A Comparison of Tourism Crowding Management between Tourism Sites in Cairns and Xi'an – Based on Tourism Carrying Capacity Assessment

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For the degree of Doctor of Philosophy
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September 2009

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I declare that this thesis is my own work but I acknowledge that the production of this thesis has benefited significantly from the contribution of several others. Specifically I acknowledge the tremendous assistance of Professor Philip Pearce and Dr. Laurie Murphy in the supervision of the thesis and the assistance of Professor Philip Pearce in the editing process.

I also acknowledge School of Business, James Cook University for their financial support in the surveys of this thesis.

Qian Jin **29 September 2009**

Declaration on Ethics

The research presented and reported in this thesis was conducted within the guidelines for research ethics outlined in the *National Statement on Ethics Conduct in Research Involving Human* (1999), the *Joint NHMRC/AVCC Statement and Guidelines on Research Practice* (1997), the *James Cook University Policy on Experimentation Ethics. Standard Practices and Guidelines* (2001), and the *James Cook University Statement and Guidelines on Research Practice* (2001). The proposed research methodology received clearance from the James Cook University Experimentation Ethics Review Committee (Approval number H2582 and Approval number H2732).

Qian Jin **29 September 2009**

Acknowledgements

The writing of this thesis has lasted for three and a half years and many friendly individuals supported me throughout the whole writing process. The thesis represents a joint effort and care from many generous parties and could not have been completed without their help.

First of all my thanks go to my principle supervisor at James Cook University, Prof. Philip Pearce, who has been so patient and supportive in the whole course of my studies. Second my thanks go to my co-supervisor at James Cook University, Dr. Laurie Murphy, who provided me with a lot of help in my questionnaire design and data analysis. Their constructive comments have guided me through this difficult yet rewarding process and have made this piece of work more valuable. Being a non-native English speaker, the writing of a thesis in English of academic quality is something close to impossible without their continuous guidance.

Secondly, I would like to thank the staff of the School of Business, who provided me with a lot of help and a friendly atmosphere at James Cook University. I would also like to convey my gratitude to my colleagues, friends and especially my parents who provided me with much support for my writing of thesis. Their encouragement was very important in overcoming difficulties during the process of thesis completion.

Last but definitely not least, my gratitude goes to all those who have helped me in the data collection process – the respondents who filled out my questionnaire, and the site managers who generously provided information in the interviews.

Qian Jin **29 September 2009**

Abstract

Tourism crowding management is an important part of sustainable tourism development. Tourism managers are responsible for preserving the natural and cultural resources which form the bases for attractions. In addition, tourist site managers are responsible for making sure tourists can experience the sites relatively free from excessive crowds. The importance of crowding issues in tourism is reinforced by considerable previous research attention. Several researchers have investigated tourists' crowding-related norms as a way of providing suggestions to site management personnel. Previous research has identified many factors which can influence tourists' perceptions of crowding. Most researchers have tried to establish crowding specific concepts to support the sound conservation as well as the use of the resources, while at the same time supporting successful businesses and quality visitor experiences. Building on the previous literature, the central aim of this thesis is to compare crowding-related issues between different kinds of sites in order to develop a crowding management model specifically relevant to tourist attractions. In developing the crowding management model, three comparative studies were conducted; the first explored tourists' actual use levels and tourists' perceived use levels, the second studied factors influencing tourists' perceptions of crowding and the third investigated crowding managerial strategies. These comparative studies were conducted at five sites in Cairns, Australia and five sites in Xi'an, China. The sites employed in the two destinations involve very different environments. The sites in Cairns are located in a developed country and are environmentally based settings, while the cultural sites in Xi'an are located in a rapidly developing country. These differences provide important points of contrast but facilitate the construction of a broadly based understanding of crowding management at tourist attractions.

In Study One, observations were conducted to find out the visitors' actual use levels of the settings. In order to compare the actual visitor use levels and the perceived use levels, a questionnaire based survey of on-site visitors (N = 585) was used to reveal tourists' crowding-related norms. The questionnaire study was then linked to detailed observation studies conducted earlier at the sites. Several evaluative dimensions reported by previous researchers were followed to measure use levels, including

"preference", "desirability", and "tolerance". The tolerance and preference data were used to undertake a comparison with the actual visitor use levels. The key findings of this study using single sample t test comparisons were that several aspects of crowding management were a problem at sites in Xi'an but not in Cairns. Moreover, the actual visitor use levels exceeded visitors' preference at some popular sites in Xi'an in the peak season. These findings were not replicated in Cairns.

The purpose of Study Two was to investigate the relationships between tourists' site evaluations and tourists' use levels. Additionally, the study sought to explain the tourists' perceptions. Data collected from the same questionnaire survey were also used in this study. The relationships among tourists' crowding-related perceptions, including the evaluative dimensions of environment concern, crowd concern, tolerance, preference, desire and satisfaction, were tested using the independent t-tests, one-way ANOVAs, correlations and multiple regressions. A key finding was that there were relationships between the three evaluative dimensions. There were further links to visitors' desire to stay in the settings and their satisfaction with the settings. The findings varied for the two destinations since tourists had different perceptions at sites in Cairns and Xi'an. Age, nationality and type of travel influenced the perception of crowding and other crowding relationships but gender did not.

The final study investigated the ideas, opinions and strategies to control crowding, as revealed by interviews with a number of key site managers. The semi-structured interviews were conducted by sampling CEOs and senior managers of six natural sites in Cairns and ten cultural sites in Xi'an. Data collected in this Study Three were analyzed by coding the dominant themes in the interviews in a version of the grounded theory approach. The responses of managers provided considerable information about crowding management strategies. First, several factors were identified which lead to crowding in Xi'an, but not in Cairns. These factors included seasonality, the homogeneous types of tourists, unevenly distributed numbers of tourists within the sites, facility deficiencies and poor service delivery on the busiest days. Second, managers in both destinations provided suggestions for better crowding management. These included ticketing and pricing controls, cooperation with other sectors, monitoring of problems and contingency plans for crises. The sites in Xi'an faced more difficulties in controlling tourists' activities in the peak season, especially

in the Golden Weeks. The managers at the Chinese sites paid more attention to crowding management issues.

As a result of these three linked studies, a crowding management model for tourist sites was developed. This model provided a structured approach defining the factors to consider in the crowd management process. Finally, this thesis noted some study limitations and suggested several future study areas which could contribute to consolidating the work conducted in the present research. It can be suggested that researchers and managers need to continue to work together to deal with the increasingly troubling problem of too many people in the same tourist space.

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(Based on the literature review, several generic preliminary research questions are articulated. These research questions address prominent research gaps in the crowding management area.)

1.7 Chapter Summary

This thesis considers crowding management based on the literature developed from the concept of tourism carrying capacity. The first chapter aims to establish the fundamental rationale for the thesis. It also provides the major literature review of the concepts and measurements applicable to tourism carrying capacity and crowding

which is the basis of developing crowding management at particular settings. Tourism carrying capacity has many different forms of interpretation, including its expression in environmental, social or economic terms. Crowding is addressed within the context of carrying capacity but it is also a psychological state. A consideration of these foundation concepts is the first step in building the studies in this thesis.

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1. 1 Why Tourism Carrying Capacity?

In 2008, international tourism arrivals reached 924 million and according to recent forecasts (United Nations World Tourism Organization [UNWTO], 2009) they will rise to 1.6 billion by 2020. The spectacular growth of tourism often has impacts on the environment and on social and economic structures. In particular, the increasing number of tourists generates pressures on nature and the environment. Researchers have highlighted the impact of large numbers of people including soil erosion, vegetation and water quality (Manning et al., 1995; Ryan & Cessford, 2003; Shelby & Heberlein, 1984; Shelby et al., 1988; Thomas et al., 2005); wildlife management practices (Vaske & Donnelly, 1988); minimum stream flows (Shelby & Whittaker, 1990); and the needs for facility development (Ormiston et al., 1997). Important threats to the environment from tourist activities are seen in the ribbon development along many coastlines, such as the Mediterranean Basin. Beaches can be heavily littered and no longer attractive to tourists (Willians, 1992). Mountainous areas too are under pressure from tourist numbers. The Alps mountain areas which accommodate approximately 40-50 million visitors with several thousand ski runs have been heavily affected by erosion (Ryan, 2003). Further, the growth and competition of tourism activities for labour, investments, infrastructure, energy and other resources have led to displacement and dominance of local communities, generating social conflicts (Hall & Shelby, 2000; Sax, 1980). Finally, the rising tourist numbers sometimes cause negative effects in economic terms, such as inflation (Fleming & Toepper, 1990).

Such strengths, weaknesses and threats from tourism growth and development require careful assessment in the context of sustainable development. A suitable balance must be established among the three dimensions, environmental, social and economic, to guarantee long-term sustainability (UNWTO, 2004a). The concept of “tourism

carrying capacity" has been used as the central assessment. It stems from the perspective that tourism growth should not cause irreversible damage to the local system in terms of environmental, social and economic dimensions (World Tourism Organization [WTO], 1981). This concept can be interpreted in many ways, for many types of destinations, such as protected areas, natural parks, archaeological sites, mountains and small beaches. The theme of capacity can be directly related to crowding. At core the idea is that there should be limits to the number of people present at a given period of time (UNWTO, 2004a). Thus tourism carrying capacity refers to the maximum number of people who use a site without causing an unacceptable alteration to the physical environment and without causing an unacceptable decline in the quality of visitors' experience (WTO, 1981). There are three commonly used components derived from the concept of tourism carrying capacity; specifically environmental, social and economic considerations. Environmental limits can be assessed in terms of ecological or physical parameters, including the capacity of natural resources, ecosystems and infrastructure. The social perspective is concerned with psychological and sociocultural aspects, including visitor enjoyment, resident population tolerance, crime and other psychological factors. The third perspective, economic dimensions, involves issues of employment, inflation and resource cost (Coccossis, 2002). In practice, there are even broader factors involved in shaping carrying capacity levels in different tourism local systems (Coccossis, 2002). There is a complex pattern of interaction among limits or capacity thresholds (Pearce, 1989) because tourism carrying capacity assessment is not static since the changing policy context and the qualitative changes in tourism activity, alter the management and monitoring of capacity and concerns.

1. 2 A Theoretical Overview of Tourism Carrying Capacity

1.2.1 Conceptual Foundation of Tourism Carrying Capacity

Definitions of carrying capacity have changed because the changing of tourist demand and tourism policy towards sustainable development is in many respects reflecting changes in tourism (European Commission, 2003). Early conceptions of carrying capacity tended to concentrate on a one-dimensional perspective (from biology). Assessing mass tourism as a basic model meant relative homogeneous tourist behaviour and tourist development patterns which led to certain specific types of

pressures on land and natural resources. These included predictable seasonality and spatial concentration. Impacts, including crowding and large visitor flows, were usually perceived in terms of utilization of resources. Limits or thresholds as expressions of capacity were conceived in a static perspective based on peaks and maximum loads rather than the dynamic life-cycle of tourist destinations (i.e. the cumulative effects) or the broad range of characteristics of tourism (i.e. social adaptation) (Getz, 1983; O' Reilly, 1986; Romeril, 1989).

Contemporary tourism is characterized by increasing individualism and a wide range of personal choices. Tourists, at different places, require better options to satisfy their multiple needs and new preferences (Puczkó, 1998; Tran & Ralston, 2006). Pressures from tourism activities have become complex and diversified. Furthermore, the perceptions of impacts may be different for different types of tourists. Contemporary impacts are considered in terms of differences in values by a range of use groups. The different patterns of tourist activities may also lead to different types of limits or thresholds as expressions of capacity (Pearce, 1991). The change in the consideration of tourist demand and tourism policy guides definitions of carrying capacity towards a multidimensional approach (PAP/RAC, 1997). The different types of carrying capacity definitions are related to environmental, physical and perceptual or psychological (Coccossis & Mexa, 2004). Carrying capacity is determined not only in terms of ecology and the deterioration of the environment but also the visitors' experiences and values (Manning, 2002). Previous research has provided various definitions of tourism carrying capacity to satisfy different management needs in various sites. These definitions can be categorized into two sets: the "capacity" which means how many tourists or how much tourism can be accommodated without causing negative impacts at destinations; and the "perception of capacity" which means how much tourism is acceptable without causing a decline in the level of tourists' experiences and satisfaction (Glasson et al., 1995). The critical point of all definitions of carrying capacity revolves around maintaining the integrity and sustainability of the resources while not sacrificing the high quality of visitor experiences. However, each component of the concept can have thresholds and implications for sustainable tourism development, requiring different methodologies for measuring carrying capacity at destinations (Liu, 2003).

The concept of a tourism or recreation carrying capacity stems from a neo-Malthusian perspective of resource limitations (McCool & Lime, 2001). The most general definition is derived from UNWTO (WTO, 1981), which defined tourism carrying capacity as "the maximum number of people that may visit a tourist destination at the same time, without causing destruction of the physical, economic and socio-cultural environment and an unacceptable decrease in the quality of the visitors". Other definitions of carrying capacity focus on the acceptability of natural resource and human impacts of visitation, and consider ecological characteristics (soils, topography and vegetation), physical factors (accommodation, transportation and visual amenities), social factors (location and mode of travel, season of use, group size, and behaviour of visitors), economic factors (investment, technology, tourist expenditure and labour cost), and political factors (visitor use restrictions) (Manning, 2001; Wilkinson, 1995). Carrying capacity is determined by these varied factors rather than the number of visitors (e.g. Ferreira & Harmse, 1999; Prato, 2001).

Ecological carrying capacity focuses on the impacts of tourism on the ecosystems and resources and the long-term viability of the natural resources. Physical carrying capacity is related to the environmental site limitations and refers to the maximum number of tourists a site or destination can physically accommodate. In some cases, the physical capacity has been used to make reference to the availability of space and facilities needed for the various tourism activities (Shelby & Heberlein, 1986; Symmonds & Hammitt, 2000). Psychological carrying capacity is related to different visitors' perception and satisfaction for the destinations or sites. Social carrying capacity refers to the social and cultural impacts of tourism and outcomes for local residents. Social and psychological capacity thresholds may be the most difficult to evaluate compared to physical, ecological and economic ones since they rely to a great extent on perceptions and values (Saveriades, 2000; Symmonds & Hammitt, 2000). The notion of social and psychological carrying capacity is often used to consider the concept of crowding and its effects on local community and tourists' satisfaction. Models based on various theories including expectancy theory, stimulus-overload theory and social interference theory have been used to define perceived crowding. Social psychological factors tend to have a larger influence on tourists' perceptions of crowding than the actual level of density or the number of visitors encountered. The characteristics, values, activities and behaviour of visitors and local

community, as well as destination management together influence the perception of crowding (Lee & Graefe, 2003). Political and economic carrying capacity focuses on local political economic structure, activities and competition with other sectors, promoting the profitability and opportunity costs for tourism businesses (O'Reilly, 1986).

In the conceptual definitions of carrying capacity, several major shifts have occurred when applying the tourism carrying capacity concept. First, the scope of tourism carrying capacity has gradually broadened, from ecological and physical to social and economic carrying capacity; in addition, there is an increase of specific factors within each of these areas to be considered. Second, the focus of the definition has shifted from the determination of maximum numbers of users towards the achievement of desirable conditions, and the identification of limits of acceptable change. Furthermore, this shift underlines the importance of perception of impacts. At the early stage, general subjective concerns such as tourists' perceptions and expectation were neglected. It has confirmed that the perception of capacity has equal importance compared with actual numbers (Ferreira & Harmse, 1999). Managers increasingly make decisions depending on values rather than on facts (Stewart & Cole, 2003). Third, tourism carrying capacity has shifted from a scientific approach towards a management approach. In reality it is hard to achieve numerical capacities or finite capacities for a specific area. It is realistic to define the maximum number of visitors and the optimal number (the number that maximizes positive impacts in the host community) depending on management goals, local systems and types of activities (Saveriades, 2000). Fourth, there is an increased awareness in terms of sustainable tourism development. Tourism carrying capacity is not only used to assess limited or confined sites such as recreational areas but for various types of large tourism destinations including cities and coastal areas. Finally, tourism carrying capacity has shifted to the integration of capacity assessment involving many interconnected environmental, social and economic factors.

1.2.2 Limitations of Tourism Carrying Capacity

Although tourism carrying capacity has been understood and accepted at the conceptual level, it raises many difficulties at an operational level (Williams, 1998).

In an overview, Lindberg et al. (1997) summarized limitations of tourism carrying capacity under three points. The three points relate to two issues, capacity and the perception of capacity.

The first point is that carrying capacity definitions often provide little guidance for practical implementation. They indicate difficulties in measuring tourism impacts. There are difficulties in determining how much impact is too much, or what is the maximum amount of utilization can be acceptable without causing crowding or some other conditions or impacts (Manning, 2002). In respect to this point, it is noted that tourism carrying capacity, or sustainability, need to be perceived as guiding frameworks (Shelby & Heberlein, 1986). Then carrying capacity can deal with each case separately, since it is not necessary to measure carrying capacity by using an approach. A framework provides guidelines for planning and managing tourism and research needs to focus on local characteristics and particularities.

The second limitation is related to the perception of carrying capacity. Carrying capacity reflects to an extent the expectations and goals of various actors, including individuals and groups (tourists), as well as managers or regulators (Williams, 1998). Tourists' different perspectives can lead to varied satisfaction levels (Lindberg et al., 1997). These differences cause different desired conditions, therefore affecting the measurement of tourism carrying capacity. Tourists may be unaware that their activities can be threats to a particular area; they may perceive impacts improperly or underestimate their significance; they may underestimate the impacts which they cause compared with the impacts caused by other groups; and they may also not understand the difficulties faced by managers (Stewart & Cole, 2003). Research on visitor satisfaction indicates that the limitation of the level of use may affect tourists' satisfaction (Lindberg et al., 1997). For determining social carrying capacity, a more precise tool than satisfaction can be used, that is perceived crowding. Research has reported that in some cases people complained about crowding, and felt that carrying capacity had been exceeded, yet the satisfaction levels recorded were quite high (Shelby & Heberlein, 1986). So it means that crowding perceptions alone are not all important and other psychological factors tend to be more influential in overall appraisals of settings (Lee & Graefe, 2003). As carrying capacity is perceived through different standards, such approaches should be carefully assessed and monitored, by

explicitly seeking standards and norms (Vaske et al., 1986, 1993). In such cases, carrying capacity is not a unique unchangeable number but varies with time and it can be altered by management action (Saveriades, 2000).

Researchers have also highlighted the importance of technological and political dimensions affecting tourism. The choice of a managerial objective involves both technical and political act (Eagles et al., 2002). For example, electronic reservation, use of intelligent cards, opportunities to control visitor flows and new ways of interpretation provide new influences on tourism demand and tourist supply (Lindsay, 1992; Martin & Mason, 1993). However, there are both positive and negative impacts of ever increasing expansion of numbers on resident populations (Canestrelli & Costa, 1991). In short, the technical expansion of numbers is not always socially desirable. Resident population might perceive negative impacts on their physical, economic and social environments. Thus the optimal level of usage of a tourist destination needs to be kept in balance with demand of both the tourist dependent population (such as tourism employers) and tourist-independent population (the wider community).

The third limitation is that carrying capacity focuses on use levels or number of visitors, but management objectives concentrate on conditions (Lindberg et al., 1997). Tourism carrying capacity needs to take into account the relationships between use and impact, and focus on measures to determine what kinds of conditions should be set for any specific place (Ahn et al., 2002). The identification of desired conditions is the key point of tourism destination management. As environments, including both natural and human ecosystems, are dynamic and adaptable, and furthermore people influence and modify the environment, ecological capacities are difficulty to define (Coccossis & Mexa, 2004). In other words, it is difficulty to link in turn, numbers of users or visitors to levels of impacts, to the conditions after use and then to the impacts on tourists' satisfaction. In some circumstances the identification of a desired number of tourists or limits on the number of tourists can be a quick and ready to use tool in management. Subsequently, the core concern of management can be monitoring the desirable condition of environments and user satisfaction, based on the set number of users as an indicator of pressures. In certain cases, especially in small areas, it is necessary to identify maximum appropriate numbers of users, and

moreover, limits on the amount of development needs to be promoted in order to avoid overuse , misuse and abuse of resources (Butler, 1997).

More generally though the criticisms of the carrying capacity approach direct tourism managers to focus on the acceptable changes in the environment or recreational experiences rather than estimating the magic number of users (Stankey et al. 1984). Managers need to consider a range of factors in order to render carrying capacity a useful framework (Lindberg et al., 1997): there needs agreement on the type of desired social and resource conditions and there also needs agreement on the desired level of these conditions and the standard for each indicator (sustainability indicators, sustainable tourism indicators and tourism carrying capacity indicators) (UNWTO, 2004a; UNWTO, 2004b). Importantly the management agency must have the legal, human resource and financial ability to limit access to area; there must be agreement on the rationing system, including price, first-come and first-served. One principle here is that the gain to admitted visitors must be greater than the loss to excluded visitors. In addition, monitoring and evaluation are necessary to assess tourism carrying capacity. However, all of these requirements are achieved infrequently. Some adaptations or pragmatic approaches to capacity which meet some of the core requirements are documented in the following section.

1.2.3 Other Approaches to Capacity for Tourism Assessment

In stead of searching for precise limits or thresholds concerning the number of users affecting sustainable use, carrying capacity research has focused on desired conditions (Boyd & Butler, 1996; Butler & Waldbrook, 1991; Clark & Stankey, 1979). It is noted that a number of alternative capacity approaches now exist. In particular, management policies now tend to meet visitor expectations and preferences instead of determining limits to use. Following this adaptation, alternative approaches to capacity have been suggested. The dominant approaches in this tradition are summarized as follows (cf. Manning, 2002).

The Limits of Acceptable Change (LAC) approach is used to define the amount of change to be allowed by means of quantitative standards or limits; and the appropriate management actions to maintain or restore those conditions which are recognized as

desirable in an area and achieve specified goals (Ahn et al., 2002; Glasson et al., 1995; McCool, 1994; Stankey et al., 1985). It is crucial to monitor such changes making sure the change does not exceed the minimum acceptable condition. Some disadvantages of LAC have been recognized. There is a difficulty in assigning a quantitative standard representing an acceptable level of ecological condition. The difficulty derives from the possible limited understanding of ecosystem structure and function, and how ecosystems respond to human activity. This approach was used for the study of SCUBA divers and coral assemblages (Jameson et al., 1999; Oliver, 1995; Rouphael & Hanafy, 2007). With this approach, the abundance of coral injuries was monitored and compared concurrently at studied sites. This approach was intended to provide early warning of potentially important ecological change. However, the approach would not be effective at sites where coral assemblages had already degraded. These kinds of management approaches reinforce the broad appeal of developing an improved understanding of crowding perceptions since such perceptions are not always adequately considered in LAC assessments.

The Visitor Impact Management (VIM) approach also identifies a set of standards to compare with existing conditions; but it recognizes unacceptable visitor impacts (Glasson et al., 1995; Graefe et al., 1990). VIM emphasizes the process of adaptations and integration of socioeconomic development activities. It describes desirable conditions and evaluates current activity in order to fulfil comprehensive local or regional development plans.

The Visitor Experience and Resource Protection (VERP) approach is mainly applied for park management. VERP at the first stage establishes an interdisciplinary project team and develops a strategy to make sure public participation occurs during the entire process, and moreover, to maintain the initial purpose, significance and primary interpretive themes in the development of statements. Second, it analyses resources and existing visitor use. Third, it identifies resource conditions and the types of visitor experiences. Finally, specific indicators and standards are selected in order to develop a monitoring plan (Manning, 2002).

These approaches are considered as different approaches or methods to determine carrying capacity (Getz, 1983) or as contemporary carrying capacity frameworks

(Manning & Lawson, 2002), or as the evolution of carrying capacity ideas (Lee, 1993; Lindberg et al., 1997). These approaches have been widely linked to studies of increased interest in social measures, including overuse and crowding and their management implications (Graefe et al., 1984; Hammitt & Cole, 1998; Kuss et al., 1990; Manning, 1999; Shelby & Heberlein, 1986; Stankey & Lime, 1973). It is apparent from this literature review these preliminary considerations that the research held concerned with capacity is not settled and that there are continuing efforts and requirements to add to the approaches and the contexts for studying crowding and its perception.

1. 3 Tools for Implementing Tourism Carrying Capacity

As already highlighted, capacity pressures may be caused by the following factors: number of tourists, type of activity, frequency of activity, intensity/concentration of use, political and economic issues. Different tools are needed to develop sites while considering their environmental, social and economic characteristics (e.g. Buckley, 2002; Murphy, 1985). The implementation of tourism carrying capacity needs different tools. Tools differing in several aspects have been categorized by the previous research (Cocossis & Mexa, 2004), including institutional tools, regulatory tools, economic tools, organizational-management tools, and information technology tools. The selection of tools represents differentiated views of planning and management for sustainable tourism development and differentiated views of implementing tourism carrying capacity (Glasson et al., 1995).

Institutional Tools

There are several institutional instruments that encourage the application of tourism carrying capacity. The World Tourism Organization provided valuable instruments for natural and cultural sites by applying tourism carrying capacity frameworks and tourism congestion approaches (UNWTO, 2004b). They created a framework as follows in Table 1.1 (UNWTO, 2004b):

Table1. 1 An integrated approach to congestion management

Management stages	The tourism experience (key organising features)	Key stakeholders
Demand management	● Decision to travel; ● Choice of destination; ● Timing and reason for travel; ● Group or individual travel; ● Choice of accommodation; ● Choice of budget.	● Tourism promotion and marketing agencies; ● Tourism guide publishers; ● Outbound/inbound tour operators; ● Travel agencies; ● Heritage information media; ● Electronic media.
	● Long distance journey to destination.	● International and domestic transportation operators.
Destination management	● Arrival at the destination; ● Change to local transport; ● Local accommodation; ● Local orientation; ● Local service providers.	● Local authorities; ● Infrastructure providers; ● Inbound tour operators; ● Local transport; ● Local tourism service providers; ● Local community.
	● Journey to site.	● Local transportation operators; ● Inbound tour operators; ● Tour guides.
Site management	● Site arrival and entry; ● Reception and orientation; ● Site visit; ● Facilities and retailing.	● Site managers; ● Site planners; ● Entry and orientation staff; ● Security and orientation staff; ● Tour guides; ● Retail and refreshment providers.
	● Departure; ● Journey back to destination; ● Journey to another site.	● Inbound tour operators; ● Local transportation operators; ● Tour guides.

The integrated congestion management approach considers three levels of the travelling process based on time. On the first level, tourists face the problems of choosing destinations and sites as well as make their travelling plans. Tourists choose and decide their destination on the basis of their personal holiday preferences, budget, and time. And if tourists travel with family and friends, their companions may affect their choice. The stakeholders at this level which can help and influence tourists are travel agencies, publishers, media, and transportation operators. The implications here

for crowding management are in terms of finding the right strategies to mediate settings and peoples' desire to be with others or tolerate others. On the second level, tourists have arrived at the destination. The factors which influence their experience include the local transport, accommodation, orientation, and service promotion. The local tourism operators need to contribute to satisfying tourists and managing the conflict between tourists and locals. Next, tourists may be led by tour guides to the local sites. The last level is site management which involves very direct person to person encounters. Site managers and the site staff need to control the visitor flows and do their best to promote tourists' satisfaction at their site. The responsibilities of site managers are in terms of the entire visit at the site. Post-visit satisfaction measures collected by destination management agencies represent the information about the other two preceding levels which can be used in crowding management. According to the content of the table, stakeholders in every section have some crowding linked managerial responsibilities.

In addition to this, the Red List, which is maintained by the International Union for Conservation of Nature and Natural Resources, provides precise criteria to evaluate the extinction risk of thousands of species and subspecies. It can be recognized as a useful instrument for defining carrying capacity levels for ecologically sensitive sites. The Alps Convention together with the Barcelona Convention for the Mediterranean Sea provided a framework for nature protection. Some other useful frameworks were provided by the Bern Convention, UNESCO World Heritage Convention, Ramsar Convention, Convention on Biological Diversity and so on (German Federal Agency for Nature Conservation, 1997).

Apart from these global provisions, most countries have their own legislation that provides for the conservation of the areas. The implementation of various provisions can be realized through the choice of a territorial scale and its implications, the choice of an indicator framework and its implications regarding communication needs and development procedure, the authority of a management plan and other specific indicators. In France for example, the implementation was conducted to control pressures for international tourism activities, specially the pressure on accommodation and natural parks, as well as the pressure on transport due to pollution (UNWTO, 2004a).

Respective mechanisms and other institutional decisions also exist for particular areas or cities, guiding their development by implementing tourism carrying capacity frameworks. For example, the World Tourism Organization introduced special techniques to measure carrying capacity in Abufera de Valencia (Spain) (UNWTO, 2004a). Elements selected to indicate carrying capacity here include: status of geographical space, status of resources, attributes and stresses of recreational activity on the area and its resources, and behaviour of users. This analysis is still centred on the quantitative monitoring of users, differentiating from the status indicators to be used to monitor the resources.

Regulatory Tools

The recreational use and tourism impacts are different in various locations because of unevenly distributed resources, facilities, and tourist types. Therefore, managers need to understand the different thresholds in various sub-areas, especially in the ecologically sensitive sites. The specific pressure, which may exceed the carrying capacity of the sub-area, may have to be measured separately. A typical measurement in zones is reported by the previous researchers. Zoning is a useful tool which is the most widely applied regulatory technique (Buckley, 1998). It is useful to limit use, encourage dispersal, control and eliminate conflicts, and keep sensitive areas free from use. Most valuable and vulnerable zones permit entry only to authorized scientific teams. Highly sensitive zones permit only visits in small groups. Considerable natural interest zones allow some traditional and tourist activities, but car access is limited. Mild development and buffer zones, where tourism and visitor facilities are provided, allow car access and parking and compatible activities (Coccossis & Mexa, 2004). For example, in the Boston Harbor Islands study, the resource impacts caused by unacceptable visitors required a carrying capacity-related monitoring program. Managers also conducted a general management plan by assigning all park lands into six zones (Manning et al., 2005). The management objectives for each zone employed different indicators and standards quality for natural and social conditions. Study findings were utilized to formulate standards of quality for natural and social conditions. For example, frequency distribution charts and tables of impact indicators were used to determine standard of quality for resource impact. Findings of the social science component decided potential standards

of quality for visitor density in a range from “preference” to “displacement”. For the zone characterized by natural features, a standard of quality near the “preference” end of the range emphasized solitude opportunities for visitors. For the zone characterized by the visitor services and park facilities, a standard of quality near the “management action” or “displacement” end of the range emphasized social experience opportunities for visitors. In addition, for all zones, both natural science indicators and social science indicators were needed to establish an appropriate standard quality and set a socially acceptable standard of quality.

Most mechanisms in terms of zoning are physical planning issues (Coccossis & Mexa, 1997). Limits to free access contribute to environmental protection, especially applying in significant ecological and cultural or vulnerable sites. For example, Kruger National Park (KNP), the largest game reserve and wildlife sanctuary in the Republic of South Africa, is one of the 14 largest protected areas in the world. As an extremely popular winter holiday destination, tourist numbers have increased tremendously over the past 24 years in KNP. The enormous growth in the number visitors in recent years could prove to be a problem. The major problems were recognized in the form of traffic congestion along the popular tourist routes and the crowding of tourists at popular viewing sites, water points and picnic spots in the southern portion of the KNP. The crowding problem was more acute during the peak season and particularly on public holidays. Moreover, evidence showed that the park's social capacity, which was concerned with the relationship between the visitor experience and the quality and quantity of their interaction with other visitors to the same recreation site, was threatened. Subsequently, several mechanisms had been used to control tourist numbers in the KNP, including limiting the size of the rest camps, requiring advance reservations for overnight spaces, limiting overnight and dayvisitor numbers, establishing a vehicle/road ratio limit, and using a zoning system for infrastructure development (Ferreria & Harmse, 1999). The major limitations include seasonal closures, site duplication and limits on visitor numbers (Buckley, 1998). In addition, special physical arrangements can minimize visitors’ impacts on environment, including building viewing platforms, pathways, or fences to prevent tourists from entrance, limiting car parks and restricting the availability of facilities and service.

Another important mechanism derived from zoning refers to concentration or dispersion of development pressures and tourist flows. From an environmental perspective concentration may not always be a good approach to manage tourist flows. Concentration may cause infrastructure burdens, impacts on social cohesion, negative impacts on local business besides tourism, and impacts on ribbon development (Collins, 1999). Dispersion can relieve the pressures exerted by the increased number of visitors, the maintenance of numbers within limits, the disappearance of social costs in terms of excess demand, the diffusion of benefits among more inhabitants and entrepreneurs (Glasson et al., 1995). However, there is often no permanent relief of the congested part, so it is difficulty to determine where dispersion can be conducted. In addition, tourists do not always obey suggestions to follow alternative routes, and when this happens, there is a problem of transferring crowding and congestion to other places. Finally, locals may be opposed to dispersion of visitors because they fear losing some of the economic benefits they possess or anticipate. Kostopoulou and Kyritsis (2006) utilized the measure of central tendency and spatial variability to evaluate the spatial pattern of recreational pressure on Mount Olympus National Park, Greece, which is host to an unevenly distributed number of visitors. The study described the variability of pressure intensity within the sub-areas. These sub-areas were classified from the least visited to the most visited. From these studies and other parallel cases in the literature it can be suggested that research within tourist attractions on managing visitor numbers is still rudimentary and requires more attention and comparative assessments.

Economic Tools

The major economic tools to manage capacity adopted are the pricing systems. The pricing strategies include: reduced fees for entrance; park-and ride schemes and on-site transportation to manage traffic problems; regulations and fines for inappropriate behaviour; and charges for the discouraged activities such as private cars. Apart from using pricing to maximize economic profits, pricing is also employed to safeguard both employment and income opportunities at areas which are highly seasonal. Pricing is often used to lower rates for tickets and accommodation for periods in the low season while applying higher prices for these services in the peak season. It means that the fee needs to be changed during the times when or where demand exceeds capacity; managers could use pricing to control flows, under the estimation

that the fee would be high enough to cause those people less willing or less able to pay, with the purpose of decreasing demand until it equalled supply (Shelby & Heberlein, 1986). Pricing is used to enhance the desire of people who would be the ones to pay, for overuse or crowding are been avoided. It can also be noted that governments use taxes to prevent environmental degradation. For example, local authorities can raise funds for waste management. The strategy of using pricing to control demand is not without its critics and raises issues of social equity or fairness (Lee & Pearce, 2002). Importantly, pricing within an attraction is a difficult tool to administer.

Organizational-Management Tools

Organizational management tools involve queuing (Shelby & Heberlein, 1986); reservation and booking system (Ferreira & Harmse, 1999; Shelby & Heberlein, 1986; Borg et al., 1996); information management (Day, 2002); education (Burkley, 1998; Marion & Reid, 2007); market control and targeting of visitors (Curtis, 1998); and many incentive schemes.

Tourists frequently view waiting as a waste of their time. Tourists tend to dislike long periods of waiting. When tourists feel that the waiting time for service is too long, they become less satisfied with the service quality (Hensley and Sulek, 2007). Research built on the understanding the psychology of time perception is valuable to tackle the negative perceptions associated with tourists' in-line behaviour (Pearce, 1989). Hornik (1984) indicated five elements based on real time, length of queue as feedback, type of queue, motivation and habit, in order to make the waiting time in a service setting better for customers. For instance, people who continue to stand in line tend to underestimate the perceived length of the actual waiting time. That is to say, the perceived length of waiting is consistent with the interpretation of a defensive or self justifying position for remaining among the latter members of the queue (Pearce, 1989). These kinds of considerations can lead to a number of further explanations and in turn managerial solutions to decrease this problem

Pearce (1989) argued that there are several factors in action here. First, people overestimate the speed at which the queue is moving. Second, people pay heightened attention to the changes which separate the person from the end goal. The fundamental mechanism operating here is that attention to time makes it appear to

pass more slowly. To make time pass quickly, methods to distract attention to time can be useful, such as providing waiting in line visitors with performances, visual information or other entertainments. Distracting people from the passage of time makes them less aware of its duration. The importance of the psychological aspect to waiting is considered particularly relevant for hospitality services that have high levels of customer-employee contact (Butcher and Heffernan, 2006). It is argued that a customer's negative affect varied with the perceived control of the service provider over wait duration (Houston et al., 1998). The service-entry wait can create an initial impression of the service operation that may promote a customer's entire service experience. The right information transmission is also helpful for customers to make sure customers are able to estimate accurately the time they have to wait (Pearce, 1989; Hensley and Sulek, 2007).

Additionally, tourists may feel uncomfortable in a queue if the waiting area is too hot or cold, too noisy or too crowded. These physical needs of people are also related to better queue management (Pearce, 1989). It is necessary to provide shelter, resting opportunities and possibly in the longer queues drinking fountains and the access to toilet facilities. However, the waiting areas need to be controlled and monitored. Crowding in a waiting line heightens both tension and awareness of time and may decrease customer satisfaction (Wakefield and Blodgett, 1996). Nevertheless, a strict linear queue arrangement may also erode customer satisfaction. People desire to stay with their family members, especially for children. It is important to provide a wider space (queue width) so children can interact with their guardians and partners converse with one another (Pearce, 1989). Further mechanisms, such as establishing a maximum total calling population for the day, providing primary booking information to consumers, introducing variable pricing and limited ticketing to specific times, as well arranging for an entertaining arrivals area, can also be used to avoid some of the waiting in line problems for visitors (Shelby & Heberlein, 1986; UNWTO, 2004b).

Reservation and booking system have been successfully applied in particular areas, keeping a balance between conservation and tourism. For example, the system had been used to control overnight stays and the number of day-visitors in the Kruger National Park in South Africa (Ferreira & Harmse, 1999).

The educational approach as a management tool is in evidence in a study by Marion and Reid (2007). They introduced education programs to address visitation-related impairment for natural and cultural resources, social conditions, and communities. These programmes included Leave No Trace, Codes of Conduct, and Environmental Guidelines for Tourists. These programmes were conducted to sustain high quality visitor experiences. Additionally, these programmes were put in place to avoid or minimize associated negative impacts to protected area resources, and park neighbours. Findings provided evidence that most of the visitor education methods did affect visitors' knowledge, attitudes, behaviour, and planning perspectives. One finding of importance was the need to improve the efficiency of message content and message delivery in the future educational efforts. In addition, awareness of audience characteristics was regarded as important to decide the educational content and communication of messages, so that the approach would resonate with different audiences.

Market control allows marketers to target particular market segments and to promote sustainability of tourism in an available carrying capacity (Curtis, 1998). Targeting of visitors in different types can provide increased benefits and spend less cost for the area. Targeting visitors is another strategy for pursuing limits in an area (Glasson et al., 1995). For example, in Venice the measurement of carrying capacity was based on the preference of overnight visitors against excursionists (Borg & Costa, 1995).

Incentive schemes can be different for particular different areas. Preda and Watts (2003) reviewed two capacity management studies undertaken at the Sydney Cricket Ground and Sydney Football Stadium in Sydney, Australia. Based on research by Thompson and Jenkins (1996) and Watts and Thompson (1996), one of the core issues of capacity management was the optimizing the use of resources. They pointed out the importance of the efficient use of capacity, which was decided by the use of an efficient ratio between total capacity and utilized capacity. The ability to transform resources into valued products and services was decided by underlying constraints of the function, involving physical elements or intangible components (e.g., staff skills). To resolve this, it was important that managers improved their efficiency in capacity utility and enhanced their ability to transform resources. These management based tools raise the value of studies in tourism crowding seeking the views of tourism

managers when trying to provide research on practical problem oriented answers to crowding questions.

Information Technology Tools

Computer simulation modelling has been applied in several studies about national parks to track visitor travel patterns. It can be a useful tool to help implement carrying capacity frameworks in the manner of less risk and less cost (Lawson et al., 2003). It can assist managers in monitoring and managing social carrying capacity for it provides information about spatio-temporal distribution of visitor use. In the case of Alcatraz Island in the United States, the model was used to estimate the maximum total daily use levels (daily carrying capacities) that could be accommodated without violating the normative crowding standards (Manning, Wang et al., 2002). The model was input based on detailed visitor counts and observations, in Manning and his colleague's study, the indicators including number of visitors per ferry, frequency of ferries, length of time between debarkation of visitors on the island and their arrival into the cellhouse, audiotour ticket line, time spent in the cellhouse audiotour ticket line, and time spent touring the cellhouse. Again, the types of studies in this category direct researchers' attention to including multiple stakeholders' perspectives and approaches in research directed at crowding concerns.

1.4 A Theoretical Overview of Crowding

1.4.1 Defining Crowding

Crowding, the specific and key topic of this thesis, comprises a long-standing issue in the field of outdoor recreation and has been analysed in the context of carrying capacity (Manning et al., 1999; Stankey & McCool, 1989). Crowding related research is a dominant theme in the social psychology of leisure literature (Shelby & Heberlein, 1986). Crowding problems appear when the usage of environmental and social resources exceeds the capacity of recreation areas (e.g. Hammitt & Cole, 1998; Manning, 1997; Manning et al., 1999). This concept closely refers to numbers of people and can be a more useful criterion for management than satisfaction. The term "perceived crowding" is a psychological state derived from an individual's subjective evaluation of setting density for specific environments (Shelby & Heberlein, 1986).

The crowding literature and research issues are a sub-set of both sustainability and capacity concerns which have been considered in the previous section.

1.4.2 Explaining Encounters, Crowding, and Norms

Many researchers have studied crowding based on the model of encounter – norm – crowding. This theory established a relationship between visitors' use levels and their crowding-related norms. The common stated relationship was that as use level increases, recreationists are more likely to evaluate the experience as crowded. This simple relationship has been useful to indicate visitor's recreational experience and to maintain visitors' satisfaction. This simple relationship cannot, however, go unchallenged in the context of this thesis. The challenge derives from the predominance of North American researchers writing about wilderness or national park settings with visitors from a culture where the appreciation of settings is often cast as a personal or small group experience (Urry, 1990). The present interest in tourist attractions with some Non Western visitors from more communal cultures could result in different perspectives. At least initially, however, it is important to consider further the main traditions of work to provide a resource for the present studies.

The concepts of encounters, crowding, and norms have been an important study field in the recreation carrying capacity literature (e.g. Kuss et al., 1990; Manning, 1999; Shelby & Heberlein, 1986). Norms help to define what people think behaviours or conditions should be. People have evaluative standards of acceptance of behaviours or conditions (Vaske et al. 1986). Therefore, norms are a direct measure of visitors' standards of perceptions. Encounters are related to the number of other people that an individual observes in a setting (Vaske & Donnelly, 2002).

Traditional crowding models claimed that actual use levels influence the number of reported encounters, and in turn, encounters influence perceived crowding. In other words, the relationship between actual visitor use levels and perceived crowding is mediated by the tourists' perceptions of the number of people in the area (reported encounters). Perceived crowding combines descriptive information (the density or encounter level experienced by the individual) with evaluative information (the

density or encounter level negatively evaluated by the individual). When people evaluate if an area is crowded, they compare the condition they experienced with their perception of the condition. In this vies if they suggest that the area is crowded, it means that the actual conditions exceeded their standards (norms) of acceptance of the conditions. In other words, norms offer a theoretical construct to integrate the issue of encounters and perceived crowding.

The normative theory has been used in over 50 studies to understand encounter norms that is the maximum number of encounters that visitors can accept to see in a certain area (e.g. Donnelly et al., 2000; Manning, 1999; Shelby et al., 1996; Vaske et al., 1986, 1993). Most of these studies are about tourism and recreation areas in the USA, but some have occurred in Canada (Freimund et al., 2002; Vaske et al., 1996). Only a limited number of studies have been undertaken in other countries such as Sweden and Austrlia (Inglis et al., 1999; Saarinen, 1998). Most previous studies reported a positive relationship between use levels and perceived crowding. When people reported more encounters than their norms, they felt “very crowded”, whereas those who reported less encounters than their norms felt “not at all crowded”, and when encounters exceeded their norm, they felt “slightly” or “moderately” crowded (cf. Vaske & Donnelly, 2002).

A commonly used model established by Manning et al. (1999) can further illustrate the relationship between actual use level and crowding-related normative use level (Figure 1.1).

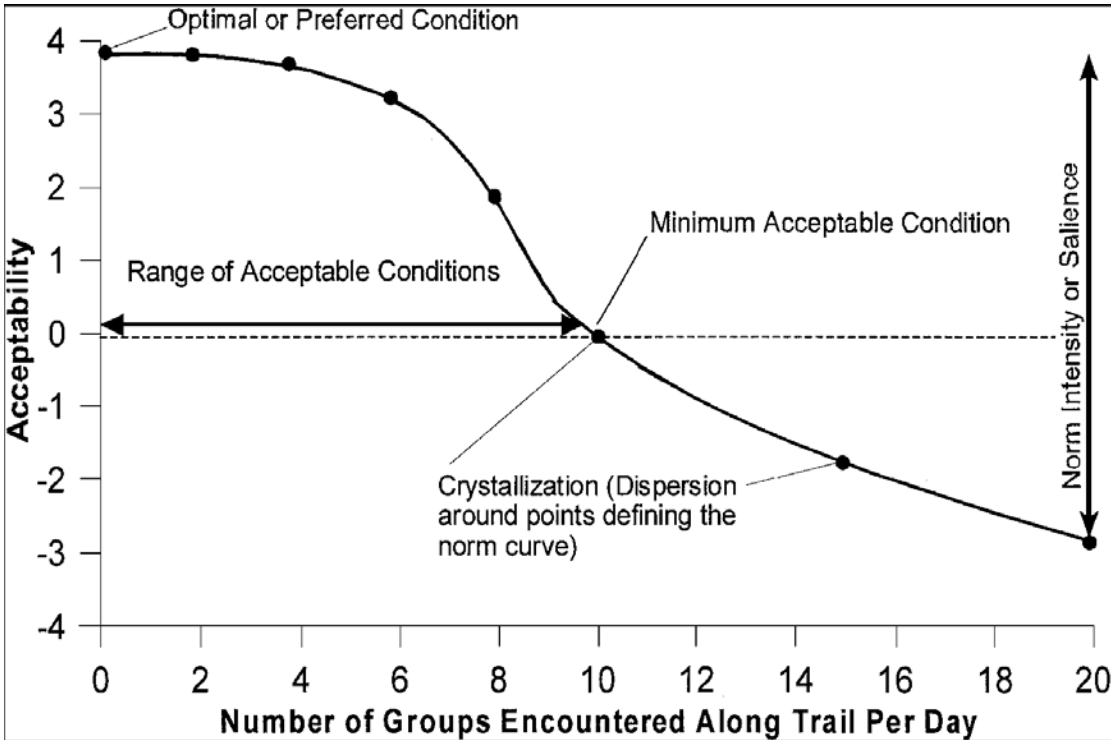

Figure1. 1 Hypothetical social norm curve
Source: Manning et al., 1999

In this model, the different points along the norm curve represent tourists' acceptable responses to encounters. At the highest point of the curve, the optimal or preferred condition means a very positive attitude to encounters. The encounters are very acceptable. The minimum acceptable condition is the point where the norm curve meets the zero point of the acceptability scale. The points below the zero point represent unacceptable conditions. This portion of the curve implies that tourists can not accept such numbers of encounters. Manning et al. (1999) define the acceptability scale in this model as "intensity" or "salience", and the juncture point as "crystallization".

1.4.3 Norm-Measurement Approaches

The studies about crowding norms have also provided several approaches. These approaches measure crowding norms in different ways. Moreover, several issues surrounding norm measurement and application have been identified.

In some areas of tourism, leisure and recreation study a particular research group builds a specialist program of research devoted to one closely pursued topic area. For crowding studies a good example of this kind of focus is represented by the work of Manning and colleagues. A number of research efforts from this group will be reviewed here because by tracking one linked set of studies, key points of program in the area can be succinctly conveyed.

The traditional measurement of crowding norms involves a numerical approach, utilising sometimes long and at other times very short measurement versions. For the long measurement version, respondents are asked to evaluate a range of encounters (0, 5, 10, 15, etc.) with other groups per day in a defined area (Manning et al., 1999). For the short measurement, respondents are asked, using an open-ended format, to report the maximum acceptable number of encounters with other groups per day. The most widely used survey methods have incorporated a visual approach when measuring crowding norms. Visitors are asked to evaluate the evaluative dimensions (i.e. acceptability of alternative use levels) by using computer-edited photographs which were used for a principal place showing a range of visitor use levels or 'people-at-one-time' (PAOT) (Manning, Wang et al., 2002). The visual approach involves long and short versions (e. g. Manning, Lime, Freimund, & Pitt, 1996; Manning, Lime, & Hof, 1996; and Manning et al., 1999). The long version asks respondents to evaluate each example in a series of photographs. The short version asks respondents to select the photograph which illustrates the highest use level of acceptability. The evaluative dimensions which have been related to use levels are "preference", "desirability", "pleasantness", "ideal", "favourableness", "acceptability", "satisfaction", "okay", and "tolerance" (e. g. Hammitt & Rutlin, 1995; Manning et al., 1999; Watson 1995; Young et al., 1991). In addition, questionnaires are usually designed based with two question formats; the closed-ended question format and the open-ended question format. Closed-ended questions ask respondents to rate the acceptability of each of the study photographs by using a nine-point response scale across the range "very acceptable" (+4) and "very unacceptable" (−4) (e. g. Heberlein & Vaske, 1977; Manning et al., 1999; Manning, Lawson et al., 2002; Manning, Wang et al., 2002; Needham et al., 2004). Open-ended questions ask respondents questions such as "Which photograph shows the number of people that would be so unacceptable that you would no longer visit this site?" (e. g. Hall & Roggenbuck, 2002; Manning et al.,

1999). The implications of these detailed outcomes about question formats and responses for crowding studies in general lie with the judicious selection of approaches to suit a context. The detailed use of this previous research will be documented and employed in the empirical chapters of this thesis.

In some studies to measure crowding, a verbal protocol was used in conjunction with the visual normative research methods (Manning et al., 2005). Respondents were asked to rate the acceptability of the studied photographs, and additionally, they were instructed to talk aloud about their responses to the questions. Further, respondents were required to verbalise everything they were thinking about. A coding scheme for the verbalizations was developed. That is, depending on the verbal protocol, respondents' comments could be classified into categories. In the study given by Manning and his colleagues (2005), respondents' statements were classified into thirteen categories. These thirteen categories involved "protection-oriented", which were the resource and social impacts of concern to the respondents. The protection-oriented responses could be divided into two groups, resource-sensitive responses and crowding-sensitive responses. Crowding-sensitive responses could be further divided into people-sensitive responses and automobile-sensitive responses. In addition, another seven response categories could be grouped into "access-oriented" in which respondents were worried about maintaining reasonable public access to the park. This study reported that these respondents' responses reflect their different crowding-related norms. For example, respondents who provided a resource-sensitive response had a lower "management action" norm than the respondents who did not provide a resource-sensitive response. Taken together, the contributions of this research program can be considered as broadly representative of the development of measures in the crowding research. Respondents' crowding norms can be identified by distinguishing amongst response types. These lessons will be applied in the research in this thesis.

Three points of difference between the visual and numerical measurement approaches were presented. First, compared to the visual measurement approaches, the numerical measures tended to have relatively high variation. The high variation indicated that there was less consensus or crystallization associated with the numerical measurement technique. Nevertheless, the lower variances in terms of the visual approach might

have reduced the possible variance of results compared with the numerical approach, because respondents chose from a limited range of use levels with this measurement. Thus it is important when using the visual approach associated with photographs to depict a wide range of use levels. Second, the numerical approaches are likely to underestimate crowding-related norms because such questions call explicit attention to all other visitor encountered. Conversely, the visual approaches tend to provide more "realistic" estimates of crowding norms. Third, the visual approach may be more likely to magnify the level of the norm under conditions of relatively high use since the "starting" stimuli set a context for respondents' answers. The two approaches may report comparable crowding norms if use levels are relatively low (Manning et al., 1999).

There appears to be a relatively small difference between crowding norms derived from the long and short question formats. The only difference is that the long question format may provide more information and may therefore provide more precise estimates of the highest level of use acceptable, whereas the short question formats provide less information, so respondents tend to report a level of use that is somewhat lower than "absolute lowest" acceptability (Manning, Lawson et al., 2002). This issue may be magnified with the visual approach. For example, when respondents select a photograph that is close to highest level of use acceptability, they may select a photograph that shows a lower use level rather than a higher use level to ensure that the use level they report is indeed acceptable.

Furthermore, several methodological issues have been discussed, including starting point bias and information bias. The dichotomous question format (close-ended question format) can be divided into single-bounded and multiple-bounded dichotomous choice question formats, which may result in "starting point bias." Starting point bias can be understood in visual approaches to normative research as the order in which photographs are presented to respondents biasing their responses. The application in this context is the influence on the preferred visitor numbers. "Information bias" can be regarded as the amount and type of information provided in survey which shapes visitors' responses. The information provided can affect respondents' estimates. The subtle contextual cues may bias the estimates. Therefore, the information bias issue can be found to have implications for photographic surveys

varied in different conditions. In such studies, responses may be influenced by respondents' personal perspectives (Manning, Lawson et al., 2002). In the study by Manning and his colleagues (2002), seeking to minimize starting point bias, half of the sample in their research were presented with and asked to rate the acceptability of the photographs in increasing order while the other half of the sample was presented and asked to rated the acceptability of the photographs in decreasing order. The issue of the information bias was also addressed in the survey. The study photographs with same content were divided into two sets, with each set administered to approximately half of the sample. However, one set of the photographs was shown as a characteristic closed in view while the other set was shown as a characteristic open view. As for the starting point bias issue, results indicated that photographs presented in increasing order resulted in higher acceptability ratings than photographs presented in decreasing order. The differences, however, were very small. Similar results were found for the information bias. The photograph which showed the open view resulted in a higher acceptability rating than the photograph which showed the closed view, but again these differences were very small.

1.4.4 Crowding Norms Applying in Management Actions

As mentioned earlier, evaluative dimensions used to measure use levels include "preference", "desirability", "pleasantness", "ideal", "favourableness", "acceptability", "satisfaction", "okay", and "tolerance" (e. g. Hammitt & Rutlin, 1995; Manning et al., 1999; Watson, 1995; Young et al., 1991). With different goals in planning and management, tourism managers depend on different evaluation dimensions. According to Manning and his colleagues (1999), there was a clear hierarchy of crowding norms among these evaluative dimensions. Absolute tolerance falls in the bottom of the range. This may reflect that respondents tend to tolerate lower use levels. On the contrary, preference is located at the highest level, which means that respondent prefer to high use levels. Acceptability is closest to preference but is substantially lower than preference. This may reflect that respondents are more willing to accept higher use levels. Finally, acceptability to other visitors falls in the middle of the range and is closest to but is lower than acceptability. It is noteworthy that each of the evaluative dimensions has potential advantages and disadvantages in guiding tourism management issues. For example, management based on preference-

related norms may result in high quality experiences but lower number of visitors. By contrast, management based on acceptability or tolerance may lead to high visitor numbers but low quality experiences. It may be critical to keep a balance between use level and quality of recreation experiences in management issues (Manning et al., 1999; Manning, Lawson et al., 2002).

Crowding norms can also be used to define a range of carrying capacity. In the case for Alcatraz Island, results demonstrated the crowding-related use level was about half of the actual people at one time (PAOT) accommodated in Michigan Avenue (one area to be employed). That is, if visitors reported that a maximum of 44 PAOT was acceptable in the Michigan Avenue location, then approximately 88 PAOT could actually be accommodated for this space. Moreover, results also demonstrated a range of daily carrying capacities (from approximately 2500 visitor per day to approximately 4800 visitors per day) for Alcatraz Island depending on the crowding-related standard of quality that was selected (Manning, Wang et al., 2002).

1.4.5 Explaining Perceived Crowding in the Social Psychological Perspective

According to Shelby and Heberlein (1986), social psychological factors have more influence on crowding perception than use levels or encounters. It has also been noted that crowding perception is based more on the character and behaviour of other visitors, and the value system of users and managers, than on the level of density or the number of visitors encountered. Encounter norms may be less useful in high density settings than under low density conditions (Shelby & Vaske, 1991).

Many researchers have concentrated more on what influences crowding norms. The origins of crowding were derived from several influences (Higham & Kearsley, 1994). Many studies have analysed the influences of these social psychological factors on perception of crowding. Such factors include demographic variables like gender-women are more tolerant (Friedman et al., 1972; Jain, 1992; Ross et al., 1973), education-better educated visitors are less tolerant (Fleishman et al., 2004) and socio economic status-the higher status individuals are less tolerant (Hayduk, 1983). Further factors of influence on perceived crowding norms include time pressure (Schellinck,

1983), spatial arrangements (Oldham, 1988), the social environment (Rustemli, 1992), motives for the experience (Bellenger & Korgaonkar, 1980) and perceived control (Hui & Bateson, 1991). The inclusion of these explanatory variables in the present research should assist explaining visitors' crowding responses in the situations being studied.

