

**THE EFFECTS OF THE MUSEUMS' CIRCULATION DESIGN ON THE  
ELDERLY VISITORS' SATISFACTION IN PENINSULAR MALAYSIA.**

**By**

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**KESAN REKABENTUK SIRKULASI MUZIUM TERHADAP KEPUASAN  
PENGUNJUNG WARGA TUA DI SEMENANJUNG MALAYSIA.**

**ABSTRAK**

Kajian ini menilai bagaimana jangkaan pengunjung warga tua terhadap mutu sirkulasi rekabentuk dalaman dan kepuasan yang berkaitan dengan reka bentuk dalaman muzium. Tesis ini mengkaji secara teoritikal dan juga praktikal yang berkaitan sirkulasi dalaman rekabentuk muzium-muzium di Malaysia. Kajian ini bertujuan untuk menerokai rekabentuk sirkulasi dalaman yang berinteraksi dengan ruang dalaman persekitaran dan reruang perancangan dalam muzium. Ini adalah untuk memahami hubungkait antara kepuasan pengunjung warga tua dengan rekabentuk sirkulasi dalaman. Tesis ini juga adalah untuk menjawab beberapa pertanyaan penting iaitu; apakah yang dimaksud dengan rekabentuk sirkulasi dalaman? Bagaimanakah rekabentuk sirkulasi dalaman dikaitkan dengan kepuasan pengunjung warga tua? Dan apakah hubungkait antara jangkaan pengunjung warga tua dengan mutu rekabentuk dan kepuasan mereka? Kajian ini adalah satu diantara beberapa kajian yang menumpukan kepada warga tua. Pendekatan kuantitatif serta pendekatan kualitatif digunakan dalam kajian ini. Metodologi penyelidikan ini diuruskan juga dengan data kualitatif yang berbentuk nota lapangan, temuduga peribadi dan jawapan lisan pengunjung, kajian tapak dan pemerhatian. Analisis empirik melibatkan seramai 509 pengunjung warga tua di 21 buah muzium di semenanjung Malaysia. Ia membolehkan penyelidik memastikan mutu rekabentuk sirkulasi dalaman sebagai penentu secara langsung kepuasan pengunjung warga tua. Hasil daripada kajian ini juga menunjukkan bahawa terdapat hubungkait yang erat antara kepuasan pengunjung warga tua dengan jangkaan mereka sebelum berkunjung. Keputusan juga menunjukkan bahawa terdapat hubungan yang

signifikan antara kepuasan warga tua, kualiti reka bentuk dan pra-jangkaan. Kajian ini mendapati bahawa reka bentuk peredaran dalaman yang berkualiti kelihatan seperti multidimensi dan terdiri daripada dimensi yang berbeza. Dimensi ini termasuk reka bentuk peredaran mendatar, reka bentuk tegak peredaran, dan reka bentuk persekitaran dalaman muzium. Kajian ini menunjukkan bahawa reka bentuk edaran dalaman mempengaruhi secara positif atau negatif tahap kepuasan pengunjung warga tua di muzium dan didapati pengunjung warga tua agak tidak berpuas hati dengan reka bentuk peredaran dalaman muzium di Semenanjung Malaysia.

# **THE EFFECTS OF THE MUSEUMS' CIRCULATION DESIGN ON THE ELDERLY VISITORS' SATISFACTION IN PENINSULAR MALAYSIA.**

## **ABSTRACT**

The study examines how elderly visitors' expectations, interior circulation design quality, and satisfaction are related in the context of interior design of museums. This study explores a theoretical as well as practical key issue in interior circulation design in museums in Peninsular Malaysia. The research intends to investigate the interior circulation design that interacts with the interior environment and space planning in museums. This is to fully understand the relationship between elderly visitors' satisfaction and interior circulation design. This study plans to answer critical questions; what is interior circulation design? How does the interior circulation design relate to the elderly visitors' satisfaction? And what is the relationship between elderly visitors' expectation, design quality and elderly satisfaction? This study is one of the few studies focus on elderly people in Malaysia. Quantitative approaches as well as qualitative approach were adopted in this study. This research methodology was dealt also with the qualitative data which came in the form of field notes, personal interviews and the visitors' verbal responses, site investigations and observations. The empirical analysis was carried out on 509 of elderly visitors in 21 museums in Peninsular Malaysia to allow us to confirm that the quality of interior circulation design is a direct determinant of elderly satisfaction. The results also reveal that there is a significant relationship between elderly satisfaction, design quality and pre-expectation. This study finds that interior circulation design quality appears to be multidimensional and consisting of different dimensions. The dimensions are horizontal circulation design, vertical circulation design, and interior environment design of museums. The study reveals that the

interior circulation design affects positively or negatively the level of satisfaction of elderly visitors in museums and the elderly visitors are somewhat dissatisfied with the interior circulation design of museums in Peninsular Malaysia.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Introduction

Museums' researches are very important for Malaysia. Recently, museums are one of the main important targets and destinations for visitors in Malaysia. Moreover, Malaysian museums tend to attract large numbers of visitors, at the same time they still face some challenges such as: How to be welcoming and inviting places to a wider variety of people, such as elderly and disables, while simultaneously maintaining the highest standards of design and presentation (Ministry of Tourism, 2009). The balance between the two issues can be solved. Therefore, achieving it requires interior designers of museums to think about the needs and interests of the people they want to serve especially the elderly visitors (Wallace & DeVita, 2000). In 2007, some states in Malaysia have been nominated to be included in the UNESCO heritage list (Malaysia, 2003; Ministry of Tourism, 2009). Apparently, this also will increase popularity of Malaysia as a destination not only for the local community but also for foreigners. Therefore, the museums in Malaysia need to cater to wider audience, inevitably disabled and elderly people should be under consideration. Nowadays, there is a relevancy to include disabled and elderly people in museums' industry since Malaysia had signed the Proclamation on the Full Participant and Equality of People with Disabilities in the Asia-Pacific Region' on 16th May 1994 (Meng, 2009).

