Acknowledging the Tourist Spatial Behavior for Space Management in Urban Heritage Destination

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ABSTRACT

How tourists consume spatial activities within a destination at micro level such as urban spaces might reveal the level of motivation among tourists, and arguably critical to be understood for efficiency in space and urban planning management. Due to the large concentration of movement throughout the urban centers, the spatial activities generated by the tourist nowadays were seen as influential forces in shaping the city function. Inaccurate information of their movement may lead into problematic city space management for city planner through incompatible facilities and activities in the tourism destination. Thus, extended perspective as to how tourists consume the destination is critical in understanding tourist motivation and behavior in terms of spatial behavior. In order to comprehensively recognize tourist spatial behavior, there is a need to integrate space (spatial data) with psychological and sociological aspects (non-spatial data). Integrating these two aspects potentially allows the researcher to portray spatial activities generate by tourist at different spaces and times. For this purpose, Melaka City is selected as a case study. It is a well-known as heritage tourist destination and received a large number of tourist arrival as well as movement within its World Heritage Site (WHS) boundaries. An analysis of 128 respondents on on-going survey was conducted in order to acknowledge this understanding of tourist spatial behavior using comparative techniques of traditional and advanced tracking methods to acquire the data. A preliminary finding reveals various variables describing the spatial activity of tourist relevant to tourist space consumption, and therefore their motivation through tourist spatial behavior.

1.   Introduction

The complexities of cities as spaces lead to difficulties in understanding the spatial behavior of tourists within cities. Growing numbers of visitors and their concentration in some parts of the tourism area is putting pressure on historic towns that may not design to accept such volumes and often give negative impacts on the towns. Due to the large concentration of movement throughout the urban centers, the spatial activities generated by the tourist nowadays were seen as influential forces in shaping the city function. However, the space management had been neglected though it is seem as important factor for a long-term success of a destination (Pierret, 2010). As seen today, many destinations are facing difficulty in managing and maintaining space which in return faces major problems in times of crisis. Thus, it is essential to understand of how spatial activities generate different spaces at times and how it may help in proper space management. The aim of this study is to acknowledge the spatial behavior of heritage tourist based on the preference of their activities during their visit to urban heritage destination. Tourists are an important target audience for urban planning, particularly in cities that encourage tourism. In order to attract and satisfy tourists, planners must study the phenomenon of urban tourism and attempt to understand on how they move and consume spaces within the city. This paper aims to integrate space (spatial data) with psychological and sociological aspects (non-spatial data). Integrating these two aspects potentially allows the researcher to portray spatial activities generate by tourist at different spaces and times.

1.1   Tourist Behavior In The Context Of Urban Area

Tourist behavior in the context of urban area can be defined in a way to understand the reasons why people visit, the links between the various motivation and the deeper reasons why people are attracted to cities (Ryan, 2002). Tourism industry creates various activities that are developed through different types of characteristics and uniqueness of each place. Each place attracts different type of tourists because of the differences recognized between the motives and the characteristics of the journey (Mansfield, 1992). Significantly, tourist behavior tends to matter to tourists (Pearce, 2005) as it shows the overall perspective on how tourists behave during the holidays and types of activities they usually undertake. A number of studies have established relationships

between various aspects of behavior relevant to tourism management as well as its theoretical understanding, related to motivation for tourist's activities. Apart from that, tourist behavior issues are also matter to people who are making decisions about tourist. Knowledge of tourist behavior plays an important role in tourism planning and marketing activities for tourism planner. It helps to analyze the role of tourist consumer behavior and tourist typologies. This knowledge is also useful in developing, selling as well as packaging the tourism product in the tourism destination.

As had been stated by Leiper (1997), understanding tourist consumer behavior is not merely of academic interest but doing so would provide knowledge for effective tourism planning and marketing. Besides that, understanding of tourist behavior would also contribute in making the marketing activities more effective and efficient. In the context of urban area, cities provide the context for a diverse range of social, cultural and economic activities in which the population engages, and where tourism leisure and entertainment form major service activities (Page 2002). It can be clearly understood that the complex urban area can contribute to the variety of behavioral pattern that involves tourist that came in and out of the city. As mentioned by Ryan (2002), the way in which people perceive leisure and holidays is determined by the social fabric that surrounds them, and it is no new thing to observe that society has changed significantly over the decades and centuries (Ryan 2002).