1.4.5.1 Theories of Perceived Crowding – Expectancy, Stimulus Overload and Social Interference

Theories involving expectancy, stimulus overload and social interference underlie the concept of social carrying capacity and have been adopted to explain perceived crowding. Expectancy is defined in the previous research as a temporary belief held by a person to undertake a certain act and a certain result will follow the certain act. People usually travel with particular motives and expectations such as stimulation desired, social interaction and status (Pearce & Lee, 2005). Certain expectations stem from individual and circumstantial factors such as individual's experience, the degree of communication with others, situational variables, mass media, and personality. Several studies have demonstrated that individuals' expectations or preferences influence the relationship between actual encounters and perceived crowding. In particular, expectancy theory applied to perceived crowding predicts that when encounters exceed a visitor's norm for seeing others, crowding will increase. Conversely when visitors see fewer or the same number of encounters as they expect, perceived crowding levels tend to be low (Vaske & Donnelly, 2002). For example, Kyle et al. (2004) reported in their study that place identity and place dependence were significant predictors of tourists' perceptions of setting density. Respondents scoring high on the place identity dimension were more likely to report feeling crowded, while respondents scoring high on the place dependence dimension were likely to report setting density more favorably.

Andereck and Becker (1993) studied perceived crowding at Fort Sumter National Monument in Charleston, SC. Their results revealed that expectations for density significantly and directly influenced perceived crowding. In addition, Wickham and Kerstetter (2000) found that place attachment can actually reduce an individual's perception of crowding. That is to say, people who shop, attend a concert, or go to festivals are more likely to enjoy or desire crowds, in contrast to other recreationists

who may wish to seek solitary activities and avoid crowds. Anderson et al. (1998) also reported that their respondents had positive attitudes to the presence of other people. Respondents felt that other people added to the quality of their experience. The behaviour of other people was tolerated. Festival participants did not experience feeling crowded, because they valued the presence of other people at the festival. This is consistent with the view that one of their motivations for attending the festival is to socialize with friends, families or other people. Vaske et al. (1994) suggested that a useful way to manage crowding is by building realistic expectations among the users.

The expectancy theory can be discussed in conjunction with the social interference theory (Schmidt & Keating, 1979). The social interference theory indicates that crowding occurs because the density interferes with a visitor's activities or goals. Visitors usually behave with the desire or expectations to experience solitude, stress release, or social interaction. Perceived crowding happens when such goals are blocked by the density of other people's behaviour. The density-related blockages may be caused by the lack or loss of control over the situations. This interference can be further explained by the stimulus-overload theory (Bell et al., 1990).

The stimulus-overload theory indicates that people feel crowded when they are overwhelmed by the presence of other visitors or by the condition of the physical environment at an area. In other words, people feel crowded in conditions of high density where people meet more stimuli than they can handle, which is related to the loss of control (Bell et al., 1990). The density level and the communication with others have a greater effect on visitors' perception than the limited capacity of a setting (Baum & Paulus, 1991). In particular, when stimulus overload occurs, people try to handle their uncomfortable feeling with various strategies. If these strategies are successful, they can minimize or eliminate the negative effects of overload; conversely, if these strategies do not work, crowding is experienced. Therefore, perceived crowding derives from the stimulations which can not be minimized by personal strategies (Andereck & Becker, 1993; Schmidt & Keating, 1979).

Lee and Graefe (2003), in a study which illustrate the application of these ideas, tried to measure the relationships between the three theories and perceived crowding in a festival setting, the 1995 Central Pennsylvania Festival of the Arts. According to their

analysis, expectations of crowding combined with stimulus-related evaluation influenced the perceived crowding of festival visitors. Participants felt more crowded when there were more people than they expected and when the stimulus related evaluation was held constant. Similarly, participants felt more crowded when there was higher stimulus than they evaluated and expectation of crowding was held constant. It concluded that the expectation of crowding was more highly influential in relation to perceived crowding than stimulus-related evaluations. The results can suggest some useful implications for festival management and planning. The expectations and stimulus load indirectly affected the perceived crowding of festival participants. The study emphasizes the role of the indirect influences rather than the physical use level and actual visitation numbers, thus prompting the possibility of managing expectations and understanding visitors' needs for stimulus control as well as managing the more tangible use level.

1.4.5.2 Identification of Influences on Perceived Crowding based on the Expectancy theory, the Stimulus Overload theory and the Social Interference theory

Visitors' Past Experiences

One further influence of significance on visitors' perceptions crowding lies in considering the visitors' experiences. Visitors going to recreational settings involve different groups, new comers and repeat comers. Visitors who have different experience perceive crowding differently. For example, in the research of Kuentzel and Heberlein (2003), when boaters were maturing in experience, and maturing in their knowledge of, and commitment to boating at the Apostle Islands, the increased repeat visitations occurred. Through this experience, it is likely that their expectations of crowding were specific and accurate. In a further study, Bryon and Neuts (2009) reported that there was a negative relationship between perceived crowding and travel experience. In a case study by Inglis et al. (1999), four respondent groups, a scuba-diving club, local residents, tourists, and US university students, who had different levels of experience in marine recreation on the Great Barrier Reef, were asked to rate the acceptability of each image. The results were different among groups because of the number of people in the images, the prior experience and gender of the respondents, and the presence of safety infrastructure. Experienced scuba divers

preferred scenes without people or infrastructure, while novices regarded the presence of both as more acceptable.

Visitors' Sociodemographic Factors

The attributes of visitors affect crowding perceptions are based on the conceptual foundation of tourist-tourist conflict (Urry, 1990). Tourist-tourist conflict appears when the specific focused purposes of one group are frustrated by the cumulative actions of another. Urry has employed the term 'the tourist gaze' to provide an integrative view of how tourist approach social and environmental encounters. 'The tourist gaze' consists of 'the romantic gaze' and 'the collective gaze'. 'The romantic gaze' can be understood in terms of those who appreciate settings alone or with a very small number of like-minded companions. 'The collective gaze' involves those seeking socially rich recreational experiences. Rathmun (1995) addressed the potential of the in-group and out-group categorization system to inform the recreation conflict literature. For instance, previous research provides the evidence from psychological and social research that different age groups have different needs for physical space as well as different preferences for recreational surroundings (Cohen, 1992; Golant, 1983). This article reexamines these relationships in high density nature-oriented and cultural-oriented urban settings.

Crowding perceptions come into being because of the encounters experienced by visitors with other visitors. The implications of such encounters on crowding perceptions vary among visitors. In this context, crowding perception may be defined as visitors' negative evaluation of a certain density or level of encounter in a given area (Gramman, 1982; Lee & Graefe, 2003; Vaske, Shelby, Graefe, & Heberlein, 1986). Crowding perceptions vary with each visitor's attributes and the activities in which he/she engages. In culturally diverse settings, both the attributes of the visitors and of those they encounter are likely to affect crowding perceptions. Visitors' characteristics, such as ethnic or racial background, have been considered in previous research mainly as factors influencing environmental perceptions and recreational behavior through personality traits, such as attitudes, preferences, and motivations, as well as previous recreational experience (Baas et al., 1993; Carr & Williams, 1993; Hutchinson, 1988; Washburne, 1978).

Previous research has addressed the influence of visitors' sociodemographic features (age, sex, education, culture) on their perceptions of crowding in recreational settings. Both cultural diversity and demographic attributes influence visitors' impressions of encounters. The quality of the recreational experience is closely linked to such impressions. It can be suggested that there is a link between perceived crowding and the degree of the recreationists' heterogeneity. In homogeneous groups, which have common social-cultural habits, motivation patterns, attitudes, and preferences, other people are readily accepted (Gillis et al., 1989; Kaplan & Kaplan, 1989; Rappoport, 1978). The feeling of being crowded is minimized when the others encountered are perceived to have behavioural norms, values, attitudes, or status that do not conflict with one's own. By way of contrast, visitors feel crowded when they are bothered by different sociodemographic circumstances and behaviours (Golledge & Stimson, 1997).

The influence of a person's educational background on perceived crowding can be found in an example from Israel (Fleishman et al., 2004). In Israel, younger visitors who are better educated and/or of European and American origin, have less tolerance to crowding than those who are older and/or of Asian-African origin. That is, the higher education contributes to increased perceived crowding levels. The findings demonstrate that visitors' similarity in terms of educational and ethnic background tends to lessen crowding perception, while demographic difference in age and education increases crowding perception.

More specifically, visitors' age appears to be a complex predictor of the perceptions of crowding (Golant, 1983). Encounters with visitors of the same age group prompt varied perceptions of crowding compared to contact with visitors of different ages. Different age groups have different needs and preferences for physical space as well as using the site differences. The younger the visitor the greater the likelihood that they will feel crowded. Younger people are likely to require more physical space for their activities than older participants. Older visitors are commonly supposed to feel more comfortable in the presence of other people in public areas. Attendance of other people lessens their sense of anxiety, apprehension, and/or lack of safety (Cohen, 1992). Thus in recreational settings, older adults might be more tolerant of crowding.

Nevertheless, visitors of the same age group like to choose the same area, the same facilities, the same attractive sites and trails, encounters of the same age group may be regarded as potential "competitors" and uncomfortable feelings, increasing the sense of crowding. The problem here is likely to be greater for the younger visitors since their activities (e.g. sports style activities) may require exclusive use of an area or larger amounts of space. They could, therefore, find their peers to be a particular impediment to their activities. In their circumstances groups of similar age may find similar others to be competitors for space.

Many scholars are incorporating national culture as a key variable in their research, with the purpose of understanding how culture explains patterns of tourist behaviour. People have been surveyed from countries which represent different levels of one or more cultural factors. Differences are analysed and considered in relation to the tested nations' distinct cultural values. The foundation for cross-cultural research is the pioneering work of Geert Hofstede. Hofstede's (1980) cultural dimensions were designed to measure work-related values. Hofstede (2001) created cultural index scores and ordinal rankings for five constructs, which were effectively used to distinguish people from various nations. The five constructs include power distance, individualism-collectivism, masculinity-femininity, the Confucian dynamic of long-term-short-term orientation, and the focus of uncertainty avoidance. The individualism-collectivism dimension focuses on relationship between the individual and the group. Individualism believes, somewhat obviously, that the individual is most important unit. It encourages people taking care of themselves; making decisions based on individual needs; and cultivating an "I" mentality. By contrast, collectivism defines a situation where the group is most important unit. It encourages primary loyalty to group and decision-making based on what is best for the group plus a dependence on organizations and institutions; altogether a "we" mentality.

The research on cultural diversity and its influence on crowding perceptions is consistent with the individualism/collectivism. Discussions suggest that individuals of similar cultural and ethnic groups may perceive the environment similarly. For example, research has suggested that individuals of Asian and African origin have better ability to deal with noise and crowding than Europeans and white North Americans (Gillis et al., 1989; Pearce, 1995; Rustemli, 1992). The Asian-African

visitors represent in broad terms groups high on collectivism. These visitors take activities and make their decisions largely dependent on group considerations.. The Asian-African visitors are less sensitive to many people, hence they like contact with other people, arguably resulting in reduced crowding perceptions. Differently, Europeans and white North Americans fit more within a framework of individualism. These visitors emphasize their personal needs. They are arguably less tolerant of intrusions and annoyances generated by others. Visitors of European-American origin are more sensitive to crowding and may have developed fewer skills to cope in such situations. This "double effect" (a different ability to deal with crowded situations and a heightened sensitivity to crowds) increases the disruptive effect of the encounters for the European – North American participants but limits it for the Asian – African visitors. The empirical recreational research supporting these perspectives derives from the variation in perceived crowding mainly between Hispanics or Blacks and Anglo-Saxons in the United States (Heywood, 1993; Kaplan & Talbot, 1988).

Recent Australian based research by Yagi and Pearce (2007) explored the physical appearance of the familiar strangers in different social situations. In this study, "Appearance" was categorized as "Caucasian" or "Asian". Japanese visitors and Western visitors were the respondents in the research. The study explored whether or not tourists preferred to mix with familiar strangers of their own nationality. The setting for the study was Australia's rainforest and tourist attractions. The results showed that Japanese preferred to see the Caucasians. Westerners preferred seeing both Caucasians and Asians. In terms of the numbers of people dimension, residents of Japan preferred seeing either a larger number of people or moderate number of people. Conversely, residents of Western countries preferred seeing a small number of people or nobody. This study was one of the few empirical pieces in tourism which systematically explored the cultural difference in crowding perception. Another study linked to assessing crowding perceptions by Asian visitors was undertaken by Doorne (2000). At the Waitomo Caves in New Zealand, the case study identified differences in perceptions of crowding between various nationality groups. Visitors from North Asia (Korea and Japan) registered a higher tolerance of crowding compared to domestic and Australian visitors (Doorne, 2000). The restricted attention to the cross-cultural experiences of crowding represents a key direction for research in this thesis

since there exist important opportunities to extend and refine our understanding of crowding in new contexts and with new samples.

Environments and Physical Conditions

The research presented in the previous sections indicates that perceived crowding norms may vary across different kinds of environments. In addition, uncomfortable crowded conditions may negatively influence the quality of participants' experience and their activities (Young, 1995). Previous studies have demonstrated that visitors at backcountry or remote sites rated encounters as less acceptable and possessed greater agreement regarding acceptable encounter levels than visitors at the frontcountry sites. The tolerance limits for crowding in developed settings appear to be higher than those in backcountry settings (Cole & Stewart, 2002; Needham et al., 2004).

Buckley (2002) reported that the shape of the break, swell, tide and wind conditions can be factors to influence visitor's perceived crowding norms in the context of surfing tourism activities. Together these studies begin to reveal a set of site and activity specific influences on perceived crowding.

In the case of restaurants, one study found that when consumers perceived a restaurant as very crowded, they thought that the restaurant supplied high quality food, had a good reputation and was likely to have low food prices (Tse et al., 2002). On the contrary, in the case of a restaurant with few occupants, the customer attributed the quietness to low food quality, high food prices and poor reputation. The implication for restaurant managers is that they can manipulate the level of crowdedness in their restaurant to create a favourable impression of high food quality, low food price and good reputation (Tse et al., 2002).

Overall, these studies indicate a consistent relationship between the physical environment and psychological perception. The quality of conditions, environments and management practices influence visitors' perceptions of crowding, and in return, visitors' perceptions can be an indicator of the quality of conditions, environment and management. In moving towards the larger aims of this thesis which include building a total picture or model of crowding management at international attractions, these considerations will be necessary inclusions.

In summary, perceived crowding is a complex problem in the social science literature. The standard of norms and expectancy help visitors evaluate the level of crowding, associated with environmental and social influences. One way of summarising these multiple factors influencing visitors' perceptions of crowding across a range of situations as described in the existing literature is presented in Figure 1.2 (Fleishman et al., 2004).

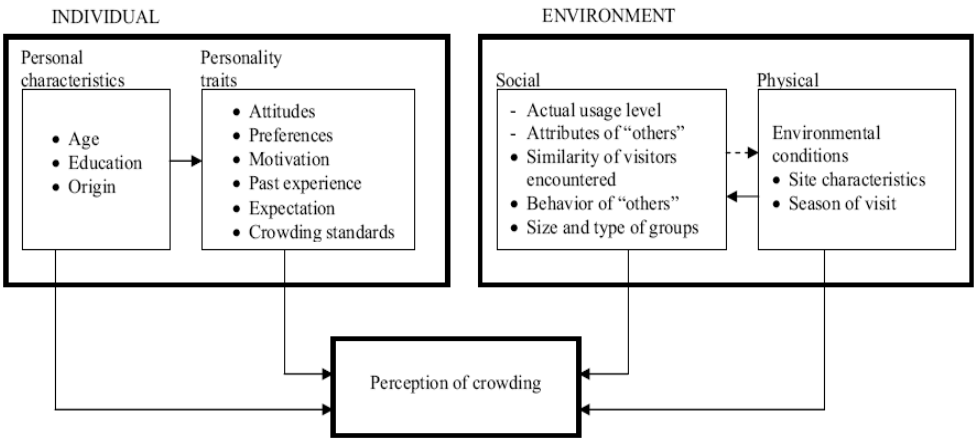

Figure1. 2 The application of individual and environmental influences in perceived crowding

Source: Fleishman et al., 2004

1.5 Assessing Crowding Based on Tourism Carrying Capacity

The long-term growth of crowding can be regarded as the damage to the destination's carrying capacity (Thomas et al., 2005). Researchers noted that when the tourist population continues to grow beyond the optimum population size, population pressure occurs. Tourist population pressure leads to spoiled physical and cultural environments, and both physical and social degradation of the environment. As tourist crowding continues to increase in destinations or sites, the appeal of theses destinations or sites decreases. Tourism carrying capacity can be used in combination with several other approaches (LAC, VIM, VERP) contributing to managing crowding on the basis of sustainability principles (Glasson et al., 1995; Williams, 1998). Tourism carrying capacity frameworks have been widely used to assess visitors' perception and then used to establish optimal numbers for visitors (e.g. Hammitt & Cole, 1998; Shelby & Heberlein, 1986; Wagar, 1964).

In a previous study, visitors in different parts of the setting reported more favourably or perceived crowding in one area but less favourably in another area (Mowen et al., 2003). Visitors who perceived crowding negatively were more likely to support a management approach of maintaining large distances between event attractions. They were also more in favour of being better informed about the length of time when waiting in line. Therefore, perceptions are not only affected by visitor numbers and behaviour, but are also influenced by event design, capacity, and the application of crowd management practices (i.e., queuing). Heberlein (1992) pointed out that appropriate information about the situations could reduce negative crowded perception in settings. In addition, keeping sound or positive conditions within the environment instead of limiting use levels also could reduce negative perception. For example, simultaneous presentations of event attractions (e.g., multiple stages for musical areas) are more likely to be associated with favourable crowding perceptions. However, event zones using queuing strategies and requiring one-on-one consumption (e.g., vendor concession areas) are associated with more negative crowding perceptions. Based on the attitudes of tourists, favourable conditions can be established by promoting rather than limiting attendance but by also providing simultaneous consumption.

In the Norfolk Broads waterways, England, overcrowding and congestion have been assessed as crucial problems (Brouwer et al., 2001). Too much boat traffic was mentioned by the respondents. The broads had changed for the worse, with a deterioration of water quality, the size of motor boats, lack of mooring, bank erosion by boat wash, and people's inappropriate behaviours on boats. The most worried problems were safety, speeding, noise, and the increasing number of short break holidays. In dealing with the safety on the water, participants stated that experience and therefore predictability of others' behaviour were important. Predictability could be encouraged by educating and informing people which included making them more aware of and taking more notice of other water users. In dealing with speeding problem, more warning signs could be put in place in order to raise awareness and gradually change people's attitudes and behaviour on the boats. As for the noise problem, participants required to encourage quietness at mooring places. Importantly

in this study, education and information management were recognized as an important instrument in addressing problems associated with overcrowding.

Further research on specific kinds of crowding capacity setting, reveals some further points. One of these issues is allocating licences to operators in crowded settings. Buckley (2002) studied the recreational capacity of the islands for surfing tourists, and noted the task of allocating operators licences through a carrying capacity management system. In the Mentawai Islands in Indonesia, surfers felt more crowded during longer breaks, under good conditions, and for a group of friends surfing together, than the reverse. It also noted that crowding occurred when the waves on which the surfer was in positioned to ride, were taken or spoilt by someone else. In maintaining uncrowded breaks, numbers must be limited from the start (optimal numbers for visitors). Recreational capacity must be defined on a social basis, depending on the response of surfers to crowding. And the area must be managed to maintain numbers within this capacity defined by surfers. In addition, a capacity management system needed to recognise the complexities of this particular environment. A quota allocation system was required to shape use between operators and individuals. In particular an allocation was needed between commercial tours and independent travellers. The system used in the Mentawai Islands required allocation between a broad annual quota and individual surfer days for particular breaks. Approach suggested by one of the operators was to allocate different groups of breaks to different individual operators or syndicates of operators. Thus each operator had access to a range of breaks in different parts of the Mentawai Islands. Further, each operator could use breaks preferentially at different times of a year. This study highlights the quite specific environmental and economic challenges which shape some crowding management studies. In the present research, a category of environments and settings, specifically managed tourist attractions in popular tourist cities will be the range of interest.

Overall, factors influencing crowding include the mode of entry, time of day, weather, and coincidental events. Crowding behaviour was also caused by poor design, unexpected demand, times for entry, transformation of technology and frustration at food and beverage outlets (Thompson & Jenkins, 1996; Watts & Thompson, 1996). Carrying capacity can be used by taking control measures such as entrance fees,

restrictions of access and use. Carrying capacity can also be used as a planning standard, benchmark or planning scenario, as the maximum acceptable level of tourist development in an area, measured in terms of number of tourists and desirable densities (Coccossis & Mexa, 2004).

1.6 Preliminary Research Questions

Although crowding research has developed for approximately thirty years, there is a gap in cross national studies in this field awaiting attention. There is a small indication that responses to crowding and crowding norms may differ from country to country (Ryan & Cessford, 2003). Several research questions derived from the tourism carrying capacity and crowding literature can be identified for the context of these present set of studies. These questions are documented here as general questions concerned particularly with exploring the perception of crowding and current crowding management strategies. A strong focus of the review has been the importance of context in framing research issues in this field and the next chapter of this thesis will deliberately provide detailed and specific contextual material. In the interim a set of questions about crowding management applicable to any tourism context are formulated from the literature. These questions are specifically generalized from a) the dominant European and North American studies, b) the achievements of those studies in developing measures and concepts and c) the ambiguities which exist concerning international visitors' perceptions at popular sites. The driving questions for the work are as follows.

Question 1: What are the effects of the different kinds of sites on tourists' crowding-related norms? In particular do the sites in a developed country and the sites in a developing country evoke the same kinds of crowding reactions?

The environmental or conditional influences in the literature have been discussed with such terms as place characteristics, the quality of service, season and natural environment feature such as weather, tides, as well as the difference between frontcountry areas and backcountry areas. The first question to be addressed there is what about developed versus developing country contexts.

Question 2: In the context of sites in developed and developing countries, what are the different crowding norms of tourists who vary in their sociodemographic types?
This question confronts the issue of finding out about the crowding-related norms of a new sample of tourists. This question further divides into considerations of two groups of tourists: one group of tourists resident in or who have been to the sites in a developed country, and the other group of tourists who are resident in or who have been to the sites in a developing country.

Question 3: What are the effects of the different kinds of attraction sites on crowding management?
This question goes beyond the issue of types of country to the types of sites. The different environments include developed environments and developing environments. For example, a site associated with developed infrastructure and facilities may escape crowding problems. In addition, appropriate planning or great investment can increase the capacity of a site hence avoiding crowding issues.

Question 4: Is it possible to generate a crowding management framework for different kinds of sites? In particular do the same factors seem to apply to the sites in a developed country, and the sites in a developing country? How much can managers contribute to a crowding management framework?

1.7 Chapter Summary

This chapter introduced key concepts for the planning of the thesis by discussing tourism carrying capacity and crowding. It emphasized that management actions concerning crowding are important in promoting sustainable tourism. Environmental, social and economic dimensions are all implicated in the study of crowding and its management. The opportunity to develop studies in this field was highlighted with particular questions to explore deriving from the lack of work outside the recreation context in North American parks and settings. Further, while the literature has considered the combined effects of individual factors and environmental factors in crowding perceptions and its management, it is apparent that a consistent picture of forces influencing crowding for set categories of contexts such as tourism attraction settings is limited. With the exception of the time based approach of the UNWTO

(2004b), few integrative empirically derived accounts exist. These gaps and opportunities have led to a number of questions which have been framed in a general way about crowding studies and contexts. The next chapter of this thesis provides a specific context and plan to explore these generic academic concerns.

Chapter 2 The Context and Thesis Framework

Chapter Outline

2.1 Destination Context

(Cairns, Australia, and Xi'an, China have been selected as the research destinations in the thesis.)

2.2 Introduction to 10 Studied Sites in Cairns and Xi'an

(Five sites were selected in Cairns and five sites in Xi'an.)

2.3 Aims

(Six aims are proposed in the thesis. The aims involve the comparison of environmental use, the comparison of perceived crowding norms of the sites and the comparison of crowding management approaches in Cairns and Xi'an.)

2.4 Thesis Framework

(Three studies are designed to explore the crowding-related issues in Cains and Xi'an, based on several different methodologies. A chapter flow chart is presented to explain the links in the research.)

2.5 Chapter Summary

This chapter provides an introduction to two destination and which together comprise the settings for the research of this thesis. Subsequently, specific aims are proposed based on the crowding management literature and the preliminary research questions outlined in Chapter One. In addition, the thesis outline is presented to direct the three studies in the following chapters.

2.1 Destination Context

The research addresses the site crowding issues in two destinations, Cairns Australia, and Xi'an China. These two destinations were selected in a planned manner. The choice of the two sites was not simply arbitrary or convenient. Instead the selection was made based on several frames of reference and decision points. As suggested in Chapter one, the special focus of this thesis in relation to crowding is tourist attractions which are managed as popular destinations for visitors. This first "frame" dictated the choice of attractions rather than restaurants or wilderness areas. Secondly within this frame, diversity of settings was considered to be a strength as this would test and challenge the research proposition that a coherent framework of tourist attraction crowding management work could be constructed. To obtain such diversity, a choice of tourist attraction sites which were in a popular location in a developed country and a developing country were considered. Further, samples which included both natural sites and cultural sites were seen as another larger frame of diversity or difference to test the boundaries in creating a study of crowding perceptions and crowding management systems. The developed country studied was Australia and within Australia Cairns is a major tourist attraction rich in natural tourist attractions. The developing country was China and Xi'an is internationally famous for its cultural attractions. Both locations have World Heritage sites. Researcher access and language skills were available to work at these sites. While noting that many other comparisons could be constructed to answer the questions in Chapter One – comparisons for example could be drawn between Canadian Rocky Mountain sites and sites in Thailand or India, between natural and cultural sites in Europe – the choice of China and Australia as studying contexts does extend the range of studies in the literature. The basic information about the destinations and sites is presented in the following sections in order to provide an overview of these locations. The maps of the destinations and sites can be found in the Appendix I at the end of the thesis.

2.1.1 Introduction to Cairns

Cairns is a well known tourist attraction on a section of tropical coastline in north Queensland, Australia. Cairns has a population of approximately 123,000. The city has a tropical climate with a dry season during the months of April to November, and a wet season during December to May. Cairns and its regional district is the only place in Queensland which involves two World Heritage-listed sites, the Great Barrier Reef and the Wet Tropics Rainforest. Cairns is the gateway to these natural attractions, as well as the home of man-made tourist destinations such as the Skyrail Rainforest Cableway. Popular tourist activities in the Great Barrier Reef involve diving, snorkeling and swimming. These activities are supported by pontoons and various types of reef tours. The 110-million-year-old rainforest, the Daintree, has a range of flora with links to ancient forest species. The Daintree is part of the Wet Tropics, a World Heritage-listed area which houses half of Australia's animal and plant species. Kuranda near Cairns has several distinctive kinds of tropical plants and animals. An Aboriginal cultural performance attraction exists for tourists in the Cairns region. The beach in Cairns is a man-made 4,000-sq.-m (43,000-sq.-ft.) saltwater lagoon. This artificial beach is on the Esplanade. Cairns provides numerous hotels, offshore island resorts, big Reef-cruise catamarans in the harbor, and many souvenir shops. Walking along the streets, tourists can find sea products, opals, and the aboriginal handicrafts. Product prices are higher in the peak season which is the

Australian winter and early spring (October -May) as well as the Christmas Holiday period (December). The five sites chosen for this study from the Cairns region are popular and potentially those most likely to have crowding problems. Both domestic and international tourists are common at these sites.

2.1.2 Introduction to Xi’an

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Xi'an is the political, economic and cultural center of Northwest China. It has a population of 6.23 million and covers an area of 10 square kilometers. Xi'an is in the warm Temperate zone with a monsoon climate. In terms of the four prominent seasons, Xi’an has hot summers, cold winters, and a gentle spring and autumn. Xi'an known as Chang'an (Everlasting Peace) in ancient times, has over 6000 years of history. For over 1,000 years the city has been a capital for 11 imperial dynasties. Xi'an is best known for its ancient historical ruins, museums, cultural relics, and

archaeology, for example, the Terra Cotta Warriors, Drum Tower, and the Shaanxi History Museum. Xi'an is still well known for its famous Silk Road. Historical tourism handicrafts are attractive products in Xian, such as imitation Trang tri-colored glazed pottery and replicas of clay figures of warriors and horses, as well as folk handicrafts of paper-cut and cloth art. Under the ancient city wall behind the Forest of Steles in Xian, there is a well-known street in the style of ancient towns - Shu Yuan Men. Other popular ancient streets include Xi'an Antique Market and Wenbaozhao Tour Shopping Center. Various crafts and arts are sold on these crowded streets all year long. Product prices will be higher in the peak season (April – October), especially in the Golden Weeks (the first seven days of May & October). The five sites chosen in Xi'an are the most popular international and domestic attractions and the sites most likely to have crowding problems.

2.2 Introduction to the 10 Studied Sites in Cairns and Xi'an

2.2.1 Kuranda Rainforestation

The Rainforestation Nature Park occupies 40 hectares. It is located on the coastal range behind Cairns. It is in the middle of the World Heritage tropical rainforest, and only five minutes from Kuranda. The attraction provides several programs for its tourists, including the Pamagirri Aboriginal Experience, the Dreamtime Walk, and the Pamagirri Cultural Performance. Kuranda is 25 kilometres from Cairns, via the Kuranda Range.

It is very convenient for people to reach there by private cars, bus, train, and skyrail. People need to take about half an hour to one hour to arrive at the attraction from Cairns city. In the site, people need two hours to visit and take all the programs, but the time to have meals is not included. The attraction is open from 9am to 4pm daily except on Christmas Day. There are optional ticket prices, including the ticket of a package of all programs as well as separate tickets for each program. Kuranda offers multiple services to both its residents and visitors, such as ATM's, an information centre, Foreign Exchange Facilities, a Post Office, a Bank and car repairs. A restaurant which can accommodate around 400 people is available to serve barbecue lunches, mini-meals and snacks. There is close collaboration with the Kuranda Railway and Cableway as well links with other tourist attractions and government departments in Queensland.

2.2.2 Green Island

Green Island is a beautiful 6000 year old coral cay located within the Great Barrier Reef Marine Park. The reef is one of the Seven Natural Wonders of the World. This tropical island paradise is a National Park and home to over 120 native plant species

and colourful bird life. The island is surrounded by coral gardens and abundant marine life. It is the only coral cay on the Great Barrier Reef with a rainforest growing on it. Both Green Island and its reef are included in the Great Barrier Reef World Heritage Area, which gives it international protection under United Nations Educational, Scientific, and Cultural Organization (UNESCO).

Green Island and its reef are very close to the mainland, lying only 27 km (16 miles) from Cairns. People can take a short cruise to reach the island in one hour from Cairns city. On the Island, people need two hours to visit and undertake activities, such as swimming, snorkelling, diving, and taking the Glass Bottom Boats. Green Island is open from 8:30am to 17:30pm daily except for Christmas Day. There are optional tickets depending on how much time people like to stay on the island, or depending on the programs people like to join. For tourists there are multiple services, including ATM's, an information centre, a Post Office, a heated pool, a conference room, and laundry service. Tourists can have a buffet lunch on their boats. Additionally, they can have a buffet lunch on the Island. There is an Emeralds Restaurant, a Canopy Grill, and a Reflections Pool Bar on the island. The Island cooperates with other tourist attractions and multiple government departments in Queensland.

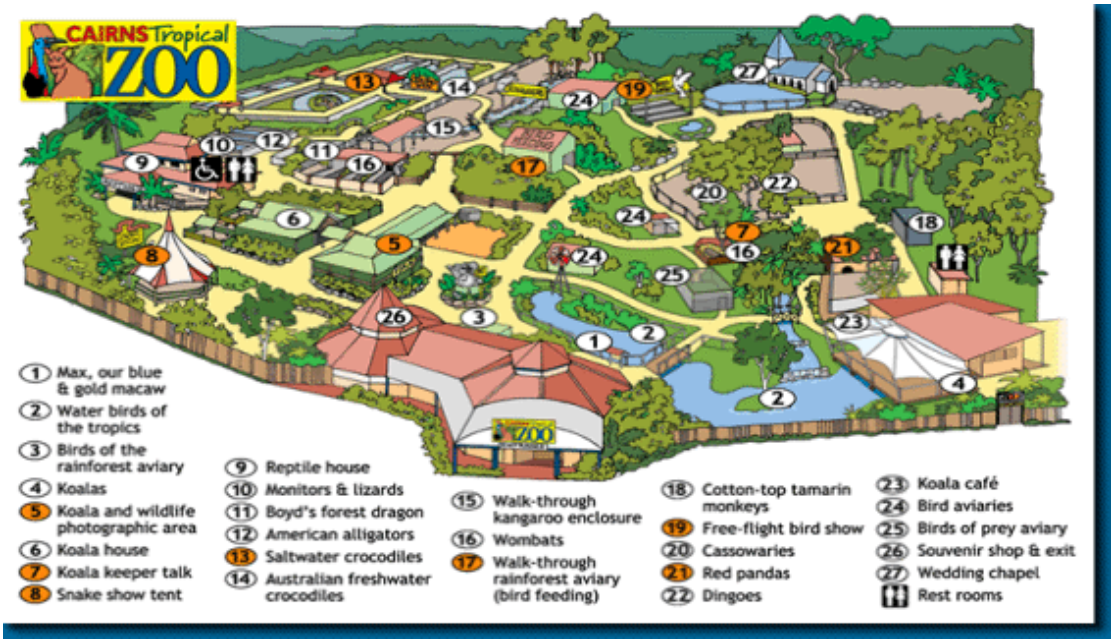
2.2.3 Tjapukai Aboriginal Cultural Park

Tjapukai Aboriginal Cultural Park is a stunning theatrical interpretation of Aboriginal culture and a 40,000-year-old society. Tourists can experience the essence of life for the Tjapukai people in the park. Seven separate arenas allow visitors to experience several facets of the rainforest people's culture.

Tjapukai is located at Caravonica, near Smithfield, 15 minutes north of Cairns. People can take private cars or buses to reach there in 20 minutes from Cairns city. In the park, tourists need three hours to visit and take part in all the programs. The Tjapukai Aboriginal Cultural Park is open daily from 9am to 5pm except for Christmas Day. Tjapukai provides night plays every night starting at 7.30pm. There are optional

tickets for adults, children, and families. For tourists there are plentiful services, including ATM's and an information centre. A restaurant which can accommodate 250 people is available to provide breakfast, lunch, and light refreshment for tourists during the operating times. The site cooperates closely with Skyrail due to its proximity as a neighbor and some partial co ownership of the attractions. In addition, there is cooperation with other regional bodies and attraction in Queensland.

2.2.4 Tropical Zoo

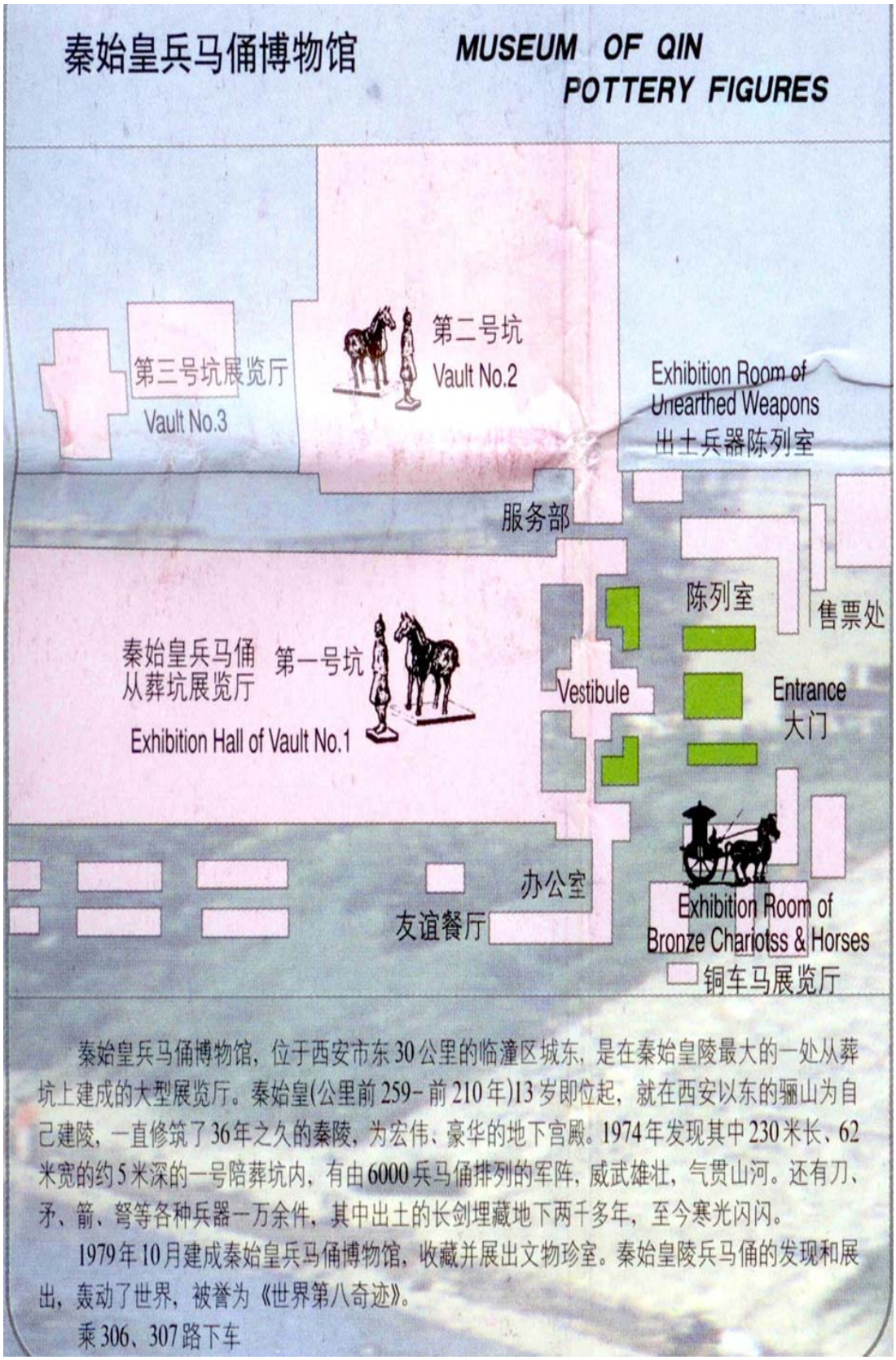


Cairns Tropical Zoo is the largest and most diverse wildlife attraction in Tropical North Queensland. It is set amidst 6 hectares of tropically landscaped gardens. The zoo is home to hundreds of native and exotic species. Many of species are indigenous to the northern wet tropics. Tourists have opportunities to get close, touch, feel and make animal friends via several wildlife experience programs. Visitors need about 30 minutes to take private cars or buses to the zoo from Cairns city. At the site, tourists need three hours to look at the animals and undertake the programs. Cairns Tropical Zoo is open from 8:30am to 5:00pm everyday except Christmas Day. There are different tickets for adults and children. The zoo provides several facilities for tourists, such as food service, shops, and wheel chair accessibility. The restaurant in the zoo can accommodate 150 people and caters for group breakfasts and lunches. Visitors to the zoo can be independent or packaged with other attractions as a part of cooperative arrangements.

2.2.5 Lagoon on the Esplanade

The Cairns Esplanade is a public recreational area for people. It has been a meeting place for rallies, family reunions and birthday parties. Its centrepiece is a world-class facility incorporating an outdoor amphitheatre, a large sandy swimming lagoon, grassy picnic areas, walking tracks, public barbeques, children's playground, shops and restaurants, an environmental interpretation centre and a Great Barrier Reef Cruise departure terminal. The 4800 sq metres saltwater swimming lagoon offers visitors a safe swimming location throughout a year. The swimming lagoon is capable of accommodating 1000 swimmers at one time. The Cairns Esplanade is also an internationally recognised migratory water bird habitat and a declared fish habitat area. The Trinity Inlet/Marlin Coast Marine Park is a part of the Great Barrier Reef World Heritage Area. The lagoon is located on the coastal edge of Cairns city. It is open to the public for free from 6am to 10pm daily. The services provided include a box office, iTour (the freedom of exploring the centre on your own), shops, a mall, ATMs, and Lost and Found. The local Council manages the attraction in cooperation with other levels of government.

2.2.6 Museum of Qin Pottery Figures (the Terracotta Army)



The Terracotta Army is a form of funerary art linked to the burial of the first Emperor of Qin Dynasty (Qin Shi Huang). The purpose of the artificial army was to help rule

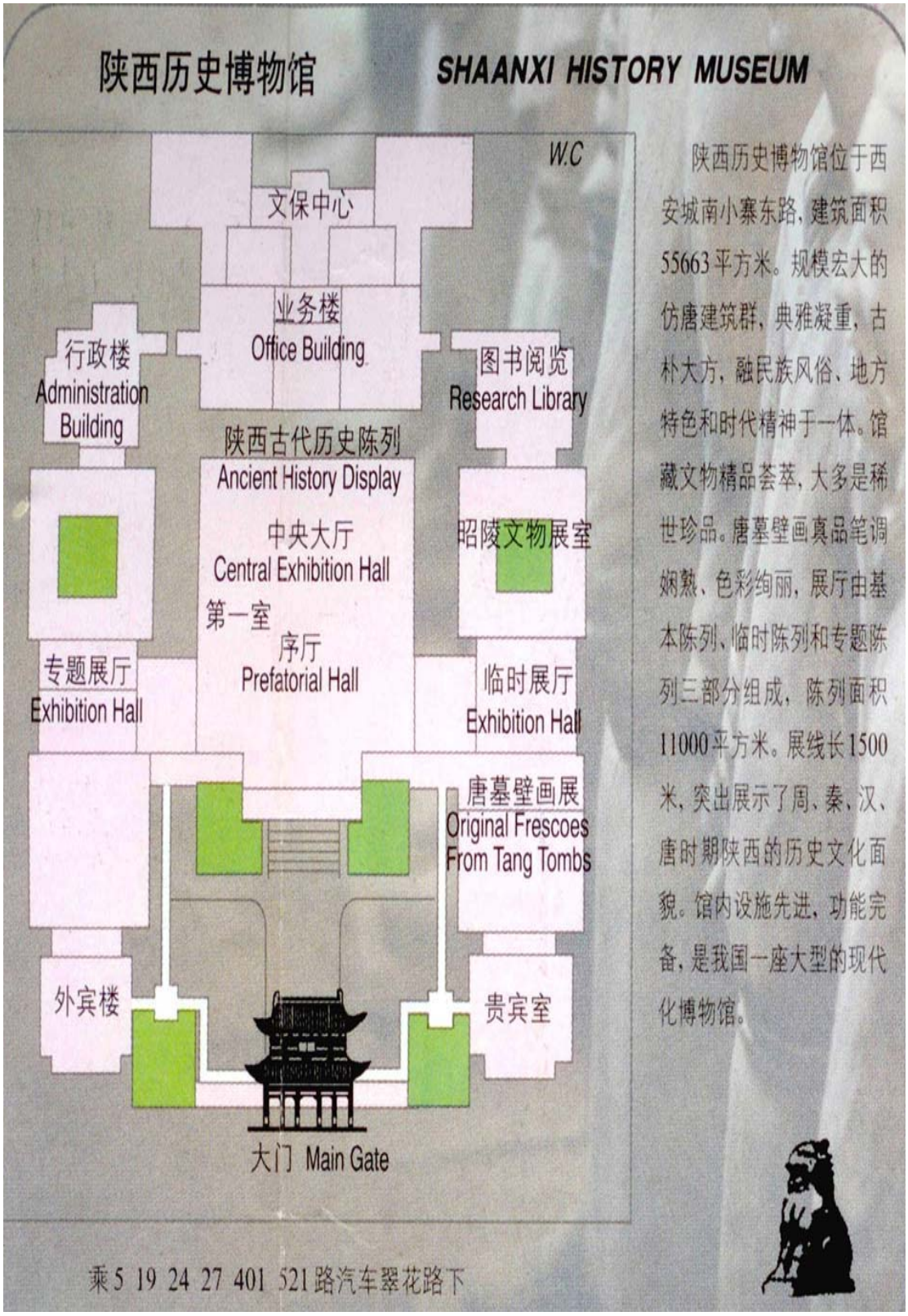
another empire with Shi Huang Di in his afterlife. This mausoleum is the largest imperial tomb in China, covering over 56 square km. In addition to the warriors, an entire man-made necropolis for the emperor has been excavated.

The museum was built near the mausoleum in 1974, covering an area of 22,780 square meters. It has been reconstructed and enlarged several times in the last thirty years. There is a collection of 8,099 larger-than-life Chinese terra cotta figures of warriors, horses, acrobats and other figures, located in 5 exhibition halls. The army has been one of the most awe inspiring sights in the world today, and was one of the earliest listings as a UNESCO World Heritage Site.

The tomb of Qin Shi Huang is located in the eastern suburbs of Lintong County, 35 kilometres (22 miles) east of Xian. Tourists need about one hour to reach there by cars or buses from Xi'an city. Tourists need three hours to visit the museum. The operating times are different in the peak season and low season. It is open from 8:30am to 5:30pm from 16 March to 14 November, but it is open from 8:30am to 5:00pm from 15 November to 15 March. Optional tickets are provided in different time periods: the normal price is 90 yuan and the concessionary ticket price is 45 yuan in the peak season (1 March – 30 November); but the normal price is 65 yuan and the concessionary ticket price is 35 yuan in the low season (1 December – the last day of February).

The services and facilities include: guides in Chinese, English and Japanese languages; free explanation for reserved students group**;** free written information**;** computer touch screen information sources**;** special lectures (reserved)**;** free wheel chairs for the disabled; medical assistance; and a complaints office. There is a restaurant covering 2000 square metres. It can serve 1000 customers at one time. Approximately 100 people work at the restaurant. The museum focuses on cooperation with schools and universities. It provides education and training for students. The museum also cooperates with some other tourism organizations and companies, especially the tourist agencies.

2.2.7 Shaanxi History Museum



Shaanxi History Museum is the premier large state museum with modern facilities in China. It has been given a label to suit its reputation as “bright pearl of ancient city,

treasure house of China." The museum is a grand complex of buildings imitating the architecture style of the Tang Dynasty (618-907). There is a hall in the centre and storied buildings in the corners. The style is elegant and dignified on a magnificent scale, combining traditional architecture and modern science.

Shaanxi History Museum was built in 1991 and opened to the public in that year. The museum covers 65,000 square meters (16 acres), with a building area of 55,600 square meters. The cultural relics storerooms cover 8,000 square meters. The well-equipped exhibition halls cover 11,000 square meters with a collection of 375,000 pieces of cultural relics, including 762 pieces under top government protection and 18 state treasures. Exhibited in the main exhibition hall are 2,700 works of art, with an exhibition line that extends 2,300 meters and covers 11,600 square meters. The exhibition space is divided into an introductory hall, permanent exhibitions, special exhibitions, and temporary exhibitions, as well as one that has been named the National Painting Hall.

Shaanxi History Museum is located in the northwest of city Xi'an. Tourists need at least two hours to visit the museum. The opening time is different in different time periods. It is open from 9:00 am to 17:30pm from 15 November to the last day of February; it is open from 8:30am to 18:00pm from 1 March to 31 May and from 8 October to 15 November; it is open from 8:30am to 18:30pm from 1 June to 7 October. There are also different ticket prices in different periods: the ticket price is 50 yuan from March to November, but the ticket price is 35 yuan from December to February. The provided services and facilities include: a service system of interpretation and tourist guides; an information Centre; free guide books; wheelchairs for the disabled; walking stick for the seniors; and free deposit for luggage. The museum focuses on the cooperation with schools and universities, providing education and training for students. The museum also cooperates with some other tourism organizations and companies, especially the tourist agencies.

2.2.8 Huaqing Hot Spring

Historically, during the Western Zhou Dynasty the construction of the Li Palace was undertaken at this site. In the Qin Dynasty, a stone pool was built and was given the name Lishan Hot Springs. The site was enlarged into a bigger palace during the Han Dynasty, and was renamed, the Li Palace. During the Tang Dynasty, Emperor Taizong ordered the construction of the Hot Springs Palace. Emperor Xuanzong had a walled palace built around the Lishan Mountain in the year 747. It was known as the Huaqing Palace. It also had the name Huaqing Hot Springs because of its location over the hot springs. Huaqing Hot Springs is located at the foot of the Lishan Mountain, a branch of the Qinling Range.

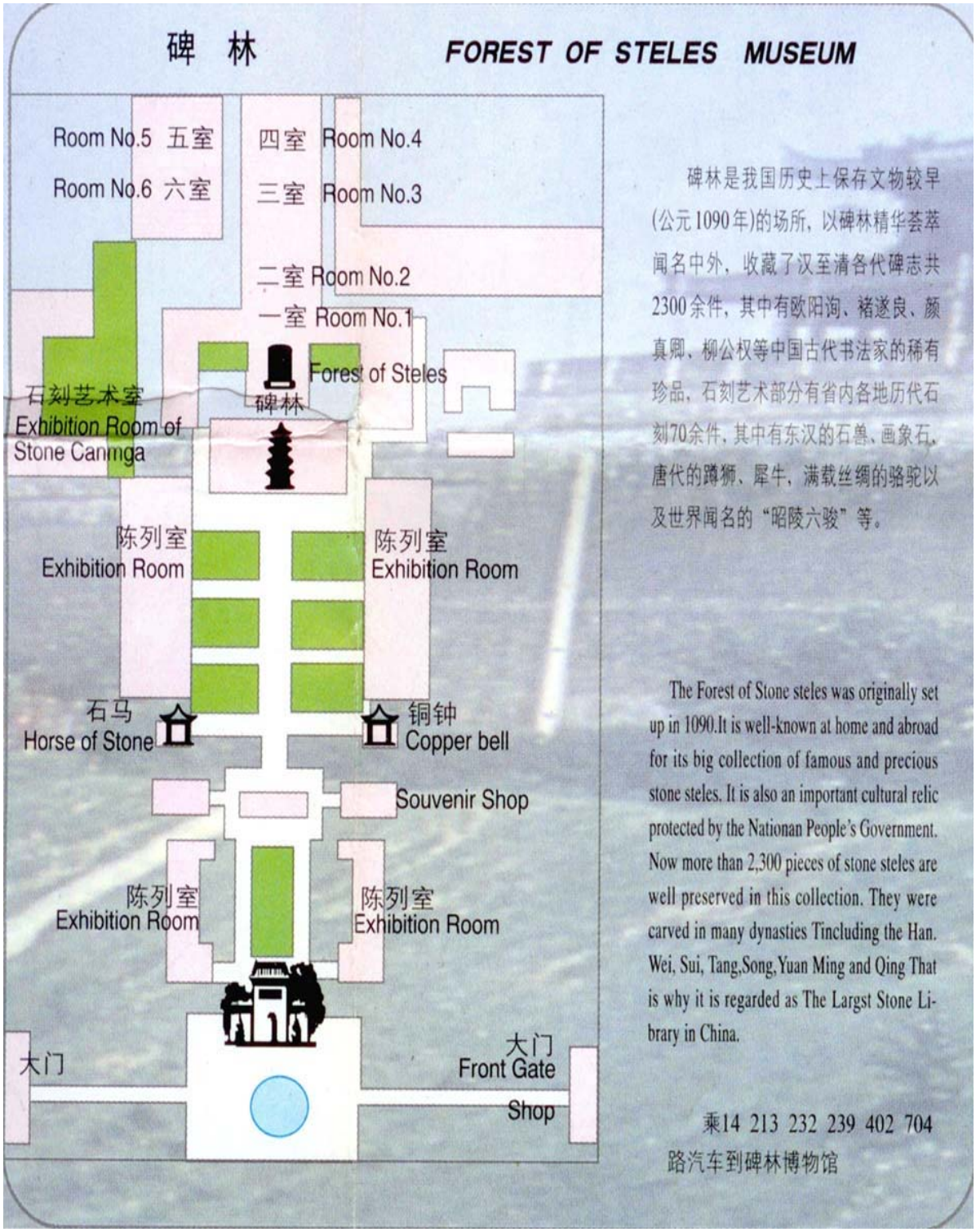
The Tang Emperor, Xuanzong used to spend his wintertime in company with his favorite concubine Yang here. Yang was recognized as one of the most enchanting ladies in ancient China. The Emperor Xuanzong built the luxurious palaces in this area for their personal pleasure. Emperor Xuanzong's misbehavior finally resulted in the An Lushan Rebellion which ended his regime and destroyed some of the palaces built in this site.

In April 1982, archaeologists found the ruins of the five pools in an area of 4, 200 square meters. The Museum of the Imperial Pools in the Tang Dynasty Huaqing Palace was built on their ruins and was opened to public in October 1990. The present-day site is only a small part of the Tang Huaqing Palace. The Huaqing Hot Springs which tourists see today was rebuilt on the site of the Qing Dynasty structure. The palace covers an area of 85,560 square meters. Entering the West Gate of Huaqing Hot Springs, tourists can see the Nine-Dragon Pool, the Lotus Flower Pool and the Frost Drifting Hall. All these structures were rebuilt in 1959 in the Tang architectural style.

Huaqing Hot Spring is situated at the northern foot of Mt. Lishan in Lintong County, 30 kilometers (18.6 miles) from Xi’an City. Tourists need about one hour to reach there by cars or buses from Xi’an city. Tourists need one and half hours to visit the site and appreciate a performance. It is open from 09:10am to 17:00pm daily. There are different ticket prices in the peak season and low season. The price for a ticket is 70 yuan in the peak season (Mar. 1-Nov. 30), but the price for a ticket is 40 yuan in the low season (Dec. 1- the next end of Feb.). The services include: interpretation and tourist guides; an information Centre; and hot spring hotel and bathrooms. The

museum cooperates with some other tourism organizations and companies, especially the tourist agencies.

2.2.9 Forest of Stone Steles Museum

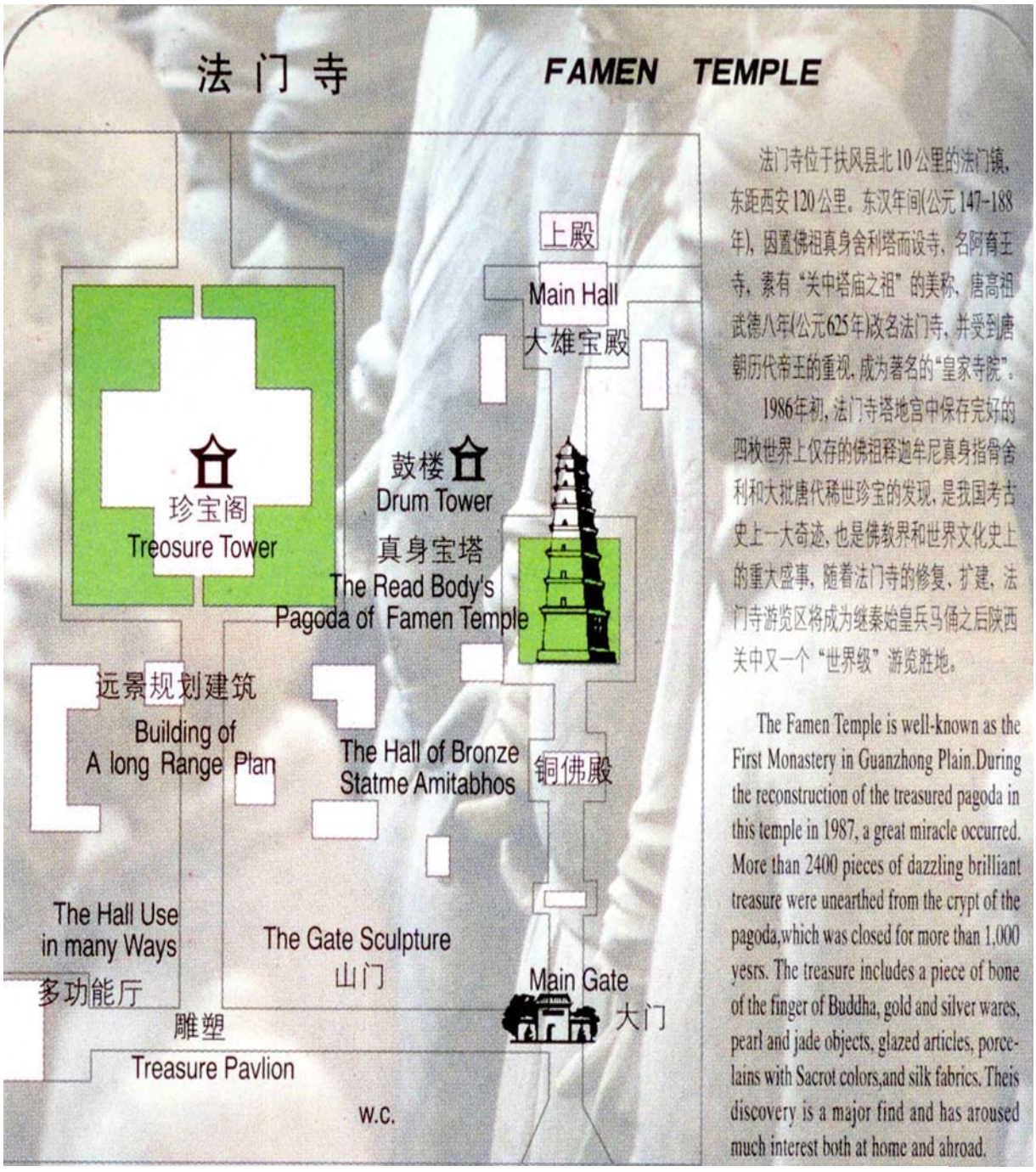


The museum of Xi'an Forest of Steles (formerly Shaanxi Provincial Museum) was founded in 1944. The museum is based on "the Forest of Steles in Xi'an" with a

history of 900 years. It uses an ancient building complex of the Confucian Temple. With an area of 31,902 square meters, it is an art museum mainly intended for collecting, studying and displaying the steles, tombstones and carved stone figures. It has collected more than 11,000 objects of cultural relics. The display consists of three parts: the Forest of Steles, the art of stone sculpture and the exhibition of other cultural relics. There are 11 showrooms with a display area of 4902 square meters. It is one of the units of the first group of the key cultural relics under the state protection. With the successive renovation and substantiation of the past dynasties, it has 7 large – sized stele exhibition halls, 6 steles – keeping corridors and a stele – keeping pavilion.