During the twentieth century, visitor institutions underwent visible critical changes as they changed the mode and strategy of museums' presentations. A century ago the typical mode of presentation was an object with an explanation or a label next to it.

Today there are countless ways museums can present objects and information to their audience. As a result, the attitudes and techniques of museum design have also changed. In fact, Falk (2000) also states that “museums have clearly changed what and how they present objects, ideas, and information, as well as the types of exhibitions and programs they present” (Falk, 2000). Yalowitz (2002) highlights that; the visitors today also have different expectations than those of 100 years ago. He states that to attract visitors to visit the museum, the topic and design should be exciting, attractive, and connected with the visitor in some way. Consequently, if the interior spaces are designed in ways that meet or exceed visitors’ expectations, they would feel more satisfied. Therefore, visitors’ experience and satisfaction would be examined regularly. So maybe by studying what happens before, during, and after a visit, design influence and the active communication between visitors, the interior design can be enhanced (Yalowitz, 2002).

Recently, the satisfaction of the visitors to museums becomes the key issue and one of the most important outcome variables for visitor institutions (i.e., whether or not visitors are satisfied with their experiences). According to Falk (2000) consumer literature links satisfaction to repeated purchases, but in museums, visitors expose satisfaction through a positive word-of-mouth, which in turn leads to increased visitation and walking time in museums (Falk, 2000). Visitors also evaluate the message of the museum and knowledge they learn within the space. Therefore, It is one of the important missions of museums to collect and to care for the chosen objects, so every museum has a message and each museum has a special designed way to communicate the message to visitors (UK Museum Association, 2008).

The purpose of this research is to investigate the elderly visitors' satisfaction with the museums in Peninsular Malaysia. It is also to determine the relationship between elderly visitors' satisfaction and interior circulation design of museums. Participants in this study are the elderly visitors of the museums in Peninsular Malaysia. The research interests are in the area of interior design but the focus is more on the interior circulation of museums. In this context, the researcher finds the possible positive or negative effects of interior circulation to ensure the satisfaction of the elderly visitors. To appreciate the importance of this study, the research work is intended to help and develop its potential findings to determine a comfortable interior design of museums for elderly visitors. It is believed that the desired outcomes should be of assistance to designers and the others who consider better ways for museum design.

## **1.2 Problem Statement**

This study concerns about the interior circulation design of the museums in Peninsular Malaysia. Bitgood (1992) highlights the problem of the interior circulation design and orientation in museums, and he states the relationships between satisfaction and circulation design as:

*‘‘Unfortunately, exhibition centers do not always pay enough attention to these areas. Visitors, on the other hand, can be painfully aware of this lack of attention. People are more likely to return or spread positive word-of-mouth about their visit if orientation and circulation factors facilitate, rather than hinder a successful visit’’* (Bitgood, 1992: 122).

R. E. Wener (2002) stresses the issue of circulation, orientation and way finding. According to him, there is growing evidence that the interior designers of museums are either unconcerned or largely ignorant of the needs of users and visitors. He considers the circulation design in museums and orientation as the first, and possibly the most basic behavioral need of visitors upon entering the museum. Wener also highlights the nature of visitors in a museum and the questions of place orientation

such as "where am I?" and "how do I get from here to there?" as well as the function of orientation and circulation, such as "how does this circulation system work?". Visitors try to answer all these questions efficiently and fast to enjoy the visit and to spend the rest of the time focusing on the objects in the museum (Weissmann. & Islam., 1996). Winer (2002) figures out that if the circulation and orientation in buildings are insufficiently designed, the remaining options for users will be asking others for help, observing the actions of others or spending much time to find the right direction. Each option actually is a source of capriciousness and therefore stressful in and of itself which may lead to visitors' dissatisfaction. The remaining option for visitors is the self-exploration, which can be even more frustrating (Wener, Richard, & Robert Kaminoff, 1982; R. E. Wener, 2002). Weisman ( 1983) also finds that experts' ratings of the complexity of floor plans correlated highly with the likelihood of space users getting lost (Weisman, 1983). Wener (2002) highlights this problem as:

*“The effects of space design on behavior must be seen in the context of user needs, expectations, and intentions, and of organizational history and goals. Effective design must consider user needs throughout the planning cycle, in predesign assessment of needs, and in postconstruction evaluation of the success of these schemes”* (Wener, 2002: 129).

In his study, Reussner (2004) finds that from the late 1980s, continuous criticism regarding to the lack of studies and audience research for museums, as well as the lack of design guidelines to help designers and curators. This leads to the question of how to propose these recommendations and how museums can make the best possible use of this recommendations and the information they provide (Reussner, 2004).