The rise of the mass tourism for the past few decades has contributed significant waves towards economic, spatial and social implications on destinations (Arnegger & Job, 2010). The potential positive economic effects of tourism on cities were quickly recognized which certainly leads to the rise of the city as a tourism destination and to new urban tourism, apart from the existing tourism in cities (Ashworth & Page, 2011).

Apart from that, Hayllar & Griffin (2008) also stated that understanding the tourists' perspectives and aspects of the way in which they visit places, such as their spatial movements, the time they spend and the services they utilize, can provide valuable information for many engaged in the management and study of tourism. The increasing volumes of tourism and urban tourism have attracted interest in tourist choice and behavior. Basically, tourism is mainly a geographic activity. Tourists' spatial behavior is complex and is affected by many factors (Lin et al. 2007). Most of the information needed in tourism planning is spatial, indicating where and how extensive the tourism resources are, how intensively the resources are used and so on. Time geography presents a conceptual framework to describe and understand tourists' spatial-temporal behavior according to which the effective reach of an individual is defined by time-space constraints and the path taken by the tourist. For the past few decades, the development of new digital information technologies made possible the development of novel and advanced tracking methods (Shoval & Isaacson, 2006). These new techniques proved very efficient in dealing with the shortcomings of traditional tracking methods (Shoval & Isaacson, 2007) producing high-resolution spatial and temporal data used to analyze on how tourist consume the cities (McKercher, Shoval, Ng, Birenboim, 2012; McKercher, Shoval, Ng, Birenboim, 2011) and tourism destinations (Birenboim et al., 2013; Russo et el, 2010) as well as to analyze individual temporal and spatial behaviors (Shoval & Isaacson, 2007; Zakrisson & Zillinger, 2012).

1.2 Understanding Tourist Spatial Behavior through Space and Time

Actual space can be defined as the area that accommodates tourism

activities and has clear geographical boundaries. It can also be viewed as functional space that views tourism space as including both generating and attracting areas which was identifies as the most useful space in the analysis of tourist flow pattern. Mansfield (1990) also defined the actual space as perceived space which refers to the personal perceived images of space that tourists have on an individual level. However generating and attracting areas are not discrete spaces but are open and at the center of social processes from those who live in the space and those who visit; constantly being created, abandoned and re-created (Shaw and Williams, 2004). In terms of how tourists use space, Fennell (1996) found that the infrastructural capacity of a region will influence how tourists disperse while Wahab and Cooper (2001) argued that as tourists are anxious to make the most of their holiday opportunities they need to explore a destination efficiently and rapidly. As suggested by Lew and Mckercher (2004), tourist spatial patterns can be classified into four broad themes: single destination with or without side trips; transit leg and circle tour; circle tour with or without multiple access points; and a hub and spoke style. However, they argue that mapping tourist movements is "complicated by the virtually unlimited number of places that tourists could visit, an unpredictable sequencing order between places, the potential for stochastic movement patterns that may follow no logical pattern, and the unique needs and wants of individual tourists" (McKercher and Lau, 2008).

Nevertheless, Mckercher and Lau extended their previous work and reported that tourist movements in Hong Kong could be reduced to 11 broad styles ranging from no movement, single distant stop, multiple stops, and local exploration to multiple day trips. Apart from that, the isolation of the design and availability of infrastructure of the destination could also affect the tourist movements. How tourists are impacted by aspects of the destination such as streetscapes, sightlines, land use, the scale of the destination, available transport, technology, signage, local use of space and location and dispersal of attractions can either enhance or inhibit the ability of people to move around an urban destination. From the tourist's perceptive, there are two type of characteristic in understanding on how tourists consume the destination. According to Walmsley & Jenkins (1992), space-searchers may visit a great many attractions, travel widely and be active participants in a wide range of activities. Conversely, space-sitters minimize exploratory travel and are far more passive in nature. Tourists, though, may exhibit characteristics of both groups (space-searching and space-sitting) during the same holiday.