The Forest of Stone Steles museum is located in the city of Xi'an, near to the Shaanxi History Museum. Tourists need three hours to visit the museum. The opening time is different in the peak season and low season. It is open from 8:00am to 18:45pm in the peak season (Mar. – Nov.), but it is open from 8:00am to 18:00pm in the low season (Dec. – Feb.). The museum is open daily except on the Chinese New Year Eve. There are different ticket prices in peak season and low season: the ticket price is 45 yuan from March to November, but the ticket price is 30 yuan from December to February. The services include: interpretation and tourist guides; an information centre; and a computer touch screen for information inquiries. The museum provides education and training for students. The museum also cooperates with some other tourism organizations and companies, including the tourist agencies.

2.2.10 Famen Temple



Famen Temple is renowned for storing the veritable Finger Bone of the Sakyamuni Buddha. Famen Temple was established in the Eastern Han Dynasty (25 – 220), to boost Buddhism. The most representative structures in the temple are the Famen Temple Pagoda and Famen Temple Museum.

At the centre of the temple is the 13-tiered octagonal pagoda under which is buried a sliver of the finger bone of Sakyamuni. In 1981, the pagoda was reconstructed

because of subsidence. The reconstruction led to the discovery of an Underground Palace in 1987. Many royal treasures and much jewellery were found, more than 2,000 pieces surrounded the Tang mandala (geometric designs, usually circular, symbolizing the universe). The most precious one is the veritable Finger Bone of the Sakyamuni Buddha. At present, this is the biggest Buddhist underground palace so far discovered. Built in the grand architectural style, it is said to have been established in the Tang Dynasty (618-907). The Famen Temple was the royal temple during the Sui Dynasty (581-618) and Tang Dynasty.

The Famen Temple Museum was established in 1987. Many of the precious treasures from the Tang Dynasty were removed from the Underground Palace, including gold and silverware, colored glaze ware, porcelain and silks. Owing to more and more tourists and their curiosity about the relics, two new exhibition halls were established in 2000. At the moment, the museum covers 33,966 square meters, and the building area is 3,591 square meters. The museum was established in the original pattern along the axis layout. It can be divided into a front yard, a middle yard, and a back yard. It has a museum gate, a Multi-functional Hall, a Treasure Exhibition Room and an Underground Palace.

Famen Temple is situated in Famen Town of Fufeng County, about 120 kilometres (about 74.57 miles) west of Xi'an. People need about one and half hours to reach there by car or buses from Xi'an city. Tourists need three hours to visit the museum. It is open from 8:00am to 18:00pm daily. There are different ticket prices in the peak season and low season. The ticket price is 45 yuan from March to November, but the ticket price is 30 yuan from December to February. The services include: interpretation and tourist guides; and free information. The museum cooperates with some other tourism organizations and companies, especially the tourist agencies in the Xi'an region.

2.3 Aims

This thesis aims to specify and answer the preliminary research questions outlined in Chapter One in the context of two destinations, Xi'an and Cairns. So the overall aim of this thesis is to investigate how tourists perceive the conditions and crowds in Cairns and Xi'an; then develop a management framework for managing crowding at

tourism sites; and identify different ways of applying this framework to Cairns and Xi'an.

Aim 1: Compare the physical and operational environments at sites in Cairns and Xi'an in terms of actual visitor use levels.

As mentioned earlier, different environment or conditions affect tourists' norm theory and crowding management. Therefore, the first step is to understand what the differences are between the actual use of the sites in Cairns and the sites in Xi'an. The awareness of the use levels will be the basis to understand physical and operational environments and conditions at these sites, and further will be the foundation for understanding the differences or commonalities in crowding management at these sites.

Aim 2: Compare tourists' actual use levels and tourists' perceived use levels between the sites in Cairns and the sites in Xi'an.

Based on the literature, the encounters-crowding-norm theory is an important tool to understand tourists' perceptions of crowding. In the literature, Manning, et al., (1999) established a range of relationships between alternative evaluative dimensions. There was a clear hierarchy of crowding norms among the dimensions, specifically tolerance, acceptability, and preference. Each of the dimensions has advantages and disadvantages in terms of management outcomes. For example, higher numbers appear to be an outcome when using visitors' experiences based on "acceptability". If managers pay attention to visitor preference, a different management outcome emerges. The latter usually results in a relatively lower numbers of visitors for sites. Therefore, the comparison between the actual use levels and the normative use levels can be used to explore the tourists' reactions to their crowding experiences at these sites.

Aim 3: Explain tourists' perceived crowding norms at the sites in Cairns and Xi'an using a range of demographic and visitor profile variables.

People's crowding norms can be varying because of environmental conditions but also because of activities and visitor demographics. Research to meet Aim 3 will explore a set of key demographic and profile factors influencing visitors' reactions to crowding.

Aim 4: Compare tourists' satisfaction to these different sites in Cairns and Xi'an.

Tourists' satisfaction has been shown to be influenced by a number of variables, including past experience, perceived crowding and levels of tolerance as well as the actual attributes of the place being visited (Ryan and Cessford, 2003). Additionally, crowding management and tourists' satisfactions have been recognized as critical dimensions of sustainable tourism development. Therefore, the links among the variables related to crowding perceptions will be outlined in an attempt to assess their connection to visitor satisfaction.

Aim 5: Compare the main concerns about crowding from tourist managers in Cairns and Xi'an.

This study will check for further factors relevant to building a crowding management framework. It will explore the specific managerial responses to crowding which can add to the construction of a crowding management model.

Aim 6: Construct an overview or framework to interpret or summarise the factors involved in crowding and crowding management at these kinds of tourist attractions.

The appropriateness of this aim will in part be determined by the results from the previous studies. If there is sufficient commonality in the findings, then an appropriate framework might be possible.

2.4 Thesis Framework

On the basis of the literature concerned with crowding management, key factors to measure include the setting variables, carrying capacity, tourists' perceived crowding and management issues. In this thesis, three studies address these issues in an attempt

to answer the research aims and questions. The three studies work together to form the framework of the thesis.

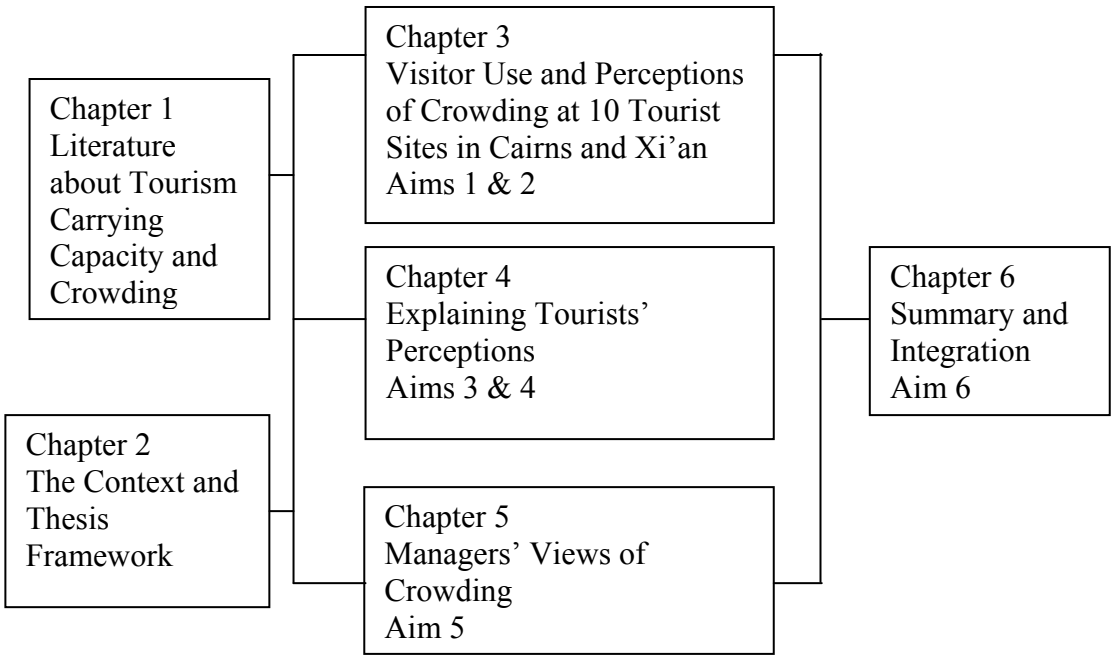


Figure2. 1 Chapter flow chart

2.5 Chapter Summary

As noted in chapter 1, the crowding literature involves studies of tourism carrying capacity, studies of perceived crowding and studies of controlling crowding. The three aspects are together involved in crowding management. Tourist managers need to consider both environmental issues (capacity) and social issues (perception of capacity) in managing crowding. This thesis obviously addresses all the three crowding-related study topics, aiming to do a comparison of crowding-related environmental and social factors as well as identifying crowding management at sites. Cairns and Xi'an are chosen as the contextual destinations in the thesis. The sites are clearly different from each other; one is a developed destination, while the other is a developing destination. By comparing diverse settings it is argued that the convenience or relevance of the study to others attractions is enhanced since these study sites capture much diversity. Therefore, they can provide a good background for assessing the operation of many variables in a range of contexts and types of sites. The first stage of the thesis is to clearly understand the environment and the use levels

of the selected sites in the two destinations. The next chapter will discuss such concerns and present the findings of the links between uses and perceptions of crowding (aims 1 and 2 of the thesis).

Chapter 3 Visitor Use and Perceptions of Crowding at 10 Tourist Sites in Cairns and Xi'an

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Chapter outline

3.1 Introduction

3.2 Aims of the Study

(Two aims are proposed in this chapter: a) to compare the physical and operational environments at sites in Cairns and Xi'an in terms of actual visitor use; b) compare tourists' actual use levels and tourists' perceived use levels between the sites in Cairns and the sites in Xi'an.)

3.3 Samples

(This study consists of two samples: one is the sample of sites in the two destinations, and the other is the sample of tourists who were respondents and filled in the perceived norm-related parts of the questionnaire.)

3.4 Instrumentation for the Study

(Observations and a questionnaire survey were used in this study. A single sample t-test was used to indicate if the mean numbers of visitors which respondents would tolerate and prefer were significant based on the mean numbers of visitors depicted in the benchmark photograph.)

3.5 Results – Compare Tourists' Actual Use Levels and Tourists' Perceived Use Levels

(The actual visitor use levels and the perceived use levels were compared across time and locations.)

3.6 Discussion

(The comparison of use levels suggests encounters among visitors in Xi'an have been too many, leading to crowding perceptions.)

3.7 Chapter Summary

3.1 Introduction

This chapter presents a general and exploratory comparison for the sample of the five natural sites in Cairns and five cultural sites in Xi'an. The comparison employs quantitative methods. The selected ten sites are located at two destinations and have different characters (refer Chapter Two). In addition, because the environment of the natural sites is different from cultural sites, tourists have distinctive recreational experiences across the ten sites. This chapter presents a comparison between tourists' perceived use levels and the actual visitor use levels of these sites, with the purpose of investigating the environmental conditions of these sites. This comparison utilises primary data derived from observations varied across time periods at these sites. In addition, the research used data based on the quantitative data obtained in a questionnaire survey. The comparison between the actual use levels and perceived use levels is conducted based on the normative model in the study of Manning, Wang et al. (2002). The exploration of the environment at the sites helps to demonstrate whether crowding has been a problem in terms of the carrying capacity management at these locations.

3.2 Aims of the Study

Following the discussion of the literature in Chapter One and considering the contextual factors in Chapter Two, the two aims for this chapter are to compare the physical and operational environments at sites in Cairns and Xi'an in terms of actual visitor use and to compare tourists' actual use levels and tourists' perceived use levels between the sites in Cairns and the sites in Xi'an.

3.3 Samples

3.3.1 The First Sample

In this study, there were two samples. The first sample was used to gain primary data about visitor actual use levels. The second sample was used to gain data about tourists' perceived use levels. The first sample consisted of the 5 natural sites in Cairns, Australia and the 5 cultural sites in Xi'an, China. The sample of 10 natural

and cultural sites was selected using a non-random stratified sampling technique. The sample frame was used to identify sites which match a predetermined list of characteristics. This sample was designed to maintain diversity in terms of: fame (the World Heritage Label or not the World Heritage Label), site type, size of the site, and location. Table 3.1 presents a summary of the sample frame in the quantitative study.

Table3. 1 The sample list of tourist sites in the study

Name	Fame	Type	Size	Location
Kuranda Rainforestation	World Heritage	Rainforest	Small	Suburb
Green Island	World Heritage	Island	Small	Great Barrier Reef
Tjapukai Cultural Park	Not World Heritage	Park	Medium	City
Tropical Zoo	Not World Heritage	Zoo	Medium	City
Lagoon	Not World Heritage	Pool	Small	City
The Terracotta Army	World Heritage	Museum	Large	Far from city
Shaanxi History Museum	Not World Heritage	Museum	Medium	City
Huaqing Hot Spring	Not World Heritage	Cultural park	Large	Far from city
Forest Stone of Steles	Not World Heritage	Museum	Medium	City
Famen Temple	Not World Heritage	Temple	Medium	Far from city

3.3.2 The Second Sample

The second sample involved tourists who had been in or to the 10 sites. The goal was to collect 600 questionnaires totally, 300 questionnaires in each destination. The questionnaire respondents were selected randomly. However, the author attempted to access a variety of respondents of different ages. One third of the questionnaires were distributed inside the attractions; one third of the questionnaires were distributed outside the main gate of the attractions; and the final third were distributed in the big shopping centers or the central squares where tourists like to visit. Finally, a total of 585 questionnaires were filled out, amounting to a 97.5 per cent completion rate. In Cairns, about 20 per cent questionnaires were completed by the Chinese visitors, while about 80 per cent questionnaires were completed by the European visitors

including Australian visitors. Only 20 per cent respondents were Chinese visitors because European visitors (including Australian), North American visitors and Japanese visitors accounted a large percentage of the visitors in Cairns. In Xi'an, about 20 per cent respondents were international visitors, while about 80 per cent respondents were Chinese visitors. Only 20 per cent respondents were international visitors because Chinese visitors accounted for a large percentage of the visitors in Xi'an. The international visitors were most Europeans (including Australian) and North Americans. Because one of the aims is to compare the cultural difference between Chinese visitors and other international visitors (most visitors are European and North American visitors), the respondents consist of Chinese visitors and other visitors in Cairns while the respondents consist of domestic visitors and international visitors in Xi'an. It was hard to target the Chinese respondents in Cairns and find international respondents in Xi'an. Finally, about 20% of visitors in this sample are Chinese in Cairns and 20% are international visitors to Xi'an. The sample was selected carefully to ensure respondents varied in demographic characteristics. Table 3.2 summarizes the demographic details of different groups of the sample.

Table3. 2 The demographic details of the sample

	Frequency	Percent	Cumulative Percent
Travel Party Composition:			
Alone	58	9.9	9.9
Friends/ family travelling with children/ seniors	166	28.4	38.3
Friends/ family travelling without children or seniors	206	35.2	73.5
An adult couple	90	15.4	88.9
Other or Missing	65	11.1	100.0
Type of Trip:			
Fully packaged tour	143	24.4	24.4
Partially packaged tour	43	7.4	31.8
Non-packaged/ independent tour	398	68.0	99.8
Missing	1	0.2	100.0
Age:			
18 - 24	147	25.1	25.1
25 – 34	140	23.9	49.0
35 – 44	100	17.1	66.1
45 – 54	92	15.7	81.8
55 – 64	73	12.5	94.3
65 – 74	23	3.9	98.2
75+	5	0.9	99.1
Refused or Missing	5	0.9	100.0
Gender:			
Female	302	51.6	51.6
Male	282	48.2	99.8
Missing	1	0.2	100.0
Nationality:			
Chinese	284	48.5	48.5
Not Chinese	301	51.5	100.0
Missing	0	0	100.0
Travelling Experience			
0 – 4 times	215	36.8	36.7
5 – 9 times	162	27.7	64.4
10+ times	194	33.2	97.6
Missing	14	2.4	100.0

3.4 Instrumentation for the Study

3.4.1 Observations

This study was designed based on the model in the research of Manning, Wang et al. (2002). As mentioned in Chapter One, the model in their study was constructed using

the commercial object-oriented dynamic simulation package, based on detailed visitor counts and observations.

Observations used in this study recorded primary data about actual visitor use levels over different time periods. The data collected in this phase were later used to compare with the data about visitor perceived use levels. The structured observation was conducted as a quantitative research strategy in this study. The coding scheme used predetermined categories for recording what was observed.

The number of tourists was recorded at three different time points a day. These numbers were recorded daily in two different time periods, the peak season and the most popular period in the peak season. The study was only conducted in the peak season because it is only relevant to this study for consider likely time periods when crowding may exist. The data were collected solely by the researcher. A pretest was conducted to examine whether the design was practical. It was also used to test what time and how much time was best to record. Finally, the design was reorganised and carried out carefully.

In any one day, the number of tourists was counted at three time points, morning (8:00am – 11:30am), noon (11:30am – 14:00pm), and afternoon (14:00pm – 17:00pm). The record lasted for 10 minutes within the set periods. In addition, the data were recorded at five different locations at each site, including entrance (Point 1), a main pathway (Point 2), a major point (Point 3), the second major point (Point 4), and the third major point (Point 5). The five selected locations were dispersed across the site. The records always started from the entrance and ended at the location near to the exit. The method of recording the data is summarized in Table 3.3.

Table3. 3 The coding scheme to record data

Time periods	PN1	PN2	PN
Morning (opening time – 11:30a.m.)			
Noon (11:30a.m. – 2:30p.m.)			
Afternoon (2:30p.m. – closing time)			

In this table, the number of tourists was recorded by alphabetic codes. PN1 (P= point, N1= the tourist number in the first minute of the 10 minutes to observe at each location) represents the tourist number to be recorded in the first minute after the researcher arrived at the location. PN2 represents the tourist number to be recorded in the last minute before the researcher left the location. In other words, the first minute and the last minute of each 10 minutes observation time were selected to record the tourist number. PN is calculated as the average number of PN1 and PN2, so PN = 1/2× (PN1+PN2).

At the five Chinese sites, the first research day was selected from the peak season (from 1 April to 31 October) except for the Golden Weeks (from 1 May to 7 May and from 1 October to 7 October), while the second research day was selected from the Golden Weeks. At the five Australian sites, the first research day was selected from the peak season (from 1 October to 31 May) except for the Christmas Holiday (from 25 December to 5 January), while the second research day was selected from the Christmas Holiday period.

3.4.2 The Questionnaire

Questionnaires can be distinguished according to their emphasis on behaviour, beliefs, knowledge, attitudes and attributes (Dillman, 1978). In this thesis, the questionnaire was used to collect data involving different aspects. Several questions sought to ascertain respondents' demographic and behavioural details; several questions explored whether tourists with different characteristics had different perceptions on crowding, and several questionnaire were designed to investigate tourists' knowledge of crowding management. There were in effect three types of question content: knowledge, attitudes, and attribute questions.

In the tourism survey literature, many researchers have studied tourists' knowledge and attitudes. Different statistical techniques have been used to analyse those data. The questionnaire in the paper was designed on the basis of the previous models derived from Manning and his colleagues (1999, 2002 and 2005). Importantly, the questionnaire was presented to respondents either in Mandarin or English. Details pertaining to the translation issue are recorded in a subsequent section. Table 3.4

summarizes the questionnaire content, and the literature which influenced the questions.

Table3. 4 A summary of the questionnaire construction

Blocks of questions	Literature	Type of question content	Data analysis technique
Demographics and Behaviour (Part A & F)	• Veal (1997) • Zhang & Lam (1999) • Andreu et al. (2000) • Kozak (2002) • Wang & Law (2003) • Kim & Morrsion (2005)	Attribute	• Descriptive analysis (frequency, percentage, cross-tabulation) • Chi-square • Cluster Analysis • T-tests • ANOVAs
Environment concern and crowd concern (Part B)	• Callan & Kyndt (2001) • Meheux & Parker (2006) • Fuchs & Reichel (2004) • Higham & Kearsley (1994) • Tse et al. (2002) • Ryan & Cessford (2003) • Mowen et al. (2003) • Yagi & Pearce (2007)	Attitudes	• Descriptive analysis (mean and standard deviation, cross-tabulation) • T-tests • Correlations • Regression • ANOVAs • Covariance • Structure Analysis
Crowding management (Part C)	• Ormiston et al. (1997) • Ferreira & Harmse (1999) • Manning (1997) • Manning & Valliere (2001) • Manning et al. (2005) • Prato (2001) • Coccossis & Mexa (2004) • Kostopoulou & Kyritsis (2006)	Knowledge	• Thematic Analysis • Narrative Analysis • Discourse Analysis

Table3. 4 continued

Crowding-related norms including tolerance, preference, and desire (Part D)	• Vaske et al. (1986) • Vaske et al. (1993) • Shelby et al. (1996) • Manning (1999) • Manning (2002) • Donnelly et al. (2000) • Eagles et al. (2002) • Manning et al. (2005)	Attitudes	• Descriptive analysis (mean and standard deviation, cross-tabulation) • T-tests • Correlations • Regression • ANOVAs • A Turkey's post hoc comparison • Tamhane's T2 post-hoc tests for unequal variances
Satisfaction (Part E)	• Ryan and Cessford (2003) • Pearce (2005) • Truong (2005) • Lin and Lin (2006) • Chang (2006) • Fuller et al. (2006) • Pan & Ryan (2007)	Attitudes	• Descriptive analysis (mean and standard deviation, cross-tabulation) • T-tests • Correlations • Regression

Questions in Part A and Part F were designed based on the literature about tourists' demographics and travelling behaviour. The demographics and behaviour chosen to be tested in this questionnaire were the factors which may influence tourists' crowding-related norms, including age, gender, nationality, group membership, travel pattern and travel experiences.

Questions in Part B were designed based on descriptive findings of Manning et al. (2005). In the literature review, it was noted that Manning and his colleagues used verbal protocol analysis to examine the factors that respondents considered concerning the acceptability of park conditions. The coding scheme was developed on the basis of the transcribed sample statements derived from the verbal protocol. The verbal protocol responses were classified into two aspects: protection-oriented and access-oriented. Moreover, protection-oriented responses were divided into crowding-sensitive and resource-sensitive concerning to studies of this paper. Categories related to crowding-sensitive responses involved solitude, traffic distractions, need for public transportation, traffic as a safety concern, concern for potential parking shortage, difficulty taking photos, people are okay but cars are not, would go elsewhere, and

values relating to feeling of wilderness. Categories related to resource-sensitive issues involved concern for resource protection and ecological health, trash/litter, concern about the in park's visibility affecting resources, and air pollution concerns. In this part of the research, questions were designed on the basis of the categories presented above. Respondents were asked to indicate their level of agreement or disagreement with these statements. Respondents were given the alternatives of strongly disagree, disagree, neutral, agree and strongly agree. These close-ended questions were presented as a set of questions arranged in a grid format. The grid format, apart from saving space, was easy to answer and was often used for sets of items that form scales. Questions in Part B sought to explore what factors tourists considered as due to the impacts of crowding. These factors can be categorized into two groups, factors about environment concern and factors about crowd concern.

Questions in Part C were open-ended questions, utilized to gather tourists' suggestions on crowding management. These questions were designed based on the literature about carrying capacity approaches. Carrying capacity focus on the acceptability of natural resource and human impacts of visitation, and consider ecological characteristics (soils, topography and vegetation), physical factors (accommodation, transportation and visual amenities), social factors (location and mode of travel, season of use, group size, and behavior of visitors), economic factors (investment, technology, tourist expenditure and labor cost), and political factors (visitor use restrictions) (Manning, 2001; Wilkinson, 1995).
The questions in Part C require suggestions to maintain the acceptability of carrying capacity on the physical, social, economic and political perspectives. The questions consisted of two groups, one group of questions sought to investigate opinions about ecological or environment control; and the other group of questions explored opinions about service or operational control.

Questions in Part D investigated the encounter – norm – crowding relationship. Perceived crowding was assessed based on measurements used in Manning's (1999) crowding studies. The thesis measures crowding perception as they pertained to five locations through a view of photographs (the locations are identical to the ones in the use data set). At each location, the researcher took a lot of photographs. Different photographs presented different numbers of tourists, from the maximum number to

the minimum number, and a middle category example was selected. In total, five photographs were presented, and each of them represented the mean number of people at each location (PAOT). As a result, the questionnaire for each attraction was a little different because of the variation in the photographs.

Manning et al. (1999) introduced nine evaluative dimensions which were related to use levels, and three of them were selected in this thesis. These were tolerance, preference and desirability. These dimensions have been applied previously and were identified by the researcher as clear to explain to respondents and to translate into Mandarin. Close-ended questions were chosen to ask respondents to rate the acceptability, preference and desirability of each study photograph. The level of perceived crowding was measured in two ways. The first items were administered as a 5-point scale where "1" meant that respondents could tolerate or would prefer the number of people when there were half as many as shown in the photograph, and "5" meant that respondents could tolerate or would prefer the number of the people to be eight times as many as shown in the photograph. The five numbers grew exponentially since each number was a multiple of the previous one. The second item was also administered as 5-point scale where "1" meant that respondents would not like to stay at the location at all, and the alternatives were not like at all, like a little, neutral, like a lot, and like a great deal.

The question in Part E utilizes the semantic differential method to explore respondents' overall satisfaction with the selected attractions.

Two questions in Part D of the questionnaire concerning the tolerance and preference were used in this Study 1 in this chapter in order to explore tourists' perceived use levels. The data from these questions in Part D were used to calculate the original data of number of visitors that respondents would be prepared to tolerate or prefer. The questions used were as follows (the Mandarin translations conveyed the same evaluative terms to the visitors).

1. What number of people would you tolerate to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the

number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

2. What number of people would you prefer to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

The perceived tourist numbers (tolerance and preference) were used as the basis for comparison with the actual tourist number derived from the observation. A single sample t-test was used to compare the visitor actual use levels and the visitor perceived use levels. The single sample t method test is appropriate if a sample mean is different from a hypothesized population mean (Pagano, 1983). In this chapter, a single sample t-test indicates that the "mean number of visitors that respondents would be prepared to tolerate" and the "mean number of visitors that respondents would prefer" were compared to the one mean, effectively the "mean number of visitors depicted in the benchmark photograph." Because in this chapter, the original scores of "number of visitors that respondents would tolerate and prefer" were available, t can be calculated directly by the equation below:

$$t_{obt} = \frac{\overline{X}_{obt} - \mu}{\sqrt{\frac{\sum x^2}{N(N-1)}}}$$

$$\Sigma x^2 = \Sigma(X - \overline{X})^2 = \Sigma X^2 - \frac{(\Sigma X)^2}{N}$$

The details to undertake these targeted t test comparisons can be documented as follows. On the first step: calculate t_{obt} directly from the raw scores.

$\overline{X}_{obt}$ = "the mean number of visitors that respondents would be prepared to tolerate at a location" or the "mean number of visitors that respondents would prefer to see at a location"; μ = the "mean number depicted in the benchmark photograph of a location"; N = "the number of respondents to answer the question about tolerance and preference of a location"; and X = "the original data of number of visitors that the respondents would be prepared to tolerate or prefer."

On the second step: evaluate the statistic based on its sampling distribution. If $|t_{obt}| \geq |t_{erit}|$, the result is significant. t_{erit} is found in the Table of Distribution of t under the appropriate alpha level and df. For this study with $\alpha = 0.05_{2\,tail}$ and df = N – 1, from the Table of Distribution of t, $t_{erit} = \pm 2.000$. So the "mean number of visitors that respondents would be prepared to tolerate at a location" or the "mean number of visitors that respondents would prefer to see at a location" is significant when $|t_{obt}| \geq 2.000$.

For example, the single sample t-test is used to test if the "mean number of visitors that respondents would be prepared to tolerate" at "entrance" is significant due to the "number of visitors depicted in the benchmark photograph" at the entrance, for example, to the Kuranda Rainforestation.

On the first step: calculate t_{obt} directly from the raw scores.

$\overline{X}_{obt} = 34; \mu = 22$; and there are 60 X totally, X are the original data of number of visitors that 60 respondents would be prepared to tolerate: X = 88, 44,22…22; ∑X= 88+44+22…+22 = 2057; $\Sigma X^2 = 88^2 + 44^2 + 22^2 ... + 22^2 = 129591$. X was calculated based on the rates of the questions in Part D in the questionnaire. For example, here $\mu = 22$, when the respondent chose "3 = twice as showing", X = 44.

$$\Sigma x^2 = \Sigma(X - \overline{X})^2 = \Sigma X^2 - \frac{(\Sigma X)^2}{N} = 129591 - \frac{(2057)^2}{60} = 59070.18$$

$$t_{obt} = \frac{\overline{X}_{obt} - \mu}{\sqrt{\frac{\sum x^2}{N(N-1)}}} = \frac{34 - 22}{\sqrt{\frac{59070.18}{60(59)}}} = 2.938$$

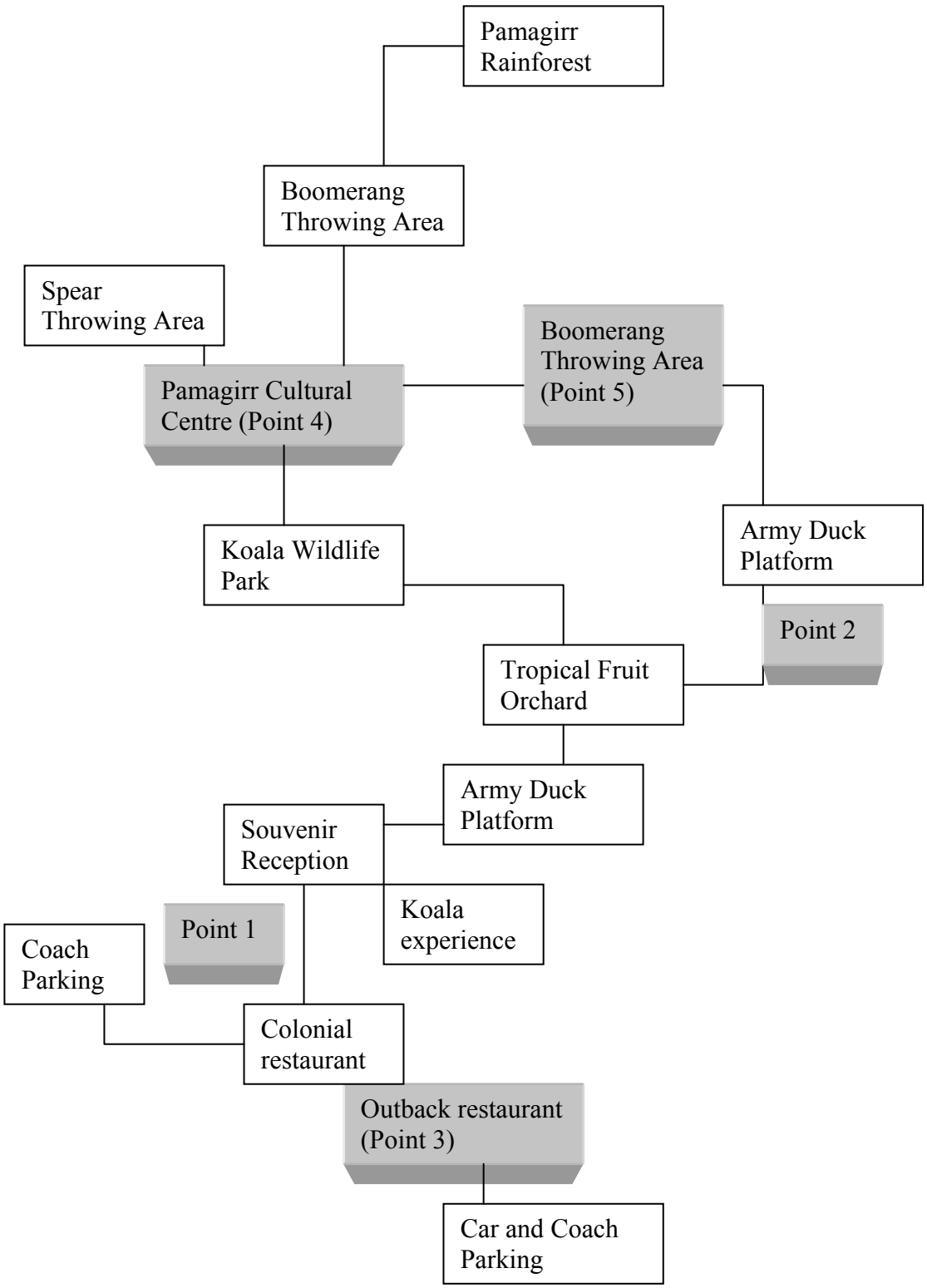
On the second step: evaluate the statistic based on its sampling distribution. If $|t_{obt}| \geq |t_{erit}|$, the result is significant. t_{erit} is found in the Table of Distribution of t under the appropriate alpha level and df. For this example with $\alpha = 0.05_{2\,tail}$ and df = N – 1 = 60 – 1 = 59, from the Table of Distribution of t, $t_{erit} = \pm 2.000$. So the "mean number of visitors that respondents could tolerate to see" at "entrance" is significant compared to the "number of visitors depicted in the benchmark photograph" of entrance in Kuranda Rainforestation. The "mean numbers of visitors that respondents would tolerate or prefer to see (the daily perceived visitor use levels)" at different points in attractions will be tested in the following section. If the mean perceived number is significant, it means that the mean perceived number can be used to indicate tourists' perceptions. Tourists can tolerate or prefer to see such a number of others. If the mean perceived number is not significant, this mean perceived number can not be used to indicate tourists' perceptions. It cannot confidently indicate that tourists can tolerate or prefer to see such a number of others.

3.5 Results – Compare Tourists' Actual Use Levels and Tourists' Perceived Use Levels

The results for the ten sites to meet the two aims of the chapter are presented in a joint and linked framework. For each site, a schematic diagram of the site is presented, the actual use data are reported and the comparison between use data and preferred and prepared to tolerate data is provided. The Cairns sites are presented first.

3.5.1 The Use Levels of the Kuranda Rainforestation

Schematic Map of the Kuranda Rainforestation



The comparison between actual use levels and perceived use levels

The daily actual use levels in different time periods, the average peak time and the Christmas Holiday, are summarized in the first two figures. The five points here are the entrance in front of the shop (point 1), a main pathway to the Platform 2 of Army Duck (point 2), a part of the restaurant (point 3), the theatre of the performance (point 4), and a Dream Walking area (point 5). The third figure presents the perceived use levels concerning tolerance and preference. It is important in reading these figures to pay attention to the scale on the Y axis which can show contrasts in the data across the figures.

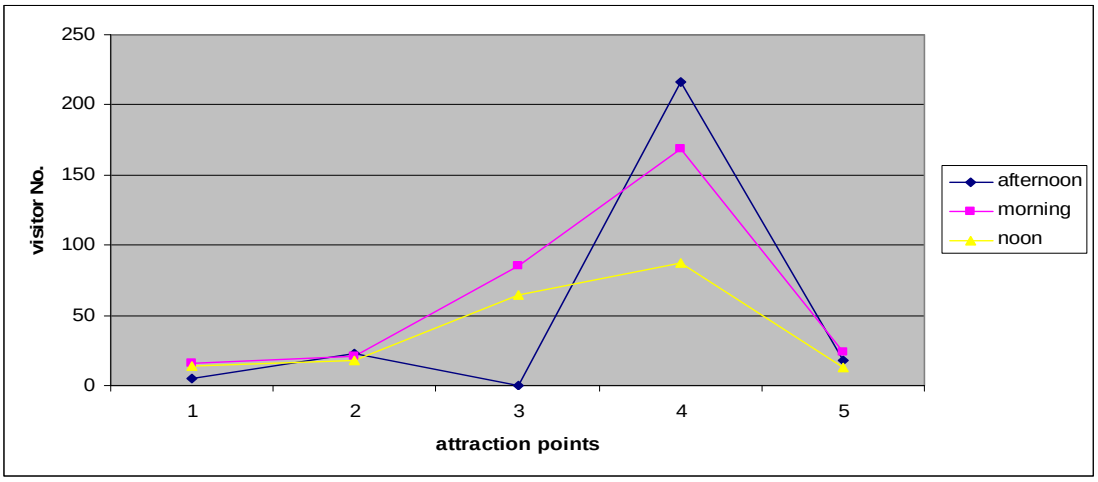


Figure3. 1 Daily visitor use levels – Kuranda, Nov. 2006

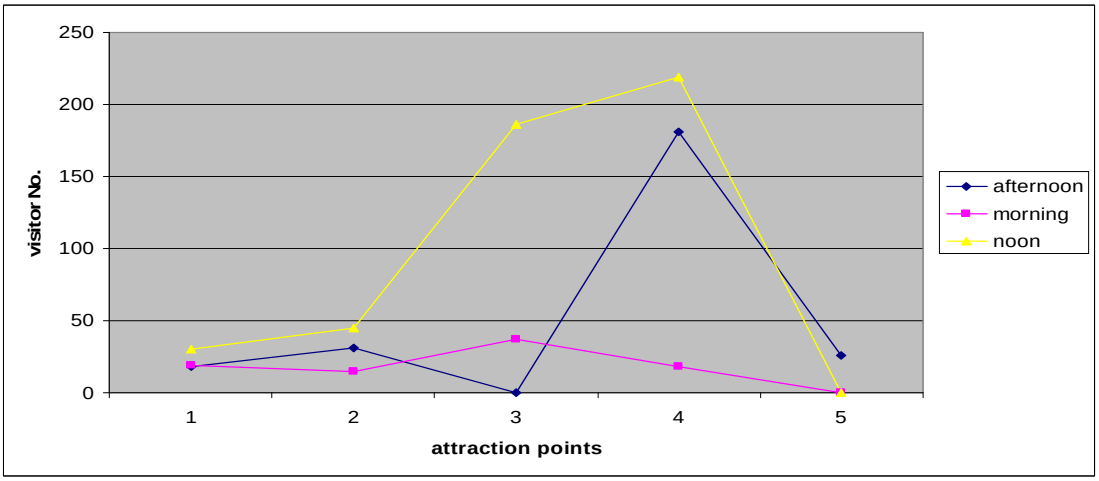


Figure3. 2 Daily visitor use levels – Kuranda, Christmas Holiday period 2006

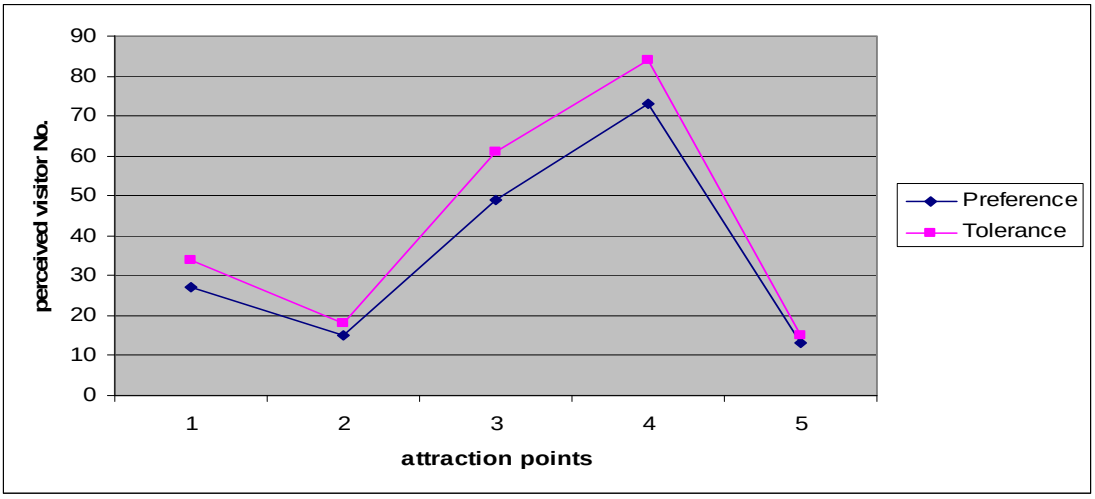


Figure3. 3 Daily perceived visitor use levels – Kuranda

Table3. 5 The actual visitor numbers and the perceived visitor numbers over different time and locations in the Kuranda Rainforestation

Locations t test related statistics df=59 Critical E=2.00	Number of visitors depicted in the benchmark photograph	Mean number of visitors that respondents would be prepared to tolerate (N= 60)	Mean number of visitors that respondents would prefer (N= 60)	Range of visitors recorded from site use data
1 Entrance	22	34*	27	5-30
2 Main pathway	14	18	15	15-45
3 A part of the restaurant	41	61*	49	0-186
4 the theatre of the performance	62	84*	73*	18-219
5 a Dream Walking area	10	15*	13*	0-26

*p < .05

There was little difference in the actual visitor numbers at different time points throughout day (morning, noon, afternoon) at most locations except point 3 and point 4. At point 3 (the restaurant), the visitor number was 0 in the afternoons because the restaurant was closed at 2p.m. In addition, because around 400 people could be accommodated in the studied area simultaneously, there was a difference between the actual visitor use levels and the carrying capacity of the restaurant. At point 4 (the theatre), sometimes large groups occurred at the same time, however, as the theatre could contain around 300 people at one time, the actual visitor numbers had not

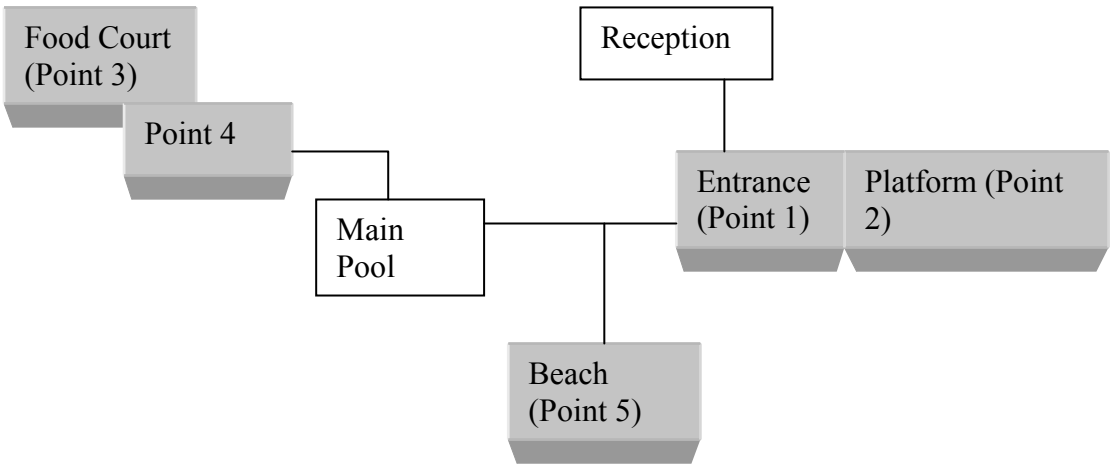
exceeded the carrying capacity. The actual use levels indicated that visitors went to Kuranda randomly over a day. There were few sensitive time points at this site.

Moreover, there was a little difference between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Christmas Holiday, indicating that seasonality was not obvious in Kuranda. The reason may be that international visitors who accounted for a large percentage of the market had holidays in different times in a year, and hence came to the site at different time periods.

In the figure 3.3, most perceived numbers were significant, and then they could arguably represent the situation for the whole attraction. There was only a small gap between the tolerance use level and preference use level. Comparing the visitors' perceived use levels to the actual use levels at the five points, the actual use levels at point 1 and 5 were close to the perceived use levels. Therefore, visitors were unlikely to be bothered by others at these locations. However, the actual visitor numbers at point 3 and 4 exceeded visitors' perceived use levels at some times. The results indicated that visitors might be disturbed by other people at these locations, and a reduced number of people could promote their quality of experiences.

3.5.2 The Use Levels of the Green Island

Schematic Map of the Green Island



The comparison between actual use levels and perceived use levels

The daily actual use levels in different time periods, the average peak time and the Christmas Holiday, are summarized in the first two figures. The five points here are the entrance to the Island (point 1), the main pathway (point 2 is half of the platform to the Island), the restaurant (point 3), a part of the beach (point 4), and one rest area (point 5 is near to the restaurant). The third figure presents the perceived use levels concerning tolerance and preference. It is important in reading these figures to pay attention to the scale on the Y axis which can show contrasts in the data across the figures.

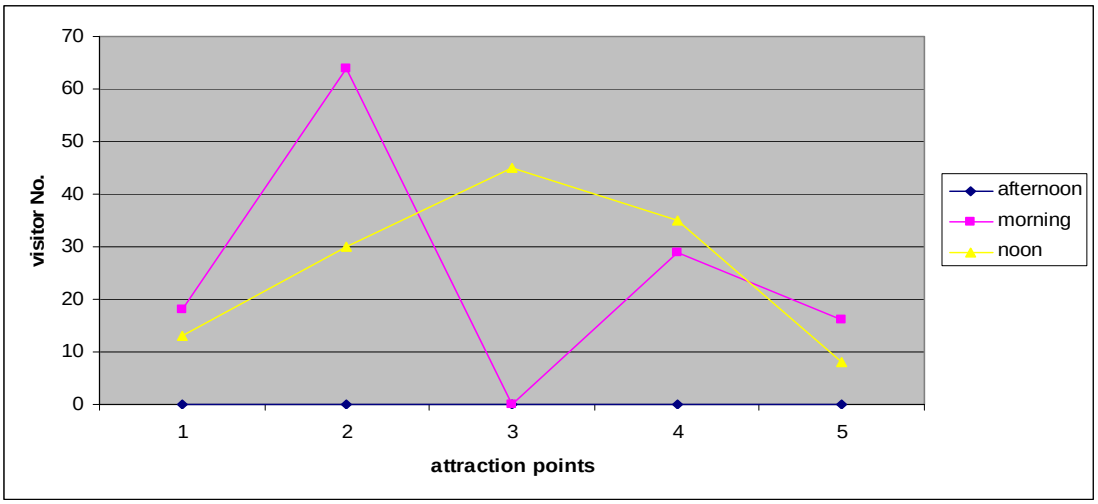


Figure3. 4 Daily visitor use levels – Green Island, Nov. 2006

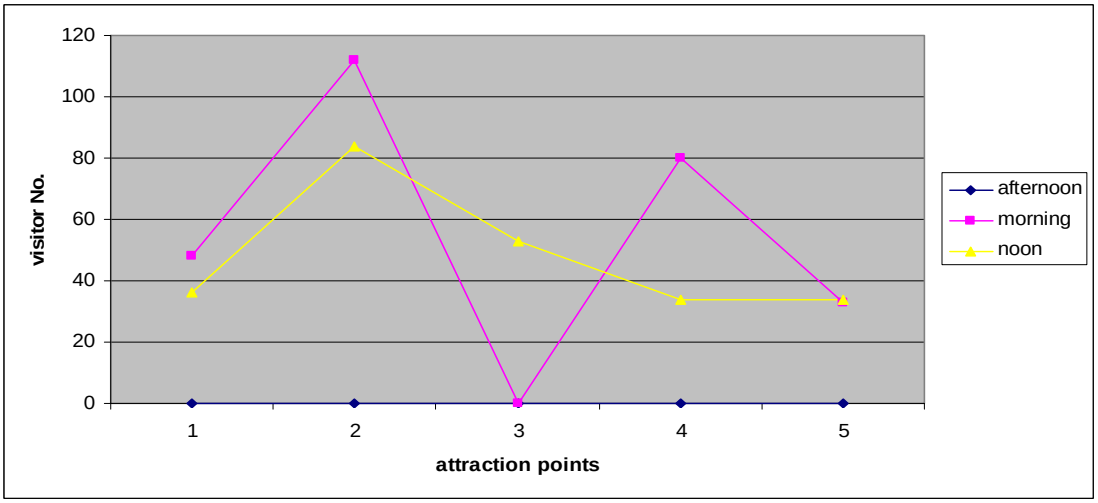


Figure3. 5 Daily visitor use levels – Green Island, Christmas Holiday period 2006

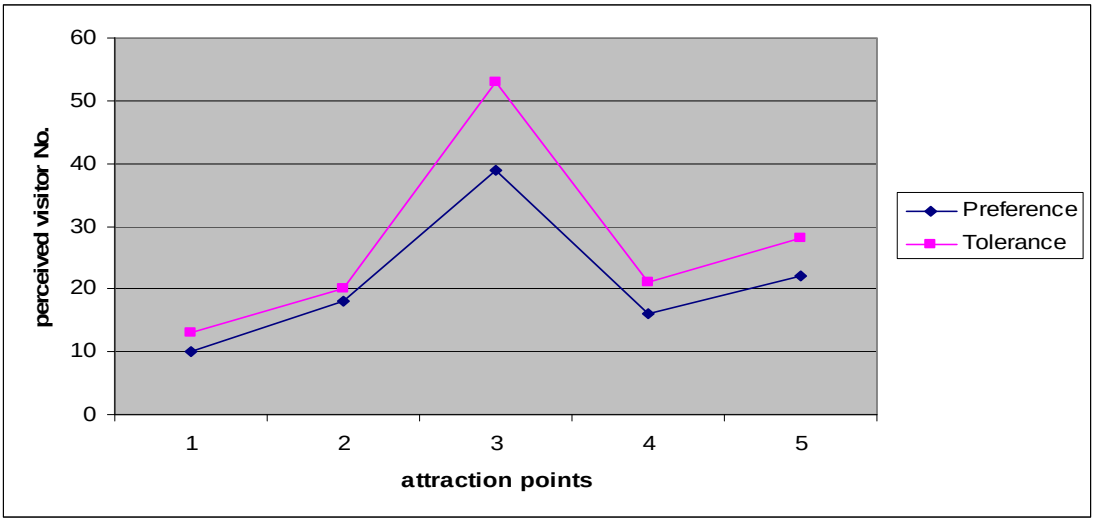


Figure3. 6 Daily visitor use levels – Green Island

Table3. 6 The actual visitor numbers and the perceived visitor numbers over different time and locations on the Green Island

Locations t test related statistics df=59 Critical E=2.00	Number of visitors depicted in the benchmark photograph	Mean number of visitors that respondents would be prepared to tolerate (N= 62)	Mean number of visitors that respondents would prefer (N= 62)	Range of visitors recorded from site use data
1 Entrance	5	13*	10*	0-48
2 Main pathway	11	20*	18*	0-112
3 the restaurant	29	53*	39*	0-53
4 a part of the beach	10	21*	16*	0-80
5 one rest area	15	28*	22*	0-34

*p < .05

Because visitors needed to take one hour to reach the island by a short cruise, there was not enough time to record visitor numbers in the afternoon. Thus the visitor numbers were recorded at two different time points per day, morning and noon.

There was a difference in the actual visitor numbers at different time points throughout day (morning, noon, afternoon) at point 2, point 3 and point 4. At point 1 and 2, the actual visitor numbers were higher in the morning, because visitors used the main pathway (point 2) to reach the island in the morning. At point 3 (the restaurant), the visitor numbers were only calculated at noon because visitors just had lunch in the restaurant. In addition, because around 180 people could be accommodated in the

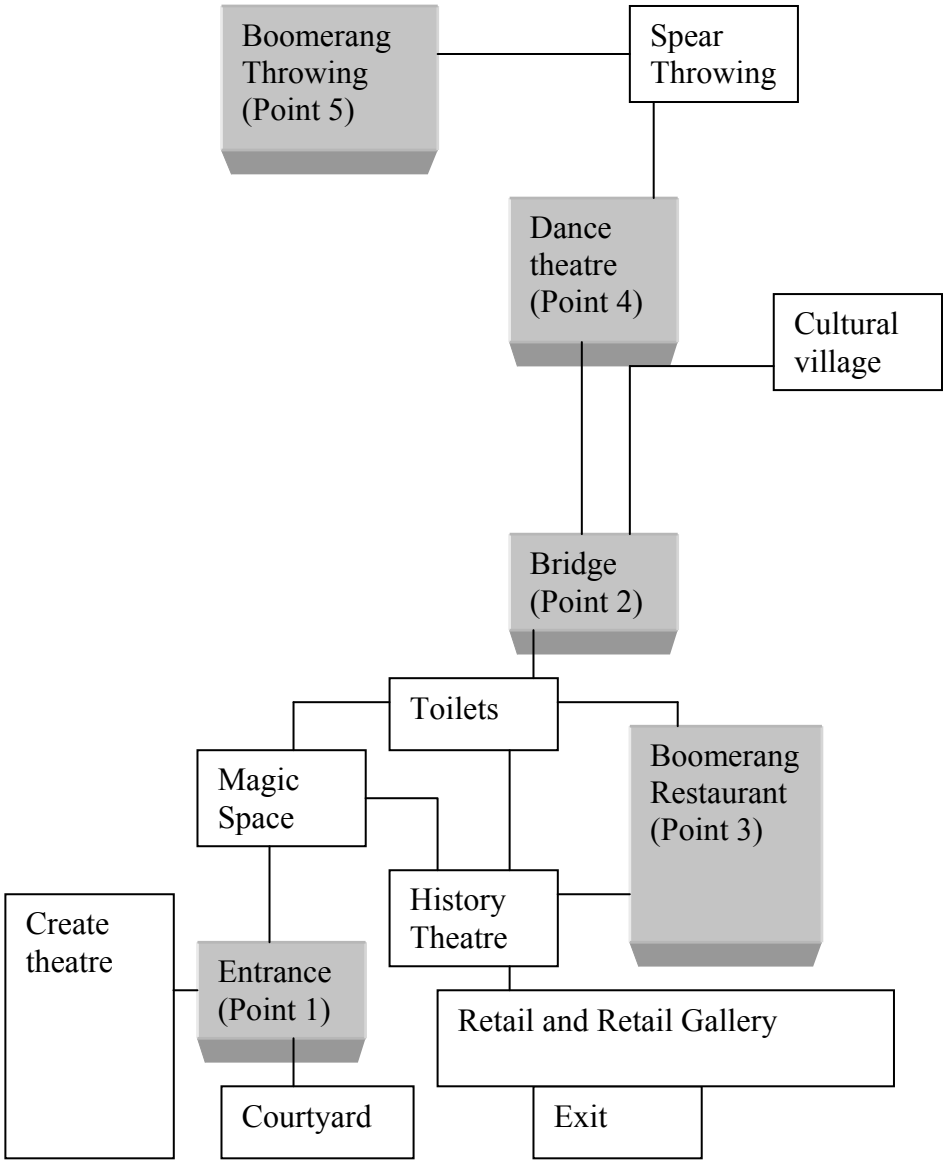
studied area simultaneously, there was a difference between the actual visitor levels and the carrying capacity of the restaurant. Visitors randomly came to the point 4 (a part of the beach), therefore, the visitor numbers were not significantly varied at this area. The point 5 (a rest area) could contain around 50 people at one time, so the actual visitor numbers had not exceeded the carrying capacity. Tourists went to the Green Island randomly, and there were differences between actual numbers of visitors and the carrying capacity at different attraction points. Therefore there were few sensitive time points and attraction points on the Green Island.

Moreover, there was a little difference between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Christmas Holiday. Such a difference was caused by weather. The day in the Christmas Holiday period was sunny, but the day in the average peak time was cloudy. It indicated that the environment, such as weather, had a big influence on the use levels on Green Island, because most visitors went there to enjoy sun, sand and sea.

In the figure 3.6, all perceived numbers were significant, and then they could arguably represent the situation for the whole attraction. There was only a small gap between the tolerance use level and preference use level over the five locations. Comparing the visitors' perceived use levels to the actual use levels over the five points, the actual use levels at point 3 and point 5 were close to the perceived use levels. Therefore, visitors were unlikely to be bothered by others at these locations. However, the actual visitor levels at point 1, 2 and 4 exceeded visitors' perceived use levels at some times. The results indicated that visitors might be disturbed by other people at these locations, and a reduced number of people could possibly promote their quality of experiences.

