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# A STUDY ON ENHANCEMENT OF WAYFINDING STRATEGIES IN KUALA LUMPUR INTERNATIONAL AIRPORT 2 (KLIA2)

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## **Abstract:**

Wayfinding can best be described as spatial problem-solving. It is one of the main factors when passengers rate their experiences at the airport terminal. Passengers and visitors at the terminals frequently complain they have difficulties in finding their way through the complex structures and most of them are associated closely to puzzling signage. The objective of this study is to identify issues that lead to poor performance as evaluated on current KLIA2 terminal wayfinding system. This paper focuses specifically on visual information elements such as the font, colour, symbols and size. Kuala Lumpur International Airport 2 (KLIA2) is selected as the case study for this research. As it is popularly known as the world's largest low-cost carrier terminal, providing a comprehensive and effective wayfinding could be a monumental task for KLIA2. Interview sessions and observation on respondents were done and documented to analyse the passengers' movement and feedback. The study shows that KLIA2 signage systems need colossal improvement. Results have shown that signage in KLIA2 is fairly visible but below average when it comes to readability and requires improvement in that aspect. Comprehensive wayfinding will not only deliver significant improvement to KLIA2's existing signage specification but it will also save time and enhance the users' experience and stigma towards low-cost carrier terminals.

**Keywords:** Low-Cost Carrier Terminal; Visual Elements, Signage; Time-Saving, Effective Wayfinding

## **1.0 INTRODUCTION**

Airports are destinations, as well as gateways between countries. The Kuala Lumpur International Airport 2 (KLIA 2) presents a modern but homely airport with serene environment. This terminal is dedicated towards its continuous effort in becoming a next-generation hub and providing excellent services to visitors and passengers. In 2016 passengers at KLIA2 recorded a total of 27.1 million people. Trying to direct a large number of people hovering in a particular area in a relatively spacious airport building is not easy. Without proper wayfinding strategies, it can possibly cause various problems to new arrivals who may not be familiar with new environments at the airport. Wayfinding plays the main role as the architectural elements found in an airport; it helps passengers to navigate throughout the complex. Positive user satisfaction at the airport terminal is closely correlated with effective wayfinding strategies. An airport terminal is measured by its service quality. ASQ Survey is a global benchmarking programme used to measure passengers' satisfaction. It provides information on important aspects; to understand passengers' perception of airport services rating and make a comparison with another airport around the globe. In 2017, KLIA was ranked at 34, while in 2015 it was ranked at 19. It shows a very drastic drop. To ensure it does not continually worsen, effective improvement should be taken.

## **2.0 LITERATURE REVIEW**

According to Arthur and Passini (1992), wayfinding is described as a major navigation action step including; making decisions and development of action plans. Once the decision is made, people will deliver the right behaviour at the right place and space.

## **2.1 Wayfinding Behaviour**

In a complex environment like airports, users always perform their wayfinding behaviour consciously and subconsciously. The building architectural features directly affect the users' experience such as when going through a straight pathway but when it comes to intersections with certain junctions or multiple gate entrances, the behaviour perception is immediately changes to become more challenging. To this end, signage containing clear information directly impacts and communicates better with people, for them to understand the cognition of space, leading to effective wayfinding behaviour. Some authors have pointed out that signage at preferred points improves wayfinding performance (Best, 1970; Corlett et al., 1972).

## **2.2 Wayfinding Category**

Wiseman (1979) states that, to facilitate wayfinding in complex buildings like airports, there are few fractions of the environmental factors category to be considered. Categories include plan layout, architecture features, perception access and signage system. He refers to the layout plan as a feature of the facility design to shape the entire image of the building configuration. To illustrate the architectural features he refers to the disparity between the other areas of the building while perceptual access is the ability to see the whole building through and out. In this case, Erhart (2001) believes that the first three categories are inflexible, difficult, expensive, and unjustified to change. On the contrary, signage system is considered as the ultimate tool to be used by travellers.

## **2.3 Understandability of Airport Signage**

Relevant signages are available at most airport locations. Regardless of which country, pictograms, arrows and location markers are often found at the airport. These signs are used globally as a basic navigation for easy mobility (Fuller, 2002). Requirements such as 'Departure' and 'Baggage Reclaim' are often used extensively and soon become standard in airport signage language. Between those three fields of signage included visibility, readability, and understanding, the most likely important is the last one. No matter how legibility and appearance of the signboard is, if it cannot be understood, there is no point in implementing it.

## **2.4 Airport Signages Category**

Airport signage is a set of signboards designed with a combination of messages with the aim of guiding travellers generally the passengers to reach their destinations at the airport. According to the American Airport Cooperate Research Program, the airport signage can be divided into three main parts, i) Runway Signage: It assists pilots in taxiways and ground facility staff., ii) Airport Operation: It represents airport regulations for airport crew and staff, and iii) Terminal Signage: It deals with passengers to reach their destinations inside the airport terminal.