The amount of time spent in a destination area is probably the single most important factor shaping tourist behavior, as it has a direct bearing on the number and range of activities available and the extent to which they are used or experienced (Pearce 1988). Plus, for many sectors in tourism industry, it is essential to know the places and times tourists visit. The only tourist-related information most public organizations like city councils have is the total number of overnight stays, but little is known about tourists' actual behaviors in terms of activities and specific locations visited (Modsching *et.al*, 2006) The space–time path is the core concept of time-geography. It highlights the constraints imposed by activities that are finite in space and time, and the need to trade time for space when moving among activities (Raubal et al. 2004). The space –time path represents the spatial movements of an individual over time, and offers an effective way of modelling the spatial-temporal characteristics of individual activities (Chen et al. 2011). The conceptual framework of time geography presented by Heagerstrand (1970) integrates time, as a limited resource, into the thought on spatial behavior. This framework relies on a few basic assumptions regarding the nature of human activity – the indivisibility of the

individual, the ability to participate in one activity at a time and the fact that every activity requires allocation of time, as does movement (Pred,1977). Therefore, space, as reflected in movement, and time, as reflected in participation in activities, are substitute resources.

In terms of this study, the best way to experience and appreciate a historically, culturally and architecturally of Malacca Historical City is to explore on foot its streets, squares and space between buildings while exercising our sense on the scenes and ambiance (spatial quality, aesthetics, colors, movements, sounds, smells, emotions etc.) that unfold as we progress through the historic urban fabric, connecting what we experience with known historic records, images and narratives, and probably also with bits of our own imagination. Hannam & Knox (2010) highlighted the connection between the tourism and individuals daily lives and see this connection in two ways. Firstly, the person who is going on holiday is no difference when the person who is at home. They tried to escape from their daily activities like working, shopping, cooking, shopping etc. Instead, other aspects of an individual's daily life like interest and favors may be strengthened during his/her holiday but in a recreational way. Thus, rationally, these persons are searching for the more familiar things on holiday to fulfil their needs. Hannam & Knox (2010) also interpret these unremarkable and familiar activities as 'banality'.

The difference between novelty and familiarity searchers are well defined by Basala & Klenosky (2001) as "…Although tourists are often motivated by a desire to experience novelty and change, they differ in terms of their willingness to travel in novel and unfamiliar ways". There are tourists who prefer the 'mass' style of pleasure travel by maintaining a comfortable distance from the host community, while others enjoy a more adventuresome and personal experience. Novelty and familiarity searchers can also be expressed by spatial differences. It can be described that space-searchers are tourists who visit attractions in a wider area and have a tendency to actively participate with these attractions. These types of tourist are intense in searching for the more unfamiliar experiences. Nonetheless, space-sitters are tourists who visit attractions in a smaller area and have a more passive participation with these attractions. These types of tourist are searching for more familiar experiences. However, in certain circumstances, individuals may contain characteristics of both types within the same visitation. As mentioned by Mckercher & Lau (2008), the choice to be a space searcher or a space sitter depends largely on the knowledge of and familiarity with the tourist destination. A number of studies reveal that familiarity affects various aspects of tourist behavior. For instance, familiarity influences the tourists' information search process. D. Snepenger & M. Snepenger (1993) showed that travelers who are very familiar with a destination tend not to rely on external information sources. From another stand-point, Baloglu (2001) determined a positive relationship between familiarity and destination image. Milman & Pizam (1995) also showed that familiarity influences the likelihood of visitation. Likewise, destination loyalty is affected by familiarity (Mechinda *et al.,* 2009).

Debbage (1991) on his research in Bahamas suggested that personality types also play a role in identifying the spatial behavior of tourists. Based on Plog's (1974) model of the psychological profile of tourist, there are two types of tourist when visiting a destination namely psychocentric and allocentric. Psychocentric tourists have the personality type which is conservative and they prefer in travelling to safe destinations, prefer a structured destination with package holidays as well as itinerary. These tourists are the ones who are low risk taking, feel the sense of powerlessness and non-adventurous. Apart from that, these types of tourists prefer to travel to familiar destination and like the common place activities in travel destination. They also preferred relaxed and more passive activities. On the other hand, psychocentrics are regarded to travel less frequently, prefer to seek familiar and well developed destinations. . A psychocentric tourist seeks cultural attractions that are easy to consume, on the other hand allocentric tourist wants to explore the destination's cultural heritage more deeply. Allocentrics travel more frequently to unfamiliar and further away destinations. Understanding the diversity of tourists and their psychological behavior helps to define a clearer tourist motivation and destination images that appeal to certain group.