Internationally, there are few researches only have been conducted to measure the attendance of elderly people in museums. Some studies (Bitgood, 1991; Rogers, 1998b; Rojas & Camarero, 2008; Tufts & Milne, 1999; Webb, 2010; Weissmann. & Islam., 1996) give indications that elderly people are very interested in visiting

museums. Based on Rogers' research (1998) most of the museums' visitors in his study are ranged from age 50 -70 years, and as a result of his study also, the elderly visitors of museum have high expectations concerning museums' design. Therefore, Rogers explains that elderly attendance could be based on (a) personal characteristics such as nostalgia, (b) experiences, and (c) general levels of satisfaction with the museum itself and interior design. At the same time, Rojas and Camarero (2008) state that in order to use museum's resources in the most successful and advantageous manner, museums need more studies to identify what factors have to be considered for the visitors' circulation in museums (Rogers, 1998b; Rojas & Camarero, 2008). Throughout museum design basics, the design must emphasis the relationship between visitors and interior space. Moreover, through the researcher's investigations and sites visits in Peninsular Malaysia, researcher notices the absence of interior circulation design's strategy especially for elderly visitors, as it is obvious that in the museums, elderly visitors are easy to get tired and old people may tire particularly quickly (Researcher, 2009).

Nowadays, It becomes a fact that the interior design of museums covers not only the display design to respond to the museum effect through changes of interior environment and space; but must also consider suitability and the comfort level for the visitors (Zorloni & Wien, 2010). Therefore, to achieve the efficient interior circulation design of museums, designers must understand the nature of visitors, behaviour, design data and their needs. Based on several studies (Wavell, Baxter, Johnson, & Williams, 2002; R. E. Wener, 1998; Yin, 2003) many of the elderly visitors have impaired mobility, and some of them could be in wheelchairs, but more are simply walking slowly and painfully. Some use a stick or simply find stairs very difficult. Moreover, studies state that many of elderly visitors have poor eyesight, and

for them it is important to design a proper interior circulation to meet their needs and satisfaction.

Thus, Meng (2009) states in his study that, “The design strategy for circulation design and accessibility for elderly and disabled in Museums’ buildings in Malaysia needs to be ascertained” (Meng, 2009). Based on the researchers’ visits to the museums in Malaysia, the shortage of the design strategy, creativity and standard have been noticed. In order to overcome this problem, Malaysian government endorsed the Biwako Millennium Framework for Action (BMF) in the year 2002. It announced the extension of the Asian and Pacific Decade of Disabled and Elderly Persons (Meng, 2009). So accessibility to built environment and circulation design are some of the areas out of 7 priorities in the policy which Biwako Millennium Framework for Action would like to achieve. The policy reflects the consequence of implementing a barrier-free in order to accommodate the involvement of disabled people and elderly in the society (Meng, 2009). Today, the Malaysian local federal government has stepped up efforts to promote enhancement and development in the interior environment of museums in Malaysia in order to promote and to motivate the tourists to visit them (Mohamed & Mustafa, 2005).

Moreover, Bitgood (2011) states that:

*“How people move through public spaces has important implications for users, architects, and other designers of public spaces. So the identification of empirical principles that influence the interior circulation and behaviors are important to be studied to improve the design of the built environment.”*  
(Bitgood, 2011:394).

However, the physical shape of the environment, its relationship to other spaces, and the presence of factors such as salient objects and direction signs must be considered (Bitgood, 2011). Bitgood also figures out that, architects and other designers of

public spaces such as museum and exhibitions fail to recognize interior circulation, the economy of movement principle and consequently design spaces that function poorly. For example, it is not unusual to find museum exhibits that require backtracking to view all the objects or to find direction signs that attempt to force visitors to violate the economy principle

Mohamed and Mustafa (2005) find that, designers are still unfamiliar with the needs of the elderly people which are of great importance in Malaysia. Until now there is no source or study which can give a great source of information related to the elderly user's needs, capabilities, and interior circulation. According to Mohamed and Mustafa (2005) designers must achieve the visitors' satisfaction first then educate them about culture and country. Then designers can propagate Malaysian culture for the world smoothly. In terms of achieving visitors' satisfaction, the interior circulation must to be considered as the key issue for exhibition design. All components of circulation are important particularly in museums since it is the main key to decisions regarding how the collection will be displayed and viewed. More particularly, circulation is critical for moving the museum's visitors through the building (The International Council of Museums, 2009). Active design considerations are seen as important elements that can encourage active engagement among elderly. In addition, elderly people need to be in constant contact with other individuals in society (Doris Selvaratnam, 2011).

According to Rabieyah Mat and Hajar Md. Taha. (2011), social institutions and government policies in Malaysia need to adapt the changing age structures to cater for an ever-increasing demand for the needs of the elderly, (Tables 1.1 & 1.2). The demographic and social trends of population ageing in Malaysia is moving at a

quicker pace than observed 10 years ago, as is evident in the data collected in the 2000 Census of Malaysia. The overall trends reveal an increasingly ageing population that will continue to grow both in numbers and proportion. The senior citizens of Malaysia are growing at a faster rate than the total population and will more than double in numbers soon. The traditional pattern of the older population being primarily involved in agriculture has significantly changed and their participation is now in more varied occupations. Changing social characteristics such as nuclearization of households, higher education levels, and economic issues such as changing occupation trends, are factors that affect the population as a whole and will eventually contribute to the overall scenario of the future elderly.

Table 1.1: Past, present and future trends of senior citizens, Malaysia, 1960-2020 (Rabieyah Mat, 2011).

Year	Number of senior citizens ('000)	Per cent of total population	Growth rate of:	
			Elderly population	Total population
1960	386.6	4.8	-	-
1970	546.1	5.2	3.5	2.6
1980	745.2	5.7	3.1	2.3
1991	1,032.3	5.9	3.0	2.6
2000	1,398.5	6.3	3.4	2.6
2010	2,134.9	7.4	4.2	2.2
2020	3,439.6	9.9	4.8	1.9
2030	4,933.4	12.0	3.6	1.7

Researches show that Malaysia's multi-ethnic population composition displays different demographic characteristics among the various groups and a cursory look at the elderly population by major ethnic groups (Table 1.2), reveals that the Chinese have the highest proportion of senior citizens at 8.8 per cent.