3.5.3 The Use Levels of the Tjapukai Aboriginal Cultural Park

Schematic Map of the Tjapukai Aboriginal Cultural Park



The comparison between actual use levels and perceived use levels

The daily actual use levels in different time periods, the average peak time and the Christmas Holiday, are summarized in the first two figures. The five points here are the entrance (point 1), the main pathway (point 2 is the bridge), the restaurant (point 3), the Dance Theatre (point 4), and one Clearing area (point 5). The third figure presents the perceived use levels concerning tolerance and preference. Again, it is

important in reading these figures to pay attention to the scale on the Y axis which can show contrasts in the visitor numbers across the sites.

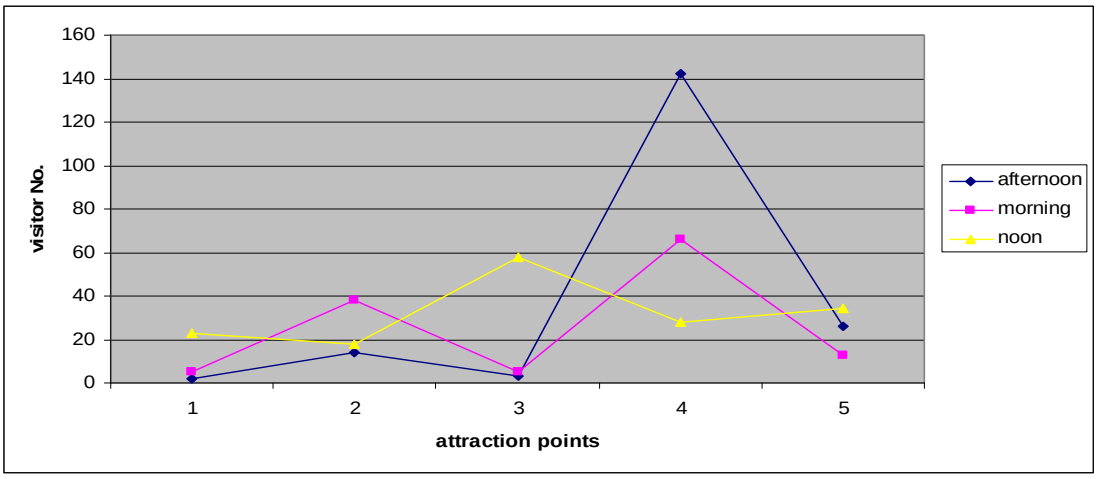


Figure3. 7 Daily visitor use levels – Tjapukai, Nov. 2006

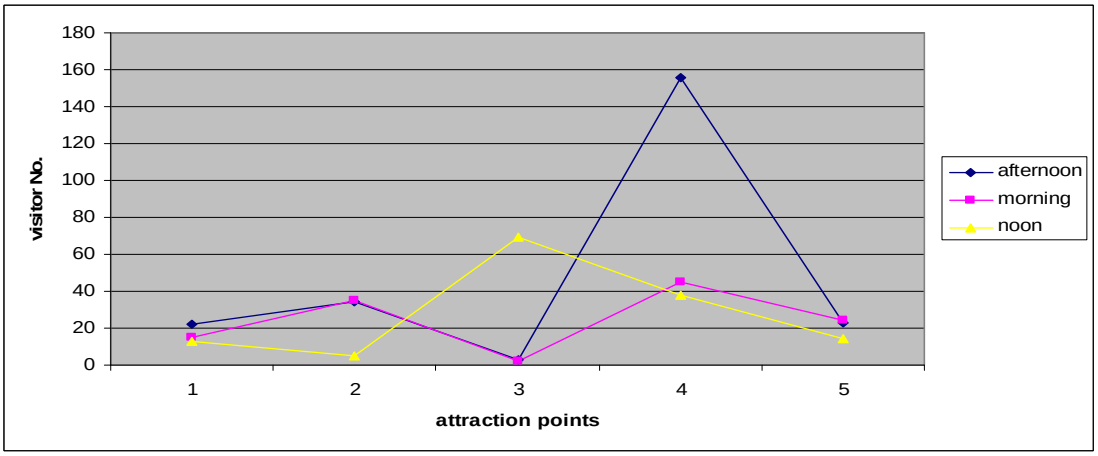


Figure3. 8 Daily visitor use levels – Tjapukai, Christmas Holiday period 2006

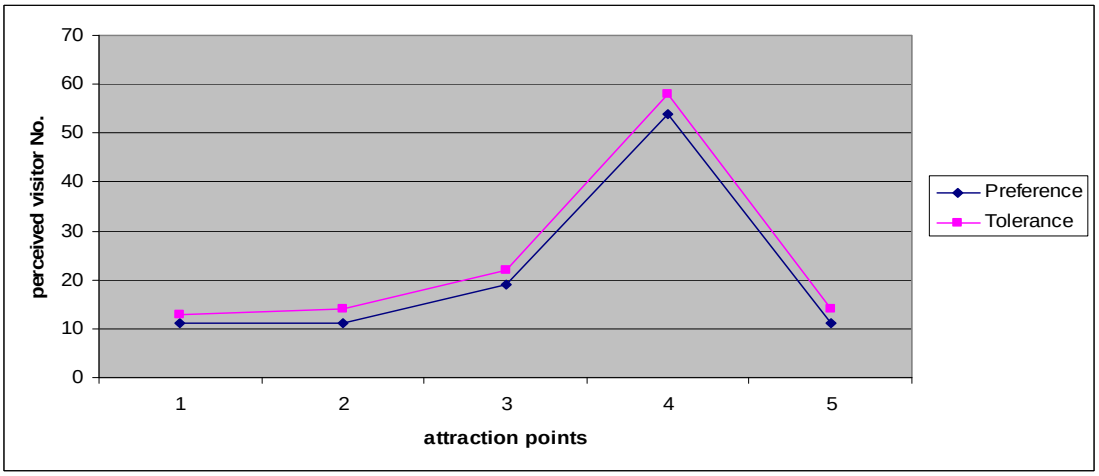


Figure3. 9 Daily perceived visitor use levels – Tjapukai

Table3. 7 The actual visitor numbers and the perceived visitor numbers over different time and locations in the Tjapukai Aboriginal Cultural Park

Locations t test related statistics df=59 Critical E=2.00	Number of visitors depicted in the benchmark photograph	Mean number of visitors that respondents would be prepared to tolerate (N= 63)	Mean number of visitors that respondents would prefer (N= 63)	Range of visitors recorded from site use data
1 Entrance	8	13*	11*	2-23
2 Main pathway	7	14*	11*	5-38
3 the restaurant	15	22*	19*	2-69
4 the Dance Theatre	35	58*	54*	28-156
5 one Clearing area	8	14*	11	13-34

*p < .05

There was little difference in the actual visitor numbers at different time points throughout day (morning, noon, afternoon) at most locations except point 3 and point 4. At point 3 (the restaurant), the visitor number was higher at the noon, because visitors in groups liked to have lunch at that time. In addition, because the restaurant had the ability to seat around 130 people simultaneously, the actual number of visitors has not exceeded the carrying capacity of the restaurant. At point 4 (the Dance Theatre), sometimes large groups came to see the performance at the same time, however, as the theatre could accommodate about 250 people at one time, there was a difference between the actual number of visitors and the carrying capacity of the theatre. The actual use levels indicated that visitors went to Tjapukai randomly over a day. There were few sensitive time points at this site.

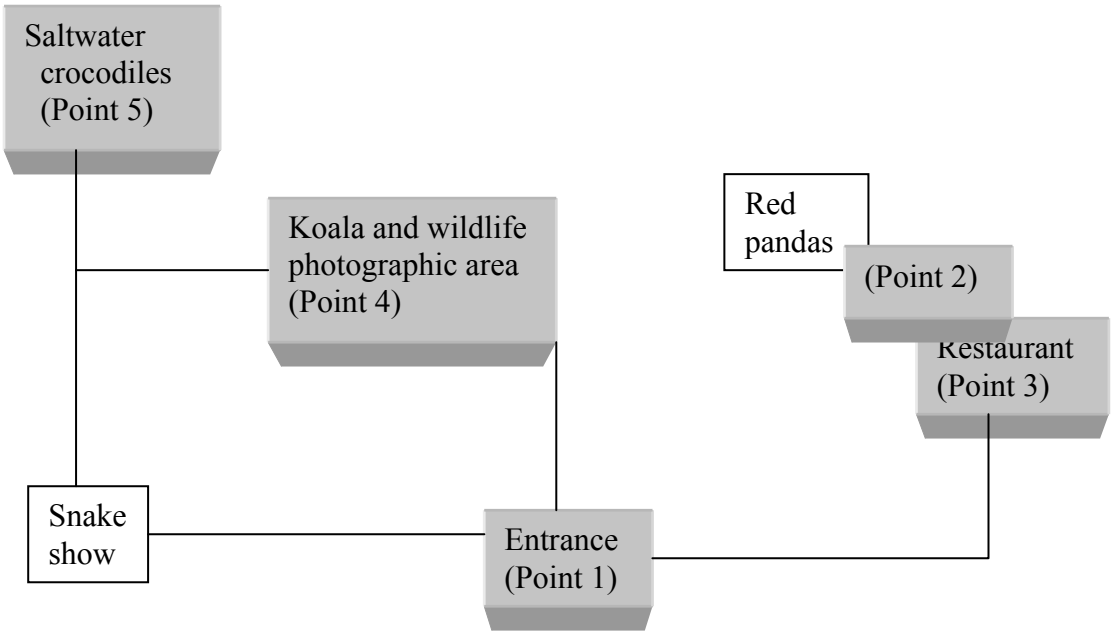
Moreover, there was a little difference between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Christmas Holiday, indicating that the seasonality was not obvious in Tjapukai. As with the other Cairns sites, the reason may be that international visitors who accounted for a large percentage of the market have holidays in different times in a year, and hence came to the site at different time periods.

In the figure 3.9, all perceived numbers were significant, and then they could arguably represent the situation for the whole attraction. There was only a small gap between

the tolerance use level and preference use level across the five locations. Comparing the visitors' perceived use levels to the actual use levels of the five points, the actual use levels at point 1, 2, 5 were close to the perceived use levels. Therefore, visitors were unlikely to be bothered by others at these locations. However, the actual visitor use levels at point 3 and 4 exceeded visitors' perceived use levels at some times. The results indicated that visitors might be disturbed by other people at these locations. Importantly, the data indicate that preference and tolerance data can be quite sensitive – small numbers may make a difference in the perception of crowding.

3.5.4 The Use Levels of the Cairns Tropical Zoo

Schematic Map of the Cairns Tropical Zoo



The comparison between actual use levels and perceived use levels

The daily actual use levels in different time periods, the average peak time and the Christmas Holiday, are summarized in the first two figures. The five points here are the entrance (point 1), the main pathway in front of the restaurant (point 2), the restaurant (point 3), the Koala photo area (point 4), and the Crocodile show area (point 5). The third figure presents the perceived use levels concerning tolerance and

preference. It is important in reading these figures to pay attention to the scale on the Y axis which can show contrasts in the data across the figures.

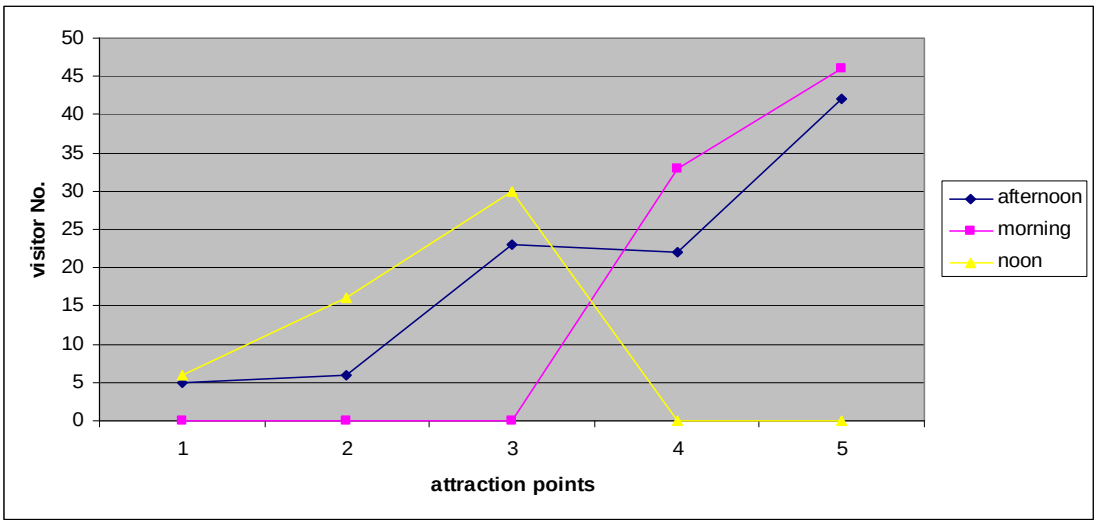


Figure3. 10 Daily visitor use levels – Tropical Zoo, Nov. 2006

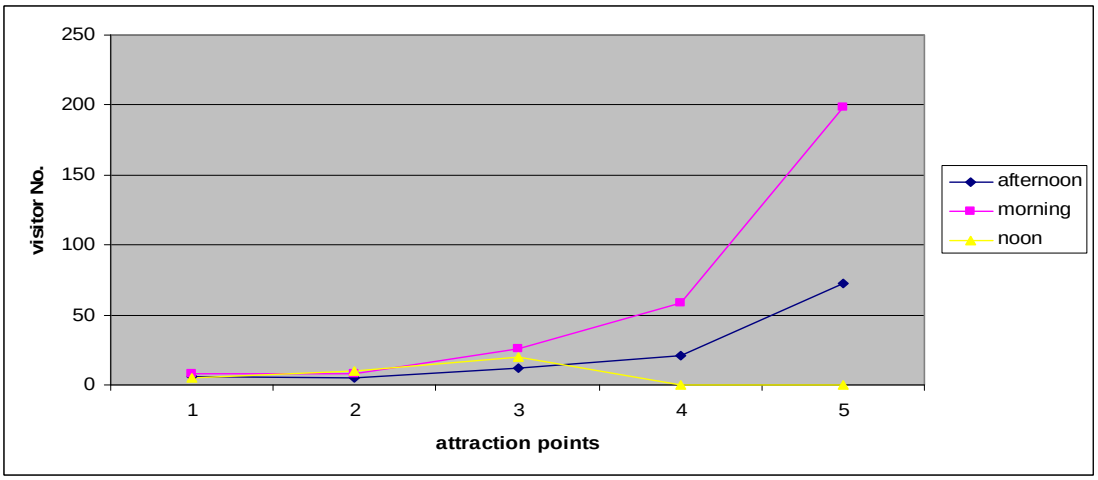


Figure3. 11 Daily visitor use levels – Tropical Zoo, Christmas Holiday period 2006

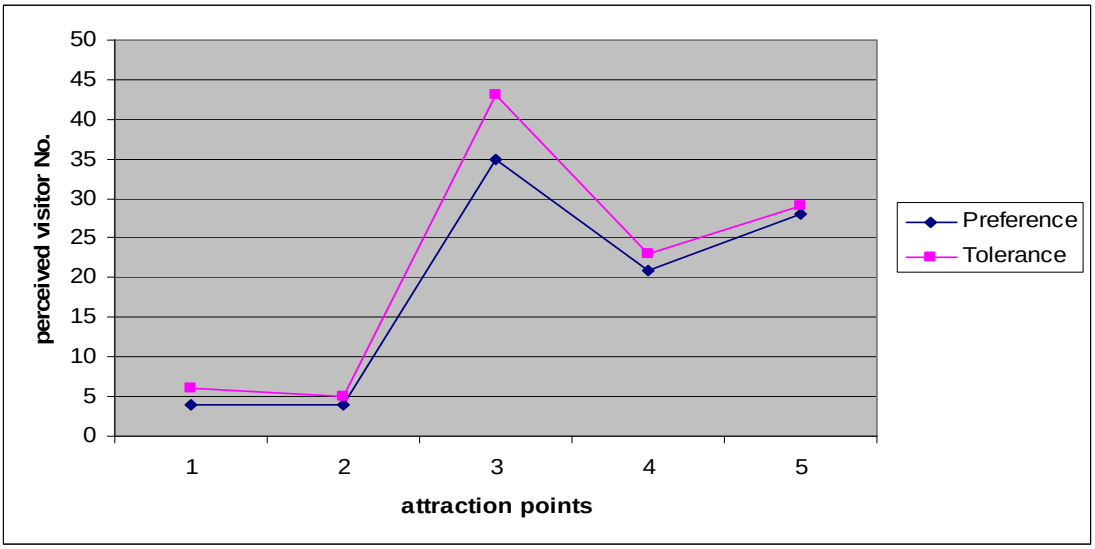


Figure3. 12 Daily perceived visitor use levels – Tropical Zoo

Table3. 8 The actual visitor numbers and the perceived visitor numbers over different time and locations in the Cairns Tropical Zoo

Locations t test related statistics df=59 Critical E=2.00	Number of visitors depicted in the benchmark photograph	Mean number of visitors that respondents would be prepared to tolerate (N= 47)	Mean number of visitors that respondents would prefer (N= 47)	Range of visitors recorded from site use data
1 Entrance	2	6*	4*	0-8
2 Main pathway	2	5*	4*	0-16
3 the restaurant	21	43*	35*	0-30
4 the Koala photo area	16	23*	21	0-59
5 the Crocodile show area	19	29*	28*	0-198

*p < .05

There was little difference in the actual visitor numbers at different time points throughout day (morning, noon, afternoon) at most locations except point 4 and point 5, and point 3 in November (the average peak time). Because there were two sessions of show programs, morning program and afternoon program, the visitor numbers at location 4 and 5 were 0 at noon. At location 3 (the restaurant), because it had the ability to accommodate around 110 people simultaneously, there was a difference between the actual visitor use levels and the carrying capacity of the restaurant. The location 5 (show area) could involve around 250 people at one time, so the actual

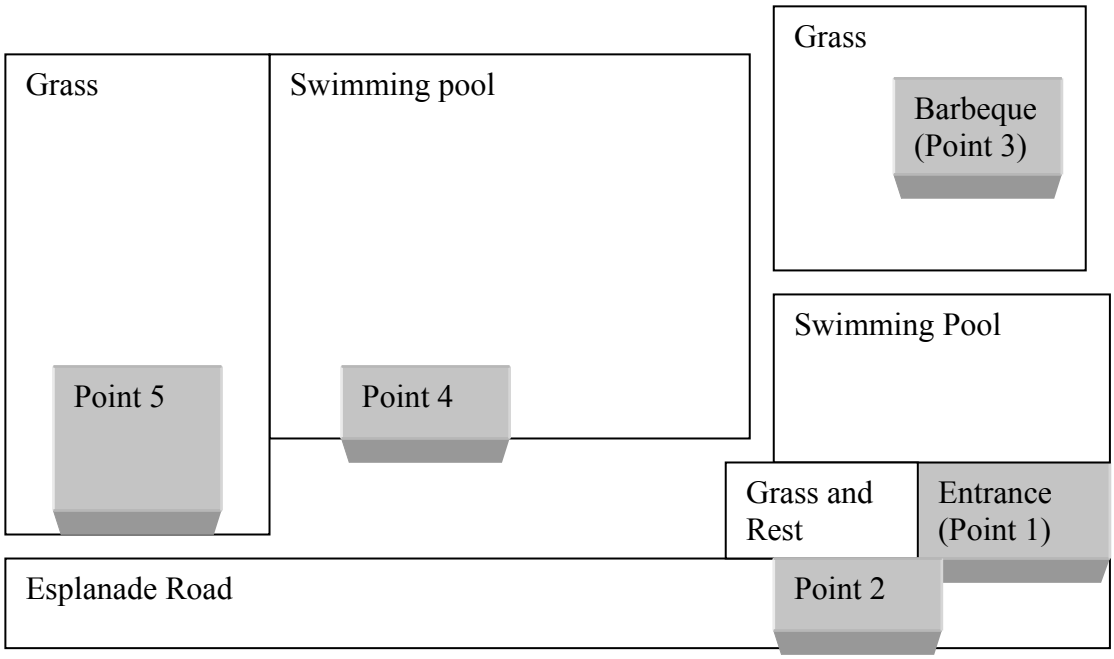
visitor numbers had not exceeded the carrying capacity, but the visitor numbers sometimes nearly arrived at the ultimate level of its carrying capacity. The actual use levels indicated that visitors went to Tropical Zoo randomly over a day. There were few sensitive time points at this site.

Moreover, there was a little difference between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Christmas Holiday except for one time point at location 5. At the particular time point, several large groups came to the location 5 at one time. It indicated that the seasonality was not obvious in Tropical Zoo.

In the figure 3.12, most perceived numbers were significant, and then they could arguably represent the situation for the whole attraction. The tolerance use level and preference use level were nearly identical over the five locations. Comparing the visitors' perceived use levels to the actual use levels at the five points, the actual use levels at point 1, 2, 3, and 4 were close to the perceived use levels. Therefore, visitors were unlikely to be bothered by others at these locations. However, the actual visitor use levels of point 5 exceeded visitors' perceived use levels. This kind of data again indicates that small numbers of extra people at a specific part of an attraction may not be preferred even though the actual capacity in purely physical terms (such as a restaurant is viewing area) is quite large.

3.5.5 The Use Levels of the Lagoon

Schematic Map of the Lagoon



The comparison between actual use levels and perceived use levels

The daily actual use levels in different time periods, the average peak time and the Christmas Holiday, are summarized in the first two figures. The five points here are the entrance (point 1), the main pathway (point 2 is a part of the walking road), a barbeque area including seats around (point 3), an area of the swimming pool (point 4), and a piece of grass land (point 5). The third figure presents the perceived use levels concerning tolerance and preference. It is important in reading these figures to pay attention to the scale on the Y axis which can show contrasts in the data across the figures.

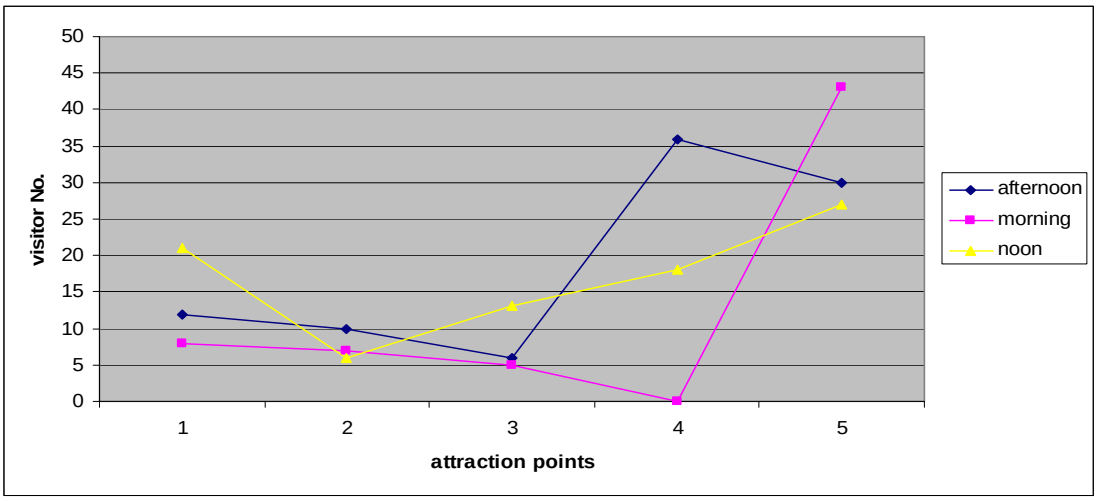


Figure3. 13 Daily visitor use levels – Lagoon, Nov. 2006

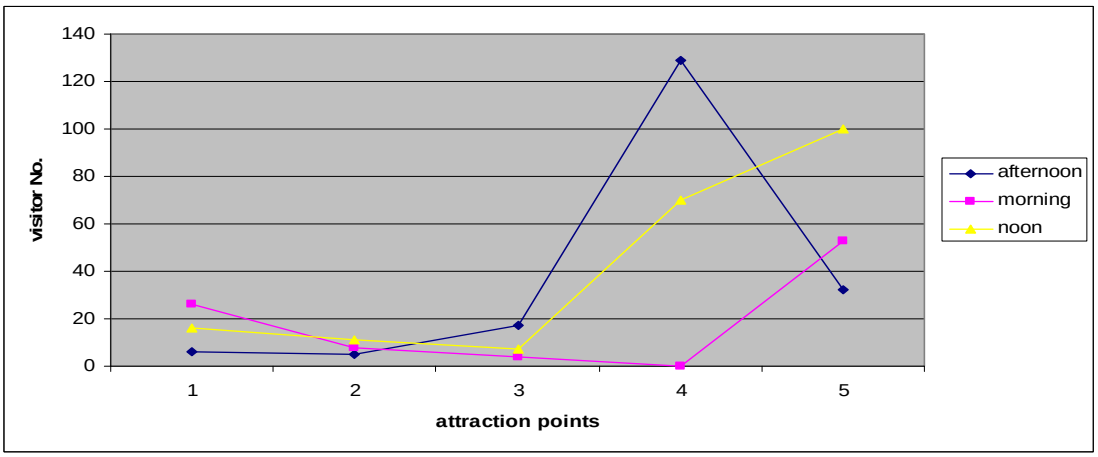


Figure3. 14 Daily visitor use levels – Lagoon, Christmas Holiday period 2006

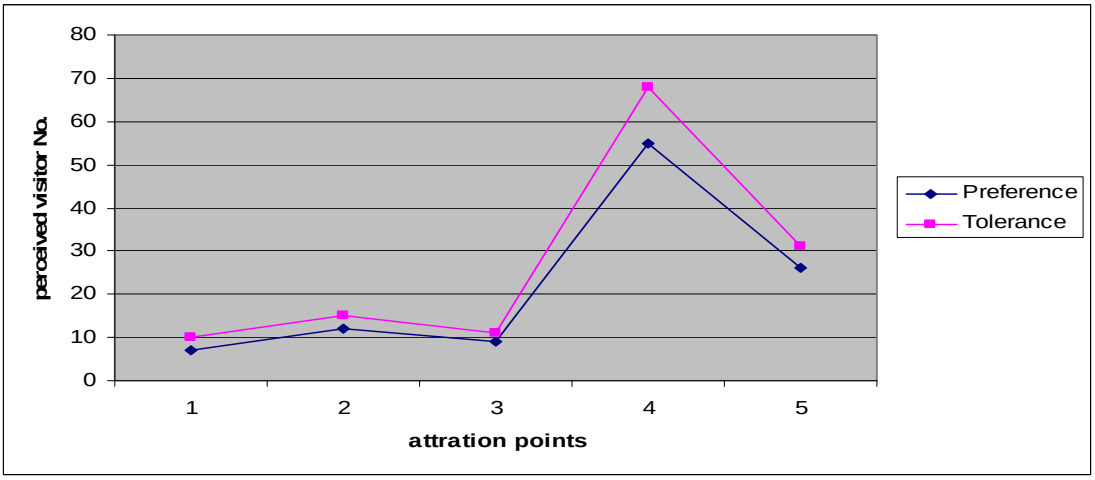


Figure3. 15 Daily perceived visitor use levels – Lagoon

Table3. 9 The actual visitor numbers and the perceived visitor numbers over different time and locations in the Lagoon

Locations t test related statistics df=59 Critical E=2.00	Number of visitors depicted in the benchmark photograph	Mean number of visitors that respondents would be prepared to tolerate (N= 66)	Mean number of visitors that respondents would prefer (N= 66)	Range of visitors recorded from site use data
1 Entrance	5	10*	7*	2-26
2 Main pathway	7	15*	12*	5-11
3 a barbeque area including seats around	7	11*	9*	4-17
4 an area of the swimming pool	41	68*	55*	0-129
5 a piece of grass land	19	31*	26*	27-100

*p < .05

There was little difference in the actual visitor numbers at different time points throughout day (morning, noon, afternoon) at most locations except point 4 and point 5. At point 4 (the swimming pool area), few visitors liked to swim in the morning, so the numbers were 0 at the time points in morning. There were large numbers of people at particular time points at locations 4 and 5, because several group visitors arrived at that time. Another reason might be accounted that local people came to enjoy their lives at lagoon during the holidays. Indeed, the actual use levels indicated that visitors went to Lagoon randomly in a day. There were few sensitive time points at this site.

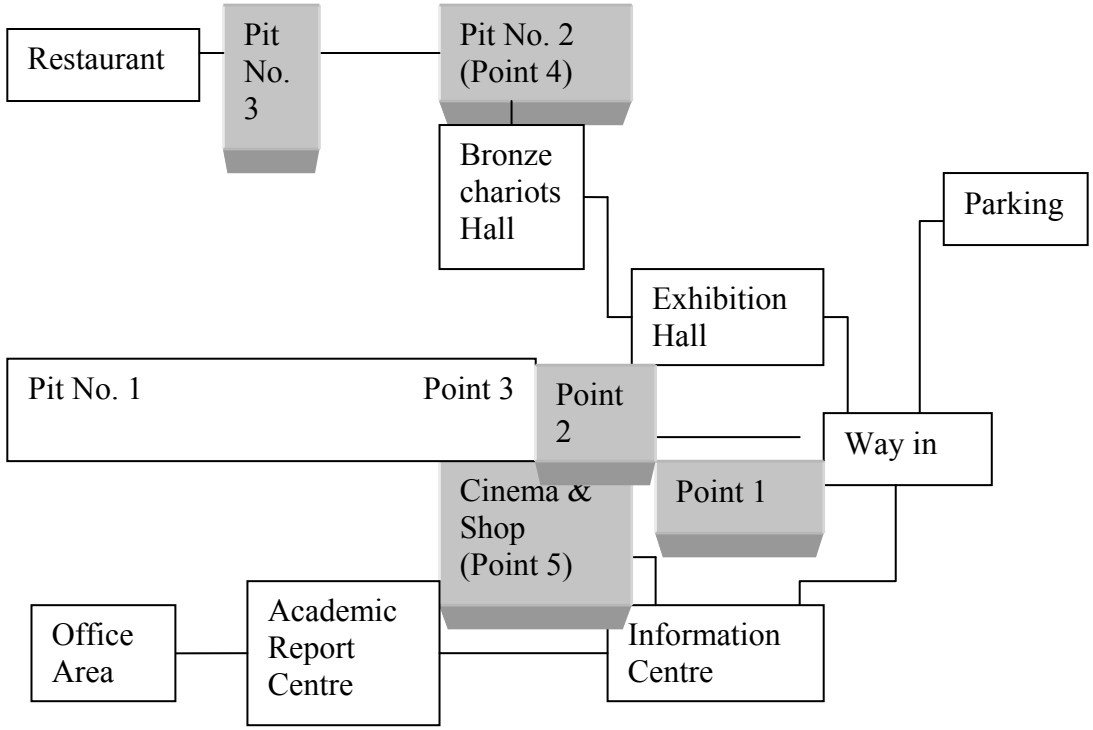
Moreover, there was a little difference at point 1, 2 and 3 between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Christmas Holiday. However, there was a different at point 4 and point 5 between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Christmas Holiday. As the difference was not large, the seasonality was not obvious at Lagoon. A large number of visitors, who were from different countries, came to the site at different time periods, contributing to avoid seasonality.

In the figure 3.15, all perceived numbers were significant, and then they could arguably represent the situation for the whole attraction. There was only a small gap

between the tolerance use level and preference use level over the five locations. Comparing the visitors' perceived use levels to the actual use levels at the five points, the actual use levels at point 1, 2, and 3 were close to the perceived use levels. Again, the range of visitors recorded at some of these locations (location 4 and location 5) is larger than the reported tolerance and preference. Clearly these measures are sensitive and offer insights into people' views of crowding which can be at variance with ongoing use.

3.5.6 The Use Levels of the Museum of Qin Pottery Figures (the Terracotta Army Museum)

Schematic Map of the Terracotta Army Museum



The comparison between actual use levels and perceived use levels

The daily actual use levels in different time periods, the average peak time and the Golden Week, are summarized in the first two figures. The five points here are the entrance (point 1), the main pathway before Pit No.1 (point 2), the space in front of the big gate of Pit No.1 (the east gate) (point 3), the space in front of the exhibition counters of the two army soldiers in Pit No. 2 (point 4), and a shop (point 5). The

third figure presents the perceived use levels concerning tolerance and preference. As before, it is useful in reading these figures to attend to the scale on the Y axis which can show contrasts in the data across the figures.

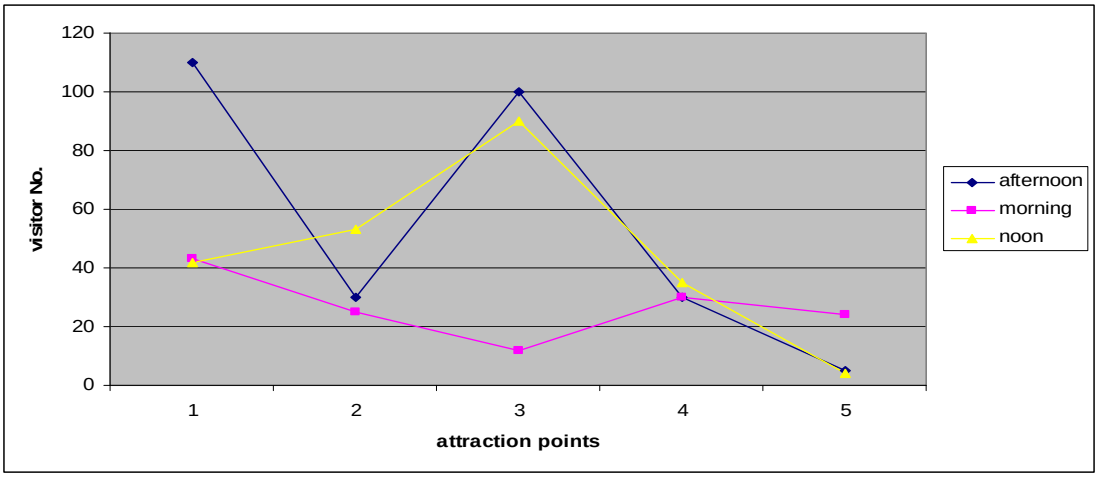


Figure3. 16 Daily visitor use levels – Terracotta Army, Sep. 2007

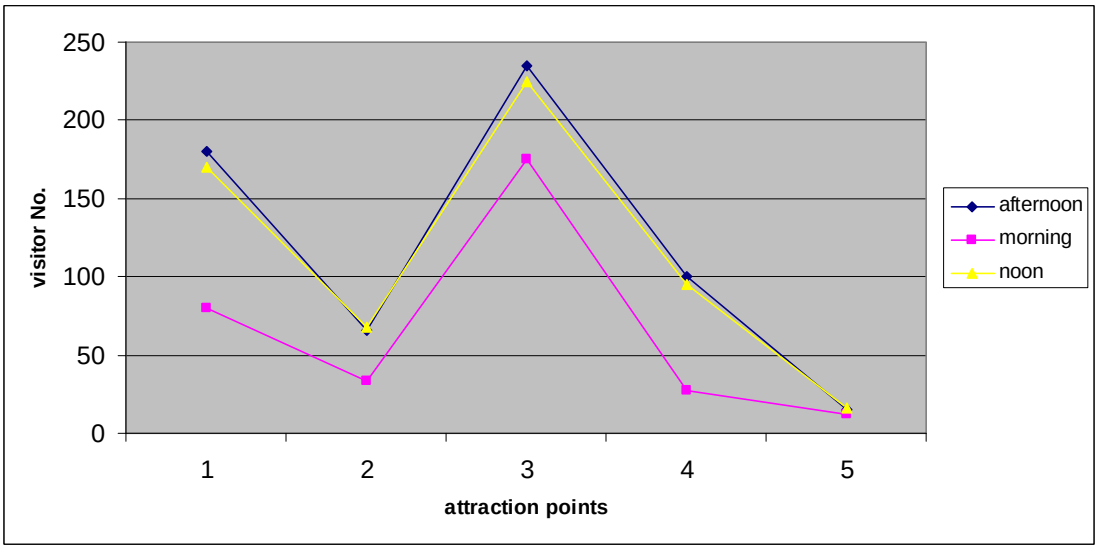


Figure3. 17 Daily visitor use levels – Terracotta Army, 3 Oct. 2007

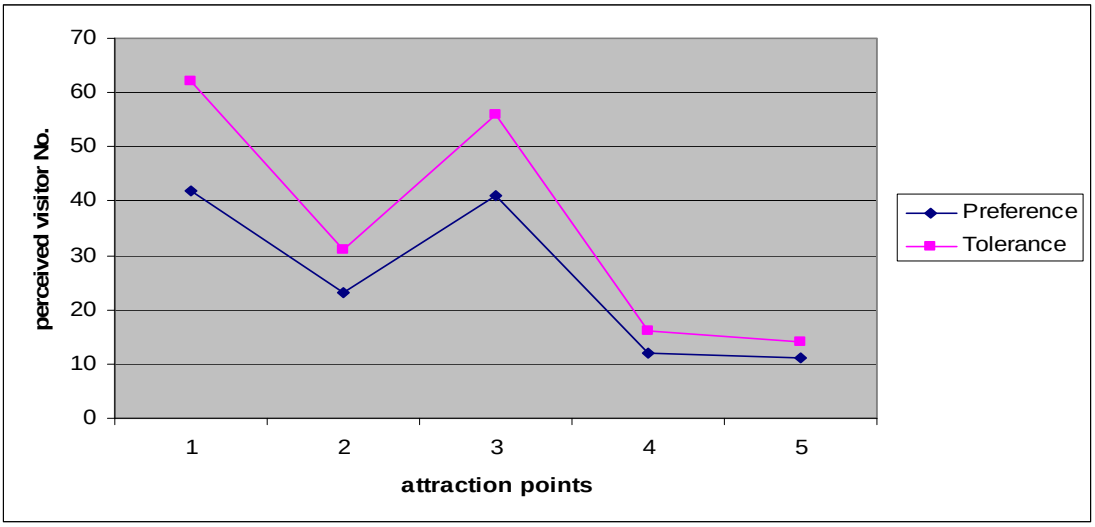


Figure3. 18 Daily perceived visitor use levels – Terracotta Army

Table3. 10 The actual visitor numbers and the perceived visitor numbers over different time and locations in the Terracotta Army Museum

Locations t test related statistics df=59 Critical E=2.00	Number of visitors depicted in the benchmark photograph	Mean number of visitors that respondents would be prepared to tolerate (N= 65)	Mean number of visitors that respondents would prefer (N= 65)	Range of visitors recorded from site use data
1 Entrance	38	62*	42	42-180
2 Main pathway to Pit 1	18	31*	23*	25-68
3 East gate in front of big Pit	67	56	41*	12-235
4 Exhibition space Pit 2	15	16	12*	30-100
5 Shop	12	14	11*	5-24

*p < .05

The actual visitor numbers were higher at noon and in afternoon than in the morning. Because visitors needed one hour to one and half hours to arrive at the site, the busy time was usually after 11am.

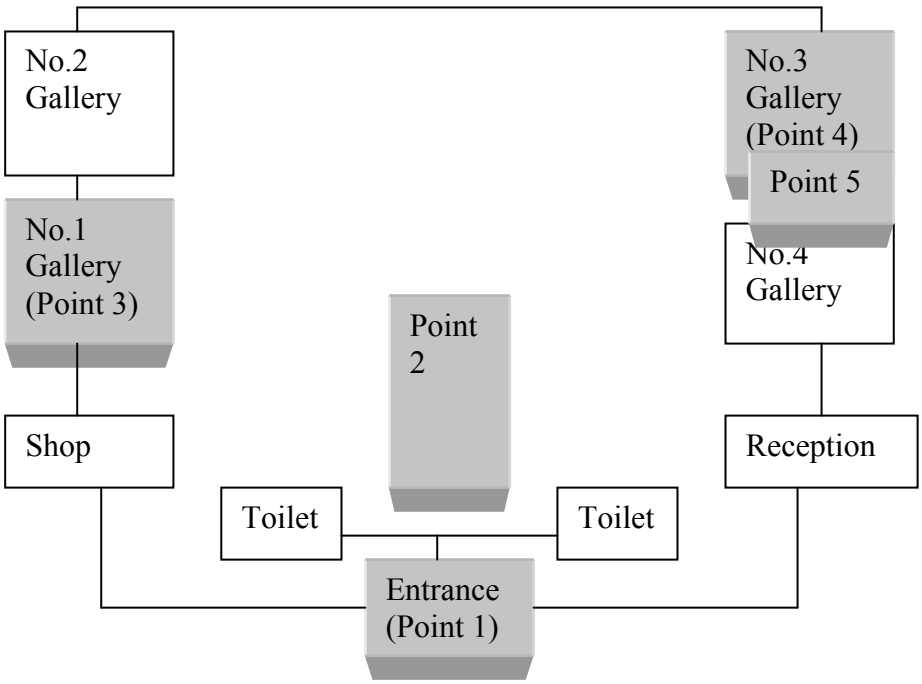
There was a big difference between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Golden Week. It indicated that Golden Week was a particularly crowded period in a year at the Terracotta Army. The

obvious reason is that domestic visitors who accounted for a large percentage of the market had the same holiday times, and hence came to the site at same time periods.

In the figure 3.18, most perceived numbers were significant, and they could arguably represent the situation for the whole attraction. There was only a small gap between the tolerance use level and preference use level at the five locations. Comparing the visitors' perceived use levels to the actual use levels at the five points, the actual use levels at point 5 were close to the perceived use levels. Therefore, visitors were unlikely to be bothered by others at this location. However, the numbers of actual visitor use levels at the other four locations highly exceeded visitors' perceived use levels at some times. The results indicated that visitors are very likely to be disturbed by other people at these locations, and a reduced number of people could promote their quality of experiences. This site exceeds all others studied in this thesis in terms of the disparity between observed and preferred or tolerated numbers of visitors.

3.5.7 The Use Levels of the Shaanxi History Museum

Schematic Map of the Shaanxi History Museum



The comparison between actual use levels and perceived use levels

The daily actual use levels in different time periods, the average peak time and the Golden Week, are summarized in the first two figures. The five points here are the entrance (point 1), the main pathway in front of the new exhibition room (point 2), the space in front of the last exhibition counter in Exhibition Room 1 (point 3), the space in front of the exhibition counter 5 in Exhibition Room 3 (point 4), and the shop between Exhibition Room 3 and 4 (point 5). The third figure presents the perceived use levels concerning tolerance and preference. Scores on the Y axis vary and show contrasts in the data across the figures.

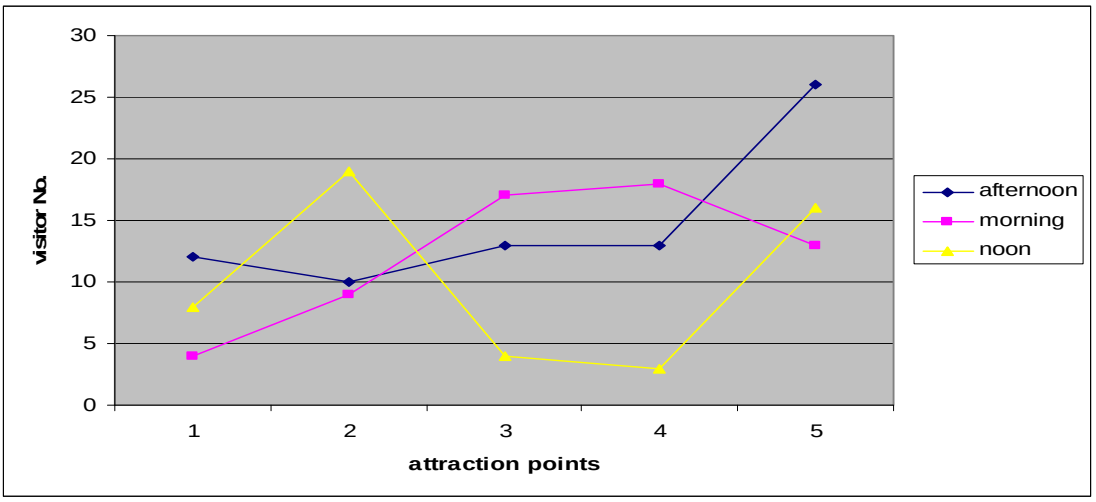


Figure3. 19 Daily visitor use levels – Shaanxi History Museum, Sep. 2007

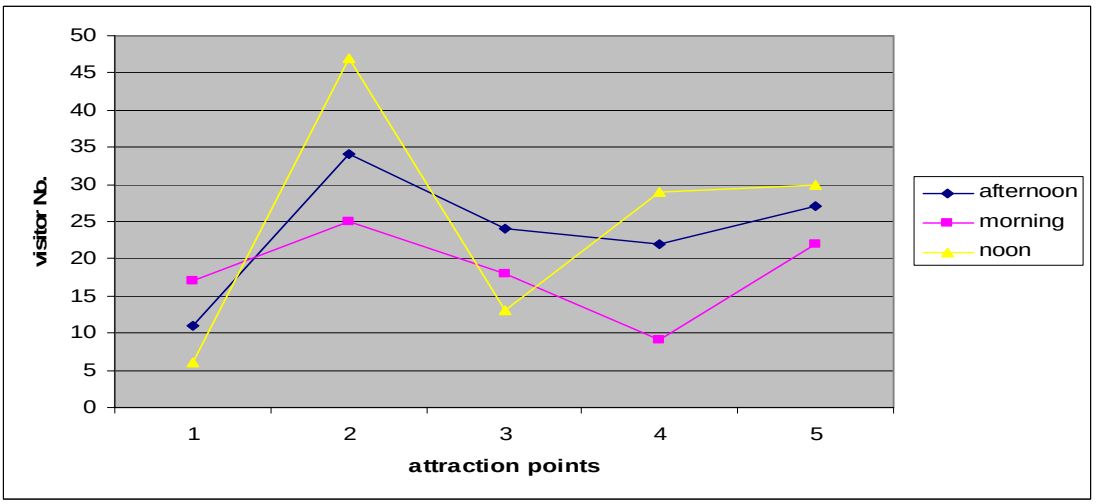


Figure3. 20 Daily visitor use levels – Shaanxi History Museum, Sep. 2007

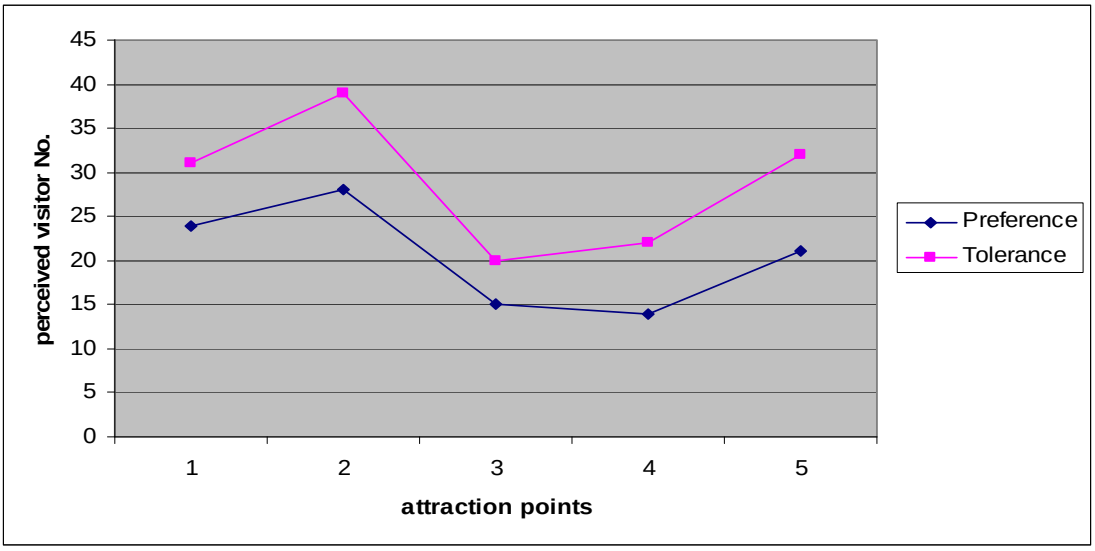


Figure3. 21 Daily perceived visitor use levels – Shaanxi History Museum

Table3. 11 The actual visitor numbers and the perceived visitor numbers over different time and locations in the Shaanxi History Museum

Locations t test related statistics df=59 Critical E=2.00	Number of visitors depicted in the benchmark photograph	Mean number of visitors that respondents would be prepared to tolerate (N= 58)	Mean number of visitors that respondents would prefer (N= 58)	Range of visitors recorded from site use data
1 Entrance	18	31*	24	4-17
2 Main pathway	15	39*	28*	9-47
3 A part of Exhibition Room 1	18	20	15	4-24
4 A part of Exhibition Room 3	17	22	14*	3-29
5 Shop	20	32*	21	13-30

*p < .05

There was little difference in the actual visitor numbers at different time points throughout day (morning, noon, afternoon) at these locations. The mean actual visitor numbers indicated that visitors went to Shaanxi History Museum randomly in a day. There were few sensitive time points at this site.

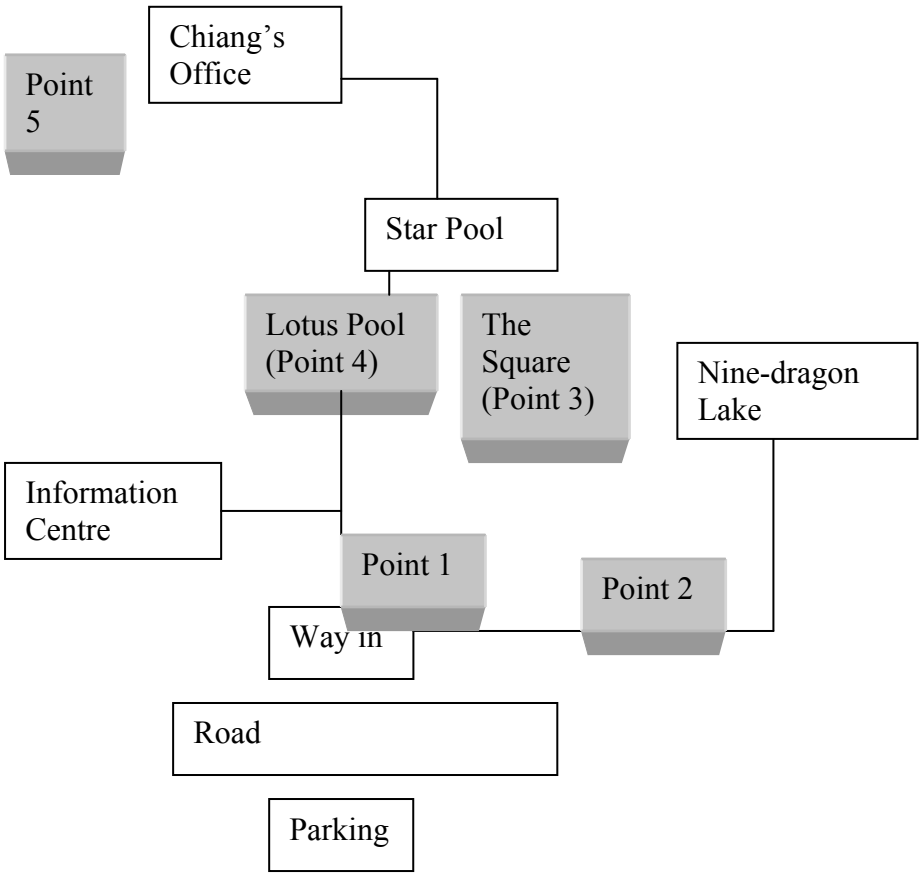
There was a little difference between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Golden Week. It indicated that

although the number of visitors increased in the Golden Week, the Golden Week was not the significantly obvious crowded period in a year at this site. One reason may be that local or regional visitors accounted for a comparatively large percentage of the market, and these visitors were not particularly influenced by the Golden Week. The other reason was that Shaanxi History Museum was not as famous as the Terracotta Army, thus many international or national visitors had not recorded the site in their travel list.

In the figure 3.21, many perceived numbers were significant, and then they could arguably represent the situation for the whole attraction. There was only a small gap between the tolerance use level and preference use level over the five locations except for location 3. The perceived numbers at location 3 were not significant. Comparing the visitors' perceived use levels to the actual use levels at the five points, the actual use levels at these four points were close to the perceived use levels. Therefore, visitors were unlikely to be bothered by others at these locations.

3.5.8 The Use Levels of the Huaqing Hot Spring

Schematic Map of the Huaqing Hot Spring



The comparison between actual use levels and perceived use levels

The daily actual use levels in different time periods, the average peak time and the Golden Week, are summarized in the first two figures. The five points here are the entrance (point 1), the main pathway to the Nine-dragon Lake (point 2), the square in the middle of the hot spring ruins (point 3), Exhibition Room of Lotus Pool (point 4), and the shop near by Chiang's Office (point 5). The third figure presents the perceived use levels concerning tolerance and preference. The Y axis scores show contrasts in the data across the figures.

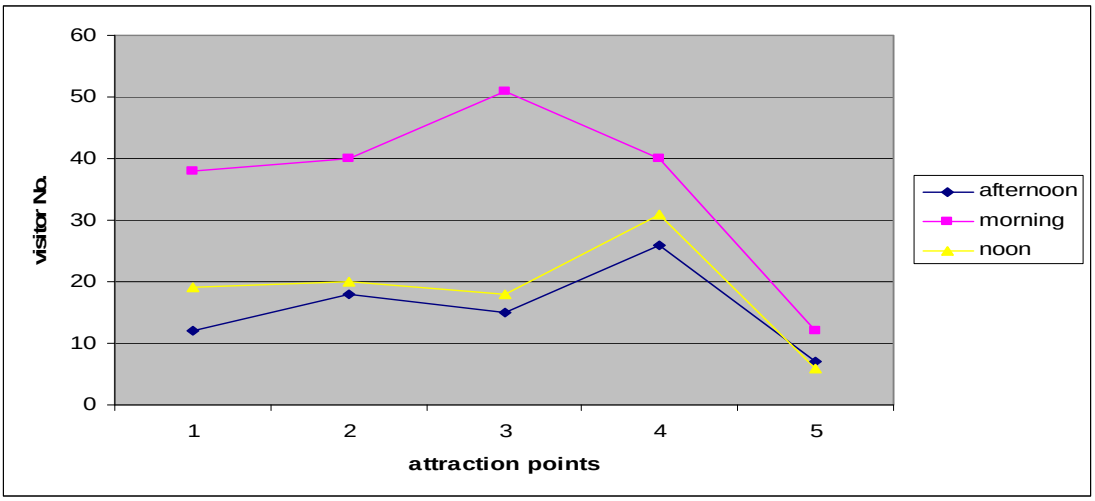


Figure3. 22 Daily visitor use levels – Huaqing Hot Spring, Sep. 2007

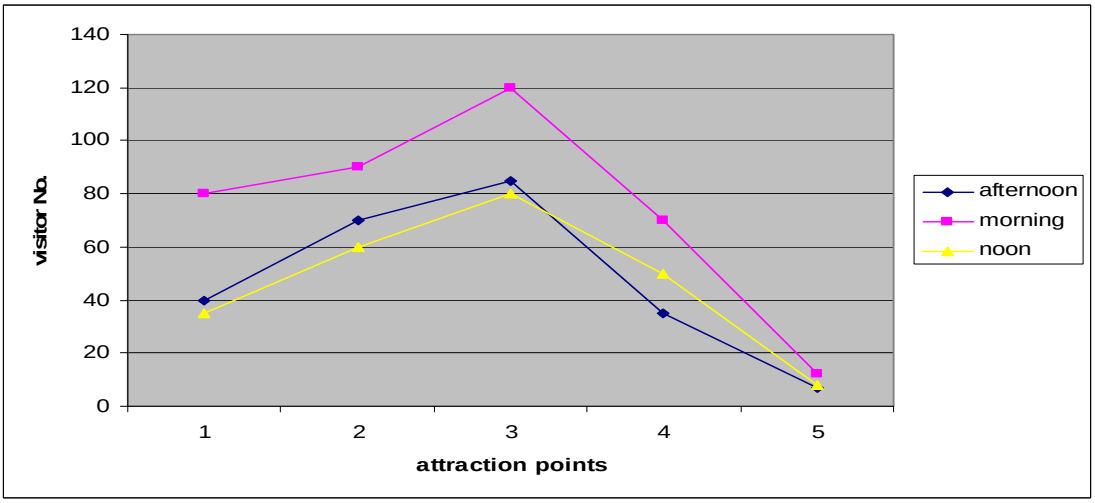


Figure3. 23 Daily visitor use levels – Huaqing Hot Spring, 5 Oct. 2007

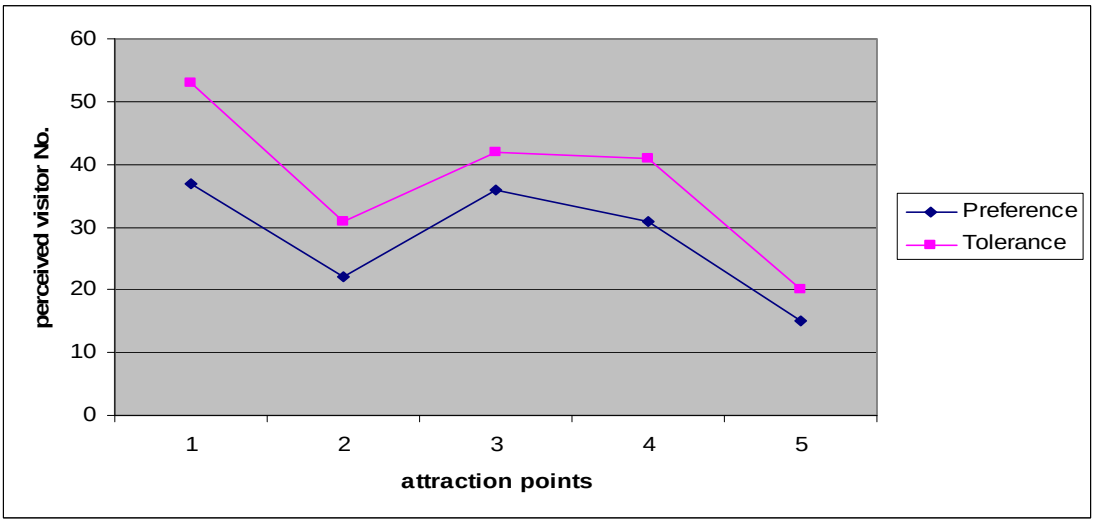


Figure3. 24 Daily perceived visitor use levels – Huaqing Hot Spring

Table3. 12 The actual visitor numbers and the perceived visitor numbers over different time and locations in the Huaqing Hot Spring

Locations t test related statistics df=59 Critical E=2.00	Number of visitors depicted in the benchmark photograph	Mean number of visitors that respondents would be prepared to tolerate (N= 54)	Mean number of visitors that respondents would prefer (N= 54)	Range of visitors recorded from site use data
1 Entrance	39	53*	37	12-80
2 Main pathway	18	31*	22	18-70
3 the square in the middle of the hot spring ruins	39	42	36	15-120
4 Exhibition Room of Lotus Pool	38	41	31*	26-70
5 Shop	15	20*	15	6-12

*p < .05

The actual visitor numbers were higher in the morning than at the noon and in the afternoon. Visitors usually travelled to two or three sites in one day, and the Huaqing Hot Spring was their first stop. Due to these travel patterns, the early morning was the sensitive time period at this site. The sensitive time point was caused by the common itineraries for many groups who simultaneously arrived at the site.