The actual behavior of tourists in particular destinations can vary considerably even if they might happen to share common motivations. Intrinsic experiences may influence behavior too. However, experiences have not been studied in combination with questions of time and space. Getz (2007) suggests that experiences are situated in a special place, but in a time out of time, thereby strongly pointing at the importance of time and space for experiences. Tourist activity is not something which can be homogenously analyzed as there are a wide variety of tourist types that behave in different ways and which shared different preferred experiences. The analysis criteria can range from the tourist's socio-demographic, cultural background and lifestyle, to their level of education, beliefs and attitudes, all of which are believed to influence tourist behaviors (Holden, 2000). Certainly, the individual main concern when touring is usually to have, simple, favorable experience (Holden, 2000), but the definition of such an experience can vary between individuals.

1.3 Malacca as an Urban Heritage Destination

Generally, urban tourism is a growing sector which particularly concentrated in well-defined areas within the city. Leisure and cultural tourists are spending more of their time in the CTD (Central Tourist District), an area that usually includes a historic city center as well. Cultural, including heritage, tourism has been growing rapidly in recent years (Alzua, O'leary, and Morrison 1998). It has been recognized in the literature that visitors to cultural tourism sites are often motivated to travel for different reasons than other types of tourists (DKS 1999; Formica and Uysal 1998; Hannabus 1999). Formerly, Malacca is listed as one of the world heritage site under UNESCO. Since then, Malacca had received a huge number of tourist arrivals every year in which contributes to a large concentration of movement in the Malacca city center. As a city center, it is not only served as a tourism destination but also part of the commercial area where tourist shopping, entertainment and accommodation can be found. Thus, there is a higher possibilities that tourist will spend most of their time at the particular destination which will further generate different spaces throughout the location at different time. The availability and accessibility of various modes of transport provided within the area will also help to create movement and space. In terms of methodology, Malacca was seen as the most suitable site in testing the GPS due to its uniqueness of the heritage trail and many narrow streets and alleyways. Malacca city have three trails which are Malacca Heritage Trail, Dutch Heritage Trail and American Heritage Trail where each of the trails has their own history and attractions. Advantageously, all of the trails are walking distance and are highly accessible that could assist the tourists to walk around easily and enjoying the attractions within appropriate time. Plus, the nature of heritage city that gives priority to pedestrian will makes the use of GPS easier.

2. Research Objectives and Methodology

This study was motivated by a realization of the importance of tourist spatial behavior and its impact on the space management in city center. Its aim is to adapt model of heritage tourist based on the preference of their spatial behavior and enrich the non-spatial data by characterizing types of tourist spatial activity in an urban heritage destination. To answer these questions and to evaluate the tourist spatial behavior, both advanced and traditional methods were used which also provides the new insight of the strengths and weaknesses of both methods applied.

Tracking technologies present a great opportunity for the study of the impact that tourism has on urban centers and urban systems, as a result there is growing literature that documents the implementation of those technologies in tourism research (Ten Hagen et al., 2005; Shoval and Isaacson, 2007; Shoval, 2008; Spek, 2008; Shoval and Isaacson, 2010). Data collected using these technologies are more exact and can be gathered with greater ease and on larger scales in comparison with the time-space data that have been available until now. The main approach when collecting the data is to put the tourist as the center of discussion and present the ways in which the analysis of time-space data collected using advanced tracking technologies can contribute to understanding the tourist's spatial activity throughout their visit to a destination.

As tourist activities are mainly located at the urban areas, using GPS tracking method will be a huge advantage as it is able to trace pedestrian routes over long periods of time. This is because commercial, business and leisure activities are highly concentrated in the city center which is thus distinguished by its high levels of pedestrian movement. In order to acknowledge the tourist spatial behavior in time and space, tourists were advice to download the GPS application in their smartphone. GPS Pal was selected among other applications due to its stability. In this way, individual itineraries could be mapped at the end of each tour day. In addition, the apps also provide other functions such as GPS-based camera that gives the tourist experience to take picture during their visit. The images that been captured will be automatically saved with exact time and location. By this way, tourists' experiences could be analyzed in respect to the time and place, in which they occurred. These experience dots were also visible on the maps that were generated for each participant at the end of the tour day. This data can essentially be evaluated in different ways. The most obvious one of course is the visualization of the track of the tour in a map and the indication of the places the tourists have been at.