Table 1.2: Percentage of senior citizens within ethnic group, Malaysia, 1991-2000 (Rabieyah Mat, 2011).

Major ethnic groups	Young-old (60-74 years)	Old-old (75+ years)	Total	Old-old (1991)
Malaysian citizens				
Bumiputera*	80.0	20.0	100.0	18.5
Chinese	80.9	19.1	100.0	26.1
Indians	83.0	17.0	100.0	17.7
Others	76.8	23.2	100.0	22.2
Non Malaysian citizens	69.7	30.3	100.0	21.7
<b>Total</b>	<b>78.8</b>	<b>19.8</b>	<b>100.0</b>	<b>21.2</b>

Mafauzy M (2011) figures out that, the increase in the ageing population in Malaysia is inevitable. The aged population has its own unique problems and will generate new challenges and demands on the design and social services. This undoubtedly requires a sharing of responsibilities between the government, private sector, designers and the community. According to Mafauzy “We will all age and we will all require the services for the aged at some point in time”. Parsons (2011) writes that "unfortunately our society still tends to hold negative attitudes about ageing and the aged." Little research has been done for the elderly, but he suggests that attitudes toward the elderly reflect those of society in general. He adds:

*“It is essential for everyone to understand that the elderly are worthwhile; that they are worth considering; that they are people. It must be recognized that the elderly are slower, so they need more time and consideration”* (Parsons, 2011:35).

Based on the department of statistics in Malaysia (2003, 2009), the demand for care and services for the elderly is clearly being recognized and effective implementation of policies is becoming crucial (Malaysia, 2003). To assess the adequacy of the circulation design of the museums for elderly people, this study uses the confirmation and disconfirmation process as a reference point to investigate the overall satisfaction of the elderly visitors. However holding these sessions may be a challenge for several

reasons. These challenges involve adjusting for diversity of the older population and their physical and cognitive differences and dealing with the attention characteristics of this population (G. Black, 2005; J. Black, 2008).

### **1.3 Research Importance**

There is a clear significance of the research questions and hypothesis for the museums and interior design industry. Museum industry is very important for Malaysia, where according to the Ministry of Tourism in Malaysia (Malaysia, 2003; Ministry of Tourism, 2009), The total number of global tourist arrivals has risen to a standard growth of about 7% per annum over the five decades. For example, in 1995 the Malacca State government proposed a plan to convert the town into a city of 101 museums (Mohamed & Mustafa, 2005).

In Malaysia elderly people are increasing yearly. The indications of an ageing population are being recognized and much is being done to study and plan for the impending changes. The National Senior Citizens Policy passed in 1995, provides a basis for planning and implementing appropriate measures. Based on the Department of Statistics in Malaysia (2003, 2009), the demand for care and services for the elderly is clearly being recognized and effective implementation of policies is becoming crucial (Malaysia, 2003). The number of elderly people in Malaysia almost doubled over the twenty years from 1970-1991 from 546 thousand persons in 1970 to 1.03 million persons. The numbers have increased by another 35 per cent over the last 10 years to 1.4 million persons or 6.3 per cent of the total population in 2000. Based on population projections, the number of senior citizens is likely to more than double to 3.4 million in the next twenty years (Malaysia, 2003). An overview of the age-structure of the population for the past four censuses between 1970-2000 (Figure 1.1)

reveals a significantly decreasing proportion of population in the younger ages and a corresponding increase in the older age groups. In fact, the proportion of the population above age 15 shows increases in all the sub-groups, indicating a continuing ageing trend in the coming years (Malaysia, 2003).

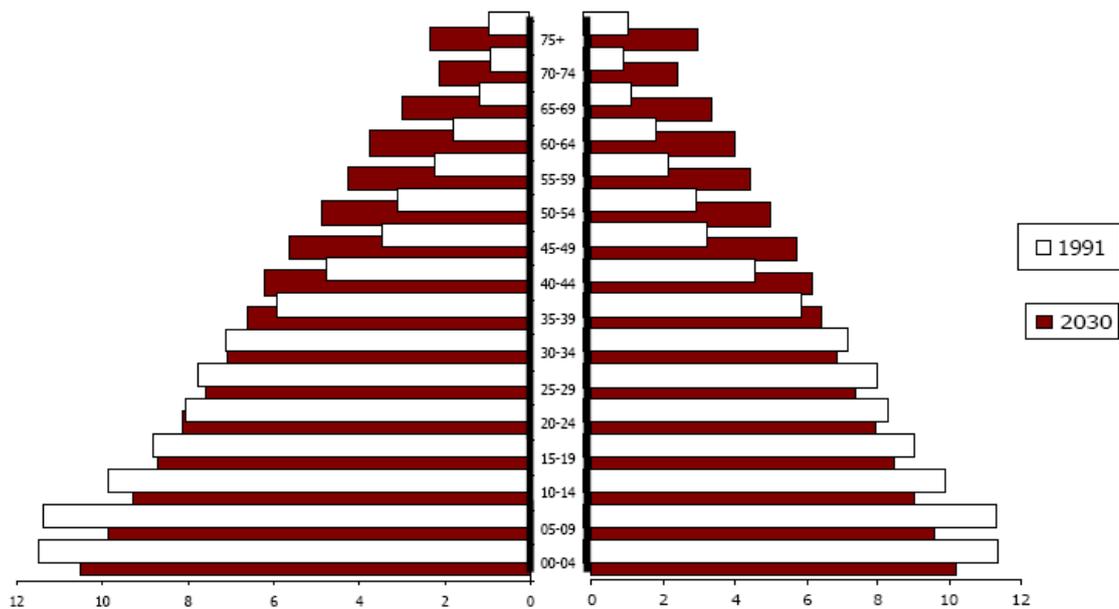


Figure 1.1: Age – Sex Pyramid, Malaysia, 1991, 2030 (Malaysia, 2003).