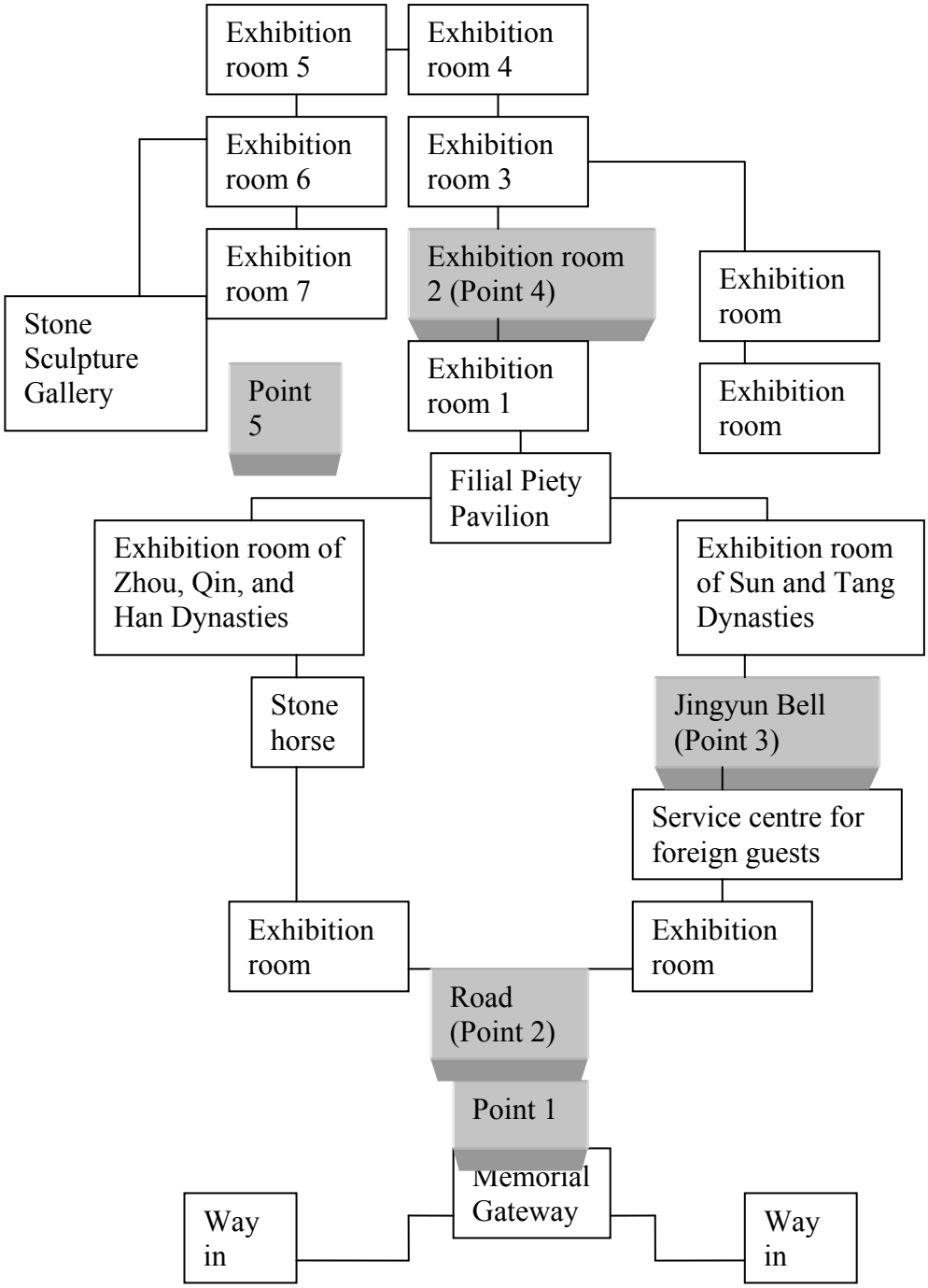
There was a difference between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Golden Week at most locations. It indicated that the Golden Week was the particular crowded period in a year in the Huaqing Hot Spring. The dominance of domestic visitors who accounted for a large percentage of the market came to the site at same time periods. Although Huaqing Hot Spring was not as famous as the Terracotta Army, a large number of international and national tourists visited the site, because the site was located near to the Terracotta Army. Often, travel itineraries link the two sites.

In the figure 3.24, many perceived numbers were significant, and were likely to represent the situation for the whole attraction. There was only a small gap between the tolerance use level and preference use level over the five locations. Comparing the visitors' perceived use levels to the actual use levels at the five points, the actual use

levels at point 5 were close to the perceived use levels. Therefore, visitors were unlikely to be bothered by others at this location. The numbers of the actual visitor use levels at the other four locations exceeded visitors' perceived use levels. The results suggested that visitors might be disturbed by other people at these locations, and a reduced number of people or better management routines could promote their quality of experiences.

3.5.9 The Use Levels of the Forest of Stone Steles Museum

Schematic Map of the Forest of Stone Steles Museum



The comparison between actual use levels and perceived use levels

The daily actual use levels in different time periods, the average peak time and the Golden Week, are summarized in the first two figures. The five points here are the entrance (point 1), the main pathway in front of the square near to the gate (point 2), the space in front of Jingyun Bell (point 3), Exhibition Room 2 (point 4), and the shop (point 5). The third figure presents the perceived use levels concerning tolerance and preference. The Y axis shows important contrasts in the visitor numbers across the figures.

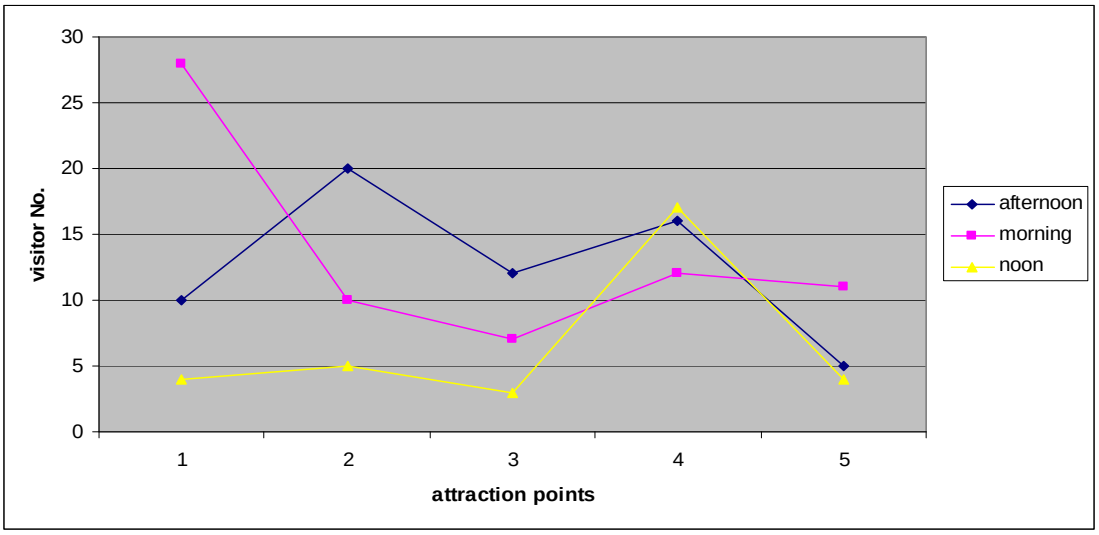


Figure3. 25 Daily visitor use levels – Forest of Stone Steles, Sep. 2007

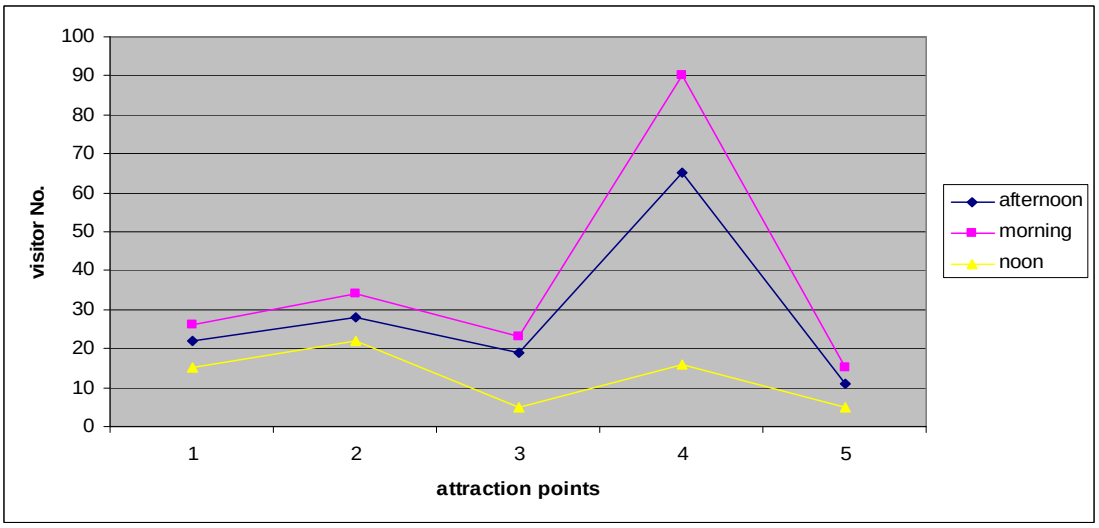


Figure3. 26 Daily visitor use levels – Forest of Stone Steles, Sep. 2007

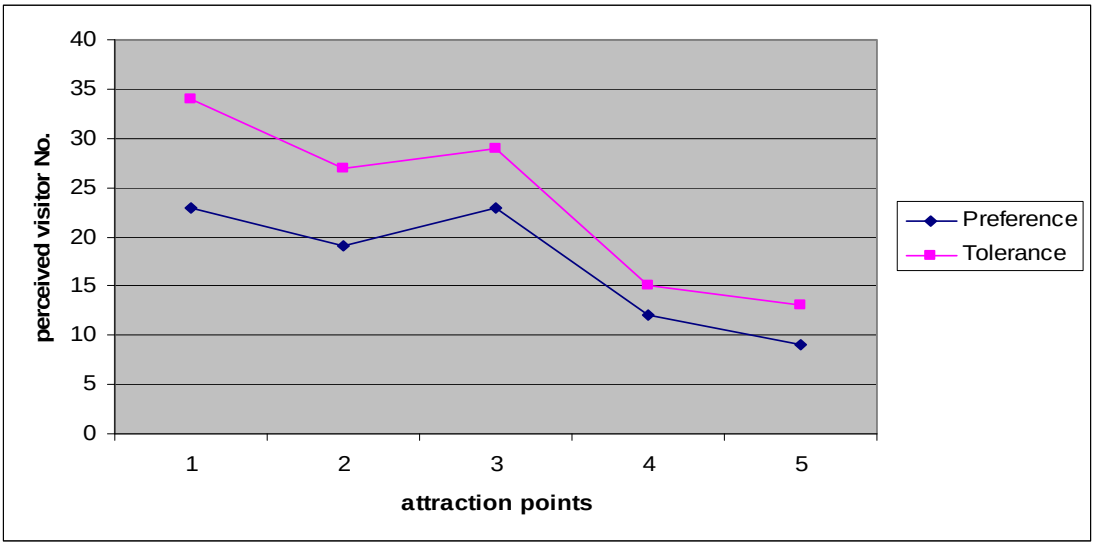


Figure3. 27 Daily perceived visitor use levels – Forest of Stone Steles

Table3. 13 The actual visitor numbers and the perceived visitor numbers over different time and locations in the Forest of Stone Steles Museum

Locations t test related statistics df=59 Critical E=2.00	Number of visitors depicted in the benchmark photograph	Mean number of visitors that respondents would be prepared to tolerate (N= 54)	Mean number of visitors that respondents would prefer (N= 54)	Range of visitors recorded from site use data
1 Entrance	15	34*	23*	4-28
2 Main pathway	17	27*	19	5-34
3 the space in front of Jingyun Bell	23	29	23	3-23
4 Exhibition Room 2	18	15*	12*	12-90
5 Shop	7	13*	9	4-15

*p < .05

The actual visitor numbers were higher in the morning and afternoon than at the noon. The reason was that many tourists were likely to visit the site in the morning and afternoon.

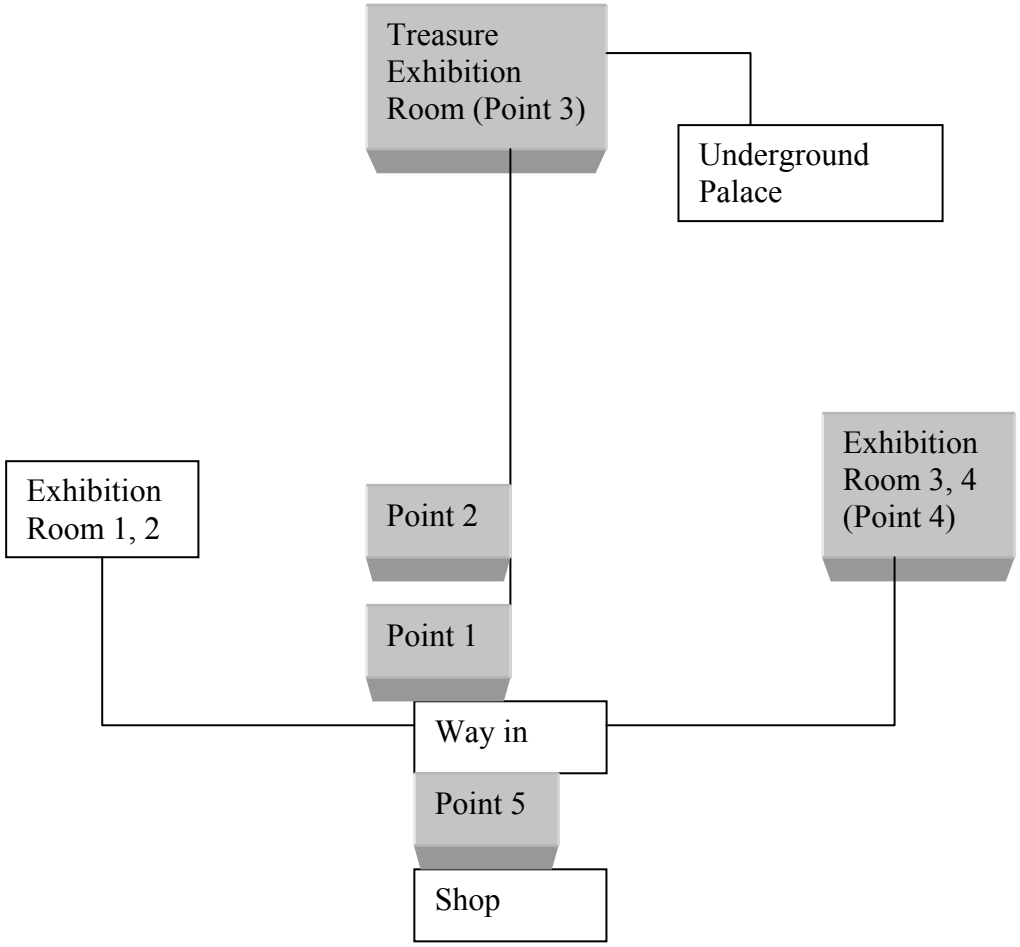
There was a small difference between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Golden Week at most locations. It indicated that although the number of visitors increased in the Golden Week, the Golden Week was not an obvious crowded period at this site. Local or regional visitors accounted for a comparatively large percentage of the market, and these

visitors were not influenced by travel opportunities in the Golden Week. The other reason was that Forest Stone of Steles was not as famous as the Terracotta Army, thus many international or domestic visitors had not recorded the site in their travel list. However, there was a big difference between the actual visitor numbers in the average peak time and the actual visitor numbers in the Golden Week at location 4, because location 4 (the exhibition room) was too small to accommodate an increased number of visitors in the Golden Week.

In the figure 3.27, many perceived numbers were significant, and then they could arguably represent the situation for the whole attraction. There was only a small gap between the tolerance use level and preference use level over the five locations. Comparing the visitors' perceived use levels to the actual use levels at the five points, the actual use levels at point 1, 2 and 5 were close to the perceived use levels. Therefore, visitors were unlikely to be bothered by others at these locations. However, the numbers of the actual visitor use levels at the location 4 highly exceeded visitors' perceived use levels at some times. These results reflect the spatial dimensions of one room at this attraction.

3.5.10 The Use Levels of the Famen Temple Museum

Schematic Map of the Famen Temple Museum



The comparison between actual use levels and perceived use levels

The first two figures summarize the daily actual use levels in different time periods; specifically for the average peak time and the Golden Week. The five points here are the entrance (point 1), the main pathway to Treasure Exhibition Room (point 2), the room on the second level of Treasure Exhibition Room (point 3), the space in front of the epitaph in Exhibition Room 3 (point 4), and the space in front of the shop (point 5). The third figure presents the perceived use levels concerning tolerance and preference. Contrasts in the visitor numbers across the figures are revealed by inspecting the Y axis differences.

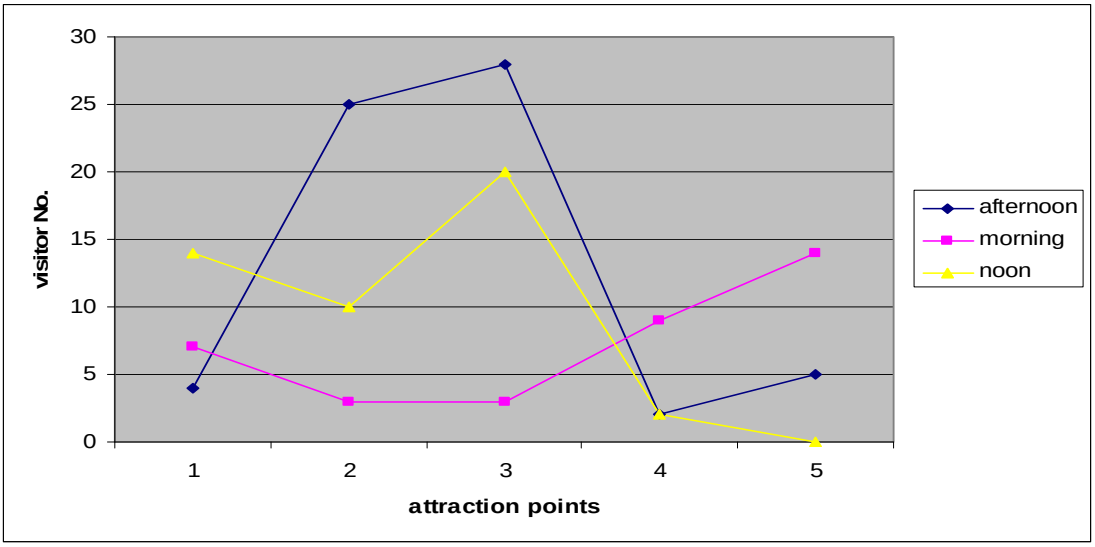


Figure3. 28 Daily visitor use levels – Famen Temple, Sep. 2007

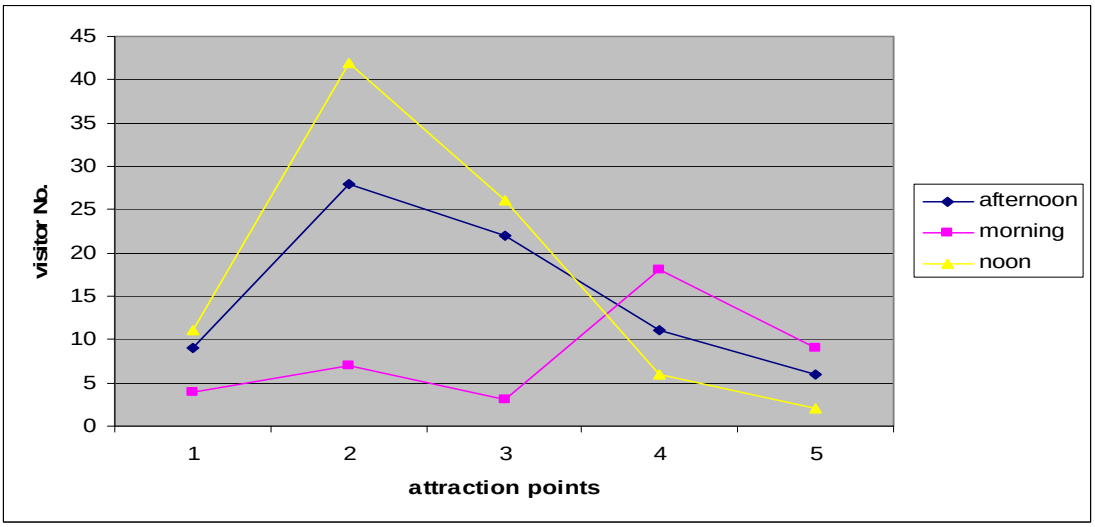


Figure3. 29 Daily visitor use levels – Famen Temple, 6 Oct. 2007

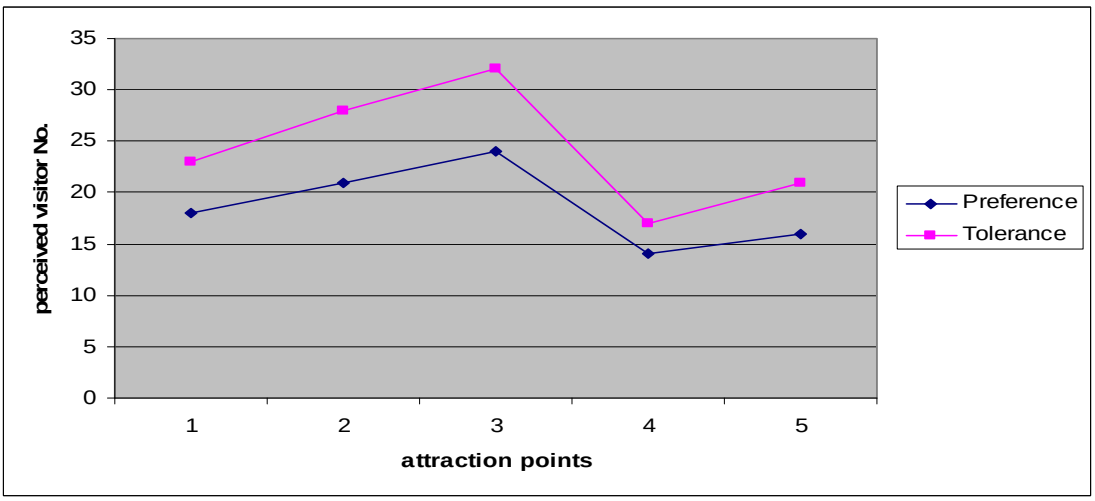


Figure3. 30 Daily perceived visitor use levels – Famen Temple

Table3. 14 The actual visitor numbers and the perceived visitor numbers over different time and locations in the Famen Temple Museum

Locations t test related statistics df=59 Critical E=2.00	Number of visitors depicted in the benchmark photograph	Mean number of visitors that respondents would be prepared to tolerate (N= 56)	Mean number of visitors that respondents would prefer (N= 56)	Range of visitors recorded from site use data
1 Entrance	12	23*	18*	4-14
2 Main pathway	16	28*	21	3-42
3 the room on the second level of Treasure Exhibition Room	26	32	24	3-28
4 the space in front of the epitaph in Exhibition Room 3	15	17	14	2-18
5 Shop	11	21*	16*	0-14

*p < .05

The actual visitor numbers were higher at noon and in the afternoon than in the morning at locations 1, 2, and 3, but the visitor numbers were lower at noon than in the morning and afternoon at location 4 and 5. Because visitors needed one and half hours to two hours to arrive at the site, the busy time was usually since 11 am. In addition, the visitor use levels were recorded after 11 am at location 4 and 5. The actual visitor numbers were higher in the morning at these two locations.

There was a small difference between the daily actual visitor numbers in the average peak time and the daily actual visitor numbers in the Golden Week over most locations. It indicated that although the number of visitors increased in the Golden Week, the Golden Week was not an obvious crowded period at this site. The reason was that Famen Temple was not as famous as the Terracotta Army, thus many international or domestic visitors did not visit this attraction in the Golden Week period.

In the figure 3.30, many perceived numbers were significant. There was only a small gap between the tolerance use level and preference use level at the five locations. Comparing the visitors' perceived use levels to the actual use levels at the five points, the actual use levels at point 1, 2 and 5 were close to the perceived use levels. Therefore, visitors were unlikely to be bothered by others at these locations.

3.6 Discussion

In considering the data presented in the figures, it can be noted that the numbers of visitors depicted in the benchmark photographs were not always located in the middle range of visitors recorded from site use data. The number of visitors depicted in the benchmark photographs represented the mean number of visitors at the convenient times the photographs were taken. There is a close correspondence with the data recorded but the photographs were taken outside the 10 minute recording period and occasionally the mean figures differed slightly.

According to the figures and the identified results, the differences of the actual use levels varied more across the day for the sites in Xi'an than for the sites in Cairns. This is not to imply that there were no time of day differences amongst the Cairns attractions but in terms of the sheer volume of visitors at different times, the data from the Xi'an sites are more striking. Additionally, the figures reflected a small gap between the actual use levels and the perceived or normative use levels in most locations in Cairns. Although the actual use levels exceeded tourists' perceived use levels at some time points, it is reasonable therefore to conclude that crowding did not occur in Cairns. However, the results demonstrated that respondents did not tolerate to see the numbers of others in many locations in Xi'an; hence it can be argued that crowding occurred in Xi'an. In particular, the different use levels over time indicated that some particular time points could be recognized as the sensitive times at the Terracotta Army, the Huaqing Hot Spring, and the Forest Stone of Steles. The sensitive time points were caused by the tourists' itinerary. For example, the sensitive time points in the Huaqing Hot Spring reflected the problem of travel patterns. The pressure was caused because the Huaqing Hot Spring was the first stop in the day tours of the region; tourists in large groups usually arrive there in the early morning. As many tourist groups pour into the site at a particular time point, it is easy to cause

a crowded situation at a specific time (cf. Coccossis & Mexa, 2004). Such time problems can be avoided by designing appropriate itineraries to distribute tourists evenly around the sites. Therefore, cooperation is very important for controlling tourists' itineraries. Sites in Cairns had tight relationships with other attractions and well organized relationships with other departments. For example, Kuranda, Tjapukai, Kuranda Railway, and Skyrail collaborated with one another to control tourists' travel itineraries. Compared with the Cairns sites, sites in Xi'an were lacking cooperation. The best cooperation in China was between sites and tourism companies as well as schools rather than other sites.

In addition, the results identified that there were sensitive locations within some sites in Xi'an, but not in Cairns. An important reason was the composition of sites in these two destinations. The compositions of sites in Cairns and Xi'an were different. It can be seen by viewing the maps of each site, the Xi'an sites adopted frequently an axis-layout while the Cairns sites adopted a more scattered layout. The scattered layout guides tourists to the same point in different ways. These different ways have the effect of distributing tourists. The axis-layout presents a very clear intuitive visual signal of the infrastructure of sites for tourists. However, few branches are possible and the routes are structured thus generating points of congestion. Nevertheless one advantage of this structural composition is often a final broad open public area or square provided for tourists. The vast open space provides one area in these attractions to limit crowding effects.

The simple issue of the physical scene of some rooms within Chinese sites presented problems. The exhibition rooms in the Forest of Stone Steles museum were not big enough to accommodate a large number of visitors in the Golden Week. Therefore, in the busiest days, tourists needed to be directed to the open places, such as squares, to escape the crowds in the small exhibition rooms of these sites. This issue of uneven distribution has been discussed in previous research and zoning can be an appropriate measurement to control crowding (Coccossis & Mexa, 2004). The focus is that site managers need to understand the different thresholds in various sub-areas, especially in the ecologically sensitive areas. For example, the sub-areas can be classified from the least visited to the most visited in the Forest of Stone Steles Museum. The very sensitive exhibitions rooms in Forest of Stone Steles can be identified as those most

vulnerable to congestion. Thus entry can be permitted only to authorized limited numbers (Coccossis & Mexa, 2004; Kostopoulou & Kyritsis, 2006). This should mean that on the busiest days, only small groups of tourists are permitted entry. One or two exhibition rooms, routes and the small square in front of the Pavilion Book of Filial Piety could be developed into a space of considerable natural interest, where the traditional tourist activities (talks, eating, relaxing) can be allowed. Finally, the big square in front of the gate could be developed as a buffer zone, where compatible activities are allowed.

The Terracotta Army site is a good example of attempting to disperse crowds in busy periods (Kostopoulou & Kyritsis, 2006). In the busiest period, the entry to the best known exhibition room is permitted only once for each visitor. Considerable areas were made available to permit tourist activities (such as shopping zone) free from cars and parking problems. Only the largest squares permit every kind of tourist activities.

A key finding in the study and site comparisons is that the sensitive time points and sensitive locations at sites in Xi'an were attributed to seasonality. Sites in Cairns and Xi'an both faced tourism peak season and low season. However, the seasonality effects were not obvious in Cairns because the physical seasonality in terms of dry and wet seasons is offset by institutional seasonality where holiday periods for domestic and international visitors compensate for the physically driven seasonal pressures. More specifically although it is hot, humid and wet over the Christmas period, Europeans and North American visitors do come because of their holidays and Australians do come because of school holidays. Conversely, seasonality was obvious in Xi'an because the destination involved marked hot and cold temperature fluctuations of the Temperate Zone. According to the figures, there was little difference of the actual visitor use levels between the average peak time and the Christmas Holiday in Cairns whereas there was a difference of the actual visitor use levels between the average peak time and the Golden Week at several attractions in Xi'an. Further, the type of heterogeneous tourists in Cairns and the homogeneous tourists in Xi'an could be regarded as a factor leading to crowding. For example, independent tourists accounted for a large per cent of tourism market in Cairns. These tourists had flexible itineraries and plenty of time to pursue remote places. By way of contrast, groups were the main tourist market in Xi'an. These tourists only went to the

most popular places and for a limited time. Therefore, many less famous sites lacked visitors in contrast to crowds at the famous sites. In the peak season, especially in the Golden Weeks in Xi'an, the increasingly large numbers pose a growing challenge to the sites' physical and cultural resources (Thomas et al., 2005).

In dealing with the seasonality in Xi'an, one core issue which can be identified following the literature is the elimination of wasted resources (Preda & Watts, 2003; Thompson & Jenkins, 1996). The resources and services need to be utilized efficiently for good tourist attraction management. For the sites in Xi'an, the over-used resources and facilities in the peak season can be renovated in the low season. This can at least repair some of the damage to the sites. Additionally, employees who have been required to work long hours in the peak season can have reduced working hours in the low season and possibly engage in training to improve their performance.

In assessing aim two of this study (the aim relates to the links between tolerance and preference), it can be noted that the perceived visitor use levels were nearly identical for the tolerance dimension and the preference dimension. There was only a small gap between the two evaluative dimensions in both destinations. In the literature on normative crowding, the evaluative dimension of tolerance has been commonly utilized to indicate the lowest level of acceptability for tourists' quality of experience. By way of contrast preference has indicated a high level of tourists' quality of experience at least in terms of reactions to crowding. In North American studies, there was often a big difference between the two normative dimensions, for the norm of tolerance was sometimes more than four times the preference-based norm (Manning et al., 1999). However, this study presented different results for these sites.

Compared with the figures for sites in Cairns, the actual use levels were much higher than the perceived use levels at some locations for the sites in Xi'an. It indicated that tourists' quality of experience was likely to be problematic at these locations. This assertion can be made because previous studies have shown that tourists had higher quality experiences when the actual visitor number was close to the preferred visitor number (Manning et al., 2005). More specifically the results also suggest some managerial opinions. For the locations characterized by high sensitivity (high demand), a standard of quality near the "tolerance" can be the major purpose, aiming to provide tourism experience opportunities for visitors. For locations characterized

by low sensitivity (low demand), a standard of quality near the "preference" can provide for visitors. If such management actions are followed visitors should be more satisfied with their experience of the site.

Additionally, good managerial conditions reduce tourists' negative perceptions of a place (e.g. Mowen et al., 2003; Needham et al., 2004). The reason is that perceptions are not only affected by visitor numbers and behavior, but are also influenced by event design, capacity, and the application of management practices. For example, appropriate information can reduce negative crowded perception in settings. Tourists have higher tolerance in developed settings than in developing settings. In recent years, sites in Xi'an have made a large investment to enhance their facilities and services. However, they may not still be enough to satisfy tourists in the peak time, when too many tourists arrive at the same time. Education and monitoring have been the focus to control tourists' actual use levels and influence tourists' perceptions in the peak season. The fuller documentation of the empirical evidence linking the perceptions noted in this study to satisfaction or desire to be in the settings will be pursued in more detail in the next study.

In summary, the different visitor use levels indicated that there were optimal utilities of the environment at sites in Cairns, without crowding. However, some inappropriate use of the environment of sites in Xi'an was systematically recorded.

3.7 Chapter Summary

This chapter sought to compare the physical and operational environment in terms of visitor actual use level between tourist sites in Cairns and Xi'an. Observations were used to collect data about visitor actual use levels at major points within each site. The data about visitor actual use levels reflected some predicable differences of the environment at sites in Cairns and Xi'an. The current number of visitors has not exceeded the perceived social carrying capacity of sites in Cairns. The sites in Cairns provided a high quality recreational environment for tourists. It can be predicted that there is not substantial crowding pressure on the operational environments of sites in Cairns. The views of tourist site managers in Cairns will be explored in a late chapter to investigate this suggestion. However, in Xi'an, the present numbers of visitors have exceeded the carrying capacity at some popular locations at some times in the peak

period. At times, the facilities and services were not able to meet visitors' preference. Additionally, it is likely that sites managers in Xi'an, especially the site managers of the most popular sites, have had pressure on their operational actions at the busiest time. The views of these managers will be investigated in a subsequent chapter.

Further, this chapter sought to compare tourists' actual use levels and tourists' perceived use levels between sites in Cairns and Xi'an. A difference was identified. Visitors were not be bothered by the number of encounters at most locations in Cairns. However, visitors were disturbed by the number of encounters at some popular locations in Xi'an. Therefore, management actions are needed to enhance tourists' tolerance and preference in order to limit tourists' perceived crowding.

In conclusion, this chapter reviewed perceived crowding and use at selected tourist attractions in Cairns and Xi'an. This chapter also presented the relationship between the visitor actual use levels and visitor perceived use levels, and their influences on the environment. However, a further question is what drives the specific differences among tourists' crowding related norms in Cairns and Xi'an? In a same environment, are there different normative crowding views among different users? In brief, what factors influence tourists' perceptions of crowding? These particular perspectives will be discussed in the next chapter.

Chapter 4 Explaining Tourists' Perceptions

Chapter Outline

4.1 Introduction

4.2 Aims of the Study

(Four aims are proposed in this chapter to explain tourists' perceptions of crowding and what factors influence tourists' perceptions.)

4.3 Instrumentations and Sample

(A quantitative analysis associated with a questionnaire survey was used in this study. The sample includes 585 respondents, half of them are Chinese tourists, and half of them are international tourists, most of whom are European-North American tourists.)

4.4 Research Hypotheses and Variables

(There are 8 hypotheses, organised in a hierarchal relationship. Each hypothesis involves different independent variables and dependent variables.)

4.5 Results – Assessing the Hypotheses

(The independent t-test, one-way ANOVA, correlation and multiple regression were used to analyse the data in this study. Results demonstrate several factors influencing tourists' perceptions of crowding. Results also demonstrate relationships among the different crowding-related variables. Finally, a comparison between the sites in Cairns and the sites in Xi'an is presented.)

4.6 Discussion

4.6 Chapter Summary

4.1 Introduction

This chapter presents and attempts to explain the tourists' different perceptions of crowding. A quantitative analysis approach was conducted to collect data by using a questionnaire survey. Following the discussion in the literature, many social and psychological factors influence tourists' perceptions, including tourists' expectations, tourists' demographic characteristics, and the environment and conditions of the destinations or sites. In this chapter, the influence of such key factors are investigated, particularly several demographic characteristics as well as several characteristics of travellers' behaviour and organization. The crowding literature investigating demographic influences has focussed on visitors' age, education, experience, and cultural or ethnic origin. Few research studies in this field involve comparisons of tourists from different countries (cf. Yagi & Pearce, 2007). This study compared the different perceptions of crowding between the Chinese tourists and the international tourists (most of them are the European-North American tourists).

Some previous research has also identified that the environment and conditions of a place can affect tourists' perceptions of crowding. Such research involved the study of festivals and the influence of site locations (Young, 1995). The positive conditions, appropriate facility arrangement and a high quality of service can help avoid or minimize crowding perception. This chapter also investigates what factors can influence these tourists' crowding-related norms. Key concepts developed include visitors' environment concern and their crowd concern. Measures of tolerance, preference, desire and satisfaction are used in the assessment of visitors' perceptions. This study also investigates the relationships among these social-psychological variables, particularly whether or not they influence crowding. The exploration of tourists' perceptions of crowding is a critical part of crowding management because the awareness and understanding of tourists' crowding perceptions can be useful for managers to make appropriate choices for different conditions.

4.2 Aims of the Study

Both positive and negative relationships can be found among the different demographic and site factor and crowding-related norms. Tourists who have more

concern with environmental conditions, which include safety, facility, and service, may be more sensitive to crowds. Moreover, tourists who have a particular concern with crowds may respond in different ways in their evaluation assessments. Therefore, the overall aim in this chapter is 1) to explore the relationships among tourists' environment concern, crowd concern, tolerance, preference, desire and satisfaction. If there are consistent clear relationships between these variables, site managers can know that tourists' concerns influence crowding perception and crowding perception influences tourists' desirability to be in the location and possibly their satisfaction. Moreover, when site managers take management actions to influence tourists' perceptions, the management actions can be directed effectively if a sound knowledge of the background factors influencing crowding is available; for example: promoting environment conditions in order to minimize tourists' environment concern; limiting visitor number in order to relieve tourists' crowd concern; educating tourists in order to enhance their tolerance; and providing special services in order to promote tourists' preference and desire.

The context can influence tourists' perceptions of crowding. The literature has reported that tourists have perceived crowding differently in different settings. This study focuses on tourists' perceptions of crowding in two different contexts, Cairns and Xi'an. So the second aim in this chapter is 2) to explore further how and why tourists have different perceptions of crowding in Cairns and Xi'an.

Building on the literature and the introduction, this study also explores the influences of the demographic characteristics on tourists' perceptions of crowding. The demographic characteristics involved in this study include age, gender and nationality. Therefore, the third aim in this chapter is 3) to explore the demographic factors affecting tourists' perceptions of crowding; and to compare the different demographic details between the Chinese tourists and the international tourists.

This study also explores the influence of the travelling characteristics on tourists' perceptions of crowding. The influences on tourists' travel include their group membership, travel patterns and travel experiences. Thus the last aim in this chapter is 4) to explore the travelling organisation characteristics affecting tourists' perceptions

of crowding; and to compare the travelling style differences between the Chinese tourists and the international tourists.

In summary, this chapter aims to present a general and integrated overview of tourists' perceptions and the factors affecting their perception of crowding in Cairns and Xi'an. This chapter also emphasizes the Chinese tourists' perceptions of crowding, compared with perceptions of tourists from other countries.

4.3 Instrumentation and Sample

4.3.1 Instrumentation

This second study uses a quantitative survey approach. The data about tourists' perceived crowding were collected by questionnaires. The content of the questionnaires for each site was the same, but there were specific components for each of the ten sites. Importantly, the questionnaire was translated into Mandarin for use with Chinese visitors at the Xi'an sites or with Chinese visitors to the Australian sites. This translation was conducted by the researcher and checked by Mandarin speaking colleagues. There were five parts of the questionnaire of relevance to this chapter: questions about demographic (Part A and F), questions about environment concern and crowd concern (Part B), questions about crowding-related norms (Part D), and questions about tourists' satisfaction (Part E). For the full questionnaire refers to Appendix III.

The data from two questions in Part A were used in this chapter:

1. Who did you visit Kuranda Rainforestation (or as appropriate to the site Green Island, Tjapukai, Tropical Zoo, Lagoon, Terracotta Army, Shaanxi History Museum, Huaqing Hot Spring, Forest Stone of Steles, Famen Temple) with? (Circle one only)
    1) Alone
    2) Friends/ family travelling together with children or seniors
    3) Friends/ family travelling without children or seniors
    4) An adult couple (ie, partners in a relationship)
    5) Other (please specify)

2. How did you arrange your last trip to Kuranda Rainforestation (or as appropriate to the site Green Island, Tjapukai, Tropical Zoo, Lagoon, Terracotta Army, Shaanxi History Museum, Huaqing Hot Spring, Forest Stone of Steles, Famen Temple)?
    1) A fully inclusive package tour
    2) A partially packaged tour with transport and accommodation only
    3) Non-packaged/ independent travel

The data collected for question 1 was not used in this chapter. Question 2 investigated tourists' travel companions. The different travel party companions can be a factor which influences tourists' crowding-related norms. Question 3 explored tourists' type of travel. Independents and tourists in groups may have different perception of crowding and their encounters.

The data from the questions in Part B were fully used in this chapter. The first question in this section explored their concern with items relevant to the environmental conditions as well as their specific concern with crowds.

1. According to your previous experiences in Kuranda Rainforestation (Green Island, Tjapukai, Tropical Zoo, Lagoon, Terracotta Army, Shaanxi History Museum, Huaqing Hot Spring, Forest Stone of Steles, Famen Temple), please indicate your agreement with each of the following factors (please tick one answer in only in each row)

	(1) Strongly disagree	(2) Somewhat disagree	(3) Neutral	(4) Somewhat agree	(5) Strongly agree
1) Worry about I can't meet and talk to the staff					
2) Concern about the facilities (such as the rubbish bin, sign posts)					
3) Feel too many people there and they cause unfriendly atmosphere					
4) Worry about there are not enough staff to look after me					
5) Need to see or experience the attraction on my own as much as possible					
6) Get concerned about my safety					
7) Worry about lots of people getting very close to me					
8) Get concerned about diseases which are likely to be transmitted					
9) Feel I will not be able to see the attraction if there are too many people					
10) Worry about long queues					
11) Feel too many people will damage the environment					

The statement about environment concern and crowd concern were developed on the basis of the coding system developed by Manning and his colleagues (2005). The code system includes:

1. Solitude

2. Parks are for people
3. Prefer to see some people
4. Balancing personal preferences and democratic concerns
5. Concern for resource protection, ecological health
6. Traffic detracting from park experience
7. Preference not realistic
8. Need for public transportation
9. Don't want to see people turned away, inconvenienced
10. Traffic a safety concern…

The statements employed in this thesis were adapted to the studied sites. The statements involve the environment concern and crowd concern. The environment concern refers to the factors which can cause visitors' concern with the destination or site environment. The crowd concern considers the extent to which visitors worry about others they encounter. The findings about environment concern reflect whether the conditions or environments satisfy visitors. The result for the crowd concern indicates whether visitors worry about the crowds at these two destinations, Cairns and Xi'an.

The statements in this question seek to explore tourists' different ideas about environment concern and crowd concern. Statements numbered 1, 2, 4, 6, and 8 are related to the environment concern, so the environment concern variable = statements 1+2+4+6. Statements numbered 3, 5, 7, 9, 10, and 11 are concerned with the crowd concern, so the crowd concern variable = statements 3+5+7+9+10+11. These closed-ended questions are presented randomly in order to escape bias due to response sets such as "yea-saying" (Manning, Lawson et al., 2002).

The next set of questions concentrated on the evaluative responses to crowding as depicted in five photographs at selected locations for each site. The questions used were as follows (the Mandarin translations conveyed the same evaluative terms to the visitors).The data from the questions in Part D were used in this chapter:

1. What number of people would you tolerate to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

2. What number of people would you prefer to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

3. How much would you like to be at the location with this number of people as showing on the photograph?

□	□	□	□	□
1	2	3	4	5
Not like to be there at all	Like to be there a little	Neutral	Like to be there a lot	Like to be there a great deal

The three questions were provided to the tourists five times by using five different photographs. As mentioned in chapter 3, the photographs of five locations at each site were presented. The locations included the entry area, an area along a main route, and three major popular locations. The photographs used for these questions depicted the visitor numbers at each location, consistent with the studied areas in chapter 3. The three questions investigated tourists' perceptions concerning three crowding-related evaluative dimensions: tolerance, preference and desire.

Another important evaluative dimension was presented in the next section of the questionnaire. The data from this question in Part E were used in this chapter, and the question was:

1. According to you previous experiences, please indicate your overall satisfaction for Kuranda Rainforestation (or as appropriate to the site Green Island, Tjapukai, Tropical Zoo, Lagoon, Terracotta Army, Shaanxi History Museum, Huaqing Hot Spring, Forest Stone of Steles, Famen Temple) on the scale of "0=very dissatisfied" to "10=very satisfied" (please tick one only).

□ □ □ □ □ □ □ □ □ □ □

0 1 2 3 4 5 6 7 8 9 10
Very Dissatisfied — Very Satisfied

This question seeks to explore tourists' overall satisfaction with each site. As discussed previously, crowding management is assumed to have an effect on tourists' satisfaction. This question was utilized to help identify the relationship between the crowding norms and tourists' satisfaction.

A final section of the questionnaire elicited some demographic information. The data from the questions in Part F were used in this chapter:

1. Which age group are you in? Are you…

   1) 18 – 24 2) 25 – 34 3) 35 – 44 4) 45 – 54

   5) 55 – 64 6) 65 – 74 7) 75+ 8) Refused

2. Please complete the following:

   Are you…

□ Female

□ Male

3. Where are you from?

   _____

6. How many times in the last 5 years have you travelled?

   _____

These questions investigate tourists' age, gender, nationality, and travel experiences. These factors were also seen as likely to influence tourists' perceptions of crowding. The answers to these questions were used to identify the distinctive crowding-related norms of different tourists.

4.3.2 Sample

As noted in the previous discussion in Chapter Three, the aim of study two was to collect 600 questionnaires in total specifically, 60 questionnaires for each site. A total of 585 questionnaires were obtained. The demographic details of the sample have been presented in chapter 3.

4.4 Research Hypotheses and Variables

Following the aims of the study, eight hypotheses were developed about tourists' crowding views in Cairns and Xi'an. Separate independent and dependent variables were implicated and used to frame and test each hypothesis. The hypotheses are described and also presented in an ordered sequence in Figure 4.1.

1. It is anticipated that there is a positive relationship between environment concern and crowd concern and a positive relationship between tolerance and preference. It is anticipated that people who have a greater level of environment concern and crowd concern tend to have less tolerance and preference to encounters, have less desire to stay at a place with other people, and are less satisfied with sites. It is anticipated that people who have a greater level of tolerance and preference tend to have greater desire and higher satisfaction. It is anticipated that there is a positive relationship between desire and satisfaction. When the desire increases, the satisfaction increases.
2. It is anticipated that the environment of sites is a factor influencing environment concern and crowd concern, tolerance, preference, desire and satisfaction. Tourists who tend to have a greater level of environment concern and crowd concern tend to have lower tolerance and lower preference scores as well as less desire and less satisfaction. The second aim explores the consistency of the relationships for the Cairns and Xi'an sites. Tourists have a greater level of environment concern and crowd concern to sites in Xi'an than

to sites in Cairns, and then they have less tolerance, less preference, less desire and less satisfaction with sites in Xi'an than with sites in Cairns.

3. It is anticipated that gender is a factor influencing tourists' environment concern, crowd concern, tolerance and preference. It is predicted that women have a greater level of environment concern and crowd concern and lower tolerance and lower preference scores than men as well as less desire to stay with other people, and lower satisfaction scores than men.
4. It is anticipated that there is a relationship between age and environment concern as well as crowd concern. The older tourists tend to have a greater level of environment concern and crowd concern but less tolerance and lower preference scores for encounters, less desire to stay with other people, and lower satisfaction scores than the younger tourists.
5. It is anticipated that the nationality of tourists is a factor influencing environment concern, crowd concern, tolerance, preference, desire and satisfaction. Compared with other international visitors (most of them are European and North American), Chinese visitors tend to have less environment concern and crowd concern, but higher tolerance and preference scores, more desire to stay with other people, and are more easily satisfied than the international tourists.
6. It is anticipated that tourists who have children or seniors as their companions tend to have less environment concern and crowd concern but more tolerance and preference to encounters, more desire to stay with other people, and are more easily satisfied; compared to tourists, who do not have children or seniors as their companions, tend to have more environment concern and crowd concern but less tolerance and preference to encounters, less desire to stay with other people, and are harder to satisfy.
7. It is anticipated that tourists who visit in a fully packaged group tend to have less environment concern and crowd concern to sites but more tolerance and preference to encounters, more desire to stay with other people, and are more easily satisfied compared to tourists, who visit in a partial packaged group or in an independent group, tend to have more environment concern and crowd concern about sites but less tolerance and preference to encounters, less desire to stay with other people, and are more difficult to satisfy.

8. It is anticipated that there is a negative relationship between travel experience and environment concern and crowd concern, but there is a positive relationship between travel experience and tolerance, preference, desire and satisfaction. Tourists who have more travel experience tend to have less environment and crowd concern but more tolerance and preference to encounters, more desire to stay with other people, and are more easily satisfied.

Therefore, the hypotheses anticipate that several demographic factors, travelling factors and the environment of tourist sites can influence tourists' perceptions of crowding. These hypotheses also anticipate that there are both positive or negative relationships among the variables derived from the questions. Indeed, there is a hierarchical structure among these variables, which is presented in the figure 4.1.

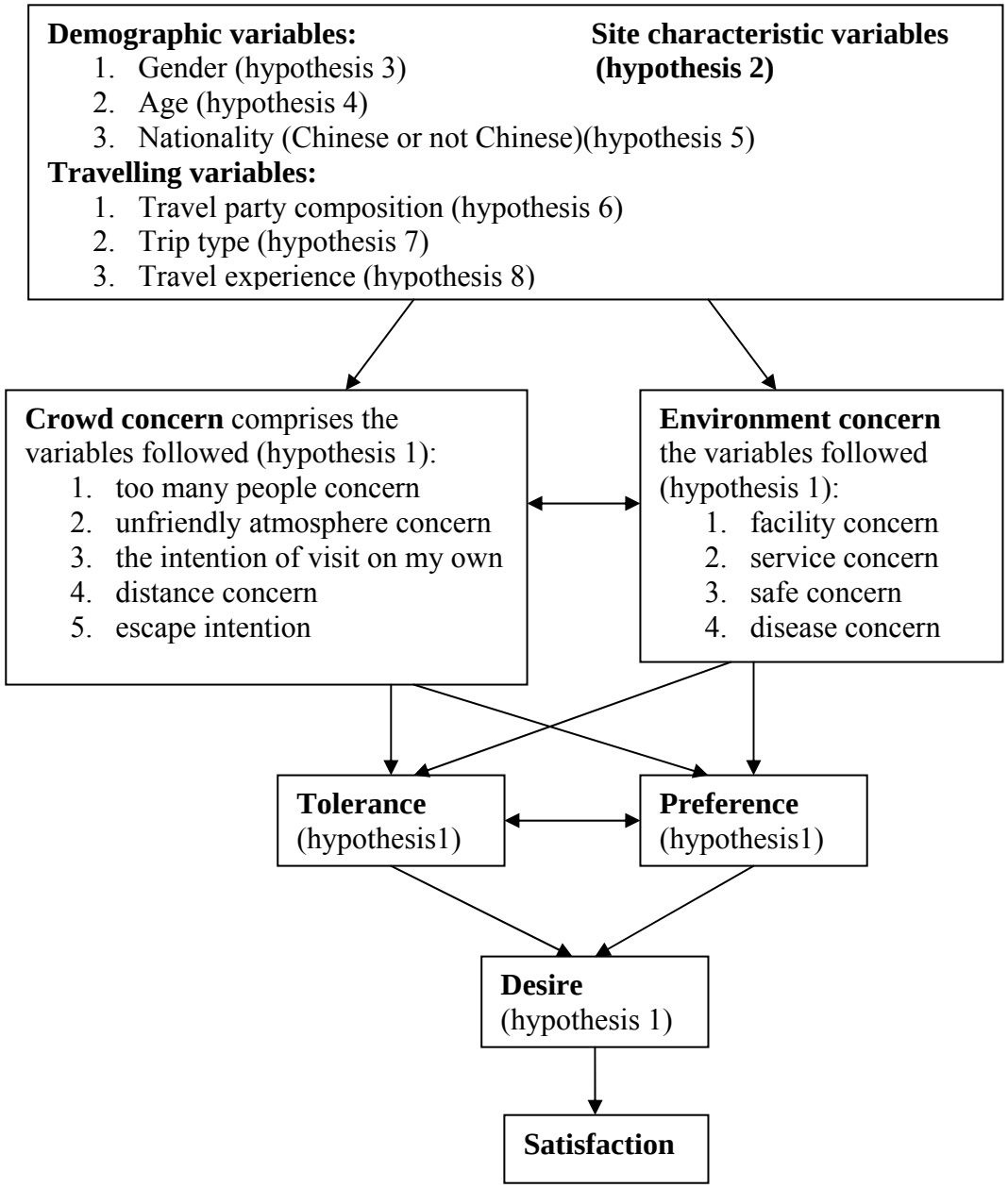


Figure4. 1 The hierarchical structure of the hypotheses

The hierarchical structure consists of five levels. The first level, the demographic variables, the travelling variables and the site characteristic variables, are the independent variables which influence the variables of the other four levels. The second level specifies the environment concern and the crowd concern, which can be the independent variables influencing the variables of the remaining three levels. The third level consists of visitors' tolerance and preference, which in turn can be treated as the independent variables influencing the remaining two levels. The fourth level is the desire (the willingness to be in the specific location), which is outcome of an

independent variable for the final satisfaction. The last level is the tourists' satisfaction, which is at least in part dependent on the preceding variables.

4.5 Results – Assessing the Hypotheses

4.5.1 The Relationships between the Crowding-related Norms

This section tests hypothesis 1, investigating whether there are relationships among the tourists' crowding-related norms. These variables include the perceptions of environment concern, crowd concern, tolerance, preference, desire and satisfaction.

Correlation analysis is a family of statistical tests which determine whether there are trends or relationships between two or more sets of data from common sources or individuals (Coomans et al., 2008). The tests provide a statistical yes or no as to whether a significant relationship or correlation exists between the variables. In this context correlation was initially used to test the relationship between environment concern and crowd concern to identify whether there is a positive relationship between these two variables. Correlation analysis was also used to test the relationship between tolerance and preference to identify whether there is a positive relationship between these two variables. Finally, the relationship between desire and satisfaction was explored to identify whether there is a positive relationship between these two variables. The results are presented in the Table 4.1.