This study tracked the day trip movements of tourists staying at the budget hotels located at the core zone within the area of WHS Malacca. Data were collected within January 2015 to March 2015 from different budget hotels that have been selected previously during the pilot study. Budget hotel is the most suitable staging point as it exemplifies several types of tourist and represents the most occupying accommodation within the World Heritage Site (WHS) of Malacca. There are 12 budget hotels in the core zone area that are eligible for staging point. These budget hotels were chosen by taking into consideration of 20 minutes walking distance from the main attraction area and the average rooms occupied by the international tourists. Potential participants were approached in the hotel lobby after breakfast and were asked if they wished to participate in the study. To qualify, participants had to confirm that they were independent tourists (not on a package guided tour), were not departing Malacca that day and were not planning on purchasing a full or half day sightseeing tour. On acceptance, they were administered a simple survey that gathered basic demographic and trip profile information. Participants were then be given assistances on how

to download the application through their smartphone and instructed to email the tracked route to researcher once they completed their tour at the end of the day.

As to date, only 128 agreed to participate in this survey. However, only 13 respondents are eligible for tracking due to technical problems with the devices (i.e., the app does not work properly with the devices) and GPS Pal application (i.e., the app were turned off or did not record the locations). Due to these circumstances, trip diaries were used as the back-up data collection method. Indeed, potential respondents reacted so badly to the prospect of 'Big Brother' being able to track their movements through their personal phones that few agreed to participate (Shoval et. al, 2011). In the end, advanced tracking method become less substantial and trip diaries method were used exclusively. GPS is still a fairly novel technology to many people that is now becoming more common on cars and smartphone. Moreover, because people were asked to use their own devices makes they felt no personal invasion of privacy. Data from the survey were then organized based on respondent socio-demographic, their spatial patterns (space) and temporal patterns (time). When data have been fully organized, researcher started analyzing the acquired data. As trip diary become the primary methods, the information from the questionnaire form need to be interpret into a visualization maps that considers their space and time. An early finding reveals various variables describing the spatial activity of tourist relevant to tourist space consumption, and therefore their motivation through tourist spatial behavior. Geo-visualizations and simulations of space–time behavior have been performed to map and predict visitor flows and activity patterns (Zhu and Wang 2008; Wang et al. 2009; Huang and Ma 2011).

3. Selected Results

The overall research indicate expected return rate where 73% response rate from 175 respondents resulting 115 respondents plus 13 respondents who successfully completed the tracking. Thus, only data from 128 respondents were successfully developed and suited to be analyzed. Data were analyzed based on their socio-demographic profile, spatial patterns (space) and temporal patterns (time). In this context, the integration of the non-spatial data (psychological and sociological) with the spatial data (space and time) is critical in order to understand the tourist behavior in a more comprehensive manner. This paper is focusing on the preliminary findings explaining the spatial patterns at the local level where tourists travel within a single destination from attraction to attraction or shifting from activity to activity. The preliminary findings presented here only examines a small group of respondents and seeks to examine if various psychological and sociological background (non-spatial data) may influence on how they consume destination through space and time (spatial data).

3.1 Tourist Mobility

Early findings found that there is some dissimilarities on how the tourist moved based on their psychological and sociological background. However, this is only an early indication and the results may changes from time to time as the survey were made. Time spent in a destination area is arguably the single most influential criterion shaping tourist behavior because it can directly constrain or expand the number and range of potential activities available and the depth at which individual activities can be experienced (Lew & Mckercher 2006). In the case of WHS Malacca, there are significant differences on the time tourist started their tour. There are tourists who prefer to

start their tour early in the morning and end the tour by afternoon. These types of tourist spend their time at the historical area in the morning and continue their tour at the evening. However, these tourists only concentrate doing the activities not far from their place of stay like sightseeing, shopping and food hunting. Conversely, other groups of tourists choose to start their tour around 11.00 a.m. and end their tour late in the evening. This type of tourist does not only spend their time visiting the historical areas but tend to move out of the core zone. They will spend more time at the historical areas rather than spending time shopping or other activities like usually mass tourist will do. Averagely, their visiting times were about 10-15 minutes at each attraction. However, they tend to repetitively coming back to the same attraction during their tour. The day tour seems more comfortable and relaxed. This shows that, the level of mobility of tourists in WHS Malacca is relatively high. This indicates that the tourists are usually not visiting the main attractions first, but they make detours which indirectly can contribute to experiences and satisfaction in time and space.