According to Hood (2010) most of previous studies dealing with museum visitors have been demographic in nature. In a study for a museum, Hood (2010) found that the group with the largest attendance was aged 55 and older. This group accounted for one-third to one-half of the visitors on any given day. Based on the local statistics, elderly people have a huge contribution to make economically and socially to Malaysia (Malaysia, 2003). Rogers (1998a) in his study investigates the age of the museums visitors by stating the differences between the frequency of visits and age, (Figure 1.2) (Rogers, 1998a).

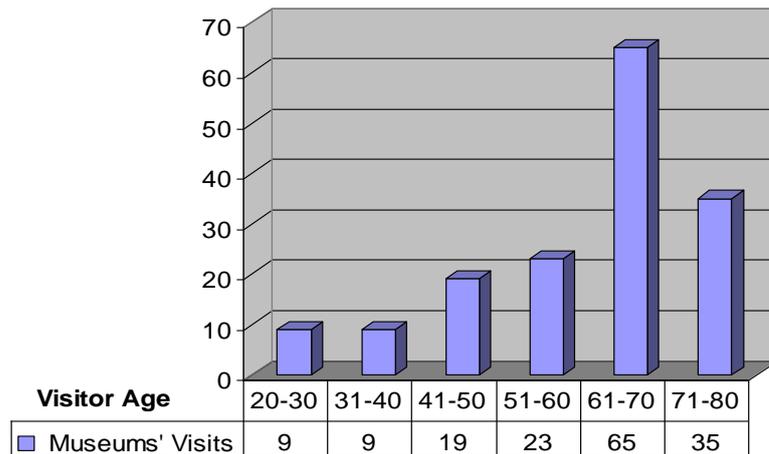


Figure 1.2: Visitors ages and museums' visits (Rogers, 1998).

Wallace and DeVita (2000) found that most of the museums visitors are in the (50 - 70) age group, as in the museum most questionnaires were filled up by 50-60 year old persons, (Table 1.3).

Table 1.3: Frequency and percentage distribution of participants in museums by Age (Wallace & DeVita, 2000).

Age	Ratio %
18-29 Years	10.4 %
30-39 Years	13 %
40-49 Years	21.9 %
50-59 Years	27.1 %
60-69 Years	17.7 %
70-79 Years	8.3 %
80 or more years	1.6 %
Total	100 %
M= 60-69 Years    SD= 1.5    4	
Missing Cases.	

#### 1.4 Previous Related Research Studies

Many similar studies have been carried out by several researchers related to the interior design of museums but this is the first study focuses on the elderly visitors' satisfaction and interior circulation design of museums in Peninsular Malaysia. Some of these studies are used in the literature review of this research. Bitgood (1992) studied some of the common principles of the interior

circulation design and orientation. He divided the principles into three major areas: conceptual orientation, visitors' circulation, and way finding. He also coined the term of "positive word-of-mouth" for the visitors' satisfaction about orientation and circulation. Bitgood focused more on the orientation systems and "you are here" map (Bitgood, 1992). R. E. Wener (2002) discussed some of the empirical data and conceptual models that have relevance to an understanding of the service encounter. He gave more attention to human factors, social ecology and orientation. In addition, he highlighted the potential effects of poor environmental conditions if disorientation occurs. Also he proposed the easiest solution to a poorly legible space as it can be overcome through the use of orientation aids. He also discussed the space especially in large settings (such as hospitals or airports), and stated that behavioral research may be critical to help determine where signs are needed or what wording is most clear. That is, when initiating a design, one may best be able to plan for uses that successfully draw on past experience, design for legibility and clarity, and plan orientation aids that complement rather than remediate the layout. In his conclusion he stated that the effects of space design on behavior must be seen in the context of user needs, expectations, intentions, and of organizational history and goals. Effective design must consider user needs throughout the planning cycle, in predesigned assessment of needs, and in post construction evaluation of the success of these schemes (R. E. Wener, 2002). Yalowitz (2002) in his study revealed that a combination of visit and visitor variables best predicted satisfaction, although he stated that satisfaction was predicted by only four of the six key variables: Sensory Opportunities, Informational Reasons for Visiting, Informational Opportunities, and Sensory

Reasons for Visiting. Of these four, both sensory and informational variables were included. He revealed also that satisfaction significantly increased visitor intention variables such as likelihood of a return visit, likelihood of recommending that friends and family visit, willingness to provide a quote to be used for endorsement of the institution, and perceiving that the institution cared about them. His research allows researchers and museum professionals to understand and increase visitor satisfaction, as well as determine what role the visitor and the institution play in a satisfying experience. He also concluded that by understanding and improving satisfaction, visitors will be more loyal, more likely to return, and to recommend visits to others (Yalowitz, 2002). Bitgood (2005) studied how visitors' circulation and movement through museums indicates what visitors will see, the points they will focus on, and, eventually, what they will learn and experience within museums. His article reviews the literature and researches on visitor movement and circulation in the light of the general principle which predicts choice behavior as a ratio of perceived experience outcome (benefits) divided by perceived costs (time, effort, etc.) (Bitgood, 2005). Carmen de Rojas & Camarero (2007) examined how expectations, experiences, and satisfaction are related in the context of cultural tourism and the services provided by cultural organizations. Also they proposed a model that combines two complementary approaches in the analysis of satisfaction: a cognitive approach based on quality and disconfirmation and an affective approach based on emotions. The analysis carried out on a sample of visitors to an interpretation center allows to confirm that the perceived quality is a direct determinant of satisfaction, as are emotions. The results also revealed that there is a significant relationship between quality and emotion

