a Bachelor's Degree holder in Business with Honours (Tourism Management) from Universiti Malaysia Sabah, Malaysia. She is currently undergoing her Postgraduate studies in Master of Tourism Management at Universiti Teknologi MARA Cawangan Selangor, Malaysia.

Mazlina Mahdzar is a Senior Lecturer at the Faculty of Hotel and Tourism Management, Universiti Teknologi MARA Cawangan Selangor, Malaysia. She has published several articles in tourism discipline. She received her PhD in Nature Tourism. Currently, she is the Head of Academic Unit of MDAB, Universiti Teknologi MARA Malaysia.

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