Apart from that, researcher also found that most of the tourists in WHS Malacca prefer to walk rather than using the public transport. This is mainly because all the attractions are located within the core zone which is approximately 0.8-1.0 kilometers. Plus, their place of stay also located at the core zone which makes them easier to move around the city center. Even though, Malacca is famously known with it 'beca' as a medium of transport during tour activities, most of the tourists does not have the intention to use them. Plus, due to the close proximity of hotel location with other attractions and shopping area makes the tourist more comfort to walk rather than spending their money for public transportation unless they want to go out from the core zone area. Thus, this shows that most of the tourists coming to WHS Malacca have strong preferences of walking over public transport. Besides that, the hotel proximity can also be related to the individual fitness level and age related disabilities that will moderate the intensity of their behavior. The relationship between age and activity level has been long recognized in tourism (Mill and Morrison 1985), with younger tourists seeking more energetic activities, while older ones prefer more sedentary activities. However, in this case, there are no significant different between older and younger tourists when they visiting a destination. Most of them prefer walking all day long rather than sitting around and enjoying the scenery.
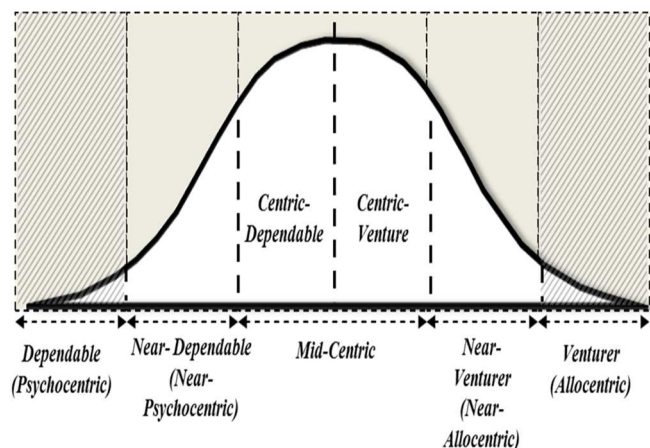

Figure 1: Tourist Personality
Source: Adapted from Plog (2011)

3.2 Tourist Personality

An early finding shows that there is some indication that tourist personality plays a role in identifying the spatial behavior of tourists. From the tourist's perceptive, there are two types of characteristic in understanding on how tourists consume destination. According to Walmsley and Jenkins (1994), space-searchers may visit a great many attractions, travel widely and be active participants in a wide range of activities. Conversely, space-sitters minimize exploratory travel and are far more passive in nature. In the case of Malacca, space sitters can also be categorized as psychocentric tourist while space-searchers can be categorized as allocentric types of tourists as shown in figure below.

Based on Cohen's (1979) idea, two types of tourist were identified which are those who seeks for novelty and the others who seeks for familiarity. This familiarity and novelty can be explained in terms of their spatial behavior through territorial model by Mckercher (2006). He suggested that there are four types of movements that tourists venture from their place of accommodation ranging from extremely restricted movement (T1) to completely unrestricted movement (T4). However, in the case of WHS Malacca, only Type T3 (Concentric Exploration) and Type 4 (Unrestricted Destination-wide Movement) explains the tourist behavior in terms of their space and time. The concentric exploration behavior pattern reflects the movements of tourists who are initially uncertain and possibly intimidated by the destination. This type of patterns displayed psychocentric characteristic where the individual tend to make their tour by limiting to the proximity of the hotel or by accompaniment of a tour guide. However, as they become more familiar with that places or destination, they will be able to negotiate their new space. On the other hand, Unrestricted Destination-wide Movement is tourists who have a high level of information about the destination on which they gained from previous visits. This type of patterns also demonstrated the allocentric type of behavior where most of them are willing to take risks and move beyond their comfort zone. Early findings show that in Malacca, psychocentric tourist can also be referring to repeated tourist while allocentric is the first time visitor.