(Rojas & Camarero, 2007). Peponis, Dalton, Wineman, & Dalton (2008) studied & presented new research on the relationship between visitor behaviour and layout in science exhibition settings. Tzortzi (2007) tried to develop a synthetic overview of spatial and object layout within a single theoretical framework, seeking to contribute to a better understanding of museum morphology. It showed that the main dimensions of layout and display strategies obtain from a group of principles, given as possibilities to be studied, explored and combined. Depending on the way museums use these principles, it is possible to differentiate between museums that intend to express a meaning and replicate information, and museums that aim at creating fields of possible meaning and producing a spatial structure (Tzortzi, 2007).

### **1.5 Research Questions**

This study is guided by the following research questions:

- a. What is the definition and the types of the interior circulation design?
- b. Is there a statistically significant relationship between elderly visitors' satisfaction and the interior horizontal circulation design in museum?
- c. Is there a statistically significant relationship between elderly visitors' satisfaction and the interior vertical circulation design in museum?
- d. What are the effects of the vertical and horizontal circulation design on the elderly visitors' satisfaction in the museums in Peninsular Malaysia?
- e. What are the proper recommendations of interior circulation design that can contribute to improve the level of elderly satisfaction?

### **1.6 The Objectives of the Study**

The purpose of this study is to investigate the elderly visitors' satisfaction with the interior circulation of museums in Malaysia. The study investigates whether, and to

what degree, relationship exists between the satisfaction of elderly visitor and the interior circulation design of museums in Peninsular Malaysia. The following objectives are carried out:

1. To understand the definition and types of the interior circulation design and the factors which affect the circulation design and the elderly satisfaction in museums.
2. To measure and evaluate the elderly visitors' satisfaction with the interior circulation design of the Malaysian museums.
3. To determine the relationships between elderly visitors' satisfaction and interior circulation design of museums.
4. To identify the findings and provide the proper recommendations of interior circulation design which contribute to develop the level of elderly satisfaction at museums in Malaysia.

### **1.7 Research Hypothesis**

This study attempts to meet the above objectives with the aid of the following hypothesis:

**H: Interior Circulation Design Affects The Satisfaction Level of The Elderly Visitors of Museums In Peninsular Malaysia.**

Null Hypotheses based on the research questions are formulated:

**H1:** A significant relationship will be found between elderly visitors' satisfaction and interior horizontal circulation design in museums.

**H2:** A significant relationship will be found between elderly visitors' satisfaction and interior vertical circulation design in museums.

**H3:** Interior circulation design affects the elderly satisfaction level at museums in Peninsular Malaysia.

### **1.8 The Sources of the Data**

There are two types of data which are: (a) the primary data and (b) the secondary data.

a- The primary data which is obtained via questionnaires that have been conducted and administered to a total 800 visitors in museums in Peninsular Malaysia.

These data has been analyzed in chapter five and the graphic data (synthesis) are included in appendices of this thesis.

b- The secondary data are of two types as in (i) and (ii) below:

- i. The first data are those that have been collected through the available text references and informal verbal information (interviews without survey) from the local authorities and the officers who work at the related institutions in Malaysia. The data has been obtained from the related officers and local authorities, the department's library/resource center (article, internets and journals), the ministry of tourism reports and statistics of materials related to the topic. The data is information that is related to the topic of the study. It has been collected from many resources by a series of interviews in Malaysia as follows: indirect interviews with the officers and executive managers of museums, documents and texts from libraries, the department of museums in Malaysia. These text references are in the form of articles in journals,

reports, statistical information on materials related to the topic of study and the internet. Most of these data are presented in Chapter 2, 4, and 5.

- ii. The secondary and primary data are collected from personal site observations and case studies.

### **1.9 The Scope of the Study**

This study encompasses the following:

- a) Museums' industry and design.
- b) Vertical circulation design in museums.
- c) Horizontal circulation design in museums.
- d) The satisfaction of elderly visitors' in museums.
- e) The components and factors affect the efficiency of interior circulation in museums such as lightings, colors, furniture arrangement, space planning, etc.).

### **1.10 Structure of the Thesis**

This represents the overall structure of the research design. It encompasses the theoretical framework which underpins the study, the formulation of the hypothesis, the research questions, the objectives, the review of the relevant literature, the composition of the methodology, the nature of the analyses (qualitative and quantitative ) describing the type of the study, the nature of the study, data analysis, the research findings and finally the conclusion. This involves three major parts of investigation as follows:

#### **1. Part One: Review of Research**

This part is in chapter 2, and covers the following discussions:

- Definitions and types of interior circulation design in museums.

- Definitions of satisfactions and elderly needs.
- Theoretical factors in interior circulation design and design quality.

## **2. Part Two: Research Survey**

This part is in chapter 3, 4 and 5. This part covers the following investigations and observations:

- Preparing methods of data collection to investigate the interior circulation design and elderly satisfaction in museums.
- Preparing the sample of questionnaires to investigate the answer from the viewpoints of the elderly respondents.
- Conducting the field survey in Peninsular Malaysia.
- Studying the interior circulation design of the selected museums in Malaysia.
- Making analysis of the data obtained from the survey;
- Identifying all the findings.