Table4. 1 Correlation for environment concern with crowd concern; tolerance with preference; and desire with satisfaction

Variables	Variables	Pearson Correlation	Sig. (2-tailed)
Environment Concern with	Crowd Concern	.715*	.000
Tolerance with	Preference	.710*	.000
Desire	Satisfaction	.347*	.000

* Correlation is significant at the 0.01 level (2 – tailed).

The correlation between environment concern and crowd concern is 0.715. By squaring the correlation and then multiplying by 100, the percentage of the variability which is shared can be determined. Rounding 0.715 to be 0.72, which when squared would be .52, multiplied by 100 would be 52%. Hence environment concern shares about 52% of its variability with crowd concern. As indicated in Table 4.1, there is a

significant positive relationship between these two variables; as environment concern increases so does crowd concern.

The correlation between tolerance and preference is 0.71. By squaring the correlation and then multiplying by 100, the percentage of the variability which is shared can be determined. 0.71 squared would be .50, multiplied by 100 would be 50%. Hence tolerance shares about 50% of its variability with preference. As indicated in Table 4.1, there is a significant positive relationship between these two variables; as tolerance increases so does preference.

The correlation between desire and satisfaction is 0.35. By squaring the correlation and then multiplying by 100, the percentage of the variability which is shared can be determined. 0.35 squared would be .13, multiplied by 100 would be 13%. Hence desire shares about 13% of its variability with satisfaction. As indicated in Table 4.1, there is a significant positive relationship between these two variables; as desire increases so does satisfaction. The relationship is not large in substantive terms but this is logical since a range of factors other than crowding are relevant to satisfaction outcomes (Ryan, 1994).

Multiple regression analysis measures the degree of influence of a set of independent variables on a dependent variable (Coomans et al., 2008). There was one outcome (dependent) variable and two predictors in each relationship. Multiple regression was used to predict the relationship between environment concern, crowd concern and tolerance; in other words, predicting tolerance from environment concern and crowd concern. This simple regression was also used to predict preference from environment concern and crowd concern and to predict desire from environment concern and crowd concern. Further the same approach was used to predict satisfaction from environment concern and crowd concern, to predict desire from tolerance and preference, and to predict satisfaction from tolerance and preference. The results are presented in Table 4.2.

Table4. 2 Multiple regression for environment concern and crowd concern with tolerance, preference, desire and satisfaction; and tolerance and preference with desire and satisfaction

Independent variables	Sig. Level	t-value	Standardized Coefficients	F	R Square	Adjusted R Square
Environment Concern	.463	.735	.045	15.141	.056	.052
Crowd Concern	.000*	-4.347	-.266			
Dependent Variable: Tolerance						
Environment Concern	.564	.578	.034	34.097	.117	.114
Crowd Concern	.000*	-6.186	-.366			
Dependent Variable: Preference						
Environment Concern	.421	-.805	-.050	7.878	.030	.026
Crowd Concern	.032*	-2.150	-.133			
Dependent Variable: Desire						
Environment Concern	.004*	-2.915	-.178	19.433	.070	.067
Crowd Concern	.079	-1.762	-.107			
Dependent Variable: Satisfaction						
Tolerance	.000*	5.003	.259	87.047	.232	.229
Preference	.000*	5.039	.261			
Dependent Variable: Desire						
Tolerance	.897	.129	.008	9.781	.033	.030
Preference	.003*	3.033	.176			
Dependent Variable: Satisfaction						

*p < .05

In these results, the p-value of the F-test was used to see if individual models are significant. Further when the dependent variable is tolerance, only the predictor variable crowd concern is statistically significant. The R-squared is .056, meaning that approximately 5.6% of the variability of tolerance is accounted for by the variables in the model. In this case, the adjusted R-squared indicates that about 5.2% of the variability of tolerance is accounted for by the model; even after taking into account the number of predictor variables in the model. The coefficient for crowd concern indicates a decrease of 0.27 in the tolerance score for every one unit increase in crowd concern, assuming that the variable of environment concern in the model is held constant.

When the dependent variable is preference, the predictor variable crowd concern is

statistically significant. The R-squared is .117, meaning that approximately 11.7% of the variability of preference is accounted for by the variables in the model. In this case, the adjusted R-squared indicates that about 11.4% of the variability of preference is accounted for by the model; even after taking into account the number of predictor variables in the model. The coefficient for crowd concern indicates a decrease of 0.37 in the preference score for every one unit increase in crowd concern, assuming that the variable of environment concern in the model is held constant.

When the dependent variable is desire, the predictor variable crowd concern is statistically significant but in actual percentage terms quite small. The R-squared is .03, meaning that only 3% of the variability of desire is accounted for by the variables in the model. In this case, the adjusted R-squared indicates that about 2.6% of the variability of desire is accounted for by the model; even after taking into account the number of predictor variables in the model. The coefficient for crowd concern indicates a decrease of 0.13 in the desire score for every one unit increase in crowd concern, assuming that the variable of environment concern in the model is held constant.

When the dependent variable is satisfaction, the predictor variable environment concern is statistically significant. The R-squared is .07, meaning that approximately 7% of the variability of satisfaction is accounted for by the variables in the model. In this case, the adjusted R-squared indicates that about 6.7% of the variability of satisfaction is accounted for by the model; even after taking into account the number of predictor variables in the model. The coefficients for environment concern indicate a decrease of 0.11 in the satisfaction score for every one unit increase in environment concern, assuming that the variable of crowd concern in the model is held constant.

When the dependent variable is desire, the predictor variables tolerance and preference are statistically significant. In this case, the adjusted R-squared indicates that about 23% of the variability of desire is accounted for by the model; even after taking into account the number of predictor variables in the model. The coefficients indicate a increase of 0.26 in the desire score for every one unit increase in tolerance or preference, assuming that the other variable in the model is held constant.
When the dependent variable is satisfaction, the predictor variable preference is

statistically significant. The R-squared is .033, meaning that approximately 3% of the variability of satisfaction is accounted for by the variables in the model. In this case, the adjusted R-squared indicates that about 3% of the variability of satisfaction is accounted for by the model; even after taking into account the number of predictor variables in the model. The coefficients for preference indicate a increase of 0.18 in the satisfaction score for every one unit increase in preference, assuming that the variable of tolerance in the model is held constant.

Hypothesis 1 is partially supported by the results. Several positive relationships were identified, including environment concern with crowd concern, tolerance with preference, tolerance and preference with desire, and desire with satisfaction. Additionally, several negative relationships were demonstrated, including crowd concern with tolerance, preference and desire, and environment concern with satisfaction. These relationships implied that tourists' evaluations regarding environment concern had a strong impact on their attitudes to crowds. Tourists' expectations of tolerance strongly decided if they preferred to see other encounters. Tourists' preference to see others had relatively strong impacts on their attitudes of desire, and so did the impact of desire on tourists' satisfaction. However, tourists' evaluation regarding environment concern and crowding concern had some impact on their tolerance and preference, yet their negative effect was not extremely impressive. In addition, the positive effect of preference was not impressive for the dependent variable of satisfaction.

4.5.2 The Influence of the Characteristic of Sites

This section tests hypothesis 2, which investigated whether tourists have different perceptions of crowding in Cairns and Xi'an. Tourists' crowding-related norms consisted of environment concern, crowd concern, tolerance, preference, desire and satisfaction.

An independent samples t-test was used to compare the means of a normally distributed dependent variable for two independent groups of sites in Cairns and Xi'an. The independent t-test was used to compare the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire

and the mean satisfaction with sites in Cairns versus sites in Xi'an. The results are presented in the Table 4.3.

Table4. 3 T-tests for tourists' perceptions of sites in Cairns and Xi'an

Independent variables	Dependent variables	N	Mean	t	Sig. (2-tailed)
Sites in Cairns	Environment Concern	285	2.43	-15.383	.000*
Sites in Xi'an		272	3.67		
	Crowd Concern	289	2.86	-12.123	.000*
		242	3.76		
	Tolerance	297	2.47	4.069	.000*
		283	2.24		
	Preference	297	2.22	7.741	.000*
		283	1.83		
	Desire	297	3.03	3.798	.000*
		284	2.80		
	Satisfaction	297	7.40	3.247	.001*
		284	6.88		

*p < .05

The results indicate that there is a statistically significant difference between the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction between the sites in Cairns and Xi'an.

Hypothesis 2 is supported by the results which demonstrate that tourists had more environment concern and crowd concern with the sites in Xi'an than with the sites in Cairns, and tourists had less tolerance, preference and less desire to stay with other people at sites in Xi'an than at the sites in Cairns. Moreover, tourists had lower satisfaction with the sites in Xi'an than with the sites in Cairns. Noe (1999) interpreted the scale of satisfaction that when the scale lies in a range of "0 = very dissatisfied" and "10 = very satisfied", above 8.5 means outstanding, 8.2 to 8.4 are equivalent to very good, 8.0 to 8.2 refer to good, 7.5 to 7.9 are sound, below 7.5 is moderate, and below 7.0 requires attention and definite improvement. Here, the mean satisfaction with the sites in Cairns is 7.4, so tourists reported a moderate level of satisfaction with the sites in Cairns. Tourists recorded satisfaction as 6.88 with the sites in Xi'an. Therefore, the sites in Xi'an need particular attention to be improved in the future. Overall, tourists in Cairns and Xi'an had different perceptions. Since these site differences were consistent, the influence of the demographic characteristics and

travelling characteristics of tourists in Cairns and those in Xi'an was then analyzed separately, based on the difference in these two destinations.

4.5.3 The Influence of the Demographic Factors and the Travelling Factors

This section tests hypotheses 3 to 8, and investigated whether these demographic factors and the travelling factors influence tourists' crowding perceptions, including environment concern, crowd concern, tolerance, preference, desire and satisfaction.

4.5.3.1 The Influence of Gender on Tourists' Perceptions

The independent t-test was used to compare the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction of female tourists versus male tourists separately in Cairns and Xi'an. The results are presented in Table 4.4 and Table 4.5.

Table4. 4 Tourists' perceptions of crowding according to gender in Cairns

Independent variables	Dependent variables	N	Mean	t	Sig. (2-tailed)
Female	Environment Concern	152	2.34	-1.632	.104
Male		133	2.52		
	Crowd Concern	156	2.81	-.922	.357
		133	2.91		
	Tolerance	159	2.45	-.517	.605
		138	2.50		
	Preference	159	2.20	-.790	.430
		138	2.26		
	Desire	159	3.05	.525	.600
		138	3.01		
	Satisfaction	160	7.39	-.129	.898
		137	7.42		

*p < .05

The results indicate that there is not a statistically significant difference between the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction for males and females in Cairns.

Table4. 5 Tourists' perceptions of crowding according to gender in Xi'an

Independent variables	Dependent variables	N	Mean	t	Sig. (2-tailed)
Female	Environment Concern	140	3.69	.503	.616
Male		131	3.63		
	Crowd Concern	122	3.73	-.441	.659
		119	3.78		
	Tolerance	139	2.27	.752	.453
		143	2.21		
	Preference	139	1.80	-.787	.432
		143	1.86		
	Desire	140	2.88	1.633	.104
		143	2.73		
	Satisfaction	141	6.98	.776	.438
		142	6.80		

*p < .05

The results indicate that there is not a statistically significant difference between the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction for males and females in Xi'an.

Hypothesis 3 relating gender to crowding perceptions is not supported. Female tourists and male tourists did not differ in their perceptions of environment concern, crowd concern, tolerance, desire and satisfaction in these two destinations. There is, therefore, no support for the overview that gender has a major role in shaping component parts of crowding responses by visitors.

4.5.3.2 The Influence of Age on Tourists' Perceptions

A one-way analysis of variance (ANOVA) is used when there is a categorical independent variable (with two or more categories) and a normally distributed interval dependent variable, testing for differences in the means of the dependent variable broken down by the levels of the independent variable. The one-way ANOVA was used to test whether the mean of environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction differed among the five age groups in Cairns and Xi'an. The results are presented in Table 4.6 and Table 4.7.

Table4. 6 Tourists' perceptions of crowding according to age in Cairns

Independent variables	Dependent variables	N	Mean	Std. Deviation	F	Sig.
18 - 24	Environment Concern	85	2.22	.923	2.824	.025*
25 - 34		78	2.38	.814		
35 - 44		40	2.73	.991		
45 - 54		37	2.48	.868		
55+		42	2.62	.917		
	Crowd Concern	87	2.79	.907	.529	.715
		79	2.86	.934		
		41	2.99	.933		
		38	2.79	.832		
		41	2.97	.941		
	Tolerance	89	2.40	.726	.336	.854
		80	2.50	.716		
		42	2.43	.708		
		39	2.50	.773		
		44	2.52	.714		
	Preference	89	2.16	.641	.364	.834
		80	2.24	.694		
		42	2.18	.612		
		39	2.28	.550		
		44	2.26	.531		
	Desire	89	3.08	.536	1.012	.401
		80	3.07	.756		
		42	2.90	.601		
		39	3.07	.708		
		42	2.62	.917		
	Satisfaction	89	7.67	1.498	2.817	.026*
		80	6.94	1.865		
		42	7.02	2.561		
		39	7.90	1.683		
		44	7.50	1.994		

*p < .05

The results indicate that there is not a statistically significant difference between the mean crowd concern, the mean tolerance, the mean preference and the mean desire among the different age groups in Cairns. The results indicate that there is a statistically significant difference between the mean environment concern and the mean satisfaction among the different age groups (p = .025 and p = .026). When comparing group mean significance, the Duncan's multiple-range test was applied. Tourists in the age group 35 – 44 (M = 2.73, SD = .99) and 55+ (M = 2.62, SD = .92) had significantly greater environment concern than tourists in the age group 18 – 24

(M = 2.22, SD = .92). However, the mean scores for all the age based groups are less than 3, therefore, tourists did not have fundamental environment concern at the sites in Cairns. Additionally, tourists in the age group 45 – 54 (M = 7.90, SD = 1.68) did have significantly higher satisfaction scores than tourists in the age group 25 – 34 (M = 6.94, SD = 1.87) and 35 – 44 (M = 7.02, SD = 2.56). However, the mean scores for all the age based groups are from 7 to 8, therefore, overall tourists reported a moderate level of satisfaction with the sites in Cairns.

Table4. 7 Tourists' perceptions of crowding according to age in Xi'an

Independent variables	Dependent variables	N	Mean	Std. Deviation	F	Sig.
18 - 24	Environment Concern	56	4.04	.838	6.728	.000*
25 - 34		59	3.52	1.012		
35 - 44		54	3.85	.751		
45 - 54		48	3.75	1.024		
55+		53	3.16	1.123		
	Crowd Concern	49	3.95	.545	3.433	.009*
		54	3.74	.795		
		50	3.87	.631		
		36	3.79	.885		
		51	3.42	.966		
	Tolerance	57	2.26	.638	2.260	.063
		59	2.28	.683		
		56	2.43	.585		
		53	2.11	.677		
		56	2.12	.631		
	Preference	57	1.84	.628	.926	.449
		59	1.71	.486		
		56	1.86	.588		
		53	1.90	.585		
		56	1.86	.626		
	Desire	57	2.73	.851	.840	.501
		59	2.85	.713		
		56	2.94	.649		
		53	2.70	.789		
		57	2.81	.923		
	Satisfaction	57	6.28	2.136	3.081	.017*
		59	6.86	1.224		
		57	6.72	1.925		
		52	7.04	1.950		
		57	7.53	2.369		

*p < .05

The results indicate that there is not a statistically significant difference between the mean tolerance, the mean preference and the mean desire among the different age groups in Xi'an. The results indicate that there are statistically significant differences for the mean environment concern, the mean crowd concern and the mean satisfaction among the different age groups. The Duncan's multiple-range test was applied to compare the mean significance between groups. Tourists in the age group 18 – 24 (M = 4.04, SD = .84) had significantly greater environment concern than tourists in the age group 55+ (M = 3.16, SD = 1.12). Moreover, tourists in the age group 55+ (M = 3.42, SD = .97) had significantly less crowd concern than tourists in other age groups. Tourists, who were older than 55, had less crowd concern than the younger tourists. The mean scores for all the age based groups are more than 3, therefore, tourists had environment concerns and crowd concerns at the sites in Xi'an. Additionally, tourists in the age group 35 – 44 (M = 6.72, SD = 1.93) and 55+ (M = 7.53, SD = 2.37) had significantly higher satisfaction scores than tourists in the age group 18 – 24 (M = 6.28, SD = 2.14). The mean scores for most the aged groups are below or around 7, therefore, tourists presented a low level of satisfaction with the sites in Xi'an. It requires improvement at the sites in Xi'an.

Hypothesis 4 is partially supported by the results. Tourists in different age groups had different perceptions about environment concern and satisfaction in both Cairns and Xi'an. Moreover, tourists in different age groups had different perceptions about crowd concern in Xi'an. The overall results provided limited support that tourists in the older age group had higher satisfaction scores than younger tourists, but this positive relationship between age and satisfaction is not firm based on the mean scores for tourists in different age groups. The results also demonstrated differences in environment concern among tourists in different age groups. Tourists in the older age group had greater environment concern than younger tourists in Cairns, but on the contrary, they had less environment concern than younger tourists in Xi'an. Still, the relationship between age and environment concern is not firm. There is, therefore, support for the overview that tourists' age has a role in shaping component parts of crowding responses by visitors, but such effects are influenced by environments and conditions.

4.5.3.3 The Influence of Nationality on Tourists' Perceptions

The independent t-test was used to compare the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction of Chinese tourists compared to international tourists (tourists other than Chinese tourists, most of them were from North America and Europe) in Cairns and Xi'an. The results are presented in Table 4.8 and Table 4.9.

Table4. 8 Tourists' perceptions of crowding according to nationality in Cairns

Independent variables	Dependent variables	N	Mean	t	Sig. (2-tailed)
International tourists	Environment Concern	226	2.37	-2.191	.029*
Chinese tourists		59	2.65		
	Crowd Concern	229	2.83	-1.203	.230
		60	2.99		
	Tolerance	236	2.48	.484	.629
		61	2.43		
	Preference	236	2.26	1.688	.092
		61	2.10		
	Desire	236	3.07	1.767	.078
		61	2.90		
	Satisfaction	237	7.49	1.524	.128
		60	7.07		

*p < .05

The results indicate that there is not a statistically significant difference between the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction for the two groups of Chinese tourists and international tourists in Cairns. The results indicate that there is a statistically significant difference between the mean environment concern with the two groups. In other words, Chinese tourists visiting Cairns sites had a statistically significantly higher mean score on environment concern than did international tourists in Cairns. However, the mean scores for the two groups are less than 3. Therefore, both groups of tourists did not have high levels of environment concern with the sites in Cairns.

Table4. 9 Tourists' perceptions of crowding according to nationality in Xi'an

Independent variables	Dependent variables	N	Mean	t	Sig. (2-tailed)
International tourists	Environment Concern	63	2.34	-14.486	.000*
Chinese tourists		209	4.07		
	Crowd Concern	62	3.05	-7.924	.000*
		180	4.00		
	Tolerance	64	2.28	.584	.559
		219	2.23		
	Preference	64	1.90	1.137	.257
		219	1.81		
	Desire	64	2.88	.888	.375
		220	2.78		
	Satisfaction	64	7.92	4.984	.000*
		220	6.57		

*p < .05

The results indicate that there is not a statistically significant difference between the mean tolerance, the mean preference and the mean desire for the two groups of Chinese tourists and international tourists in Xi'an. The results indicate that there is a statistically significant difference between the mean environment scores, the mean crowd concern scores and the mean satisfaction for the two groups. In other words, the Chinese tourists had a statistically significantly higher mean score on environment concern and crowd concern, but a lower mean score on satisfaction than did the international tourists in Xi'an. The mean scores for environment concern and crowd concern with Chinese tourists are about 4, so Chinese tourists had somewhat marked environment concern and crowd concern scores for the sites in Xi'an. As the mean scores for environment concern and crowd concern regarding international tourists are less than or around 3, international tourists did not have major environment concern and crowd concern with the sites in Xi'an. Further, Chinese tourists had lower satisfaction scores than international tourists. If Chinese tourists achieve attention from the sites' staff, their satisfaction may be enhanced.

The results provide some subtle detail broadly supporting Hypothesis five. The different nationality groups (Chinese and international) did have varied perceptions for environment concern in Cairns. Moreover, there is a relationship between the nationality and environment concern, crowd concern and satisfaction in Xi'an. The results demonstrate that in Cairns, Chinese tourists visiting Cairns had more

environment concern than other international tourists. In Xi'an, Chinese tourists also had greater environment concern and greater crowd concern than international tourists. Moreover, Chinese tourists were less satisfied than international tourists. There is, therefore, support for the overview that nationality has a major role in shaping component parts of crowding responses by visitors.

4.5.3.4 The Influence of Travel Party Composition on Tourists' Perceptions

The independent t-test was used to compare the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction of tourists in Cairns and Xi'an who travel without children or seniors as their companions compared to those who travel in company with children or seniors. The results are presented in Table 4.10 and Table 4.11.

Table4. 10 Tourists' perceptions of crowding according to group travel party composition in Cairns

Independent variables	Dependent variables	N	Mean	t	Sig. (2-tailed)
without children or seniors	Environment Concern	170	2.44	.836	.404
with children or seniors		86	2.34		
	Crowd Concern	170	2.84	.338	.736
		88	2.80		
	Tolerance	176	2.43	-1.730	.085
		90	2.60		
	Preference	176	2.16	-2.871	.004*
		90	2.40		
	Desire	176	3.02	-1.101	.272
		90	3.11		
	Satisfaction	176	7.32	-.613	.540
		90	7.48		

*p < .05

The results indicate that there is not a statistically significant difference between the mean environment concern, the mean crowd concern, the mean tolerance, the mean desire and the mean satisfaction for the two groups of tourists with different memberships. The results indicate that there is a statistically significant difference between the mean preference for the two groups of tourists with different memberships. In other words, tourists travelling in company with children or seniors had a statistically significantly higher mean score on preference than tourists who

travelled without children or seniors as their companions in Cairns. Tourists travelling in company with children or seniors were more likely to prefer to see more other people than tourists who travelled without children or seniors as their companions. The mean scores for the two groups are more than 2, but less than 2.5. Therefore, both groups of tourists preferred to see a few more others rather than many others as shown on the comparison photograph. As the number of people shown on the photograph was the average number of people at the studied locations, the findings suggest that the locations could accommodate more visitors in Cairns.

Table4. 11 Tourists' perceptions of crowding according to group travel party composition in Xi'an

Independent variables	Dependent variables	N	Mean	t	Sig. (2-tailed)
without children or seniors	Environment Concern	171	3.68	-1.596	.112
with children or seniors		71	3.87		
	Crowd Concern	155	3.77	-.764	.446
		59	3.86		
	Tolerance	177	2.16	-2.609	.010*
		72	2.39		
	Preference	177	1.77	-2.284	.023*
		72	1.94		
	Desire	178	2.79	-.368	.713
		72	2.83		
	Satisfaction	176	6.88	-.066	.948
		74	6.89		

*p < .05

The results indicate that there is not a statistically significant difference between the mean environment concern, the mean crowd concern, the mean desire and the mean satisfaction for the two groups of tourists with different memberships in Xi'an. The results indicate that there is a statistically significant difference between the mean tolerance and the mean preference for the two groups of tourists with different memberships. In other words, tourists travelling in company with children or seniors had a statistically significantly higher mean score on tolerance and preference than tourists who travelled without children or seniors as their companions in Xi'an. Tourists travelling in company with children or seniors could tolerate more others and they were more likely to prefer to see more others than tourists who travelled without

children or seniors as their companions. The mean scores for tolerance regarding the two groups are more than 2, but less than 2.5, so both groups of tourists could tolerate to see a few more others rather than many others as shown on the comparison photograph. However, the mean scores for preference concerning the two groups are less than 2. Therefore, both groups of tourists preferred to see a few less others rather than many others as shown on the comparison photograph. As the number of people shown on the photograph was the average number of people at the studied locations, the findings suggest that it is better to control the number of visitors at these locations in Xi'an.

Hypothesis six has limited support as indicated by the results in Tables 4.10 and 4.11. The different membership (without children or seniors and with children or seniors) does not consistently influence tourists' perceptions on environment concern, crowd concern, desire, and satisfaction. However, there is a relationship between the membership and preference for tourist numbers in Cairns; and there is a relationship between the membership and tolerance and preference for tourist numbers in Xi'an. The results demonstrate that in Cairns, tourists who travelled in company with children or seniors preferred additional encounters compared to tourists who travel without children or seniors as their companions. However, tourists who travelled in company with children or seniors did not prefer additional encounters compared to tourists who travel without children or seniors as their companions in Xi'an. There is, therefore, limited support for the overview that travel party membership has a major role in shaping component parts of crowding responses by visitors as only one component of the spectrum of variables is influenced in one location.

4.5.3.5 The Influence of the Trip Type on Tourists' Perceptions

The independent t-test was used to compare the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction of tourists in Cairns and Xi'an who travel in a fully packaged group compared to those who travel in a partial packaged group or independently. The results are presented in Table 4.12 and Table 4.13.

Table4. 12 Tourists' perceptions of crowding according to trip type in Cairns

Independent variables	Dependent variables	N	Mean	t	Sig. (2-tailed)
Fully packaged groups	Environment Concern	76	2.51	.895	.373
Partially packaged groups and independent groups		208	2.39		
	Crowd Concern	77	2.77	. -.917	.360
		211	2.88		
	Tolerance	77	2.47	-.104	.917
		219	2.48		
	Preference	77	2.13	-1.494	.136
		219	2.26		
	Desire	77	2.99	-.688	.492
		219	3.05		
	Satisfaction	78	7.62	1.152	.250
		218	7.33		

*p < .05

The results indicate that there is not a statistically significant difference between the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction for the two groups of tourists with different travel patterns in Cairns.

Table4. 13 Tourists' perceptions of crowding according to trip type in Xi'an

Independent variables	Dependent variables	N	Mean	t	Sig. (2-tailed)
Fully packaged groups	Environment Concern	62	3.22	-3.576	.001*
partially packaged groups and independent groups		210	3.80		
	Crowd Concern	58	3.37	-3.719	.000*
		184	3.88		
	Tolerance	64	2.34	1.421	.156
		219	2.21		
	Preference	64	1.93	1.976	.049*
		219	1.73		
	Desire	65	2.87	.686	.495
		219	2.78		
	Satisfaction	65	7.11	.940	.350
		219	6.81		

*p < .05

The results indicate that there is not a statistically significant difference between the mean tolerance, the mean preference, the mean desire and the mean satisfaction for the two groups of tourists with different travel patterns in Xi'an. By way of contrast, the results indicate that there is a statistically significant difference between the mean environment concern, the mean crowd concern and the mean preference with the two groups. In other words, tourists travelling in partially packaged groups or independent groups had more environment concern and more crowd concern and they preferred to see a few less other people than tourists travelling in fully packaged groups in Xi'an. The mean scores for environment concern and crowd concern concerning the two groups are more than 3. Therefore, both groups of tourists had some environment concern and crowd concern with the sites in Xi'an. Moreover, the mean scores of preference are less than 2, so both groups of tourists preferred to see a few less others rather than the current number of visitors.

Following the results, hypothesis 7 is partially supported. The different travel patterns (fully packaged group and not fully packaged group) did not influence tourists' perceptions on environment concern, crowd concern, tolerance, desire and satisfaction in Cairns. However, there is a relationship between the travel pattern and environment concern, crowd concern and preference in Xi'an. The results demonstrate that in Xi'an, tourists who travelled in fully packaged groups had less environment concern and less crowd concern but a higher level of preference for encounters than tourists in partially packaged groups or in independent groups. There is, therefore, limited and destination specific support for the overview that trip type has a major role in shaping component parts of crowding responses by visitors.

4.5.3.6 The Influence of the Travel Experience on Tourists' Perceptions

The one-way ANOVA was used to test whether the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction differ between the three tourist groups with different travel experience. The results are presented in Table 4.14 and Table 4.15.

Table4. 14 Tourists' perceptions of crowding according to travel experiences in Cairns

Independent variables	Dependent variables	N	Mean	Std. Deviation	F	Sig.
0 - 4 times	Environment Concern	68	2.52	.895	.534	.587
5 - 9 times		98	2.37	.920		
10+ times		118	2.42	.910		
	Crowd Concern	71	2.97	.889	1.338	.264
		101	2.75	.905		
		116	2.90	.935		
	Tolerance	72	2.56	.816	.619	.539
		103	2.43	.720		
		121	2.46	.701		
	Preference	72	2.35	.716	1.919	.149
		103	2.17	.600		
		121	2.20	.626		
	Desire	72	3.02	.668	.041	.960
		103	3.04	.599		
		121	3.02	.690		
	Satisfaction	71	7.52	1.896	.777	.461
		104	7.21	2.093		
		121	7.49	1.742		

*p < .05

The results indicate that there is not a statistically significant difference between the mean environment concern, the mean crowd concern, the mean tolerance, the mean preference, the mean desire and the mean satisfaction for tourists with different travel experience in Cairns.

Table4. 15 Tourists' perceptions of crowding according to travel experiences in Xi'an

Independent variables	Dependent variables	N	Mean	Std. Deviation	F	Sig.
0 - 4 times	Environment Concern	134	4.06	.649	52.678	.000*
5 - 9 times		55	3.71	.848		
10+ times		70	2.79	1.133		
	Crowd Concern	125	3.92	.613	18.012	.000*
		43	3.94	.763		
		64	3.27	.935		
	Tolerance	143	2.25	.683	.146	.864
		57	2.20	.608		
		73	2.25	.595		
	Preference	143	1.84	.615	.546	.580
		57	1.77	.508		
		73	1.88	.576		
	Desire	143	2.89	.816	1.898	.152
		58	2.67	.737		
		73	2.76	.801		
	Satisfaction	141	6.67	1.937	8.784	.000*
		58	6.59	2.169		
		72	7.74	1.565		

*p < .05

The results indicate that there is not a statistically significant difference between the mean tolerance, the mean preference and the mean desire for the three tourist groups with different experience in Xi'an. The results indicate that there is statistically significant difference between the mean environment concern, the mean crowd concern and the mean satisfaction for these groups. According to the results derived from the Duncan's multiple-range test, it is noteworthy that tourists who had less travel experience tended to have more environment concern. There was a negative relationship between travel experience and environment concern in Xi'an. Moreover, the mean score for crowd concern regarding tourists who travelled 10+ times in five years (M = 3.27, SD = .94) is significantly different from tourists who travelled less than 10 times in five years (M = 3.94, SD = .76; M = 3.92, SD = .61). In other word, tourists who travelled 10 times or more in five years had significant less crowd concern than tourists with less travel experience in Xi'an. Most of the mean scores for environment concern and crowd concern are more than 3, therefore, most tourists had environment concern and crowd concern with the sites in Xi'an. Finally, the mean score for satisfaction concerning tourists who travelled 10+ times (M = 7.74, SD =

1.57) is significantly different from tourists who travelled less than 10 times (M = 6.59, SD = 2.17; M = 6.67, SD = 1.94). In other words, tourists who travelled above 10 times in five years reported higher satisfaction scores than tourists with less travel experience in Xi'an. The mean score for satisfaction concerning the "10+ times" group is 7.74. Therefore, tourists presented a sound level of satisfaction with the sites in Xi'an. However, tourists in the other two groups recorded their satisfaction on a scale less than 7, so the sites' managers need to pay more attention to enhance their satisfaction.

Following the results, hypothesis 8 is partially supported. The different travel experience does not influence tourists' perceptions on environment concern, crowd concern, tolerance, desire and satisfaction in Cairns. However, there is a relationship between the travel experience and environment concern, crowd concern and satisfaction in Xi'an. The results demonstrate that there is negative relationship between travel experience and environment concern. In addition, "10 times" is the boundary of tourists' crowd concern and satisfaction. Tourists who have 10 times or more trips in five years have less crowd concern and report higher satisfaction scores than tourists who have travelled less than 10 times in five years. There is, therefore, support for the overview that tourists' travel experience has a role in shaping component parts of crowding responses by visitors in Xi'an.

4.6 Discussion

The results reported in the previous section provided support for Hypotheses 1, 2, 4, 7 and 8. There was limited support for Hypotheses 5 and 6. However, Hypothesis 3 was not supported. Actually, each hypothesis involved several dependent variables, and thus there were several relationships between the independent variables and different dependent variables. The following Table 4.16 provides a systematic conclusion of all the significant findings in order to make it easy for review.

Table4. 16 A summary of significant results – the Hypotheses which were demonstrated

Independent Variables	Identified Hypotheses	Findings (Sig.)	
Dependent Variable: Environment Concern			
Environment influence			
Sites in Cairns compared to sites in Xi'an	Hypothesis 2: More environment concern in Xi'an	.000*	
Demographic and visitor profile influence		Cairns	Xi'an
Age groups: 18 – 24 25 – 34 35 – 44 45 – 54 55+	Hypothesis 4: Older tourists have greater environment concern than younger tourists.	35 – 44 and 55+ have greater environment concern than 18 – 24. .025*	18 – 24 have greater environment concern than 55+. .000*
Chinese tourists compared to international tourists	Hypothesis 5: Chinese tourists have less environment concern than international tourists	Reverse to Hypothesis. .029*	Reverse to Hypothesis. .000*
Fully packaged groups compared to partially packaged groups and independent groups	Hypothesis 7: Fully packaged groups have less environment concern than partially packaged groups and independent groups.	Not support the hypothesis.	.001*
Travel experience in five years: 0 – 4 times 5 – 9 times 10+ times	Hypothesis 8: A negative relationship between travel experience and environment concern.	Not support the hypothesis.	.000*
Dependent Variable: Crowd Concern			
Influence on crowd concern			
Environment concern	Hypothesis 1: A positive relationship between environment concern and crowd concern.	.000*	
Environment influence			
Sites in Cairns compared to sites in Xi'an	Hypothesis 2: More crowd concern in Xi'an	.000*	

Table4. 16 continued

Demographic and visitor profile influence		Cairns	Xi'an
Age groups: 18 – 24 25 – 34 35 – 44 45 – 54 55+	Hypothesis 4: Older tourists have greater crowd concern than younger tourists.	Not support the hypothesis.	55+ have greater environment concern than others. .009*
Chinese tourists compared to international tourists	Hypothesis 5: Chinese tourists have less crowd concern than international tourists	Not support the hypothesis.	Reverse to Hypothesis. .000*
Fully packaged groups compared to partially packaged groups and independent groups	Hypothesis 7: Fully packaged groups have less crowd concern than partially packaged groups and independent groups.	Not support the hypothesis.	.000*
Travel experience in five years: 0 – 4 times 5 – 9 times 10+ times	Hypothesis 8: A negative relationship between travel experience and crowd concern.	Not support the hypothesis.	Tourists with 10+ times of trips in five years have less crowd concern than other tourists. .000*
Dependent Variable: Tolerance			
Influence on tolerance			
Crowd concern	Hypothesis 1: A negative relationship between crowd concern and tolerance.	.000*	
Environment influence			
Sites in Cairns compared to sites in Xi'an	Hypothesis 2: Less tolerance in Xi'an	.000*	
Demographic and visitor profile influence		Cairns	Xi'an
With children or seniors compared to without children or seniors	Hypothesis 6: Tourists who have children or seniors as their companions have more tolerance to see others than tourists who do not have children or seniors as their companions in Cairns.	Not support the hypothesis.	.010*

Table4. 16 continued

Dependent Variable: Preference			
Influence on preference			
Crowd concern	Hypothesis 1: A negative relationship between crowd concern and preference.	.000*	
Environment influence			
Sites in Cairns compared to sites in Xi'an	Hypothesis 2: Less preference in Xi'an	.000*	
Demographic and visitor profile influence		Cairns	Xi'an
With children or seniors compared to without children or seniors	Hypothesis 6: Tourists who have children or seniors as their companions have more preference to see others than tourists who do not have children or seniors as their companions in Cairns.	.004*	.023*
Fully packaged groups compared to partially packaged groups and independent groups	Hypothesis 7: Fully packaged groups have more preference for others than partially packaged groups and independent groups.	Not support the hypothesis.	.049*
Dependent Variable: Desire			
Influence on desire			
Crowd concern	Hypothesis 1: A negative relationship between crowd concern and desire.	.032*	
Tolerance	Hypothesis 1: A positive relationship between tolerance and desire.	.000*	
Preference	Hypothesis 1: A positive relationship between preference and desire.	.000*	
Environment influence			
Sites in Cairns compared to sites in Xi'an	Hypothesis 2: Less desire in Xi'an	.000*	
Dependent Variable: Satisfaction			
Influence on satisfaction			
Environment concern	Hypothesis 1: A negative relationship between environment concern and satisfaction.	.004*	

Table4. 16 continued

Preference	Hypothesis 1: A positive relationship between preference and satisfaction.	.003*	
Desire	Hypothesis 1: A positive relationship between desire and satisfaction.	.000*	
Environment influence			
Sites in Cairns compared to sites in Xi'an	Hypothesis 2: Lower satisfaction in Xi'an	.001*	
Demographic and visitor profile influence		Cairns	Xi'an
Age groups: 18 – 24 25 – 34 35 – 44 45 – 54 55+	Hypothesis 4: Older tourists have lower satisfaction than younger tourists.	45 – 54 have higher satisfaction than 25 – 34 and 35 – 44. .026*	35 – 44 and 55+ have higher satisfaction than 18 – 24. .017*
Chinese tourists compared to international tourists	Hypothesis 5: Chinese tourists have higher satisfaction than international tourists.	Not support the hypothesis.	Reverse to Hypothesis. .000*
Travel experience in five years: 0 – 4 times 5 – 9 times 10+ times	Hypothesis 8: A positive relationship between travel experience and satisfaction.	Not support the hypothesis.	Tourists with 10+ times of trips in five years have higher satisfaction than other tourists. .000*

From the major Table 4.16 reviewing the findings in this chapter, tourists perceived these evaluative dimensions differently in Cairns and Xi'an. In this thesis Chapter One reviewed normative approaches to crowding. After analysis of tourists' norms to individual use and situational or environmental conditions, in this study it can be claimed that there was crowding in Xi'an but not in Cairns (e.g. Buckley, 2002; Kyle et al., 2004; Mowen et al., 2003). This study presents several new differences between a natural and developed nation destination (Cairns) and a cultural and developing nation destination (Xi'an). The preference limits for crowding in the developing setting (Xi'an) appear to be higher than those in developed setting (Cairns), because the mean score of preference is lower in Xi'an than that in Cairns. It is important to

remember that these judgments are all comparisons with the mean or representative use levels and usually recorded in field work at the sites. Moreover, tourists presented higher desire and satisfaction with sites in Cairns compared with Xi'an. The mean scores of desire and satisfaction were influenced by tourists' environment concern, crowding concern, tolerance and desire. Tourists' higher crowd concern and lower tolerance and preference led to their lower desire for the sites in Xi'an. In addition, tourists' higher environment concern led to lower scores of satisfaction with the sites in Xi'an. Such influences further indicate the relationships between these evaluative dimensions.

This study also explored different age groups and their needs for the sites' environments and conditions (Golant, 1983). The present study did not produce any evidence to support previous findings of tourists' different attitudes to tolerance and preference associated with different age groups. But this study revealed differences for age related tourists' environment concern, crowd concern and satisfaction. Tourists in different age groups reported to have different perceptions between the sites in Cairns and Xi'an. The younger tourists had a greater level of environment concern and crowd concern in Xi'an, but in Cairns they had less concerns about the environment, as it relates to crowding factors, than the older respondents. This age factor may significantly influence crowding perception in Cairns and Xi'an. However, young tourists reported lower satisfaction than older tourists in both destinations. In this study, environment factors consisted of safety, disease, facility and service. These factors are basic provisions in a tourist site. As Gherrissi-Labben and Johnson (2004) suggest, young tourists intent on pursuing leisure activities and actively engaged in that may have less basic environment concerns. In Cairns, abundant leisure activities are provided for tourists, including rainforest bushwalking, hiking, horse riding, 4-wheel drive racing, sailing, underwater diving, and other sea activities. These leisure activities may contribute to dispersing on the environment concern of young tourists. However, in cultural destinations, such as Xi'an, there is few leisure activities provided for tourists. That can be a reason why young tourists recorded environment concern at a higher level than the older tourists.

As discussed in the literature review, some existing studies have related the influence of cultural diversity to crowding-related norms. The research suggested that

individuals of similar cultural and ethnic groups may perceive the environment similarly. For example, individuals of Asian and African countries were better able to deal with noise and had a greater ability to deal with crowding than Europeans and white North Americans (Pearce, 1995; Rustemli, 1992; Yagi & Pearce, 2007). The present study also explored contrasts between two groups of people; specifically the Chinese respondents and the international respondents, most of them were of European-North American origin. However, the findings are different from the literature, for the Chinese tourists had more environment concern in both destinations. In particular, the Chinese tourists had greater levels of crowd concern than international tourists in Xi'an. Chinese tourists were also less satisfied in Xi'an. Contrary to the literature, the Chinese tourists were more sensitive to the crowding situations. The explanation of this finding was undertaken through a consideration of linked demographic and visitor profile studies.

A new discovery concerns the influence of tourists' travel party composition on tourists' preference in Cairns and tourists' tolerance and preference in Xi'an. Tourists travelled in company with children or seniors were more likely to see others than tourists who travelled without children or seniors as their companions. Tourists travelled in company with children or seniors were most middle-aged people. Thus middle-aged tourists were commonly supposed to feel more comfortable in the presence of other people in tourist sites. Another new discovery was that in Xi'an, tourists in fully packaged groups tended to have less environment concern and less crowd concern than tourists in partially packaged groups or in independent groups. In other words, Chinese tourists travelling in a full packaged group might have stable sense of security; they did not worry about their safety. Because group travelers had tour guides to lead them, they were not concern about local services and facilities. In addition, tourists in fully packaged groups were more preference of others.

Several previous researchers have studied the influence of tourists' travel experience on their perceptions in tourism settings (Inglis et al., 1999; Kuentzel & Heberlein, 2003). In the present study, the influence of travel experience on tourists' perceptions was highlighted in Xi'an. Tourists who had plentiful travel experiences tended to have less environment concern. In addition, tourists who travelled 10 times or more in the last five years were likely to have less crowd concern and be more satisfied. It

indicates the importance of travel experience for Chinese samples. Less-experienced tourists may lack confidence in their communication skills, leading to uncomfortable feeling with strangers. Further, it can be suggested that travel experiences help tourists cope with unfavourable situations, such as crowding. Overall, the demographic characteristics and travelling characteristics had more influences on tourists' perceptions in Xi'an.

4.7 Chapter Summary

This chapter studied tourists' perception of crowding at sites in Cairns and Xi'an. In particular, it explored what factors influence tourists' perception of crowding. By examining the mean scores of the crowding-related norms for sites in Cairns and Xi'an, it was found that tourists perceived the sites in the same destination differently due to their nationality and background. More specifically, the Chinese tourists and the international tourists (most are European and North-American) had different perceptions of crowding. The Chinese tourists were more sensitive to the environment and to others' activities or behaviour. The fundamental reason proposed was their lack of travel experiences. They can not deal with unexpected situations by using their previous experiences. The Chinese tourists were also more likely to travel in groups. Groups provide them the sense of safety and provide them convenience to achieve facilities and services, which are aspects of the environment concern, but it appears that this did not fully compensate for their lack of travel experiences and their greater concern with crowds.

In dealing with tourists' perceptions, both the sites' characteristics and tourists' characteristics need to be considered. How the site managers deal with crowding in order to protect their local environment as well satisfying their tourists is considered next. The advantages and disadvantages of their management strategies will be explored in the next chapter which will focus on these concerns.

Chapter 5 Managers' Views of Crowding

Chapter outline

5.1 Introduction

5.2 Aims of the Study

(Three aims are proposed in this chapter to identify the different crowding management issues at the two destinations.)

5.3 Sample

(The sample in this study involves 16 site managers, 6 managers in Cairns and 10 managers in Xi'an.)

5.4 Instrumentation for the Study

(The semi-structured interview was used in this study. This study utilized a qualitative methodology. There are 10 interview questions which were designed under three categories.)

5.5 Data Analysis based on the Thematic Approach

(The responses of the site managers are categorized on the basis of the thematic approach, allied to grounded theory. Several similarities and differences are identified among the sites at the two destinations.)

5.6 The Models of Tourism Crowding Management in Cairns and Xi'an

(Building on the model of tourism crowding management introduced by the WTO, two different models of managing crowding can be developed for the sites in the two destinations.)

5.7 Chapter Summary

5.1 Introduction

This chapter presents managers' perceptions of crowding for sites in Cairns and Xi'an. As introduced in the literature, crowding management demands the involvement of different stakeholders, such as the government, the destination tourism managers, the site managers, transportation, and sometimes the police department. This thesis focuses on the fundamental crowding management issues at sites, therefore, the tourist managers at the selected ten sites were sampled in this study. Chapter 3 presented a comparison of the actual use levels and the perceived use levels of the environments in the two destinations. Several distinctions have been identified, including both the ecological and operational differences. Subsequently, chapter 4 explained why tourists' have such kinds of perceived use levels. Several evaluative dimensions related to use levels were discussed. The comparison study demonstrated that tourists' perceptions were influenced by site characteristics, tourists' demographic characteristics and travelling characteristics. This third study extends the findings of the last two studies, and ties the crowding-related findings to the tourist managers' opinions. Models of the crowding management situations at each of the destinations are presented.

The third study utilizes a qualitative approach in terms of the technique of the semi-structured interviews with open-ended questions. The interviews were conducted with a sample of 16 site managers, 6 managers from the sites in Cairns, and 10 managers from the sites in Xi'an. Their responses were transcribed and the synthesis of their perspective based on the grounded theory is presented in this chapter. The focus on managers' opinions on crowding management is included in this thesis to help provide a comprehensive view of crowding management, and to enable a crowding management framework to be formulated by adding to the empirical work on tourists' perceptions.

2. Aims of the Study

In particular, this chapter explores the similarities and differences of site managers' ideas, opinions and strategies on crowding in Cairns and Xi'an. As the sites in Cairns and Xi'an involved substantially different environments and appealed to different

types of tourists, their managers were seen as likely to have distinctive approaches to crowding problems. Such approaches can reflect the crowding problems which have occurred or which are going to occur at the sites. This study will find out the managers' perspectives on crowding that lead to particular crowding management tactics. Therefore, the first aim in this chapter is 1) to compare the site managers' understanding of crowding in Cairns and Xi'an.

As discussed in the literature, crowding management is a complicated issue, because site managers design and conduct different management frameworks at their particular sites, on the basis of the specific characteristics of the sites. The site managers in Cairns and Xi'an are faced with complicated situations, and their ways of dealing with the issues are of interest. The next aim in this chapter is 2) to compare the different crowding management approaches at the sites in Cairns and Xi'an.

Crowding research is still a new study field in China. This study tries to contribute some ideas to the future of crowding studies in China and other destinations. The last aim in this chapter is 3) to provide some ideas concerning the future crowding management at tourist sites or destinations.

5.3 Sample

The approach to selecting the managers to be interviewed followed a non-random stratified sampling technique. The managers of the10 sites in the first two studies were selected, but some of them refused the invitation. Then managers of some other sites in Cairns and Xi'an were invited to join the study. So the sample in this study includes some of the former participants and some new participants. The focus is on identifying sites which match a predetermined list of characteristics introduced in Chapter 3. Six site managers in Cairns agreed to participate in the study, and ten site managers in Xi'an agreed to participate in the study. All the managers were CEOs or senior managers of the natural and cultural sites. Table 5.1 summarises the diversity of the sites in the qualitative study.

Table5. 1 Tourist sites participating in the study

Name	Fame	Type	Size	Location
RS1	World Heritage	Rainforest	Small	Suburb
PS1	Not World Heritage	Park	Medium	City
PS2	Not World Heritage	park	Small	Far from city
ZS1	Not World Heritage	Zoo	Medium	City
AS1	Not World Heritage	Artificial Entertainment	Small	City
AS2	Not World Heritage	Artificial Entertainment	Small	City
MS1	Not World Heritage	Museum	Small	Far from city
MM1	Not World Heritage	Museum	Medium	Far from city
MM2	Not World Heritage	Museum	Medium	City
OM1	Not World Heritage	Old mausoleum	Medium	Far from city
TM1	Not World Heritage	Temple	Medium	Far from city
OM2	Not World Heritage	Old mausoleum	Medium	Far from city
MM3	Not World Heritage	Museum	Medium	City
CL1	Not World Heritage	Cultural park	Large	City
CL2	Not World Heritage	Cultural park	Large	Far from city
ML1	World Heritage	Museum	Large	Far from city

To maintain confidentiality, site names have been substituted with alphanumeric respondent codes that are used throughout the remainder of this paper. These codes are structured so that the reader can ascertain the type and size of the site. The first letter represents site type (**R**ainforest, **P**ark, **Z**oo, **A**rtificial Entertainment, **M**useum, **O**ld mausoleum, **C**ultural Park, **T**emple) while the second represents size (**S**mall, **M**edium, **L**arge). For example, MS1 is a small museum.

5.4 Instrumentation for the Study

The semi-structured interview was the technique used in this study. Semi-structured interviews were conducted with management personnel at tourist sites in Cairns, Australia and sites in Xi'an, China. The process of selecting managers is outlined in the discussion of the study sample. Initial contact with potential interviewees was made using a mailed invitation in Cairns and Xi'an. The invitation included a list of the interview questions and a fact sheet about the research. Six interviews were conducted from May 2007 to July 2007 in Cairns, and ten interviews were conducted from December 2007 to February 2008 in Xi'an. The interviews in China were conducted in Mandarin, while those in Cairns were conducted in English. The interviews were conducted in two different ways, face-to-face interviews and telephone interviews. The duration of the interviews varied from a half hour to one and half hours. The answers of the managers were recorded and noted down. The interview answers in Mandarin were later translated in English.

The in-depth interviews sought to gain insights and an understanding of the crowding approaches rather than seeking a representative assessment of the frequency of management approaches. A list of questions was used to gain information about site mangers' recognition, opinions and strategies concerning crowding. The 10 interview questions are categorized into three sections in Table 5.2.

Table5. 2 Interview Questions used to assess site managers' views of crowding

1. General crowding recognition
1) How do you define tourism crowding?
2) What are the effects of tourism crowding on the whole tourism industry & what are the effects on tourism sites?
3) In your opinion, what factors can cause tourism crowding?
2. Crowding recognition and management at your personal site
4) Do you think that there are the crowding problems at your site in any of these areas, if there are, please point out the problems; if there are not, please present the crowding and congestion problems you have met before (not only at your site)? 1) In the area of pricing and ticketing? 2) In the area of fundamental and special facilities? 3) In the area of customer service? 4) In the area of human resource? 5) In the area of cooperation with other tourism sections? 6) At any special points or sites within the site? 7) At special times such as school holidays, peak season, big events, or urgent safety problems?
5) Could you remember a particular case or example of a bad reaction to crowding? Yes or No. If yes, please describe the example.
6) Could you please provide some suggestions to improve or avoid crowding problems in the areas above…?
7) How much do you think the following nationalities are likely to cause crowding issues, with a score of "10 = very likely to cause crowding" to "0 = not at all likely to cause crowding"? (Please rate every nationality) Australian visitors ( ), New Zealanders ( ), English ( ), Irish ( ), German ( ), Swiss ( ), Swedish ( ), Italian ( ), Japanese ( ), Indian ( ), Korean ( ), and Chinese ( )
8) How much do you think the following nationalities are affected by crowding issues, with a score of "10 = very affected by crowding" to "0 = not at all affected by crowding"? (Please rate every nationality) Australian visitors ( ), New Zealanders ( ), English ( ), Irish ( ), German ( ), Swiss ( ), Swedish ( ), Italian ( ), Japanese ( ), Indian ( ), Korean ( ), and Chinese ( )
3. Future development
9) Could you please provide the visitor numbers per day/ year? And could you separately give the visitor number a day in average time, peak time, and low season, and the maximum visitor number a day in 2007? Would you like to attract more visitors in the future? What measures you will take if the visitor number is beyond the capacity of your site?
10) As tourism grows in Australia/China from other destinations what do you think will need to be done to avoid crowding in Australian/Chinese tourism market?

5.5 Data Analysis based on the Thematic Approach

5.5.1 Thematic Analysis

The transcripts were analysed by a thematic approach, which involves identifying general information or ideas that emerge from within the data. Thematic analysis is

the most commonly used form of analysis in qualitative analysis, particularly for research involving interviews (Gomm, 2004). In some cases, themes may be predetermined, and analysis involves the exploration of those themes within the data collected. In other cases, themes are discovered by analysis from a close reading and coding of the data. In the present study, there is a marriage of these approaches. The interview questions used (see Table 5.2) were already quite structured, thus providing one level of a thematic framework about crowding responses. Within this structured, a priori approach, managers' responses were considered and assessed resulting in further themes (or sub-themes) to help interpret this study (cf. Walter, 2006b).

The research approach used is consistent with grounded theory which seeks to summarize and generate theories from data through the use of a continuous comparative analysis. Grounded theory was developed in 1967 by Ansel Strauss and Barney Glaser (Glaser & Strauss, 1967). An inductive process drives the grounded theory approach in the analysis of interview data and coding. Coding is part of the process aiming to generate an emergent set of categories and their properties (Allan, 2003; Fernandez et al., 2002). Researchers look for similarities and differences and group information into categories through close analysis of data. Such central themes were established and labelled for every part of the interview questions in this study. Illustrative quotations are used throughout to preserve the detail in the responses and to support the themes identified. In presenting these results the central themes are linked initially and the supporting quotations or comments are them provided as specific examples or illustrations.

5.5.2 Recognition of Crowding

5.5.2.1 Core Definitions of Crowding

Question 1: How do you define tourism crowding?

Question 1 required managers to define crowding in their own way. Their principle responses can be categorized into several aspects:

1. The space available can not accommodate so many people at one time
2. Too many people come to an attraction or a destination because of the tourism policies, holidays, and big events etc.

3. Too many people cause inconvenience, dissatisfaction, and some other social effects
4. The situation leads to pressure on social, economic and long-term development.

The site managers in Cairns provided the following ideas:

"Crowding appears in limited areas in one attraction or in one destination." (The small park 1)

"Too many people need to be located at one time." (The small rainforest 1)

The site managers in Xi'an provide the following ideas:

"The number of tourists is beyond the capacity of a space." (The small museum 1)

The managers of medium museum 1, the medium old mausoleum 2, and the large museum 1 provided further comments.

"Crowding appears in the tourism peak time, such as festivals and holidays as well as big events." (The small museum 1)

The managers of the medium old mausoleum 1 and 2, and the large cultural park 1 in Xi'an offered some other ideas.

"Too many people cause inconvenience and uncomfortable feeling." (The large museum 1)

The managers of the medium old mausoleum 1 and 2, and the small museum 1 provided parallel ideas to those above.

"Crowding causes tourists' dissatisfaction." (The small museum 1)

"The informal order caused by people." (The medium museum 2)

"Heavy pressure is on attractions." (The medium old mausoleum 1)

"The tourism industry can not make expected economic and social profit." (The medium temple 1)

The data from Question 1 provides an overview of the managers' understanding of crowding. When crowding causes higher pressure on an attraction, managers may have an in-depth understanding of this problem. The responses are grouped in several ways: space and time congestion, negative feeling and social conflict. These points emphasize, respectively, the physical environment in attractions, the degree of people's satisfaction, and social conflict caused by crowding. Every manager touched on one or two points. In addition, some points were related to the impacts of developing tourist attractions, while others reflect people's perception of crowding issues.

The first two definitions were offered by attraction managers in Cairns. The other seven definitions were provided by mangers in Xi'an. The first two definitions reflect the reality presented in previous chapters that few attractions in Cairns have crowding problems, but sometimes 'too many people' can cause some disturbance. By way of contrast, the attraction managers in Xi'an defined crowding in many different ways. These definitions reflect the multiple ways tourists have placed pressure on their attractions. In particular, one response pointed out that crowding can be a threat to the long-term development of the tourism industry. Overall, these concerns reinforce the importance of the whole thesis topic and research.

5.5.2.2 Crowding Negative and Positive Influences

Question 2: What are the effects of tourism crowding on the whole tourism industry & what are the effects on tourist sites?

The question required the site managers to comment on the consequence of crowding for the tourism industry and tourist sites. The responses can be divided into negative influences and positive influences, which can be separately categorized into several subdivisions.

Fourteen interviewed site managers (effectively all respondents except for one manger in Cairns and one in Xi'an), regarded crowding as a negative factor on tourist sites and the tourism industry.

The negative influences on tourist sites included:

1. Damage to the natural and cultural resources, such as the flora, fauna, scenic values, and ancient handicrafts as well as relics;
2. Damage to the long-term tourism development;
3. A cause of environment pollution, including litter;
4. The waste of human resources, and other kinds of resources;
5. A shortage of facilities;
6. Overall pressure on the sites.