The activities generated by tourist during the tour were determined by the survey and previous field observation by the researcher. The main activities of the tourist in WHS Malacca are visiting historical monuments, photography, buying souvenirs and general sightseeing. Based on the early findings, researcher also found that there are certain areas in WHS Malacca are less visited by the international tourist. Places like huge shopping mall were only visited by the locals compared to the international tourist. Most of them prefer going to the night market or other local souvenir shops around the Malacca city center. As food is a psychological need, many activities occurred near the street that served food especially in Jonker Street. The survey also shows that some of the tourist took part in leisure activities such as walking and that most of the visitors displayed the typical behavior of sightseeing tourist. Unlike the other group of tourist which are more eager to explore the historical areas and tend to move out of the comfort zone. This can be explaining through their pattern of movement which shows the sign of repetition at certain places in one day tour. The activity choices were determined by the survey and previous field observation by the researcher. The main activities of tourist are visiting historical monuments, photography, buying souvenirs and general sightseeing.

4. Discussion

The result of this study clearly shows that it is possible to rigorously

analyze the spatial behavior of tourists in a city. It can be clarify that tourist spaces provide cities with places where visitors can have distinctive experiences. Understanding of tourist spatial behavior helps in managing destination more effectively. Destination management tries to redirect tourist flows to take advantage of the entire destination area and to avoid overcrowding at single places. The implications of research in this area can be significant especially for destinations like Malacca City that are highly dependent on tourism and for which tourists comprise a large proportion of vehicle and pedestrian movement. Plus, various behaviors of tourists and how they makes decision on their destination choice, travel party, duration, travel mode, activity participation, time use and expenditure during travel area basically interrelated and shows the temporal and spatial variations. Understanding on how tourist consume the destination through time and space has an important implications for infrastructure and transport development, product development, destination planning, the planning of new attractions, as well as management of the social, environmental, and cultural impacts of tourism. As Malacca City is famously known with its historical background, proper space management is crucial to avoid commercial business influence for taking profitable advantage that will give pressure towards the historical area.

Methodologically, the use of GPS tracking system in collecting and obtaining data on spatial tourist behavior have shown an emerging trend of technologies that have resolved both data collection and analysis problems. The development of this technology has potentially revolutionized research into tourist behavior in urban destinations. This technique of accurately tracking the temporal and spatial behavior of visitors carrying the global positioning system units had slowly overcomes the well-known limitations of traditional data collection methods. However, as with any emerging technology, this tracking technology is still at its experimenting phase and some limitations of its application has been clearly determined. Taking everything into account, these technologies will not replace questionnaires, diaries, or interviews, which will, of necessity, remain important sources of information on behavior and especially motives underlying it. But they will complement, add to, and enrich the findings of more traditional research tools.

Acknowledgement

References

Alzua, A., J. O'leary, And A. Morrison (1998). "Cultural and Heritage Tourism: Identifying Niches for International Travelers." Journal of Travel and Tourism Studies, 9 (2): 2-13.

Ashworth, G. J., & Page, S. J. (2011). Urban tourism research: Recent progress and current paradoxes. Tourism Management, 32(1), 1–15.

Baloglu, S. (2001). Image variations of Turkey by familiarity index: Informational and experiential dimensions. Tourism Management, 22(2), 127-133

Basala, S., & Klenosky, D. B. (2001). Travel style preferences for visiting a novel destination: A conjoint investigation across the novelty-familiarity continuum. Journal of Travel Research, 40(2), 172-182.

Chen, J., Shaw, S., Yu, H., Lu, F., Chai, Y., And Jia, Q. (2011) Exploratory

Data Analysis of Activity Diary Data: A Space-Time GIS Approach. Journal of Transport Geography 19, 3, 394–404.

Debbage, K. (1991) Spatial Behavior in a Bahamian Resort. Annals of Tourism Research:18251–18268.

Dks (1999). Pennsylvania Heritage Tourism Study. Harrisburg: Pennsylvania Department of Conservation and Natural Resources.

Edwards, D., Griffin, T. and Hayllar, B. (2008) Urban tourism precincts: an overview of key themes and issues. In B. Hayllar, T. Griffin, and D. Edwards (Eds.) City Spaces – Tourist Places: Urban Tourism Precincts. UK: Elsevier.

Fennell, D. (1996). A tourist space-time budget in the Shetland Islands. Annals of Tourism Research, 23(4), 811–829.