## **3. Part Three: Conclusions**

This part is in chapter 6, and covers the following discussions:

- To assess how the research questions have been answered;
- To estimate how the objectives have been met;
- To present the specific and holistic findings;
- To make recommendation on future research on related topics.

Diagrammatically, the structure of the thesis is as depicted in the figure 1.3.

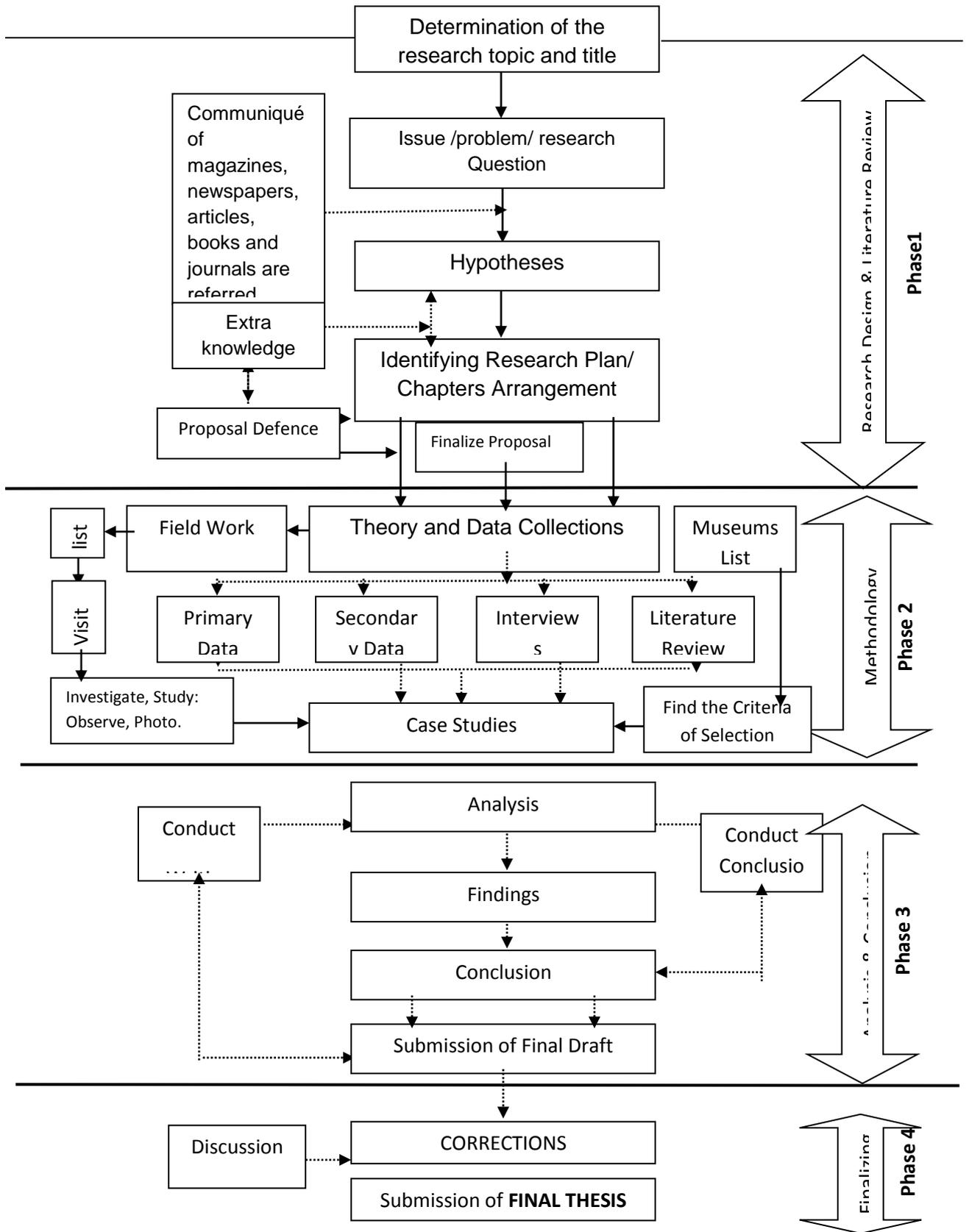


Figure 1.3: Flow chart of research structure.

### **1.11 Organization of the Chapters**

This study is organized in six chapters. Chapter One is the introduction which includes the statement of the problem and the justification of the study. It also includes the hypothesis, the objectives and the research questions. Also it presents the scope of the study. Chapter Two consists of three parts to present the literature review which covers a study of the definitions of “interior circulation” and “elderly satisfaction” and factors affect the circulation design such as lighting, colors, materials. Chapter three presents the research methodology. In particular it provides the methodology that is used for the research design. The chapter also elaborates on the pattern of the methodology which includes the survey and the analytical components. Chapter four consists of study cases in Peninsular Malaysia. While Chapter Five presents the results and its analysis. Chapter six is the conclusion and recommendations. It discusses the manner in which the study has answered the research questions through research key findings, whether the hypothesis has been confirmed or rejected. Chapter Six refers to the recommendations for museums’ interior designs in chapter two. These recommendations contribute in particular to the interior circulation design and the satisfaction of the elderly visitors of the museums in Malaysia. It also provides recommendations of other possible areas for further research studies.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

This research addresses one particular component of the interior design of museums, which is its interior circulation. This chapter particularly presents a literature review on past studies that are related to the topic of the study. In this chapter three parts are covered;

- i. The understanding of museums.
- ii. The interior circulation design.
- iii. The elderly visitors' needs and satisfaction.