The negative influences on the tourism industry include:

1. The wastage of natural, human, and financial resources;
2. The negative influences on the social economy;
3. An impact on the integrated and long-term tourism development.

The site managers in Cairns provided the following ideas:

"Crowding causes many impacts on the tourism industry and tourist site. The shortage of public facilities, such as vehicles, accommodation, and restaurants, reduces tourists' satisfaction and interests. Crowding challenges the working staff, and can restrict our economic profit."(The small rainforest 1)

The site managers in Xi'an provided similar ideas. In particular, the managers of the small artificial entertainment 2, the medium museum 3, the large cultural park 1, and the large museum 1 provided same ideas as the manager of the small rainforest 1 above.

"Crowding does great damage to sites, such as landscapes and ancient handicrafts. The crowds in peak time and the stagnation in off time cause of resources wastage and the relative loss of profit. Crowding provides short-term economic profit rather than the long-term tourism development."(The medium museum 2)

The managers of the small museum 1and the medium temple 1 provided further ideas.

"Crowding is a pressure on sites. It can trample vegetation, litter, break historical relics, and be a threat to environment. It causes the service quality to decrease."(The medium museum 1)

The managers of the medium old mausoleum 1 and the large cultural park 1 provided the parallel ideas as those above.

The managers' responses are consistent with the literature, for example UNWTO (2004b) note that tourism crowding at destinations and sites results in similar impacts to those noted by the managers. These impacts include:

- A major reduction in the visitor's enjoyment and appreciation;
- Damage to the flora, fauna, scenic values, physical fabric or special values of the place;
- Adverse impact on conservation or presentation programmes;
- Reduces opportunities for visitors to spend money locally;
- Generates considerable stress on the local community through competition for local services;
- Increases litter and pollution;
- Strains the capacity of local infrastructure; and/or
- Reduces the efficiency of tourism services.

The managers' responses identified most of the crowding impacts on sites also noted by UNWTO. In addition, some Chinese site managers focus on the breaking of historical relics and ancient handicrafts as well as the impacts of transportation on sites. As a very heavily populated country, Chinese local residents frequently have to face transportation crowding, and the increased numbers of tourists reinforce the transport pressure. The cultural site managers emphasized their worry about the damage to the ancient relics caused by crowds, because relics can not be replaced. Indeed, arguably the damage to ancient handicrafts and relics is getting worse. Recent news reported that the National Palace Museum received nearly 100,000 visitors during the Golden Weeks. Too many people cause both road and step wear. Additionally, the activities of the people create changes in temperature and humidity inside the building, resulting in damage to paintings and sculptures (QQ News, 2008).

Several site managers noted some positive outcomes of crowding which can be categorized into the following components.

The positive influences on tourist sites include:

1. A large number of tourists drive the development of the sites' physical and operational environment.

The positive influences on the tourism industry include:

1. Substantial numbers of tourists do bring profits to the local or regional business market;
2. A large number of tourists provide employment opportunities for the local people;
3. A very large number of tourists upgrades the profitability of the tourism industry;
4. Large numbers of tourists drive competition among tourist sites or destinations;
5. A large number of tourists can promote the development of the tourism industry.

The site managers in Cairns provided the followed ideas:

"A large number of tourists provide more jobs for people associated with the tourism industry. The increased tourists provide opportunities for the region, and generally everywhere, to promote employment and tourism business, then the tourism business can make more profit."(The small park 1)

The site managers in Xi'an provided a range of responses:

"Crowds of tourists have no negative influence. They can promote the development of tourism industry, and promote the establishment of physical infrastructures."(The medium museum 1)

"The crowding enforces competition among tourist sites."(The large cultural park 1)

"The crowding enhances the economic component and the ancillary revenue, beyond the tourism industry."(The small museum 1)

The managers of the medium museum 1 and the large museum 1 provided similar ideas to those already cited.

"People always like to pour into famous sites, so crowding sometimes acts as the propaganda for a site to tourists. At the same time, when more people come, we will pay more attention to developing our products and other facilities." (The medium museum 1)

Clearly some of the interviewees presented a different view on crowding, that crowding can cause some positive influences on the tourism industry and tourist sites. It can be noted that some previous research has also supported positive views of large numbers of people, such as festivals and religious ceremonies, and in places of public assembly including plazas, squares and bazaars (e.g. Anderson et al., 1998; Wickham & Kerstetter, 2000). The positive crowding views arise from the special expectations applied to special events and performances. In this study, six interviewees, both in Cairns and Xi'an, considered crowding as a trigger to stimulate the development of tourism industry and tourist sites.

The increased number of tourists can be the stimulus for the development tourist sites, because the sites need expanded facilities and services to meet demand. In addition, the increased number of tourists contributes to the revenue and the employment of a destination. In this way, tourism strengthens the development of the local economy. Overall, there are diverse views about the effects of crowding and it can be suggested that there is a tipping point between large acceptable numbers and the even greater numbers causing harmful effects.

5.5.2.3 Key Factors Caused Crowding

Question 3: In your opinion, what factors can cause tourism crowding?

This question was intended to gain information about what factors caused crowding. The interviewees' answers can be categorized into several aspects:

1. The environment: a) the bad weather; b) the different levels of development of the site's environment and transportation support as well its peripheral environment; c) the fundamental facilities and capacity; d) fragmentary organization of eating areas, accommodation, transportation, shopping, and entertainment.

2. The characteristics of sites: a) different levels of attractive views or entertainment; b) different levels of reputation; c) the remote location of sites.

3. The National policies and measurement: a) school holidays; b) festivals; c) tourism peak time and the assembled holidays (e.g. the Golden Week); d) a shortage of fund or investment.

4. The management of sites: a) mega-events and special exhibitions; b) improper plans; c)focus on economic profit rather than long-term development; d) inappropriate travel itineraries; e) the number of tourist guides and vehicles on some special days; f) improper allocation of human resource; g) ticket prices; h)the service.

The site managers in Cairns provided comments as follows:

"Direction by management can cause the problem." (The small artificial entertainment 1)

The manager of the small rainforest 1 provided the same idea as above.

"Tourists' anticipation or expectation is very important. If tourists have been aware that the site may attract a lot of people, they can wait. But if tourists do not have such awareness, they feel crowded. (The small zoo 1)

The manager of the small artificial entertainment 2 noted some further issues.

"A high demand occurs in a small size area." (The small zoo 1)

"The seasonality, large groups, and changes to the normal procedures cause crowding." (The small rainforest 1)

The manager of the small artificial entertainment 2 supported these suggestions.

The site managers in Xi'an provided the following ideas:

"The main factors causing crowding are the Golden Week, festivals, holidays, and the mega-events." (The medium museum 1)

All the managers of the sites in Xi'an adopted this position.

"The particular characteristics of the site can affect a huge number of people. The sites which are more popular with average people, such as folk-custom sites and the

natural sites, are more likely to have crowding than professional sites." (The small museum 1)

"China is a developing country, so she does not have sustainable financial resources to exploit more sites to distribute tourists away from the popular ones." (The large museum 1)

"The fundamental infrastructure, the service, and the ticket price can be factors in crowding." (The medium museum 3)

The managers of the large cultural park 2, the medium old mausoleum 1, and the medium temple 1 provided similar responses.

"The inappropriate management of sites and destinations leads to disorder and crowded situations. The excessive numbers of tour guides and vehicles cause crowds." (The medium old mausoleum 1)

The managers of the large cultural park 1 and the medium old mausoleum 2 emphasized space and organizational issues.

"The inappropriate itineraries and the geography of sites means that tourists like to centralize at one time or one period." (The small museum 1)

The managers of the large cultural park 2 and the medium old mausoleum 1 provided further similar suggestions.

"The blockages of transportation lead to crowding." (The small museum 1)

"The illogical national policies guide tourists and tourism organizations in the wrong way." (The medium museum 2)

The manager of the large museum 1 noted the following extension to the issue of popularity.

"The different levels of reputation of sites determine that tourists will be crowded at popular places." (The medium temple 1)

Depending on the responses, the objective physical environment and the subjective human responses were both seen as reasons for crowding. The environmental factors can be divided into natural factors and man-made factors. Apart from the natural weather and location, site managers can control other factors in order to minimize crowding. Site managers can continuously regulate their plans and programs in different time periods to minimise crowds. In China, the national tourism policies sometimes create more crowding impacts than other factors. Thus the cooperation with the government is crucially important for the Chinese sites.

In some cases, tourists can escape crowds themselves by their own choices. Physical congestion may occur at any point in a site, when "too many people" or vehicles, or both, are present in a defined place at one time. Traffic congestion occurs at arrival and parking areas as visitors alight from transport, gather into groups or walk to and from the entry areas. Certain places within a site, such as ticketing, toilets, and narrow passageways are more subject to physical crowding than larger spaces. The physical congestion is related not only to the numbers of people in a space at any one time, but to their behaviour while in the space. A crowd that is patient, quiet, respectful and interested will have less impact on tourists and the site itself, than if they are disturbing or threatening due to excessive pushing and unruly behaviour. For certain places, visitors have a clear view of what they expect to see or experience. The presence of relatively large numbers of tourists, especially those travelling in groups, can be regarded as undesirable by both the tourists themselves and by some of the local inhabitants, local authorities, service providers, site managers, and local tourism industry, especially in small communities (cf. Doorne, 2000).

5.5.3 Proposed Crowding Problems at the Sites in Cairns and Xi'an

Question 4: Do you think that there are the crowding problems at your site in any of these areas, if there are, please point out the problems; if there are not, please present the crowding and congestion problems you have met before (not only at your site)?

1) *In the area of pricing and ticketing?*
2) *In the area of fundamental and special facilities?*
3) *In the area of customer service?*
4) *In the area of human resource?*
5) *In the area of cooperation with other tourism sections?*
6) *At any special points or sites within the site?*
7) *At special times such as school holidays, peak season, big events, or urgent safety problems?*

Question 5: Could you remember a particular case or example of a bad reaction to crowding? Yes or No. If yes, please describe the example.

The two questions above required interviewees to describe crowding problems at their personal sites or the crowding problems they have met. The proposed crowding problems can be categorized into nine dominant issues. Each of these issues is considered in turn.

5.5.3.1 Communication

1. Deficient or unclear signs and notices at sites.

The site managers in Xi'an provided the followed ideas:

"Sometimes visitors do not know where they can visit first. The visitor's itinerary is not clear." (The medium museum 3)

"Sometimes visitors complain about the signs and maps." (The large museum 1)

The signs, brochures, guides and other information provided by a site can become confusing, visually complex, poorly coordinated or contradictory. This can reduce visitors' appreciation and satisfaction (UNWTO, 2004b). In Australian sites, visitors do not face this problem because they can pick up brochures and maps for free in information centres or at sites. However, in some Chinese cultural sites, the problem occurred that visitors can not understand their itinerary at sites. Some Chinese destinations or sites can not provide information timely for two reasons. First, there are not enough information centres or some of the information centres can not be viewed by visitors. Second, some sites or destinations are lacking funds for this service. In managing this kind of case, site or destination managers could at least information posts and signs at places which are easily viewed.

5.5.3.2 Consultative Mechanisms

1. There is a shortage of employees to consult which leads to inconveniences.

The site managers in Xi'an provided the followed ideas:

"There is a shortage of employees, especially interpreters at peak times." (The old mausoleum 2)

The managers of the medium museum 2, the large cultural park 2, and the medium temple 2 provided same ideas above.

"Sometimes the service is not convenient." (The large cultural park 1)

At some sites or destinations, consultative mechanisms do not serve tourists well. Advisory personnel are useful to guide tourists in a friendly manner along well-defined routes to escape crowding places. In this way tourists can avoid a loss of control and appreciate the points of interests. The lack of consultative personnel may lead to tourists' uncomfortable feeling at the Chinese sites. Depending on the managers' responses, such negative situations inevitably occur in the peak season

because of the shortage of employees. In addition, the operators of some sites are not subject to specific regulation about advisory services or staffing levels that may cause congestion at sites. For example, tourists may not be able to find specific service lines for arts and crafts, refreshments and souvenir sales, interpretation programmes, and filming and photography requirements. Then they complain about the inconvenience of making a booking. A focus on consultative mechanisms and advisory personnel is critical to deal with crowding problems.

5.5.3.3 Coordination of Arriving Groups

The dominant themes in the interviews relevant to this theme can be itemised under two headings.

1. The inappropriate itineraries caused by weak coordination among sites;
2. The less control of suddenly excessive or uncoordinated arrivals.

The site managers in Cairns provided the followed ideas:

"RS1 have a lot of Chinese visitors and some Japanese. We have a lot of Japanese and some other countries' visitors." (The small park 1)

"We cooperate with other sites around. When visitors get off AS2 (RS1), they come to my place. If the visitors have some problems in AS2 (RS1), they will inform us, and then we can rotate our staff or change our time outline." (The small park 1)

The manager of the small artificial entertainment provided the same idea above.

"156 Japanese students suddenly called to come at 6 o'clock in the morning. I immediately arrange a place for them to change clothes and to have a rest. I also arrange six performers to come at 7 o'clock, and the breakfast at around 6." (The small park 1)

The site managers in Xi'an provided the followed ideas:

"Visitors always come in the morning. There are crowds in the early morning." (The large cultural park 2)

Excessive or uncoordinated arrivals may cause crowding. Many Chinese sites and destinations face such problems in the peak season, especially in the Golden Weeks. Visitors arrive at some sites at key, concentrated times either by themselves or led by tour guides. Visitors often visit two or more sites per day in Xi'an. The location of some sites means that they are always the first or last stop for visitors, leading to a huge number of visitors arriving at the same time; second, tour guides have a negative

impact on these uncoordinated arrivals, because few tour guides or their companies seek to avoid crowds; third, there is a less control of these excessive or uncoordinated arrivals at sites. Some sites lack emergency plans to control unexpected or uncoordinated group arrivals.

Some sites lack of cooperation with other local sites, so these sites do not have ability to distribute crowded visitors to other remote sites in the peak time. Moreover, the cooperation with other tourism stakeholders, especially tourism companies and tour guides, is still important to deal with the excessive or uncoordinated arrivals, because such cooperation can help to establish staged itineraries for visitors to escape crowding. Australian sites do not face excessive or uncoordinated arrivals. The responses in the interviews explain the way Australian managers deal with the sudden arrivals. Australian sites are administered as enterprises, so they compete with one another to take tourism market share. This competition induces visitors to be distributed across the different sites. Conversely, few Chinese sites face competition. Chinese sites, especially cultural sites are state-owned assets. The government pays for employees in full or as a part of the wages. These sites need not compete to earn money. Further, the sites in Xi'an have different reputations. Every visitor goes to the Terracotta Army, but a lot of them ignore other sites if their time-table is compact. The Terracotta Army does not compete with other local sites. The tourism brand in Xi'an is the Terracotta Army rather than a brand of historical relics or ancient graves. Therefore, the tourism market of Xi'an does not really work under competitive conditions. Different from the Xi'an tourism market, Cairns is well-known of its Great Barrier Reef and Rainforest. Almost every site in Cains is related to corals or rainforest with the ability to satisfy visitors' expectation. The homogeneity of the sites in Cains triggers their competition. The competition reduces the occurrence of crowding situations. Moreover, these sites cooperate with one another to attract visitors in their locality. The cooperation helps site managers to make sure visitors arrive at different time. The managers of PS1 and AS2 described that their collaborator would inform them if the visitors had not arrived on time. Thus these site managers were more capable of coping with unexpected visitors quickly. Few site managers in Xi'an can deal with unexpected visitors at the same speed with these site mangers in Cairns, apart from the reasons of competition and cooperation, another reason is that some site mangers in Xi'an are restricted by their complicated

organization and rules. Compared with the flexible management in Cairn, few managers in Xi'an can open their site at 7 o'clock in the morning if the fixed open time is 9 o'clock. Regulations on hours and opening times in Chinese attractions are not flexible in this way. Additionally, large site managers find it hard to allocate adequate staff quickly when there is an unexpected situation, while small site mangers can not quickly provide enough staff rapidly to tackle an unexpected situation.

5.5.3.4 Seasonality

The themes from the interviews again are twofold.

1. The crowded tourists have been a problem in the peak time in Xi'an, especially in the Golden Weeks;
2. The quality of service is poor in the Golden Weeks.

The site managers in Cairns provided the followed ideas:

"We have a lot of international visitors from different countries. From July, the American students come, and they will be less after August. Then Germans come back." (The small park 1)

The site managers in Xi'an provided the followed ideas:

"There was once a tragic accident (trampling accident) in the Golden Week." (The large cultural park 1)

"People poured in so much in the peak time that it caused traffic crowds." (The medium old mausoleum 2)

"Visitors have poor vision in the Golden Week." (The large museum 1)

"The price of tourism products increases in the peak time. Visitors need to spend more money in the peak time than in the average time." (The small museum 1)

According to the responses of the site mangers in Xi'an, crowding has been a problem, even a tragic problem, in the peak season, especially in the Golden Weeks. The traffic congestion, passage and exhibition room congestion, and the high price of tourism products and accommodation have been recognized as the short-term problems caused by the huge number of tourists during this period. There are two reasons for the excessive visitors: first, the Golden Week holidays are the best time to travel in China throughout a year; second, domestic visitors are the main customers in the local tourism market. As discussed in previous chapters, the government plays the leading role in modulating the holiday policy and allocating tourism resources.

Therefore, the government assumes a critical role in dealing with the seasonality problem. The modification of the holiday policy and the optimal use of the resources of popular sites or destinations are urgent problems waiting to be solved.

The sites in Cairns do not face the seasonality problems because international visitors account for a larger percentage of the local tourist market. International visitors travel to Cairns in different time periods due to their different national holidays. Thus visitors distribute themselves across broad time periods. The site mangers and the other tourism managers need not make much effort to address seasonality problems in Cairns.

5.5.3.5 Site Entry

The site entry concerns of the managers resolved around ticketing problems.

1. The timing and ticketing problems are the major problems of site entry.

The site managers in Cairns provided the following ideas:

"We do have ticketing problem in the peak time." (The small artificial entertainment 1)

"We had this problem two years ago, but we have invested a lot of money to expand our facilities. Four new windows have been opened." (The small artificial entertainment 2)

The site managers in Xi'an provided the following ideas:

"We have a shortage of ticket windows in the Golden Weeks." (The medium museum 3)

"The preferential or free tickets increase the number of visitors." (The medium museum 2)

"There is conflict between teller and visitors." (The medium museum 2)

"We do not have internet booking." (The large museum 1)

Site entry is often congested. The poor ticketing services and confusing pricing measures can cause a failure to manage the flow of visitors. It can be important to have a range of entry prices or incentive packages at different time periods (Preda & Watts, 2003). The responses demonstrated that entry problems occur in the peak season in both Cairns and Xi'an. A few Australian sites have crowds at ticket windows in the peak season, but such problems can be controlled in Cairns. Most

Chinese sites face the crowds at ticket windows and entrance in the peak season. In Xi'an, the lack of internet booking leads more visitors to buy tickets at sites, and thus extend the waiting time to enter. The Chinese managers stated another problem that the conflict between ticket sellers and visitors can be a reason for crowding. This complication may cause chaos around entrances. The managers' interviews did not mention another difficulty which observers to sites might highlight. There can be a physical challenge to visitors who have to wait in ling lines for tickets due to exposure to weather conditions such as harsh sun, strong wind or rain (Pearce, 2005).

5.5.3.6 Tour Guide

While tour guides make a valuable contribution to the tourists' experience and knowledge of attractions, the managers' responses about tour guides raised two negative and crowding linked problems.

1. Tour guides are the noise maker at sites;
2. The sites in Xi'an lack guides in the peak season.

The site managers in Cairns provided the followed ideas:

"Sometimes our employees have conflict with tour guides. The conflict may cause visitors' dissatisfaction to our site." (The small park 1)

The site managers in Xi'an provided the followed ideas:

The managers of the medium museum 2, the large cultural park 2, and the medium temple 1 in Xi'an agreed with each other on the above theme.

"We lack interpreters in the peak season, especially in the Golden Week." (The old mausoleum 2)

The managers of the medium museum 2, the large cultural park 2, and the medium temple 1 provided the same ideas as the small park 1 above.

"Sometimes tour guides talk to their groups too loudly, so other visitors complain about the noise. And sometimes tour guides stay at some major points of interest for a long time which causes crowds." (The small museum 1)

Most of the other site managers in Xi'an provided the same ideas as above.

Tour guides often cause congestion and inconvenience to other people by giving long and loud explanations to groups of visitors at popular points. The interviewees pointed out that tour guides caused such congested problems at their sites, especially at the sites in Xi'an. When tourists are crowded in an exhibition room, some tour

guides disturb tourists other than their own groups. Sometimes the conflict occurs between tour guides and employees or tourists. There is also conflict among tour guides of different companies, leading to chaos at places. These conflicts need to be controlled by powerful measures.

Another problem is the shortage of tour guides in the peak time in China. The number of independent tourists has increased rapidly in recent years, especially in the peak time, resulted in the shortage of interpreters or guides in Chinese sites. However, site managers can not necessarily employ more people, because the extra employees may become idle in the low time at their sites. Carefully planned deployment is a challenge in dealing with the deficiency of tour guides in the peak season.

5.5.3.7 Crowd Behaviour

Managers reported on this theme in commenting on crowd behaviour.

1. Tourists are sometimes bothered by the behaviours of others.

The site managers in Cairns provided the following ideas:

"Sometime people smoke around the toilet. And some customers use some facilities for a very long time. These activities cause delays to other people and dissatisfaction." (The small park 1)

The site managers in Xi'an provided the following ideas:

"The arrival of too many tourists causes pollution. Our employees are too busy to clean some places at the peak times, especially the toilets. (The large museum 1)

The managers of the large cultural park 1 and 2, the medium museum 2, and the medium temple 1 gave similar comments as that above.

"Tourists like to centralize at some famous points. The crowds sometimes obscure the vision of other tourists." (The large cultural park 1)

"The conflict among tourists causes dissatisfaction." (The large museum 1)

Tourists' behaviour, it seems, is another source of crowding. Inappropriate tourists' behaviour can lead to the blockage of some places, and causes other tourists' dissatisfaction. Few Australian sites have such problems except for the delay issues. The most severe problem caused by tourists in Xi'an is the pollution, especially the pollution in toilets. Some tourists are not satisfied with the toilets at some sites. Actually, the toilets have been built very well in recent years in Xi'an sites, but the

infrastructure may not yet conform to international standards. Maintenance and improvement of toilet facilities in peak times can be seen as highly desirable to resolve one source of crowd behaviour effects.

5.5.3.8 Cooperation

For the items concerning cooperation the managers' responses suggested two fundamental themes.

1. There is a lack of cooperation among departments at the sites in Xi'an;
2. There is a lack of cooperation between the sites and other tourism stakeholders in Xi'an.

The site managers in Xi'an provided the followed ideas:

"I do not know the responsibilities of other departments at present." (The large cultural park 1)

"Sometimes the managers can not arrange employees in appropriate positions." (The large cultural park 1)

"There is a lack of cooperation with other organizations." (The medium museum 1)

"We have conflict with the transportation department because of different ideas on barrier protection in the middle of the road out of the site." (The medium museum 2)

According to the respondents, different departments in a site need to cooperate with one another. Tourist sites need to cooperate with other tourism stakeholders to control tourists. The inefficiency or conflict of the cooperation in a site or out of a site may cause crowding problems. The Australian interviewees did not point out any cooperation problems for their sites, but they indicated that they will cooperate with more organizations, especially the international organizations in the future. The Chinese cultural managers reported some cooperation problems both internal to their sites and external to their sites. Education is important to enforce the cooperation among the different departments in a site or among the different tourism stakeholders external to a site. At present, many Chinese sites, especially small or remote sites do not cooperate with other organizations on a broad scale. The development of cooperation is a critical issue for these sites.

5.5.3.9 Physical Capacity

The question addressing physical capacity issues led to the identification of two themes in the managers' answers.

1. There are crowded utilities at only a few locations in Cairns;
2. There is a lack of facilities in Xi'an.

The site managers in Cairns provided the followed ideas:

"We just have one way down and one way up, so tourists have no choice but to wait."(The small artificial entertainment 2)

"The only area we now experience crowding is in our Food Service area at peak times." (The small park 2)

The site managers in Xi'an provided the followed ideas:

"Some facilities are not good enough at the peak time, such as toilets and parking areas." (The medium museum 3)

The managers of the large museum 1, the large cultural park 1 and 2 provided the same ideas as above.

"Some exhibition rooms are not big enough to accommodate tourists at the peak time." (The medium museum 3)

"Tourists have to stand in a queue at some crowded points." (The old mausoleum 2)

The manager of the medium temple 1 provided the similar idea as above.

"There is chaos at the entry and exit place." (The small museum 1)

The physical capacity at a site involves many of the previously mentioned issues; directional signage, the efficiency and convenience of parking areas, the spacing of entry points, the design and installation of access ways, security, lifts, ramps and handrails, and the retail or food outlets and visitor amenities. The managers interviewed pointed out that congestion occurs for some of these issues. Some sites in Australia had crowding problems in using facilities. However, the problems were few, because only one or two popular or sensitive locations at a site had problematic crowds. In the Chinese cultural sites, the crowds occur at many major locations in the peak season, including toilets, parking areas, entry or exit places, and some exhibition rooms in most sites. The recommendations for correcting this problem repeat many of the points made in previous sections of this chapter and include facility construction, information provision and cooperative limits. The further development of these

solutions in the topic of the next section where managers responded to questions about suggested ways of improving crowding problems.

5.5.4 The Current Crowding Management Issues for the Sites in Cairns and Xi'an

An important and constructive question in the interviews sought to identify useful suggestions for crowding management.

Question 6: Could you please provide some suggestions to improve or avoid crowding problems in the followed areas?

1) *In the area of pricing and ticketing?*
2) *In the area of fundamental and special facilities?*
3) *In the area of customer service?*
4) *In the area of human resource?*
5) *In the area of cooperation with other tourism sections?*
6) *At any special points or sites within the site?*
7) *At special times such as school holidays, peak season, big events, or urgent safety problems?*

Question 6 aims to explore the site managers' opinions and strategies on crowding. Nine kinds of responses were given, some of which reiterate previous themes in the interviews while some points add fresh material to the assessment of crowding management.

5.5.4.1 Administrative Responsibility

1. Provide sufficient employees for serving tourists at any time;

2. There need to be different allocation of employees for the peak season and the low season;

3. The senior staff members are responsible for administering other employees.

The site managers in Cairns provided the followed ideas:

"Everyone works in a team. I need to operate with my staff. Because we have a big area and different departments, we always talk to each other, and let each other know what we are doing. For example, I inform the shop that you would have fifty people at eleven o'clock. I keep another 300 people out of the shop at that time." (The small park 1)

"For 500 people, it is not good when you only have 15 people to work. So instead of 15 people, you need 40 people to keep customers happy." (The small park 1)

"When we have a busy period, we have extra staff on customer service." (The small rainforest 1)

The managers of the small park 1 and the small artificial entertainment 2 provided the parallel ideas as those above.

"We change our management a little when we have busy days. (The small park 1)

All the other site managers in Xi'an provided parallel ideas.

"We employ more people in the peak time." (The large cultural park 1)

The managers of the medium museum 2 and 3, the old mausoleum 2, and the medium temple 1 stated similar views about their administrative activities in the peak time.

"We arrange out staff in different ways at the peak times and low times." (The old mausoleum 2)

The managers of the large museum 1 and the large cultural park 2 provided the same ideas as above.

"We have particular people to be responsible for some emergent problems." (The medium museum 2)

The senior staff members are responsible for coordination of all operational and physical planning to improve crowding management. They consider the number of employees to make sure there is sufficient qualified staff to manage crowds. In addition, the managers operate financial resources to control crowds. The managers need to review all proposals to improve crowding management. Moreover, if necessary, managers should implement special operational systems to manage tourism activity at peak periods. These procedures are in addition to those normal uses in average or low periods (Blackstone, 1989; Hilton et al., 2000).

Because the sites in Cains do not have distinct peak periods and low periods, the Australian managers do not focus strongly on modifying the arrangements for their employees during different seasons. They focus on the coordination and rotation of their staff to deal with the emergent situations. The managers indicate that they efficiently distribute their employees to cope with tourists. Therefore, the administrative system is flexible in tourist sites in Cairns. On the contrary, the Chinese cultural site managers focus on different allocation of their staff between peak season and low season. The site managers need more employees to support the increased number of tourists. Therefore, the site managers need strong financial support and backing to fulfill their role in the peak season rather than the low season.

5.5.4.2 Comprehensive Communication

The responses to communication issues repeat some of the issue noted earlier in the interviews concerning information and signage. In this context of suggesting crowding solutions one major theme was identified.

1. There is a need to provide enough, straight forward, and clear brochures, and signage.

The site managers in Cairns provided the followed ideas:

"The signage for any facility at a place is usually straight forward." (The small park 1)

"We have brochures, and schedules in different languages for customers, especially for our major customers." (The small park 1)

All the other site managers in Cairns provided the same ideas as above.

The site managers in Xi'an provided the followed ideas:

"We set up enough sign posts." (The medium museum 1)

"We have the information centre." (The medium museum 1)

Adequate introductory, information and directional signs, notices, interpretation material, brochures and websites can be regarded as the set of desirable comprehensive communications for tourists. Moreover, these interpretive messages need to be clear and concise, and be consistent with a communications policy (e.g. Moscardo, 1999). The sites managers are responsible for working with intermediaries to ensure that the right messages reach the end consumer, especially relating to pricing/timed ticketing and busy periods. Both the Australian and Chinese sites focus on providing comprehensive communication for tourists. But there are some differences in the way of providing the messages for tourists. The communication system has been developed extensively at the sites in Cairns. Tourists can get brochures or direct interpretive services for free at the airports, in hotels, and at sites. The Chinese destinations and sites can not afford to provide such mature services at present. Some sites, usually the popular sites, provide brochures for tourists for free. These brochures involve Chinese and English interpretive versions, and sometime including the Japanese and Korean translations. But tourists need to spend about one dollar to get these brochures at other destinations and sites. Although there has been a comprehensive communication system in Xi'an, the system needs further improvement.

In Cairns, most tourists can communicate with the local community in English. The site managers and other stakeholders need not expend much effort to design appropriate itineraries for tourists. By contrary, the Chinese sites face these problems. The Chinese stakeholders need to develop a friendly English communication style for international tourists. Otherwise, international tourists may be dissatisfied with the communication efforts. Additionally, a huge number of tourists travel in groups in the peak season. Providing the services in bulk and in fluent English is a challenge in Xi'an.

5.5.4.3 Responsive Measures for Peak Periods

A further set of suggestions for improved crowding management focused on six ideas obtained in discussions about the peak periods.

1. Provide information to tourists prior to the peak season;
2. Readjust the ticket price in order to control the number of tourists;
3. Arrange particular staff to be responsible for emerging problems in the peak season;
4. Enforce the cooperation among the departments in a site and with other tourism organizations out of a site;
5. Open more tickets windows, gates, and emergency routs for tourists;
6. Conduct contingency plans in the peak season, especially to guarantee tourists' safety.

The site managers in Cairns provided the following ideas:

"We have a big area to operate. It is easy for us because we do not have limited resource." (The small park 1)

The managers of the small zoo 1 and the small rainforest 1 provided the same ideas as above.

"If extra people come, we have extra staff on the customer service." (All the sites)

"In the peak season, if it is too congested in the theatre, we put one group in the restaurant, and tell the tourists, we will provide special services for you, so you will not miss any program." (The small park 1)

"We increase our opening hours and add additional tours in the evening. We increase the frequency of our Day Tours to every 30 minutes, with the capacity to increase the frequency to every 20 minutes in the peak times, so each tour only reaches our maximum size of 30 guests. We provide additional types of experiences. We provide a

separate Tour Guide for Coach Groups, to keep to below maximum capacity. And we increase ticket price to help to slow growth. But we now experience crowding at only one area." (The small park 2)

The site managers in Xi'an provided the following ideas:

"We control visitor numbers and the ticket numbers." (The large cultural park 1)

"We have contracts with tourism agencies and provide them pre-booked group tickets." (The small museum 1)

Similar ideas from other managers at other Xi'an sites included the following:

"We build the automatic entrance. We open additional gates at the peak times." (The large cultural park 2)

"We plan to provide portable toilets at the peak times." (The old mausoleum 2)

"We have different ticket price and different business time in the peak season." (The small museum 1)

"We have more staff to serve tourists at the peak times with the help of volunteers and police." (The large cultural park 1)

The managers of the medium museum 2 and 3, the old mausoleum 2, and the medium temple 1 provided a suite of linked ideas.

"We offer travelling information to tourists." (The old mausoleum 1)

"We have particular people to be responsible for the possible emerging problems." (The medium museum 2)

"We open new routes and upgrade security inspection at the peak times." (The large cultural park 1)

"At one sensitive exhibition room, we have additional tellers to monitor the flow so that tourists can visit the room only once with their tickets. The tickets of tourists who have been there will be stamped." (The large cultural park 1)

These themes and the managers' responses emphasize that it is important to ensure that additional staff and other resources are available to cater for peak periods. It is also important to have adequate monitoring of peak period activity to identify any issues that require additional responses. Further, contingency plans and clear quick reactions are necessary for peak periods.

5.5.4.4 Develop More Tourism Operator Licenses

A different kind of strategy was also identified in the managers' responses.

1. Licenses have been developed to monitor tourism operators.

The site managers in Xi'an provided the followed ideas:

"The national government has set test standards to examine tourist sites. There are five levels ranging from a low standard to a high standard for tourist sites. Depending on the examination, each site is designated as being at a particular level." (The large museum 1)

An operator license system is used to govern the activities of all operators. License conditions include means of access, group size, paths of travel, frequency of entry, modes of transportation, restricted access to certain areas or at certain times, site safety, and protection of the special values of the site. The license system is seen as necessary and appropriate to the various categories of operators in consultation with industry representatives. The license conditions are in accordance with the plan of management and contain protocols to monitor operator performance. For example, limitations may be placed on the number of tour operators permitted on site at any one time. Licenses can be withdrawn if performance standards are not met. And licenses are regularly renewed in a time period. The interviewees in Cairns did not discuss this issue, but there are other, Australian government checks to examine enterprises. The site managers in Xi'an raised this special topic of Chinese assessments of tourist sites. The environment, facilities, reputation, and the quality of services are all involved in the range of assessment.

5.5.4.5 Coordination of Arriving Groups

As already noted this issue of arrival times can cause negative effects for crowding. In assessing the managers' responses and suggestions for dealing with crowded attractions, this topic also emerged as having two areas for attention.

1. Upgrade the cooperation among departments in a site to organize the coordination of arriving groups;
2. Cooperate with all the tourism stakeholders to organize the coordination of arriving groups.

The site managers in Cairns provided the followed ideas:

"We cooperate with a lot of local, regional, and national organizations to monitor tourists' movement." (The small park 1)

All the other managers of the sites in Cairns provided the same ideas as above.

"When our restaurant is full of customers, they will inform me. Then I arrange the arrival group to see a performance first." (The small park 1)

"We cooperate with other local sites. For example, we have coupon tickets to serve tourists/" (The small park 1)

The site managers in Xi'an provided the following ideas:

"We will upgrade the coordination with other organizations, especially the transportation, the police, the tourism agencies, and the government." (The small museum 1)

All the other managers of the sites in Xi'an echoed similar points.

"We require the tour guides to inform us if their customers would not arrive on time. For example, if a group may reach us half an hour later, the guide would inform us." (The small museum 1)

The UNWTO suggestions require coordination of the arrivals schedules of those tour operators who regularly bring groups to a site. The information on access conditions and restrictions need to be readily available to local tour operators, transportation companies and self drive visitors. The sites in the two destinations focus both on the coordination internal to the sites and external to the sites in order to monitor the arrival and departure of tourists. The coordination with the tour guides and the transportation companies is crucially important, because it affects tourists' arrivals. In addition, the government plays a critical important role in the coordination of arriving groups in China. The coordination among sites and destinations requires the control and mediation of the government.

5.5.4.6 Site Entry Management

A further theme is the management of ticketing.

1. There are different ticketing systems among the sites.

The site managers in Cairns provided the followed ideas:

"We serve multiple entry tickets to different tourism programs." (The small rainforest 1)

The manager of the small park 1 provided the same idea as above.

"We provide pre-booking tickets." (The small park 1)

The site managers in Xi'an provided the followed ideas:

"We have separate ticket windows for groups and independent visitors." (The medium museum 1)
"We have ticket contacts with our major cooperative partners." (The large cultural park 2)
"We modulate our ticket number and ticket price." (The large cultural park 1)

The unobstructed site entry requires appropriate ticketing system. The sites introduce optional multiple entry tickets and variable entry fees to manage their visitors. The sites in both destinations utilize ticketing as a mechanism to control the number of tourists. But there are different ticketing systems at the sites of the two destinations and they seem to work with varying degrees of success. The Australian sites like to control the number of tourists through the multiple ticket options. The Australian natural sites offer several entertainment programs to tourists. Tourists can buy the optional tickets according to the programs they attended. The Chinese cultural sites attract tourists through ancient handicrafts and relics rather than the entertainment. Thus the Chinese managers take advantage of level of the ticket price to control their visitor numbers rather than using tickets with different options.

5.5.4.7 Tour Guide Management

In the interviews some managers raised points about the management of the tour guides. The key ideas were as follows:

1. The site mangers should cooperate with tour guides to control tourists' activities;
2. The site mangers need to introduce education program to their guides.

The site managers in Cairns noted the following approach:

"Because some of the guides do not like each other, we separate them." (The small park 1)
"We sign contracts with some tourism companies." (The small park 1)
"We require tour leaders to inform us if their groups would not reach on time. Most of the time they follow our requirement." (The small park 1)

The site managers in Xi'an provided about tour guide education and services:

"Our tour guides need to have training classes every year." (The large museum 1)
"We have audio systems in some exhibitions rooms and we have a film introduction." (The large museum 1)

The Australian and Chinese sites have similar requirements for tour guides. Most of tour guides accept education in order to provide customers with good service. The Australian natural sites rarely receive tourists' complaint about noisy or lengthy explanations of tour leaders, because tour guides in Cairns work in open spaces for short periods. However, the Chinese cultural sites receive such complaints from customers, especially in the peak periods, because tour guides need to interpret history and handicrafts to tourists often in small echoing rooms. Establishing audio systems with headphones may be the solution to these complaints as this reduces the noise problem. That is tourists may not need tour guides to help interpret some areas, and such mechanisms could reduce tourists' complaint about the noise of tour guides.

5.5.4.8 Management in Certain Areas

Circulation patterns and approaches to manage these flows were noted in the interview responses.

1. Distribute tourists to remote areas;
2. Control the number of tourists at the popular or sensitive areas;
3. Provide multiple channels at the popular or sensitive areas;
4. There are inspectors at the popular or sensitive areas.

The site managers in Cairns provided the followed ideas:

"In the afternoon, we are very busy at one place, so we sell tickets as many as possible at another place to distribute visitors. We plan to establish an additional footwalk for groups." (The small artificial entertainment 2)

"We distribute and rotate people from the popular places. And we are flexible to do extra shows to distribute people." (The small artificial entertainment 1)

The site managers in Xi'an observed their responses to the issues:

"We have more security inspection and we do distribution at the popular points." (The old mausoleum 1)

The manager of the old mausoleum 2 provided the same idea as above.

"We arrange popular exhibitions in wide spaces or in the open air." (The large cultural park 1)

"There are extra routes at our special points." (The medium museum 1)

"There is only a one-way pathway at our sensitive place in order to control the visitor number." (The large cultural park 2)

"At one sensitive exhibition room, we have additional ticket inspectors. Tourists can visit the room only once with their tickets. The tickets of tourists who have been there will be stamped." (The large cultural park 1)

Developing different itineraries or walking routes to distribute and control the movement of visitors, appeared to be a key future option for the sites. In addition, congestion can be reduced in certain areas be locating car parks and other visitor facilities well away from each other, by restricting the width or layout of walking paths and using lighting. An increased number of staff and tour guides can help to ensure that visitors move around the site as efficiently as possible and move others away from sensitive areas during the busiest periods. The optional ticketing management is still a good way to control visitor numbers to certain areas. There are different performances at some sites in Cairns, and then the managers of these sites flexibly distribute their tourists by using the different times of the performances.

5.5.4.9 Physical Capacity Management

The future modification of the physical setting of the attractions was also seen as a crowd management strategy for the coming years.

1. Provide additional the infrastructure and recreational facilities.

The managers of the large cultural park 2 and the medium museum 3 in Xi'an provided ideas about physical infrastructure.

"We may build underground parking areas in the future." (The large cultural park 1)

"To build popular exhibition rooms in some special formation is good to reduce crowds, for example, the trapezia shape." (The large cultural park 1)

"Build rest areas, shops, and restaurants to be away from the exhibition areas." (The medium museum 1)

"Set up enough and clear signposts.' (The medium museum 1)

"Provide portable toilets at the peak periods." (The old mausoleum 2)

"Build multifunctional exhibition rooms." (The small museum 1)

"Distribute visitors to have meals out of sites." (The old mausoleum 2)

Apart from the well-developed fundamental infrastructure, it is also important to develop good conditions of shelter, seating, toilets, pedestrian paths, emergency evacuation procedures, facilities for the handicapped and children. Site managers have

the responsibility to maintain the facilities. Adequate and appropriate facilities can help to minimize the possible blockages and make sure the smooth flow of tourists in order to reduce or avoid crowding problems. The sites in Xi'an, especially the popular sites, face the overuse or the shortage of facilities at the peak times, but less use or idle use of facilities at the low times. Thus the Chinese managers need some facilities which can be used in the peak season, but which can be easily put away in the low season, for example, the portable toilets. In addition, some managers suggest that trapezoid shaped exhibition rooms can accommodate more visitors than the normal rectangular rooms. And the multifunctional exhibition rooms can be used by managers to distribute visitors at different times. As attractions grow and develop mindfulness about crowding management needs to be to the fore in architectural thinking and construction plans.

5.5.5 Perceptions of Tourists of Different Nationalities

The section of the interview related to managers' perceptions of nationality differences is crowding. It contained several elements and is reproduced as follows:

Question 6: How much do you think the following nationalities are likely to cause crowding issues, with a score of "10 = very likely to cause crowding" to "0 = not at all likely to cause crowding"? (Please rate every nationality)

Australian visitors ( ), New Zealanders ( ), English ( ), Irish ( ), German ( ), Swiss ( ), Swedish ( ), Italian ( ), Japanese ( ), Indian ( ), Korean ( ), and Chinese ( )

Question 7: How much do you think the following nationalities are affected by crowding issues, with a score of "10 = very affected by crowding" to "0 = not at all affected by crowding"? (Please rate every nationality)

Australian visitors ( ), New Zealanders ( ), English ( ), Irish ( ), German ( ), Swiss ( ), Swedish ( ), Italian ( ), Japanese ( ), Indian ( ), Korean ( ), and Chinese ( )

These two questions investigated the perceived impacts of different nationalities as causes of and likely respondents to crowding. The responses of the site managers on this issue can be categorized into several themes.

1. Tourists in groups are more likely to cause crowding;
2. Independent tourists are more likely to be affected by crowding;
3. Tourists who are from crowded countries are more likely to tolerate crowding.

One site manager in Cairns provided the followed response. The transcript is included in full to help identify the way the managers thought their way through their answers.

"I can not simply say that one nationality causes crowding problems. I just can say that groups like to cause crowding problems, because they cause delays and slow downs. Japanese and Korean visitors like to travel in groups. Now we have a lot of Japanese and some Korean. In the future, it may be Chinese. And I think people from crowded countries can tolerate crowds. Independent tourists tend to be affected by crowds. So if I rate them as causing crowding, I think Japanese, Korean, and Chinese can be categorized as a group which I rate 7 or more, depending on how many of these people you accommodate. They like to travel in groups. Indian may be 6. European should be around 4 or less. Australian and New Zealand may be 5, because we have a lot of tourists from these countries. For the nationalities affected by crowding, Japanese, Korean, and Chinese may be 3. Indian should be 5. European, Australian, and New Zealand may be 6, 7, or 8." (The small artificial entertainment 1)

The manager of the small artificial entertainment 2 responded in a similar way.

"I think for the nationalities affected by crowding, Australian, New Zealand, and Irish are 1, because they travel independently. English is 4 or 5, because some of them travel in groups. Swiss and Germen are 7 or 8, they travel in groups. Japanese should be 9 or 10, because we have a big Japanese market. Korean is 1 or 2, we have few of them. Chinese may be 0. We do not have Chinese at the moment. The rate of nationalities causing crowding is same" (The small park 1)

The site managers in Xi'an provided the followed ideas:

"For the nationalities which cause crowding: all other nationalities should be 0 or 1, Chinese should be 8. For the nationalities affected by crowding: other nationalities should be 7, Chinese should be 3." (The small museum 1)

"For both questions, the European nationalities should be rated less than 5, American may be 5 or 6, Indian, Korean, and Japanese should be 7 or 8, and Chinese may be 9 or 10." (The large cultural park 1)

The managers of the large cultural park 2, the medium museum 2, the old mausoleum 1 and the medium temple1 provided the same ideas as above.

Some interviewees did not answer the question because they did not think that people of a particular nationality caused crowding. The responses of the site managers can be

divided into two parts. The first set of interviewees pointed out the groups they saw as more likely to cause delay and slowness, which can be the factors causing crowding. Independent tourists it was suggested were more likely to be affected by crowds, because they need more space than tourists in groups. Additionally, people from crowded countries, such as Chinese, Indian, Japanese, and Korean were seen as having greater tolerance to crowding than people from less crowded countries, such as the Australians. The second set of interviewees rated the nationalities based on the number of tourists from different countries which visited their sites. In these cases, the site's major market was typically seen as the most likely to cause crowding. For example, one manager rated the Japanese as 9 or 10 because the Japanese tourists accounted for the biggest per cent of his site's market.

Importantly these perceptions by site managers conflict with the findings in Chapter 4. In Chapter 4, Chinese tourists were identified as more sensitive to crowding. It is important to emphasize that stereotypes about crowding and nationality influences about crowding may inform the managers' responses. It is not necessarily the case that managers know in detail how different nationalities really feel about the crowding issues.

5.5.6 Suggestions for Tourism Crowding Management in the Future

In a final and further attempt to access managers' views two final questions were asked.

Question 9: Could you please provide the visitor numbers per day/ year? And could you separately give the visitor numbers a day in average time, peak time, and low season, and the maximum visitor number a day in 2007? Would you like to attract more visitors in the future? What measures you will take if the visitor number is beyond the capacity of your site?

Question 10: As tourism grows in Australia/China from other destinations what do you think will need to be done to avoid crowding in Australian/Chinese tourism market?

The responses to questions 9 and 10 can be integrated. The opinion of the site managers in Cairns followed several main issues:

1. The sites in Cairns have the potential ability to attract more tourists, and they hope to attract more tourists in the future;

The Chinese managers provided a lot of ideas which can be categorized into five aspects:

1. The government urgently needs to modify the policy of public holidays. Holidays could be arranged evenly throughout a year, because the concentrated holidays, such as the Golden Weeks, cause serious site crowding.
2. Promote less popular or remote sites for the purpose of decentralizing visitors. One site can cooperate with other sites and departments to make appropriate travel itineraries. Then visitors will not be so crowded at one time or in one place.
3. Develop cultural brands to enhance the site's competitive ability. Cultural sites need to exploit different cultural characteristics to appeal to visitors. For example, museums can take advantage of some famous handicrafts or hold exhibitions to promote their reputation. Temples can attract people by religious activities and celebrations. And traditional parks can stage large performance.
4. Prepare for more diversified visitors. Natural sites are the primary product adapted to most kinds of people, but cultural sites always appeal to professional visitors, specialist cultural tourists, and others. Nevertheless, as the level of education increases in China, more and more Chinese people will tend to visit cultural sites. Moreover, the increasing numbers of international visitors need to be regarded as an important part of the future.
5. Contribute to the local and national tourism market. Sites need to devote both economic and cultural profit to the local and national tourism market. As the local and national tourism market will develop, sites should receive support from other departments to establish better environments for tourists.

The site managers in Cairns offered the following suggestions:

"We can have 25 percent more visitors." (The small artificial entertainment 2)

"We have a big area; the visitor number can be double sized." (The small zoo 1)

"I think we will not be seeing crowding problems in the next five years. In the future, if we face the problem, we will restrict the number of visitors. And we will enlarge our site." (The small zoo 1)

The manager of the small park 1 provided the same idea as above.

"We hope to attract more people to come, as many more as possible." (The small park 1)

The site managers in Xi'an provided the followed ideas:

"We are too busy to serve customers in the Golden Weeks, but we are free in winter." (The large museum 1)

The manager of the medium temple 1 provided the same idea as above.

"We are enlarging our site. It will easily solve the problem in the future." (The large cultural park 2)

"I hope the government can change the holidays, and the Golden Weeks should be ceased." (The large museum 1)

The mangers of the medium 1, 2, and 3, the large cultural park 2, and the old mausoleum 2 provided the same ideas as above.

"I hope the government can promote the small or remote sites." (The old mausoleum 2)

"For the Xi'an tourism market, the number of tourists has been far away from our upper limit except for the busiest days. The tourism organization should work together to exploit the potential capacity of the market. In the future, the cultural tourism will be more popular. Our sites need to promote our commercial competition, develop our cultural brands and particular characteristics. Still, the sites need to enhance the cultural entertainment and cultural environment in advance." (The large museum 1)

The managers of the large cultural park 2, the old mausoleum 1, and the medium temple 1 provided additional ideas.

"The government should make the itineraries clear. The ticket price should be increased in the future. And the sites can provide coupon tickets." (The medium museum 1)

The managers of the medium 1 and 2 emphasized a sustainability theme.

"The tourism organizations need to develop the sense of long-term sustainable tourism development. The tourism resources should be reasonably allocated. And the organization should enforce their anticipation of crowding problems." (The large cultural park 1)

The site managers in Cairns did not provide specific data about their sites (refer Appendix II Table 5.3), but they indicated that the highest number of visitors they accommodated was about 3,000. They can accommodate more visitors, from 25 percent extra visitors to twice as many as the present number of visitors. The data presented by the Chinese site managers (refer Appendix II Table 5.3) revealed the

obvious distinction between the peak times and the low times to say that goes back to a simple view of capacity.

Compared with some developed countries, the Chinese government has a more important role in modulating the tourism market because of the recent development of Chinese tourism. The potential changes involve the modification of tourism policies, the improvement of the tourism environment, and the diversification of cultural visitors to China. These special characteristic of the Chinese tourism market requires cultural site managers to focus on adjusting their management in the near future.

In 2008, the Chinese government modified public holiday planning. The holiday in May was changed to three days from the original seven days. Every public holiday is to last for three days except the National Holiday in October and the Spring Festival Holiday in February. These two public holidays are still seven days long. This modification will influence the framework of Chinese tourism market. Future research needs to monitor the effect of these new Chinese tourism policies on tourists and tourist sites. Tourist managers may need new ways to adapt to the changes. And according to the views of Chinese tourist attraction managers even more flexibility for Chinese tourists would assist their business and management.

5.6 The Models of Tourism Crowding Management in Cairns and Xi'an

In dealing with the crowding management at tourist sites, many stakeholders need to cooperate together. The UNWTO (UNWTO, 2004b) introduced a list of issues and measurements in mapping out the visitor experience and ways of minimizing crowding. According to the UNWTO analysis, there can be a model to manage tourism crowding.

In the UNWTO (2004b) model, the management of tourism crowding in natural and cultural sites includes two major aspects, the improvement of operational crowding responses and the improvement of the physical capacity. The UNWTO recommendations can be regarded as a comprehensive model to manage tourism better to avoid crowding in natural and cultural sites. The UNWTO model can also be

used as a standard for considering the Australian natural sites and the Chinese cultural sites. As revealed in this chapter, the sites in Cairns and Xi'an have their specific management systems. According to the analysis of the management issues in Australian and Chinese sites, these two destinations are very different in recognizing, planning, and managing crowds. In accordance with the conceptual map of crowding management provided by UNWTO, the following Figure 5.1 and Figure 5.2 help identify the differences between the Australian and Chinese crowding situation and management.

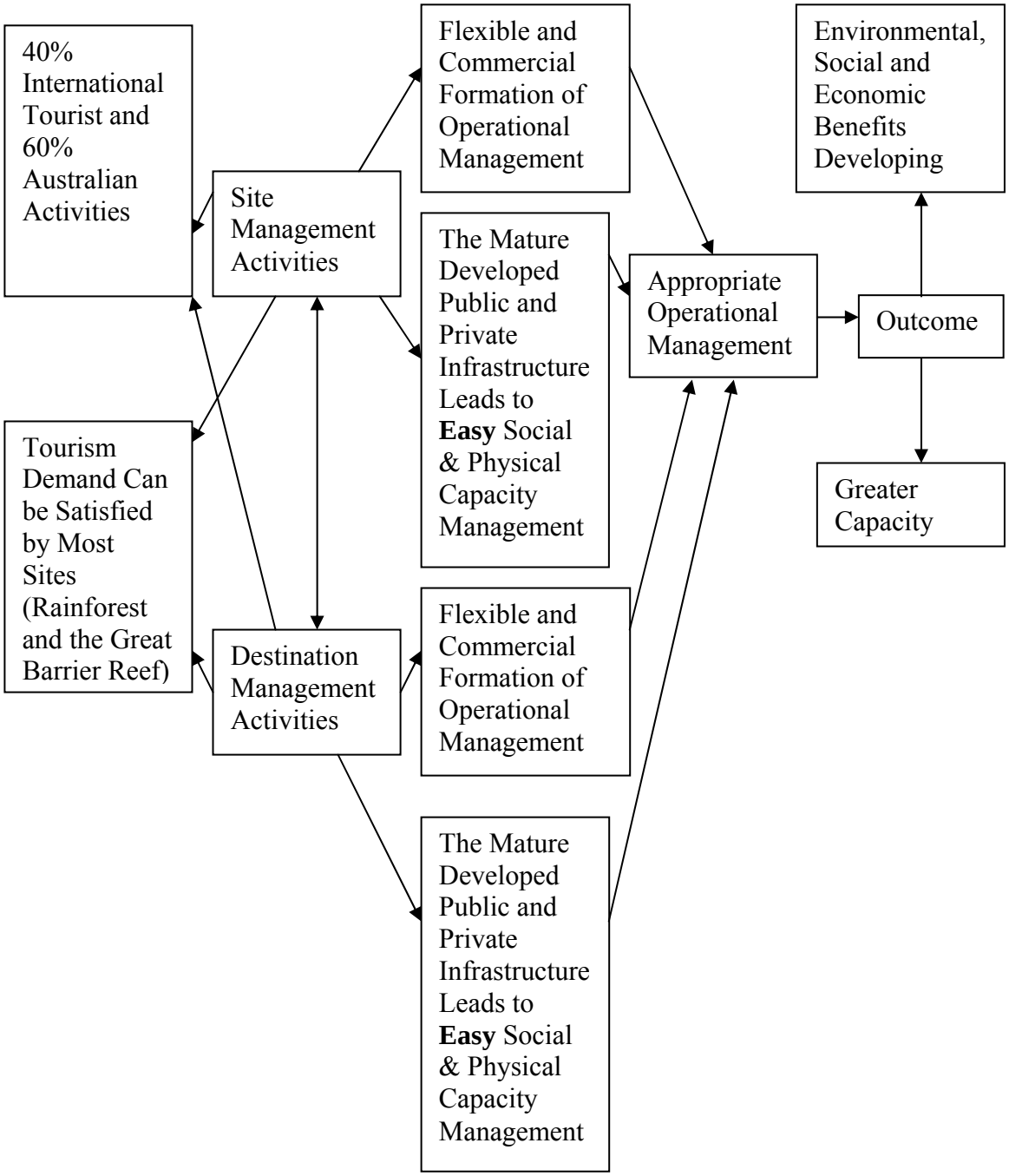


Figure5. 1 A Model of Forces Shaping Managing Tourism Crowding in Cairns

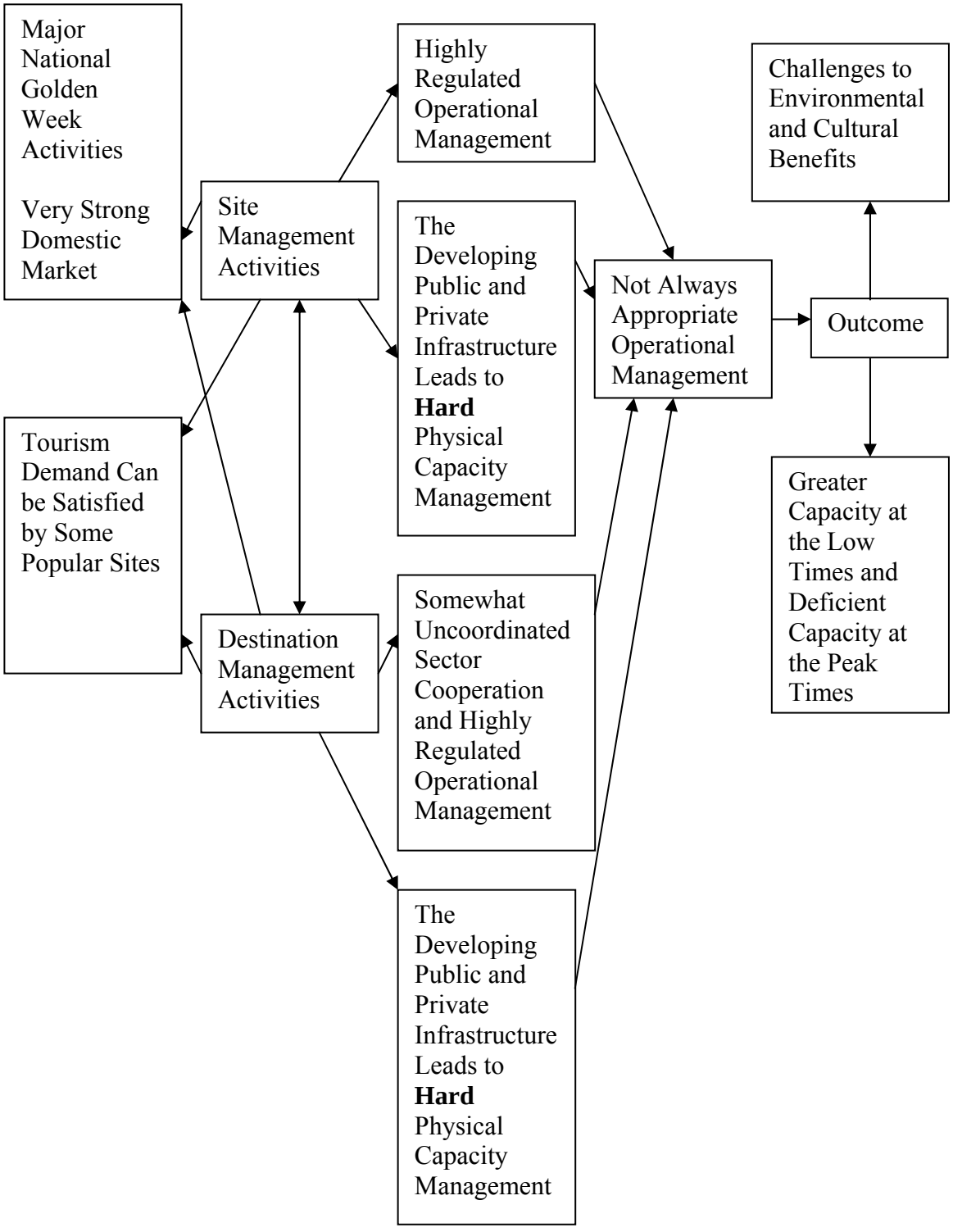


Figure5. 2 A Model of Forces Shaping Managing Tourism Crowding in Xi'an

In conclusion, the differences in crowding management between the two destinations involve four aspects, the source of visitors, tourist demand, the physical capacity management, and the operational management. Firstly, the climate of Cairns is good

for people to visit in the whole year, so there is no obvious peak time and low time in Cairns. The international tourists come to Cairns at different times in the whole year ensuring that seasonality is not marked. Further the institutional forces shaping traveler times are not so varied as to cause major problems. However, the climate of Xi'an is an impediment for tourists coming in the period of December to February. Then tourists usually come to travel in the period of March to November, especially in the period of May to October. The major tourist market is the domestic tourists who are travelling in that period. Secondly, sites in Cairns have a similar level of reputation, and therefore tourists can be distributed somewhat evenly to different sites. The sites in Xi'an have markedly different levels of reputation. Tourists are commonly attracted to the most popular sites leading to the crowds at these sites, but other sites lack tourists. Thirdly, Cairns has good public and private facilities to inform and guide and redirect tourists, so the sites in Cairns have adequate physical capacity. By way of contrast, Xi'an endeavors to inform and manage visitors through its public and private facilities, but it can not meet the needs of many tourists. At present, the modest facilities must serve a huge number of tourists in the peak periods, so the physical capacity is crowded at that time. Fourthly, the Australian sites are commercially managed creating keen competition among these sites. Most importantly, in a commercial organization, managers can operate flexibly. The site managers in China need to operate in accordance with somewhat restrictive regulations. These four distinctions lead to the difficulties for the Chinese cultural managers to manage crowds in their sites at the peak times. Apart from the differences, managers in the two destinations conduct some similar strategies to control their tourists. For example, they all take advantage of ticketing, pricing, monitoring, and flexible planning in order to control tourists' number and tourists' movement.