## **2.5 Types of Signages**

According to Erhart (2001), there are particularly three main types of signage that can be categorized individually as i) Identification - It identifies the location of the airport terminal and marks all of the functions inside the terminal, ii) Directional -It is used to direct the movement of passengers and traffic in airports, iii) Informational - It provides specific details on services and functions in the airport such as regulations, amenities, and so on.

## **2.6 Signage Design**

To investigate the basic design components, one easy solution that needs to be done is to clarify the understanding of signage potential as an effective medium for the passengers. Regarding a broad range of studies about wayfinding system, the major design components are:

### 2.6.1 Typography

Typography plays a key role in signage appearance. Typography can assist in routing the traffic flow by showing a directional message on signages. Things that often become the main questions are ‘do all users understand the concepts of typography?’ and ‘can they make the same decision afterwards?’ It is not even clear that all users are not illiterate and able to read. That’s why typography is not the only solution to help users find their way.

### 2.6.2 Colour

Colour has been using widely to define a message in the world. Same goes for the airport where colour is used as well to describe messages. High contrast colour has been chosen to differentiate from the environment. The colour chosen is required to be equivalent in the whole airport when it comes to the signage system terminology. Normally, a few colours have been defined by the airport authorities as to satisfy visual comfort during the passenger’s flow process. Furthermore, it must have a strong consideration on the selection of colour scheme as to avoid a mistake that would cause disorientation condition.

### 2.6.3 Symbols

Symbols are used to give command on signages. ACRP-Report 52 (2011) states that to provide a visual message confirmation, symbols should be put on the sign. They are easy to be understood which may result in a better wayfinding process in a complex building. It helps passengers to digest the information faster as the symbol itself has its own message like a script that gives a visual command. According to Erhart (2001), there are more than 46 identified symbols are available today while additional appropriate symbols are still being developed as to recognize the new airport functions like self-check-in.

### 2.6.4 Size

Size is also a great influence on the design components of the signage. It is implemented in various items like symbols, script, arrow, signboard, background, etc. The airport signage is a three-dimensional object which has a specific standard. The good signage is not measured by how big the size, but as to be better, the physical appearance should be effective with the valuable message and terminology on it. Besides the size of the sign, Arthur and Passini (1992) explain that sign mounting also needs to be considered. Moreover, the relationship between the mounting height with the distance and angle of view is the key to determine the appropriate size of any given type of sign, included ceiling height and architectural environmental factor. For the associated text, it is also important to consider the relationship between the sizes of the symbol with the size of the letter to be applied.

## 3.0 METHODOLOGY

In order to achieve the objectives, purpose and outcome of this study, the method used to collect data for this research was done in three phases. To get familiar with a complex building like an airport a wayfinding theory study has been done in phase one, while observation and picture taking analysis has been focused on in phase two. Phase three was carried out to gather findings about the appraisal of the signage system in KLIA2. It involves the collection of data by doing interview sessions with the respondents. After that, three phases of data analysis process was arranged. In the first phase, the defined attributes of signage system were collected and analysed with a preset attribute. The next phase is based on the interview sessions. The data collected from the interview sessions will be the basis of the analysis and contributes in the last phase by making a proper improvement to the current signage system by referring to defined attributes.

## 4.0 ANALYSIS AND FINDINGS

Visibility of KLIA2 signage is investigated by their four design components involved, based on the conceptual framework of this study and the related opinion of respondents. Among six types of signs in KLIA2 ‘Informational-Departure’ has the best visibility quality while ‘Informational-Arrival’ has the

lowest visibility. In term of visibility, the entire signage in KLIA2 is good by 54%, average by 4% and poor by 42% (Figure 1 and Table 1).

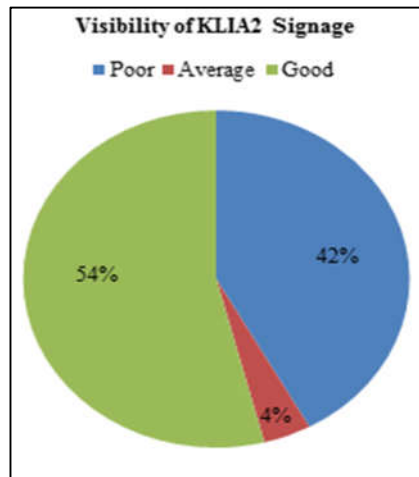


Figure 1: KLIA2 Signage – Visibility result

Table 1: KLIA2 Signage - Visibility

VISIBILITY		Poor	Average	Good
Identificational – Departure		2	-	2
Identificational – Arrival		1	-	3
Directional – Departure		1	1	2
Directional – Arrival		2	-	2
Informational – Departure		-	-	4
Informational – Arrival		4	-	-
<b>TOTAL</b>	Frequency	10	1	13
	Percentage	42%	4%	54%

Based on Figure 2 and Table 2, readability of KLIA signage is investigated by their four design components involved, based on to the conceptual framework of this study and the related opinion of respondents. Among six types of signs in KLIA2 ‘Informational-Departure’ has the best readability quality while ‘Informational-Arrival’ and ‘Directional-Departure’ has the lowest readability. In term of readability, the entire signage in KLIA2 is good by 33%, average by 25% and poor by 42%.