The definitions and past studies will serve as a guide to the concept of interior circulation design of museums and elderly satisfaction.

#### **2.1 Understanding of Museums**

Museums are the treasure-houses of the human race. They store memories of the world's peoples, their cultures, their dreams and their hopes (UK Museum Association, 2008). The examination of museum's interior design provides one way to table the development of the museum from a history dark space engaged for a few visitors to the modern public entertainment environment visited by hundreds visitors daily. Furthermore, the analysis of interior design of museum can be approached from many different aspects such as an art form, public building or as courier of social and history changes (Ambrose & Paine, 2006; G. Black, 2005; Kanazawa, 2004). Recently museums are not only places to display or store collections, but museums have become cultural centres and places for education. More and more, the interior design of museums is seen as the prologue to the museum experience that extends beyond the galleries into restaurants, shops, theatres, conference rooms, scientific

centre, school and research area (G. Black, 2005; Webb, 2010a). The main central issue of the interior design of these multi-functional museums is the space plan for how the spaces and halls are connected - its interior circulation. G. Black (2005) in his study states that:

*“Despite their impact on the art world and their instant popularity, two factors conspired to frustrate the architects' original intent and worked against these museum building designs. First, issues regarding installation design for exhibit space that conflicted with the circulation function and, secondly the unanticipated huge number of visitors to the museums.”* (G. Black, 2005:132).

Future museums will stay to be important public buildings and will stay in the centre of the communities they serve (G. Black, 2005). Their interior design will likely develop with new design concepts and the use of high tech materials (Webb, 2010a). A critical element to museum design is its interior circulation plan which gives form and shape to the building and at the same time differentiates between spaces according to functions. Interior designers must be careful to consider a proper hierarchy of halls and spaces that balance aesthetic image with functional needs of elderly visitors. This mission is crucial to the circulation plan for a successful museum building (Ambrose & Paine, 2006; G. Black, 2005; Reeves, 2004).

### **2.1.1 Historical Review**

According to Lewis (2010), the word *museum* has classical origins, as in its Greek form, *Mouseion*, it meant "seat of the Muses" and nominated an idealistic institution or a place of observation. Thus the first great Museum was at Alexandria, established in the 3rd century BC, with its library and college. The institution called a museum and constructed to protect and display a collection belong to the public. It was well

organized and established in the 18th century (P. S. Allen, Stimpson, & Jones, 2000; Ambrose & Paine, 2006; Lewis, 2010).

The idea of the museum development certainly occurred early in the 2nd BC at Larsa, in Mesopotamia, as copies of old inscriptions works were made to be used in schools. In addition, Woolley's findings also indicated that the king Nebuchadnezzar (Babylonian king) and Nabonidus collected antiquities works and kept it to be exhibited (Christensen, Bent, Padfield, Ryhl-Svendsen, & Thickett, 2007; Lewis, 2010).

In Asia, as a result of respect of the past and of its personalities, people collected many objects. Collecting occurred at least as early as the Shang dynasty, which ruled China from approximately the mid-16th to the mid-11th century BC. In Japan also the Todai Temple, housing a colossal seated bronze statue of the Great Buddha, was constructed in the 8th century at Nara. Islamic communities were also gathering collections of what's left at the tombs of early Muslim martyrs. After that, the idea of *WAQF*, coined by Prophet Muhammad himself, as property was given for the public good and for religious purposes, which also resulted in the formation of collections and objects. In medieval Europe collections were mainly the prerogative of princely houses and the church early in the 9th century (G. Black, 2005; Canadian Museums Association, 2006; Ching, 2004).

The first official body to keep the private collections, and make it available for public was the University of Oxford. The building later became known as the Ashmolean Museum, opened official in 1683. Diderot's suggestion of a first national museum in the world, make arrangements for the royal collections to be exhibited for the public and visitors in the Grande Galerie of the Louvre palace. On the other hand, when the

Grande Galerie was opened to the public in 1793, it was only by judgment of the Revolutionary government rather than royal authorization, and it was called, *Central Louvre, Grande Galerie* in 1797 (Christensen, et al., 2007; Lewis, 2010).

At the 18th century the phenomenon of the museum itself had broadened to the other parts of the world. By the early 19th century, the public and visitors have granted the full access to the exhibited collections. At the middle of the 19th century the establishment of a number of museums has started. Therefore, about 100 museums opened officially in Britain in just 15 years before 1887, while other 50 museums were constructed in Germany in just five years from 1876 to 1880 (Christensen, et al., 2007; Lewis, 2010). In addition, a huge number of local museums were recognized in Germany immediately after World War I. It was to promote the history and significant figures of the mother country. German people encouraged the nationalistic tendencies that led to the Nazi era. In the developed industrialized countries new types of museums became more common. Some countries made mindful attempts to preserve and display structures and customs of their more recent past. A modern types of science museums also emerged in which static displays of scientific equipment and instruments were replaced with demonstrations of the applications of science. The years immediately following World War II were a period of remarkable achievement for museums. This was reflected both in international and national policy and in the individual museums as they responded to a rapidly changing and better-educated society. Museums after World War II became more as an educational service, a mean of communication and a source of leisure activity (Danilov, 1992; Piotrowski & Asid, 2002; Piotrowski & Rogers, 2007).

Therefore, museums attracted more visitors. Many of them were tourists and students. Governments, in some developed countries, recognized the museums' contribution to