Formica, S., and M. Uysal (1998). "Market Segmentation of International Cultural-Historic Event in Italy." Journal of Travel Research, 36 (Spring): 16-24.

Getz, D. (2007). Event Studies. Theory, Research and Policy for Planned Events. Amsterdam: Elsevier Butterworth-Heinemann.

Hagerstrand, T., (1970). What about People in Regional Science? Regional Science Association Papers, Vol XXIV, pp.7-21.

Hannabus, S. (1999). "Postmodernism and the Heritage Experience." Library Management, 20 (5): 295-302.

Hannam, K. & Knox, D. (2010) Understanding Tourism – A Critical Introduction. London: SAGE Publications Ltd

Holden A. (2000) Environment and Tourism, Routledge, London.
Leiper, N., (1997). *Tourism Management*, RMIT Press, Australia.

Lin L, Xu Z, Ding D. (2007) Spatial behaviour of tourists research. Sci Geogr Sin. 27(3):434–439 Mansfield, Y. (1990) Spatial patterns of international tourist flows: towards a theoretical framework. Progress in Human Geography 14(3) 372-390.

Mansfeld, Y. (1992). From motivation to actual travel. Annals of Tourism Research, 19, 399–419

Mckercher, B. and Lau, G. (2008) 'Movement Patterns of Tourists within a Destination', Tourism Geographies, 10(3), 355-374

Mechinda P., Serirat, S., & Guild, N. (2009). An examination of tourists' attitudinal and behavioral loyalty: Comparison between domestic and international tourists. Journal of Vacation Marketing, 15(2), 129-149.

Mill, R., and A. Morrison (1985) The Tourism System: An Introductory Text. Englewood Cliffs: Prentice Hall.

Milman and Pizam (1995) also showed that familiarity influences the likelihood of visitation. Likewise, destination loyalty is affected by familiarity (Mechinda et al., 2009).

Milman, A., & Pizam, A. (1995). The role of awareness and familiarity with a destination: The central Florida case. Journal of Travel Research, 33(3), 21-27.

Modsching, M., Ten Hagen, K., Kramer, R., & Gretzel, U. (2006). Capturing the beaten paths: a novel method for analysing tourists' spatial behaviour at an urban destination. In M. Hitz, M. Sigala & J. Murphy (Eds.), Information and Communication Technologies in Tourism: Proceedings of the International Conference (pp. 75-86). Vienna, Austria: Springer Verlag.

Page (2002) Urban Tourism: Evaluating the Tourist's Experiences Of Urban

Places, The tourist experience- a new approach, Continuum, London

Pearce, D. (1988) 'Tourist Time-budgets', Annals of Tourism Research, vol. 15, pp. 106- 121.

Pearce, P.L. (2005) Tourists Behaviour: Themes and Conceptual Schemes, Clevedon: Channel

Ryan, C. (2002) Stages, Gazes and Constructions of Tourism. In The Tourist Experience, C. Ryan, ed., pp. 1–26. London: Continuum.

Shaw, G. And Williams, A.M. (2004) Tourism and Tourism Spaces. London, GBR: Sage Publications.

Shoval, N. (2008). Tracking technologies and urban analysis. Cities, 25, 21–28.

Shoval, N., & Isaacson, M. (2006). Application of tracking technologies to the study of pedestrian spatial behaviour. The Professional Geographer, 58(2), 172–183.

Shoval, N., & Isaacson, M. (2007). Tracking tourist in the digital age. Annals of Tourism Research, 34(1), 141–159.

Shoval, N., & Isaacson, M. (2010). *Tourist mobility and advanced tracking technologies.* London and New York: Routledge.

Snepenger, D., & Snepenger, M. (1993). Information search by pleasure travelers. In M. A. Kahn, M. D. Olsen, & T. Var (Eds.), Encyclopedia of Hospitality and Tourism (pp. 830-835). New York, NY: Van Nostrand Reinhold.

Wahab, S. and Cooper, C. (Eds.) (2001). Tourism in the Age of Globalisation. New York: Routledge.

Walmsley, D., and J. Jenkins (1999) Cognitive Distance: A Neglected Issue in Travel Behavior. In Consumer Behavior in Travel and Tourism, A. Pizam and Y. Mansfield, eds., pp. 287–303. New York: Haworth Hospitality Press.