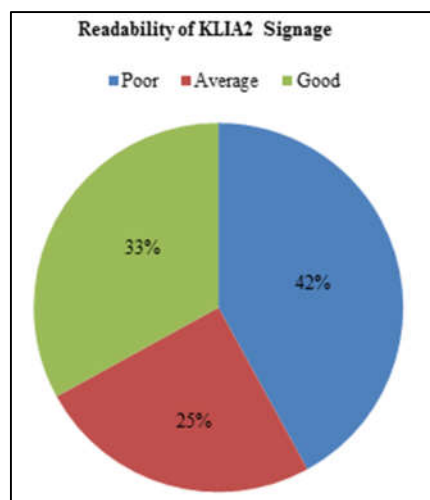


Figure 2: KLIA2 Signage – Readability result

Table 2: KLIA2 Signage – Readability

<b>READABILITY</b>		<b>Poor</b>	<b>Average</b>	<b>Good</b>
Identificational – Departure		2	1	1
Identificational – Arrival		1	-	3
Directional – Departure		3	1	-
Directional – Arrival		1	2	1
Informational – Departure		-	1	3
Informational – Arrival		3	1	-
<b>TOTAL</b>	Frequency	10	6	8
	Percentage	42%	25%	33%

Understandability of KLIA2 signage is investigated by their four design components involved, based on to the conceptual framework of this study and the related opinion of respondents. Among six types of signs in KLIA2 ‘Informational-Departure’ has the best understandability quality while ‘Informational-Arrival’ has the lowest understandability. In term of understandability, the entire signage in KLIA2 is good by 17%, average by 29% and poor by 54%.

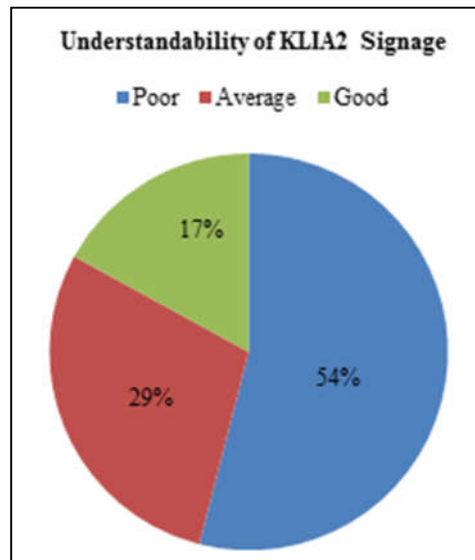


Figure 3: KLIA2 Signage – Understandability result

Table.3: KLIA2 Signage – Understandability

<b>UNDERSTANDABILITY</b>		<b>Poor</b>	<b>Average</b>	<b>Good</b>
Identificational – Departure		2	1	1
Identificational – Arrival		1	2	1
Directional – Departure		3	1	-
Directional – Arrival		3	1	-
Informational – Departure		-	2	2
Informational – Arrival		4	-	-
<b>TOTAL</b>	Frequency	13	7	4
	Percentage	54%	29%	17%

## 5.0 CONCLUSION

According to the analysis results, it can be concluded that signage in KLIA2 is fairly visible but below average when it comes to readability and requires improvement when it comes to understandability factor of them. At KLIA2, the signage is visible for most of the passengers but because of different weak points of the four design attributes, the signage is not successful in term of readability and quite hard to understand for a large number of passengers to help their wayfinding experience and related inquiries. This matter can cause a large number of wayfinding questions and assistance inquiries by passengers within KLIA2 during every operating day. An enhanced signage system in KLIA2 can make the process of passengers flow toward their destination faster and more reliable with a lower rate of stress and frustration which can be considered as a major of airport service quality credit rating to the airport authorities.

## REFERENCES

- ACRP-Report 52 (2011). Wayfinding and Signing Guidelines for Airport Terminals and Landside. Transportation Research Board of the National Academies. Washington, D.C. National Academy of Science ISSN: 1935-9802
- Arthur, P. and Passini, R., (1992). Wayfinding: People, Signs, and Architecture. New York, N.Y., McGraw-Hill Book Company.
- Best, G. (1970). Direction Finding in Large Buildings. In D. Canter (Ed.) Architectural Psychology. London: Royal Institute of British Architects.
- Corlett, E., Manenica, I. & Bishop, R. (1972). The Design of Direction-Finding Systems in Buildings. Applied Ergonomics, (3): 55-59.
- Erhart, J., (2001). Guidelines for Airport Signing and Graphics: Terminals and Landside. Washington DC, Air Transport Association of America.
- Fuller, G. (2002). The Arrow—Directional Semiotics: Wayfinding in Transit. Social Semiotics, Vol. 12, No. 3, 2002, 231-244.
- Wiseman, J. (1979). Wayfinding in the built environment: A study in architectural legibility. Unpublished doctoral dissertation, University of Michigan.