5.7 Chapter Summary

Crowding management is a complex issue for tourist sites. It is critical to identify the site's specific ecological situation, and then the fundamental infrastructure and other facilities which shape the operation of the setting. Still, it is important to emphasize the optimal usage of the facilities. Both natural and cultural site managers are responsible for preserving their product whether that is composed of biological

resources or ancient relics. In addition, site managers need to consider their customers' behavior, expectation or anticipation, perception on crowding, and the needs of the nationalities they host in dealing with the crowding management.

This chapter identified a range of mechanisms for managing crowding at sites in the two destinations. The findings of this study provide a better understanding of crowding management issues at the business level for Australian natural sites and Chinese cultural sites. The findings support other research investigations highlighting that crowding is a problem in some tourism sites. In addition, the findings of this study apply very directly to the future of these Australian and Chinese sites. The managers in Cairns presented the stress-free capacity of their sites, and their sites have the potential ability to accommodate a larger number of tourists. The site managers in Cairns can provide well-developed facilities and services to aid tourists' satisfaction. The Chinese cultural managers provided a listing of special Chinese crowding problems, where Chinese public holidays and modest facilities or services at some sites are the major factors leading to crowds. The findings also confirmed that most cultural sites in China do undertake planning tasks such as controlling ticketing and pricing, promoting facilities and environment, educating staff to upgrade customer service, enhancing cooperation with other departments, and monitoring tourist activities in peak season and popular places. The monitoring in peak season was regarded as a particularly critical point for Chinese sites. Compared with the sites in Cairns, the Chinese managers have many more difficulties in dealing with crowding. Consequently, they need more help from other departments and organizations, especially the government, to work together to reduce crowding problems in the peak periods.

Chapter 6 Summary and Integration

Chapter Outline

6.1 Highlights of Findings of the Research

6.2 A Crowding Management Model for Tourism Sites

(Building on the results of the three comparative studies, an overall model is developed for tourism sites managing crowding.)

6.3 Contributions to the Academic Tourism Literature

(The distinctive achievements of this research in looking at Chinese and Australian crowding issues (and doing so in part through questionnaires and interviews in Mandarin) are summarized. Highlights include contrasts between the locations, between managers' and visitors' perceptions and the value of building a model is stated.)

6.4 Future Directions

(The limitations of this thesis are recognized and opportunities for future research to address these limits and construct new insightful studies into crowding management are stated.)

6.5 Final Comments

6.1 Highlights of Findings of the Research

The research aims, which were put forward in Chapter Two, were achieved through three related studies. In this section, the findings are presented again in order to integrate the literature, aims and results. The section succinctly reviews the core results for each aim in turn.

Aim 1: Compare the physical and operational environments at sites in Cairns and Xi'an in terms of actual visitor use.

According to the observations in Study One, in Cairns, the numbers of tourists at most locations in the Christmas period were close to the numbers of tourists in the average peak time. The time of data did not vary significantly. Few sensitive time points or locations could be found in Cairns. Thus the optimal use levels at the sites in Cairns permitted the physical and operational environments to be easily managed. Most tourists felt comfortable in the environments in Cairns, and moreover they were not bothered by others.

By the way of contrast, the numbers of tourists were uniformly higher at most locations in the Golden Week, usually of a scale of at least double as many as the numbers of tourism in the average peak times. The time of day data did vary according to common trip itineraries, distance from the city and limited spaces of exhibition rooms. In addition, the observational data reinforced the influence of the domestic Chinese visitors and the way in which their allocated holiday periods led to high visitor numbers throughout the cultural attractions at concentrated periods. The excessive use in the peak season, especially in the Golden Week, caused pressure on the physical and operational environments in Xi'an. Site managers need to carefully adopt specific strategies to protect their environments from crowding.

Aim 2: Compare tourists' actual use levels and tourists' perceived use levels between the sites in Cairns and the sites in Xi'an.

This aim was developed based on the literature of perceived crowding theory, particularly the approaches and findings from Manning and his colleagues. The evaluative dimensions used here were "tolerance" and "preference" to measure tourists' use levels. The different levels of "tolerance" and "preference" were developed to illustrate the relationship between actual use level and perceived use level. Study One in Chapter Three also investigated results related to this purpose. One major finding here was the difference between tourists' use levels and tourists' perceived use levels at the popular places in Xi'an, but in Cairns, tourists' actual use levels were close to tourists' perceived use levels in most locations. The number of or the activities of other encounters were seen as potentially disturbing for tourists in Xi'an but not in Cairns. A further key finding was the sensitivity of the Chinese tourists in Xi'an to crowding. Contrary to some stereotypes, Chinese visitors were not particularly tolerant of the larger numbers of visitors rather than showing considerable tolerance as might be expected from citizens of a very populous country.

Aim 3: Explain tourists' perceived crowding norms at the sites in Cairns and Xi'an using a range of demographic and visitor profile variables.

This aim was also developed on the basis of the perceived normative theory and its related approaches. However, the evaluative dimensions used here were not only "tolerance" and "preference", but also "environment concern", "crowd concern", "desirability" and "satisfaction". The major findings here can be categorized into three parts. First, relationships among these normative dimensions were demonstrated. Environment concern had a significant effect on crowding concern and tolerance was significantly related to preference. In addition, crowd concern was significantly related to tolerance, preference and desirability when the environment concern was held constant; crowd concern, tolerance and preference was related to tourists' desire; and environment concern, preference and desirability were significantly related to satisfaction. Some of these effects were however not strong when considered in terms of the size of the effects or R^2 relationships. Although crowd concern and environment concern only weakly influence tourists' attitudes, together these concerns provided an influence on tourists' perception of crowding.

Second, the normative mean scores provided by tourists were different for the sites in Cairns and Xi'an. Tourists had solid environment concerns and crowd concerns for sites in Xi'an but not for sites in Cairns. Minor site to site differences were discovered between tourists' other normative dimensions, including tolerance, preference, desirability and satisfaction; but overall, tourists had higher scores of these dimensions at sites in Cairns rather than at sites in Xi'an.

Third, different tourists perceived the same destination differently. Tourists' different perceptions have been presented in details in the tables in Chapter 4. Here the key findings are emphasized. The first key point was the difference among tourists of different age groups between Cairns and Xi'an. The older tourists had greater environment concern than the younger tourists in Cairns, but they had less environment concern than the younger tourists in Xi'an. Many researchers have indicated that age is a complex predictor of perceptions of crowding (Fleishman et al., 2004; Golant, 1983). Cohen (1992) found similar differences that at different settings, tourists in the same age group exhibited varied perceptions of crowding compared to tourists in different age groups. In Cairns, the abundant entertainment facilities, such as diving, snorkeling and helicopter rides, may take effect in enhancing younger tourists' preference and satisfaction, so the younger respondents indicated a lesser environment concern compared to the older respondents. By way of contrast, the display of cultural relics in Xi'an may be more attractive to the older tourists rather than the younger tourists, and hence the older tourists reported the lower mean score for facility and experience provision concerns.

The second key point was that the Chinese tourists had greater environment concern and greater crowd concern than the international tourists (most of whom were European and North American), and additionally, the Chinese tourists were less satisfied than the international tourists. These findings differ from the literature, because much of the previous research pointed out that people from Asian and African countries are likely to be more tolerant of crowding than Europeans and white North Americans (Gillis et al., 1989; Pearce, 1995; Rustemli, 1992). This finding may be attributed to tourists' travel experience. The abundant travel experience plays a part in enhancing tourists' acceptability, tolerance and satisfaction. Another demographic statistic describing tourists' travel experience involved in Study Two

identified the important effect of tourists' travel experience. And this is also the third key point to be emphasized here. In Chapter Four, the tourists who travelled 10 times or more than 10 times in five years displayed less crowd concern than the tourists whose travel experience did not reach 10 times in five years in Xi'an. This is a clear break in the responses, but there is not a specific reason to explain why "10 times" is the determining factor. However, this finding hints that at settings like Xi'an, when tourists' travel experiences arrive at a critical level, the cumulative effects of previous experiences can influence their perceptions.

Aim 4: Compare tourists' satisfaction to these different sites in Cairns and Xi'an.

According to the literature, crowding can be used as a key measurement to access tourists' satisfaction (Ryan & Cessford, 2003). In this thesis, a numerical scale question in a range of "0=very dissatisfied" to "10= very satisfied" was used to indicate tourists' satisfaction. There was some difference in the mean scores for tourists' satisfaction with the sites in Cairns and Xi'an. Tourists had higher mean score of satisfaction in Cairn (mean score = 7.40) than in Xi'an (mean score = 6.88). Nevertheless, tourists in Cairns gave a moderately high satisfaction rating since the mean scores is around "7.5". Tourists in Xi'an gave a moderately low satisfaction rating since the mean scores is below "7.0". In other words, most tourists were reasonably satisfied with the sites in Cairns, but they required the improvement of the sites in Xi'an. Study Two demonstrated that although there was some evidence of perceived over-crowding in Xi'an, it seemed to have little effect on tourists' overall satisfaction at sites. Satisfaction is a complex measure likely to be determined by many factors and crowding is only one of those factors. Further detailed empirical studies linking crowding levels and satisfaction for single sites across time will be needed to sort out these links even more. It remains clear, however, that perceived crowding can be regarded as a more precise tool than satisfaction in determining social carrying capacity (Lee & Graefe, 2003; Lindberg et al., 1997; Shelby & Heberlein, 1986).

Aim 5: Compare the main concerns about crowding from tourist managers in Cairns and Xi'an.

Compared to the information provided by the site managers in Cairns and Xi'an, the managers in Cairns did not have concerns about crowding, because they rarely faced crowding problems. On the contrary, the site mangers in Xi'an were concerned about crowding in the peak season because they met many crowding problems. According to the interview answers derived from the mangers in Xi'an, the key ideas emphasized here included the substantial influence of national policy, followed by the influences of location and reputation of a site on site crowding management in Xi'an. Another key finding was site managers' views about tourists from different groups. The interviewees hinted that group tours were more likely to cause crowding; independent tourists were more likely to be affected by crowds; and people from crowded countries, such as China, India, Japan, and Korea were more tolerant of crowding. The last point was different from the finding in Study Two corresponding to Aim Three. The final key finding involves the managers' suggestions for future crowding management. The site managers in Cairns indicated their potential ability to attract more tourists, and they hoped to attract more tourists. By way of contrast, some site managers in Xi'an reported that they would enlarge the capacity of their attraction in order to accommodate the anticipated number of tourists in the near future. In addition, these managers hoped that the national and local governments could help them relieve their crowding pressure, including modification of public holidays, promotion of remote and less popular attractions, development of different cultural brands and preparation for diversified tourists.

Aim 6: Construct an overview or framework to interpret or summarize the factors involved in crowding and crowding management at these kinds of tourist attractions.

The aim will be achieved in the next section. An integrated model will be constructed to illustrate how site managers can effectively manage their sites in order to avoid or minimize crowding problems.

6.2 A Crowding Management Model for Tourism Sites

The findings of the previous five chapters assist the construction of a crowding management model for tourist attractions. The purpose of appropriate crowding management lies in providing high quality experience at tourist sites, while

simultaneously assisting the sustainable development of tourism sites. A model linking the key forces and representing the focus of studies in this thesis is presented in Figure 6.1.

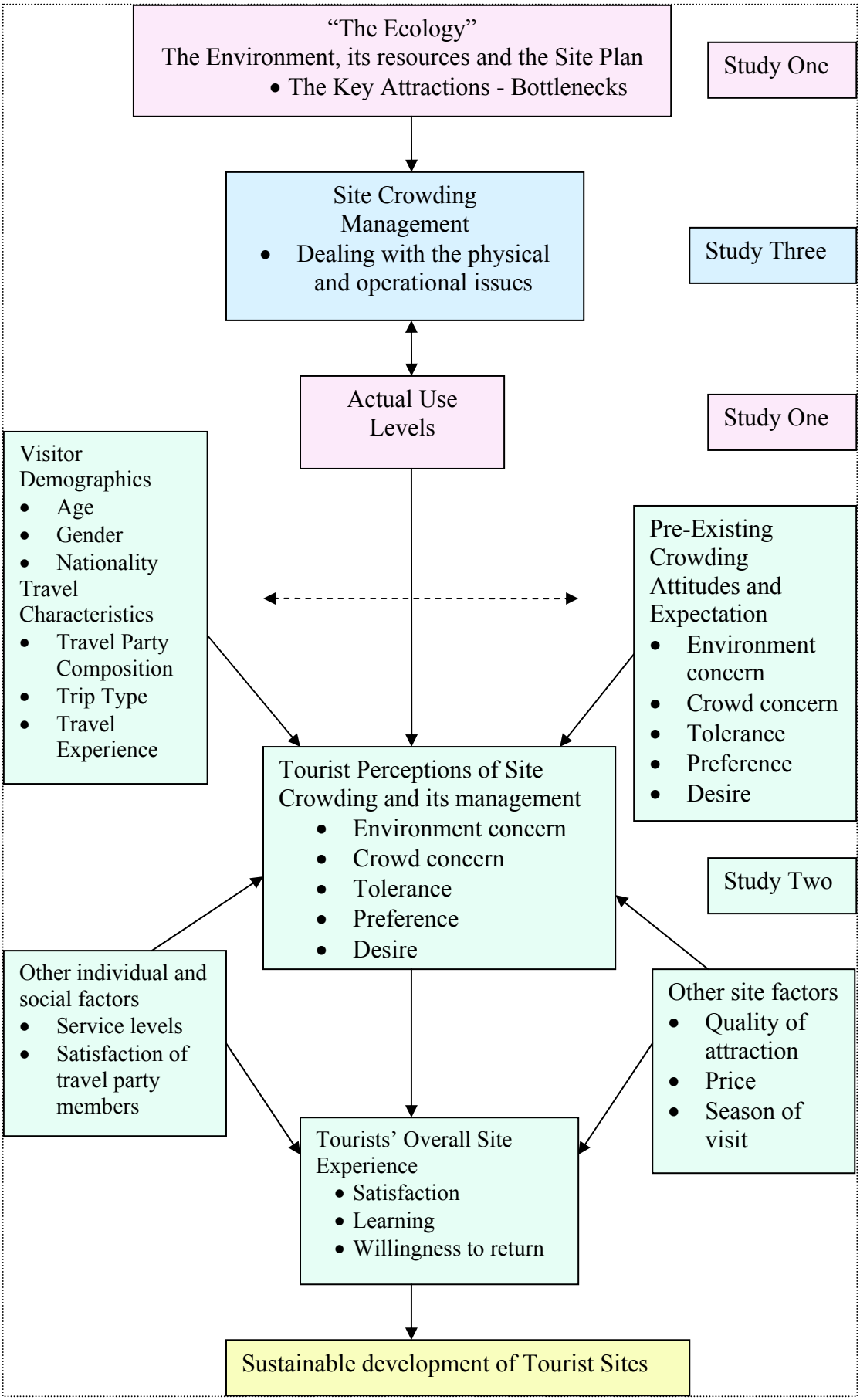


Figure6. 1 A Crowding Management Model for Tourist Sites

6.2.1 Monitoring Crowds When Crowding Has Not Occurred by Using this Crowding Management Model – Cairns

6.2.1.1 Determination of Natural Attributes and Tourism Requirements

The determination of local resources and destination characteristics is important because they are the foundation for tourism and tourist activities. In this case Cairns was a natural destination with some of the better known natural sites. Any crowding related work should start with the determination of the ecological values of the area; specifically, analyzing natural resources related to tourism activities. Cairns has major natural resources including the rainforest and a major part of the Great Barrier Reef, as well as displays and performances concerning Australian Aboriginal Culture. The tropical weather has made these resources attractive to tourists all the year round.

The second step is to ensure tourism requirements. Most tourist activities in Cairns required an attractive natural environment, to be used with various degrees of frequency. The highly used sites are rainforestation (Kuranda) and the Great Barrier Reef (Green Island and Lagoon). Recently there has been a growing tourism interest in sites which feature exciting animal and plant species, as well as the aboriginal activities (Tropical Zoo and Tjapukai Aboriginal Park). These sites attract large and increasing number of visitors. A number of activities, including rainforest bushwalking, hiking, horse riding, 4-wheel drive racing, sailing, underwater diving, and other sea activities, have specialized environmental requirements.

6.2.1.2 Determination of Ecological Values

Depending on the sustainability requirements, tourism needs to significantly contribute to the conservation of destinations and sites, especially the sensitive areas (e. g. Coccossis & Mexa, 2004; Walter, 2006a; UNWTO, 2004b). So the desirability and feasibility of restoring certain degraded resources must be evaluated. The evaluation can be developed on the basis of carrying capacity criteria and in comparison to sites, and then an objective assessment of the overall ecological value of each area can be obtained.

Tourism carrying capacity frameworks establish desirable conditions of a destination, keeping development of the physical, economic and socio-cultural environment and guaranteeing the quality of the visitors' experiences (McCool & Lime, 2001; WTO, 1981). In Cairns, the perceived degradation of the physical, economic and socio-cultural environment had not occurred at sites; the decrease in the quality of the visitors' experience had not occurred either. The justification for these statements lies in the evaluation of tourists' actual and perceived use levels. Tourists actual and preferred use levels of were mostly harmonious.

6.2.1.3 Infrastructure, Services and Organization

Whether the ecological values of a destination are positive or not to a great extent it is determined by the local infrastructure, services and organization. Adequate infrastructure must be provided for transport, sanitation, health and security; commercial facilities must be provided for visitors dining and leisure; and information and educational opportunities must be available in properly designed (Boyd & Butler, 1996; UNWTO, 2004a, b). The provision of facilities and services must take into account the different age and interest groups. In addition, there must be a discreet but effective management system to be instituted to control the development of the infrastructure and services to be harmonized with the local ecological system.

As analysed in Chapter Two, Cairns attractions are supported by a range of services. Adequate infrastructure was established and currently it can satisfy tourists' requirements. As established in the introduction to the sites in Cairns, transport to sites was convenient; public and private vehicles were separately allocated in the parking system; as well, each site included self-contained sanitation, health and security systems. The whole city and each site provided accommodation, dining and leisure facilities for visitors. The Lagoon and Esplanade area is a dining and leisure public facility provided by the Cairns Government. As for its entertainment characteristics, the region has developed as a popular place to attract both international and national visitors. Most sites also provided dining and leisure facilities, and moreover, some islands located in the Great Barrier Reef provided accommodation. Further, Cairns had mature information and educational systems supporting visitor needs. Visitor information centres and tourism agencies were available to provide travelling information for tourists in different languages,

including English, Japanese, Korean and Chinese. Signage was clear and adequate leading to few orientation troubles for tourists. And tourism maps and information books were available for free. No matter where the tourists stayed they could find the information they needed. Tourism sites had their own information centre, again providing information for free. Airports, hotels, motels and backpackers also provided various materials describing the local area.

Additionally, building on the information provided by the site managers in Study Three, organizations in Cairns cooperated closely with one another, including the cooperation between sites and tourism agencies, airports, hotels, transportation companies, universities and governments. In addition, the site management system was effective based on the managers' statements. The managers were capable of coping with unexpected visitor numbers. In the case stated by the manager in the Tjapukai Aboriginal Park, they opened their attraction early in the morning around seven to accept the unexpected visitors. They also flexibly provided changing rooms and breakfast for visitors in order to highlight visitors' experiences in the Tjapukai Aboriginal Park.

In conclusion, the development of infrastructure, facilities and services in combination with the efforts of the tourism managers did not cause a degradation of the Cairns ecological system and its environment, at least as perceived by managers and as reflected in the tourists' satisfaction scores.

6.2.1.4 Users' Motivation

Crowding is also determined by tourists' motivation. For example, tourists can feel crowded even in low-density conditions because their personal and social standards drive them to expect to see few others in the place (Shelby & Heberlein, 1986). As discussed, ecological values and tourist activities, as well as infrastructure, services and organization are forces influencing crowding because any one of these components may be the trigger leading to crowding (Lee & Graefe, 2003). However it is equally critical to monitor tourists' motivation which directly determines if crowding occurs (Shelby & Heberlein, 1986). In this thesis, broad visitors' views of crowding were linked to excessive levels of use, and the provision of settings, facilities and services (environment concern), to references to others' behaviour

(crowd concern), and to personal attitudes (tolerance, preference, desirability and satisfaction). Visitors' views of crowding are regularly influenced by factors such as age, gender, nationality origin, group membership, travel type and past travel experience (Higham & Kearsley, 1994). Inadequate management of the conflicts among users may lead to crowding.

In applying these indicators to sites in Cairns, excessive levels of use did not exist based on the results in Study Two. In most areas in Cairns, respondents preferred the current use levels or levels close to the current use levels; they did not regard current encounters as a disturbance. In addition, respondents provided a positive comment on the quality of the environment, infrastructure, facilities and services in Cairns. They did not show any substantial environment concern (mean = 2.43). Respondents also showed positive attitudes to others for they recorded a low score for crowd concern (mean = 2.86). Finally, visitors in Cairns presented relatively high tolerance and preference scores regarding the number of others. Others' behaviour (facial expressions, gestures, shouts, hisses, murmurs) may underline the results of tourists' tolerance and preference (Shelby & Heberlein, 1986). In Cairns, most respondents appear to experience little unfavourable behaviour; otherwise the scores for tolerance and preference would be low. Visitors also recorded high levels in their assessment of the desirability and satisfaction for the sites.

The results of these attitudes to crowding indicated that perception of crowding did not occur in Cairns. However, it did not mean that there were no issues differentiating users. From the results arising from Study Two, visitors had different perceptions of crowding due to their age, nationality and group membership. In Chapter Three, the site managers reported a limited range of likely conflicts among users because of different nationalities. In one case the Germans did not like to see the Japanese, so that management actions were taken to separate these groups. Such complication may lead to pressures on tourism sites (Williams, 1998). But in Cairns, the complication has been adequately controlled, so that it is not severe to cause crowding.

6.2.1.5 Integrated Management and Planning

The results of the previous analytical steps can be integrated in the management planning of a destination, which should consider monitoring crowding in accord with

sustainability principles. When crowding monitoring is conducted adequately and effectively, crowding will not occur. Sustainable tourism can be developed by embracing notions of limits, optimal use levels and a concern for authenticity (Mason & Moore, 1998; Saarinen, 2006; UNWTO, 2004b). Taken together these steps in the model provide pathways to describe and pinpoint areas where the forces of crowding are operating and hence assist the logical assessment of the situation by managers.

6.2.2 Controlling Crowding When Crowding Has Occurred by Using this Crowding Management Model – Xi'an

The failure of any step discussed previously may lead to crowding. When crowding has occurred, the crowding management model can be used in different ways to manage crowding. In this thesis, Xi'an was the example to be used to interpret this set of consequences arising from the model.

6.2.2.1 Identification of Crowding Problems

In the case of Xi'an, the crowding problems which can be identified from the model include:

- On the aspect of natural attributes: Xi'an sites tended to be overcrowded in the summer months (from April to October). At that time tourists' activities can cause deterioration to the historical relics and handicrafts.
- On the aspect of infrastructure: There were crowding problems in local transportation and local service systems. Crowding problems also existed in the popular exhibition rooms.
- On the aspect of facilities: Crowding occurred due to the extensive use of parking areas, toilets, ticket windows and information or educational system.
- On the aspect of services: Crowding occurred by using services provided by tour guides, interpreters and tourist sites.
- On the aspect of organization: Crowding occurred due to tourists' travelling itineraries and the commonality of those trip times.
- On the aspect of user activity or behavior: Crowding occurred when tourists had to deal with many others and loud guides.
- On the aspect of user motivation: Crowding perceptions were different among tourists with different characteristics and different interests.

These points derive from the multiple sources of information in this thesis including the managers' views, the visitors' perceptions and the on-site recording of use levels.

6.2.2.2 Identification of Reasons for Crowding

The second step is to identify what factors lead to crowding in an area. When the reasons of crowding are found, appropriate strategies can be conducted to manage crowding.

Why crowding occurred in the summer months in Xi'an? The seasonality was one of the triggers leading to crowding in the summer months (from April to October). The summer months were considered as the peak season. Second, the national policy determined three seven-day holidays, involving the holiday for the Spring Festival (in January or February), the holiday for the Labor Day (from May 1 to May 7), and the holiday for the Chinese National Day (from October 1 to October 7). These were the holidays in 2007. Such holidays created two intense Golden Weeks in Xi'an; May 1 to May 7 and October 1 to October 7. The number of tourists in these weeks usually twice as much as that in other times in the peak season, as assessed in Study One. Third, the composition of the tourists in Xi'an was regarded as another reason for crowding in the summer months. Chinese tourists were the main tourists in Xi'an, and they were likely to visit in the same period – in the summer months, especially in the Golden Weeks. Fourth, group travel consisted of the major travel type in Xi'an. Tourists in groups were likely to cause crowding rather than independents, as reported by the interviewees in Study Three.

The intensive use levels investigated in Study One reflected crowding due to pressures on of infrastructure, facilities, services and organization. As Xi'an can still be seen as a developing destination, transportation was not adequate. The inconvenience in getting to sites influences tourists' negative attitudes, including views of crowding. The small size of some popular exhibition rooms also made tourists feel crowded. There was a shortage of facilities in the peak season, such as toilets, ticket windows, parking areas, dining and signage system, all of which strengthen tourists' perceptions of crowding. In addition, tourism sites lacked interpreters and tour guides in the peak season in Xi'an. The competition among visitors to employ interpreters or tour guides shaped their perception of crowding.

Tourism organizations in Xi'an did not cooperate closely with one another. This lack of cooperation brought about failure to control tourists' itineraries and tourists' arrivals. When a large number of visitors arrived at a site at the sensitive time, crowding appeared. Moreover, there was a lack of cooperation among different departments managing the site and surrounding area.

Tourists' different definitions of crowding might cause their perception of crowding to others. From Study Two, it can be noted that visitors to Xi'an had environment concerns (mean = 3.67) and crowd concerns (mean = 3.76). These scores imply that others' activities help cause tourists' perception of crowding. Moreover, the mean score for preference also showed tourists' negative attitude to others' use of the popular areas (mean = 1.83). It demonstrated that tourists reported crowding, with the likely consequence that the satisfaction level was influenced. The satisfaction level was low compared to other satisfaction scores recorded for tourist attractions elsewhere (Pearce & Benckendorff, 2006; Pearce & Moscardo, 2008). The influential factors included in this study were age, nationality, travelling type and past travel experience. Others' behavior might strengthen tourists' negative perception, leading to crowding. In Xi'an, a major disturbance recognized was noise derived from tour guides.

6.2.2.3 Adequate Strategies for Crowding

Tourism carrying capacity frameworks can be used to manage crowding on the basis of sustainability principles (Glasson et al., 1995; Williams, 1998). However in different sites, specific strategies need to be designed based on localized crowding problems.

In Xi'an, overall pricing and ticketing were used to deal with seasonality. Students were prohibited at the popular sites in the Golden Weeks. Many more facilities were provided in the peak season, especially in the Golden Weeks. For example, extra ticket windows were supplied for tourists. In addition, the site managers employed part-time staff or volunteers to serve tourists in the peak season. Moreover, site managers were promoting cooperation with other tourism organizations, especially the government, hoping to enhance information and education training system, control tourists' itineraries and arrivals, and ensure efficient services.

Zoning was also in use as a control measure, mainly for the exhibition rooms. In these sensitive areas, limitations were implemented to control tourists' visit frequency. As the promotion of infrastructure and facilities in the future, transportation, physical space and other facilities might be expanded to assist the dispersal of visitors.

In summary, the value of an organizing model is demonstrated for the more problematic crowded sites in Xi'an. By highlighting factors leading to crowding, it is possibly to review systematically the forces involved and begin to consider helpful actions.

6.3 Contributions to the Academic Tourism Literature

6.3.1 Tolerance and Preference was the Evaluative Dimension related to Use Levels

In this thesis, tolerance and preference were selected as the dimensions to measure use levels of tourists. The previous research often used "acceptability" related to use levels (Hammitt & Rutlin, 1995; Manning et al., 1995, 2002, 2005; Watson, 1995). According to Manning et al. (1999), the norm of absolute tolerance was more than four times that of the preference-based norm for visitors. In other words, there was a big gap between tolerance and preference. In this thesis, a small gap between tolerance and preference was repeatedly demonstrated. The number of others visitors would tolerate to see was close to the number of others they preferred to see. The contribution here lies in advancing our understanding of how these measures operate in different countries and contexts and as researchers build a comprehensive knowledge of crowding responses the present work reporting relatively close scores for these measures should assist international understanding of crowding perceptions.

6.3.2 The Measurement linked Actual Use Levels to Crowding Normative Use Levels

This thesis also incorporated a visual approach when measuring crowding norms (Manning, Wang et al., 2002). The version used asked respondents to evaluate each of five photographs for each site. Closed ended questions asked respondents to rate the tolerance and preference of each of the study photographs. However this thesis did not

employ a nine-point response scale across the range "very acceptable" and "very unacceptable" (Manning et al., 1999, 2002; Needham et al., 2004), it involved a scale across the range "half as many as the number of people showing on the photograph" up to "eight times as many as the number of people showing on the photograph". The five numbers grew exponentially since each number was a multiple of the previous one. This measurement aimed to achieve benchmarked normative numbers which could be compared with the actual visitor numbers. In addition, because these crowding normative numbers were calculated based on the mean numbers depicted in the benchmark in the study photographs, a single sample t was used to test the significance of these numbers. This is a way to establish the relationship between actual use levels and crowding normative use levels, contributing to norm-measurement approaches.

6.3.3 Explaining Social-Psychological Influences on Crowding Perceptions

A major new finding in this thesis related to the difference in crowding perceptions among people from different origins. In the literature, it has been suggested that individuals of Asian and African origin could be more tolerant of crowding than Europeans and white North Americans (Gillis et al., 1989; Pearce, 1995; Rustemli, 1992). The results in Study Two in this thesis reported that the Chinese tourists were less tolerant of crowding than Europeans and North Americans.

In addition, this thesis investigated the influences of tourists' travelling membership and travel patterns. These two factors have been used infrequently in crowding research. Results suggested that children and seniors could influence tourists' perceptions. When children or seniors are members of a group, the tourists in this group can cope with more others. But this finding was only supported by respondents in Cairns. Another finding indicated that tourists in groups showed lower scores for environment concern. This finding was only supported by respondents in Xi'an. Taken together these results suggest that the operation of explanatory variables in context specific thus implying that broad generalizations about factors influencing crowding perceptions need to be considered carefully.

6.3.4 Comparing Crowding Perceptions in Contrasting Cities

This thesis offered a comparative study of crowding between Xi'an and Cairns. Results demonstrated that the different environments and the management actions definitely influence tourists' perceptions of crowding. Crowding did not occur in Cairns, several positive environmental influences could be given: optimal use of ecological environment, high quality of infrastructure, facilities and services, and optimal use of infrastructure, facilities and services. Two positive management influences can also be suggested: the discreet and efficient management actions, and the cooperation among tourism organizations. By the way of contrast, crowding occurred in Xi'an. Here negative environmental influences could be given including inadequate use of the setting, less developed infrastructure, facilities and services, and inadequate use of infrastructure, facilities and services. In this setting, two management influences can be identified: the shortage of efficient management actions, and the lack of cooperation among tourism organizations.

6.3.5 Integrated managers' views into an overall model of crowding management

This thesis provided an overall model to manage crowding at tourism sites by linking the results of the three related studies. Several useful strategies derived from the tourism carrying capacity frameworks were introduced such as zoning, pricing and ticketing, reservation and booking, educational approach, information management and market segments as well as market control. This model can be used to monitor local environments, local tourism activities, tourists' behavior, and tourists' motivation in order to assess crowding influence. When there is crowding, this model would be used to identify where crowding occurs, why crowding occurs, and identify what strategies can be used to control crowding. In its best use this model can be regarded as a contribution to the site management literature, especially to the sites in developing countries, such as China.

6.4 Future Directions

6.4.1 Project Related

In this thesis, both quantitative and qualitative methods were used in the series of three related studies to explore the crowding management issues. In the process of exploration, the weaknesses can be found in terms of the methods. Future research in this field can develop additional studies to avoid these limitations.

First, in this thesis only ten sites were involved in Study One, data about actual use levels to these sites were limited. In addition, data about tourists' use levels were collected from only five points in each site. Although use levels at these points could represent the overall use level in each site, some specific sensitive points might not be identified. The sample of tourism sites was limited, because the author collected the data by herself. Finally, the data about the actual use levels of each site were collected in only two days, one day in the average time of the peak season, and one day involved in the Christmas holiday or in the Golden Week. In dealing with this problem, data about each site were collected in different days. The data collect on different days in each destination was taken to represent the comprehensive use levels in the peak season. However, there might be special occasions missed in Study One. So in future studies, there might be a development of large samples of tourism sites or destinations measuring tourists' use levels. As few studies have been developed in the field of crowding in Asian and African countries, further tourism sites or destinations in developing countries can be chosen to study crowding concerns and links to sustainability.

Second, data about tourists' perceived use levels and data about factors which could influence tourists' perceptions of crowding were limited. Only 585 respondents took part in the questionnaire, including Chinese, Europeans and North Americans. In future studies the scale of the quantitative study could be broadened to investigate Chinese tourists' perceptions of crowding in other destinations. Tourists' perceptions can vary in different environments as discussed in this thesis. Further, the scale can be extended to tourists from different origins such as Korean, Japanese and Africans. The same methods can be used to structure studies of Chinese tourists' perceptions of crowding in other Chinese locations besides Xi'an and in other international locations

besides Cairns. Moreover, applying the same methods, tourists' perceptions in different nationalities can be studied in Chinese locations or in other international locations.

Third, the sample of site managers was limited. The qualitative study in this thesis included only sixteen site managers. These interviewees provided multiple opinions and strategies to manage crowding but the possibility of there being further options exists. A larger sample of site managers can be involved in future studies. Moreover, crowding management is not only the responsibility of site managers; it requires the efforts of all tourism stakeholders. For example, in this thesis limited data about tourist arrivals could be found. If governments can provide accurate data about the number of tourists each year in Xi'an, site managers may develop a clearer view of how many tourists they can accept. In future studies, a qualitative study can focus on opinions of all tourism stakeholders including other managers and interested marketing personnel.

Fourth, Photographs were employed as the technique to investigate visitors' tolerance and preference. Photographs provided visual and intuitive impressions of the locations for visitors. The implications of these detailed situations about crowding lie with visitors' selection of these photographs. The visual approaches provided more "realistic" estimates of crowding norms.

However, the visual measurement tended to have low variation. The lower variances in terms of the visual approach might have reduced the possible variance of results, because respondents chose from a limited range of use levels by using this measurement. It is useful to use the visual measurement associated with photographs to depict a wide range of use levels. But in this thesis, only the average level was depicted for each location. Several photographs, which presented a wide range of use levels for each location, would make the questionnaire too long to engage respondents. The average use level can reflect the situation of the whole site in general, but further variations of crowding at locations can be studied in the future. The long question format in the future study may provide more information and may therefore provide more precise estimates of the highest level of use acceptable and the lowest level of use acceptable.

Finally, there can be more social-psychological influences assessed in future studies. This thesis reported the influences of age, gender, nationality, group membership, travel pattern and past experiences. There can be new studies to investigate the influences on crowding derived from the individual level of income and of education, individuals' social status, people cultural attitudes, tourists' background knowledge, reference groups, social interaction and language, and tourism advertising and tourism image. These factors can be push factors taken into account by tourism managers in planning and managing crowding. Moreover, new studies can be conducted on the differences between different tourist groups in terms of crowding perception. For example, what are the different crowding perceptions between Chinese independent travelers and group travelers?

6.4.2 Topic Related

The studies related to crowding have continued for many years, but there are gaps in the field of study. This thesis focused on the crowding management issues at attractions. Predictably, there can be more topics to be investigated beyond the scope of this thesis. Other studies may extend to other destinations of the world. Crowding is an interesting and meaningful topic because if it can be appropriately managed, a positive relationship will occur between crowding and tourism development. Building on this thesis, future studies are suggested to extend crowding to economic perspective, to political perspective, and to local community reactions and appraisals.

Over the last few years, the motivation theories derived from social psychology have been increasingly integrated into economic considerations. Such a relationship is recognized as the motivation crowding effect (Frey & Jegen, 2000). Social psychologists have identified that under particular conditions, monetary rewards undermine intrinsic motivation (Deci & Ryan, 1980). For example, if the crowding-out effect holds, it is not advisable to use the price mechanism to elicit a higher supply, instead, a quite different type namely intrinsic motivation can be used. This thesis did not investigate in any detail the relationship between crowding perception and pricing. It is also possible to suggest further investigation of the relationship between crowding and politics. For example, the Chinese government has made one

modification to the public holiday planning in 2008. The holiday in May has been changed to three days from the original seven days. Every public holiday will now last for three days except for the National Holiday in October and the Spring Festival Holiday in January or in February. The two public holidays are still seven days long. Any further modification will influence the framework of Chinese tourism market. Future research needs to monitor the effect of these new Chinese tourism policies on tourists' crowding perceptions. Tourist managers may even design some new ways to adapt to the changes. Future studies can focus on the ways tourism managers respond to the new politically derived holiday periods.

This thesis focused on tourists' perceptions of crowding. However, local residents' have their personal perceptions which may be different from tourists. The communication between local residents and tourism may boost different perceptions of residents. Tourist-independent residents might perceive negative impacts on the physical, economic and social environments (Pearce et al., 1996). Thus residents may hold different standards or norms for tourism use levels. There is a need to study local residents' perceptions of crowding, adding the social-psychological influences. For sustainability principles, it is necessary to establish a good relationship between tourists and residents. It is necessary for future studies to manage crowding by using the crowding management model in thesis or by using other approaches, with the purpose of develop community tourism for the sustainable benefit.

6.5 Final Comments

Crowding has become an important issue in the development of sustainable tourism. Some destinations have developed management frameworks to limit crowding. Many attractions have now begin to focus on this problem because of the increasing visitor numbers. Xi'an is one of those destinations facing crowding problems. Tourist attraction managers are responsible for recognizing the crowding problems and then they need to design appropriate management frameworks to control crowding. Good crowding management is vital to assist the continuing growth of the tourism market in Xi'an and elsewhere. Although Cairns is a destination which is very different from Xi'an, some opinions or strategies undertaken in the sites of Cairns can be adopted in Xi'an. Eastern and Western countries have much to learn from one another in multiple fields, including crowding management and its solutions.

"We live in a super crowded living space, the only way people can avoid a crowded feeling is through innovation."

- Ma Jin (1993)

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Appendices

I. Maps of the destinations: Carins and Xi'an; and maps of the sites: the Kuranda Rainforestation, the Green Island, the Tjapukai Aboriginal Cultural Park, the Cairns Tropical Zoo, the Lagoon, the Terracotta Army Museum, the Shaanxi History Museum, the Huaqing Hot Spring, the Forest of Stone Steles Museum, and the Famen Temple Museum.

   Maps were derived from the Cairns Tourist website, from Cairns Attractions websites, and from China Tourist website
   http://www.cairns-australia.com/101582.php
   http://www.chinahighlights.com/xian/map.htm
   http://www.rainforest.com.au/welcome/map.htm
   http://www.green-island.com.au/site-map.html
   http://www.tjapukai.com.au/plans.html
   http://www.cairnstropicalzoo.com.au
   http://www.toiletmap.gov.au/toilet.aspx?type=toilet&id=eb9c71fa-5717-45fc-b6aa-a08608224a5f
   http://www.chinatouristmaps.com/travel/shaanxi.html
   http://www.chinahighlights.com/image/chinamap/city/xian/xian-location.jpg

Destinations

Cairns

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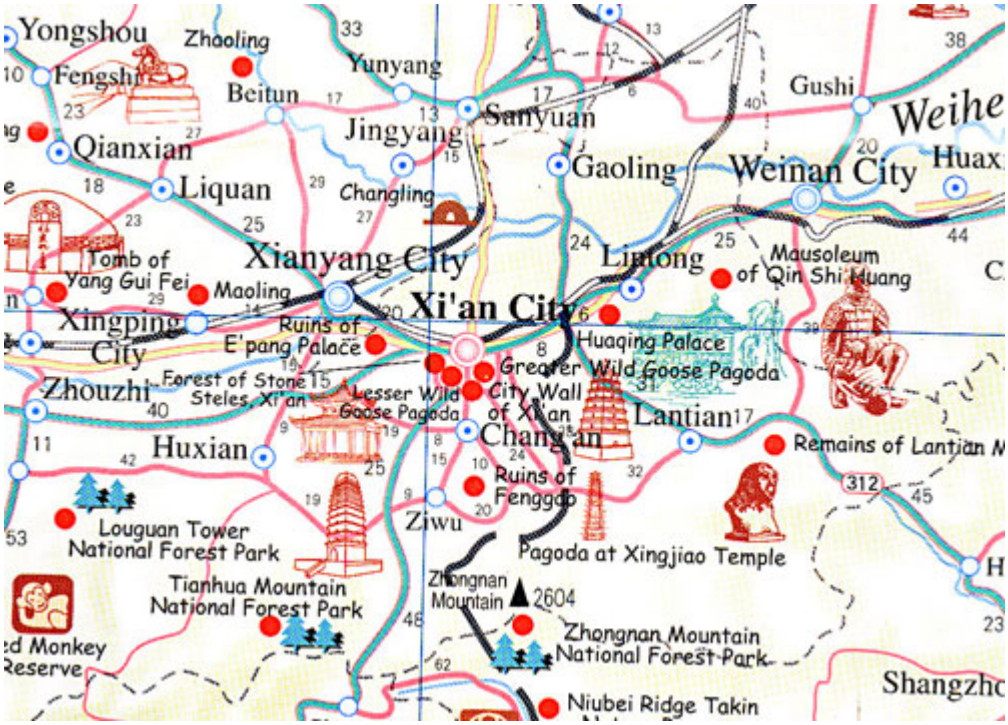
Xi’an

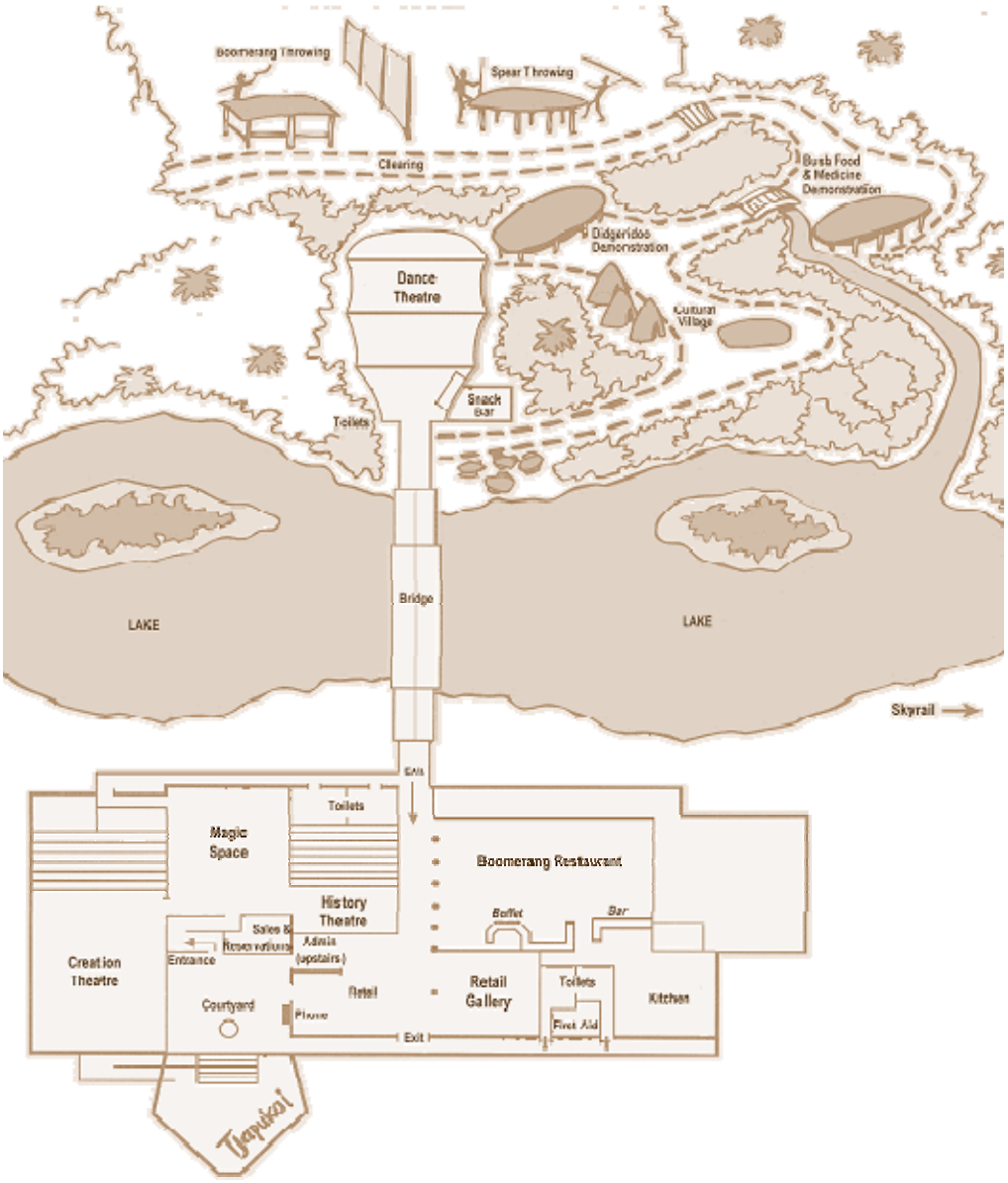

Yongshou
Zhaoling
Fengshi
Beitun
Yunyang
Jingyang
Sanyuan
Gushi
Weihe
Qianxian
Gaoling
Weinan City
Liquan
Changling
Tomb of Yang Gui Fei
Maoling
Xianyang City
Xi'an City
Lintong
Mausoleum of Qin Shi Huang
Xingping City
Ruins of E'pang Palace
Huaqing Palace
Greater Wild Goose Pagoda
Forest of Stone Steles, Xi'an
Lesser Wild Goose Pagoda
City Wall of Xi'an
Zhouzhi
Lantian
Changan
Remains of Lantian
Huxian
Ruins of Fenggao
312
Louguan Tower National Forest Park
Ziwu
Pagoda at Xingjiao Temple
Tianhua Mountain National Forest Park
Zhongnan Mountain
2604
Zhongnan Mountain National Forest Park
Monkey Reserve
Niubei Ridge Takin
Shangzhc

Sites in Cairns

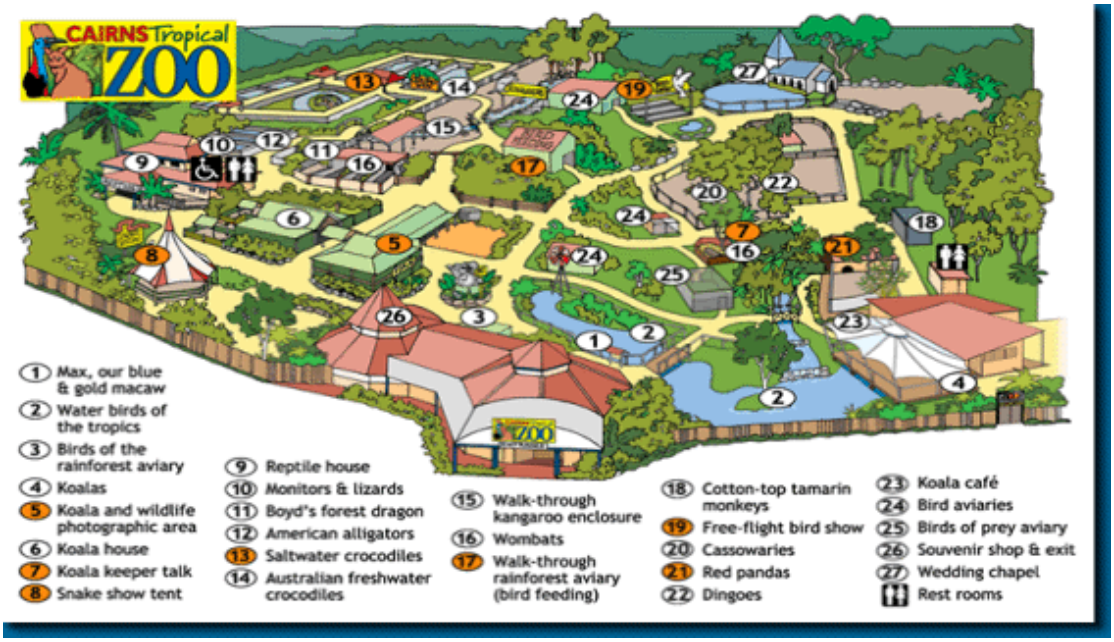
Kuranda Rainforestation

Green Island

Tjapukai Aboriginal Cultural Park



Cairns Tropical Zoo



Lagoon

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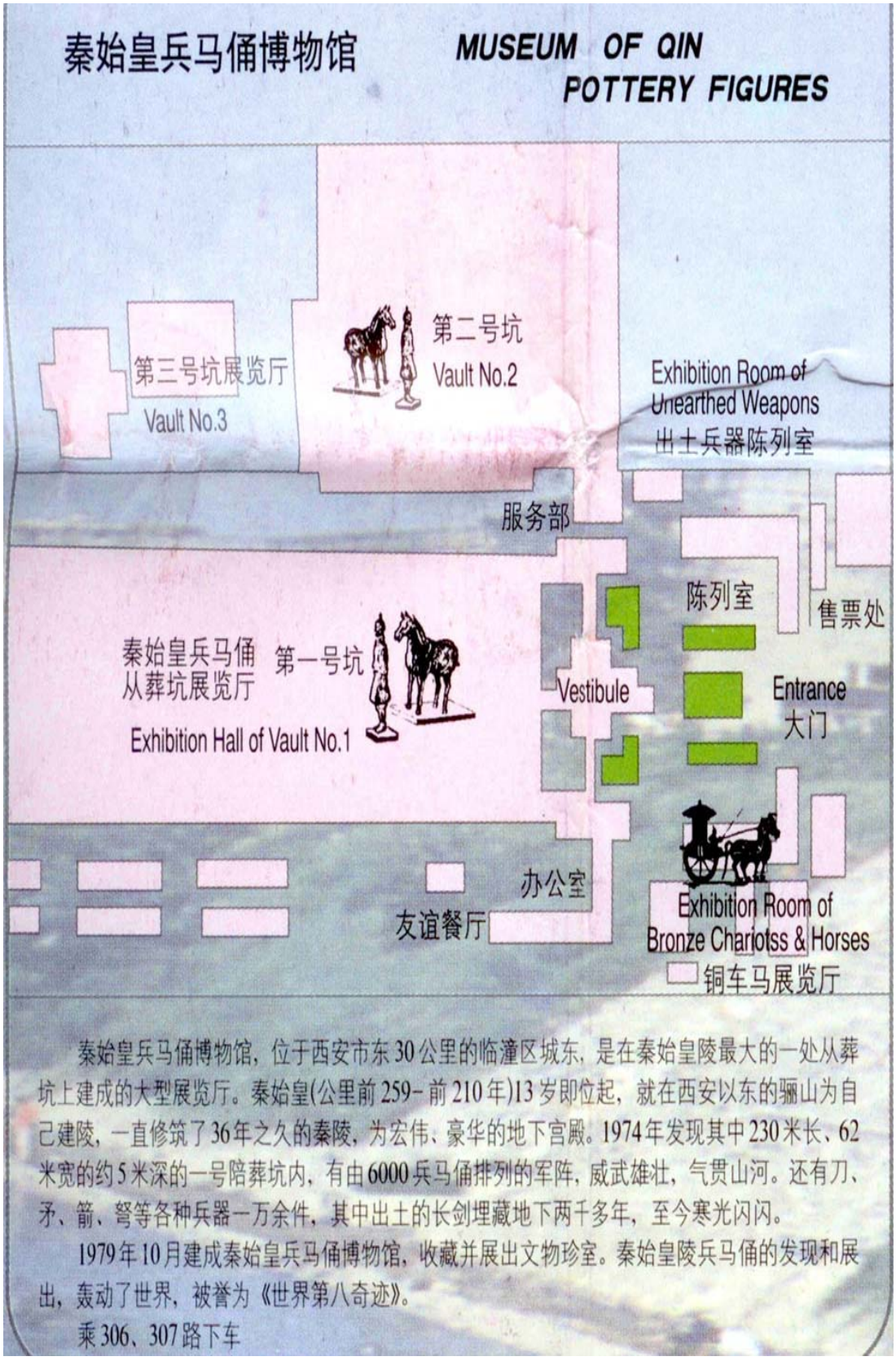
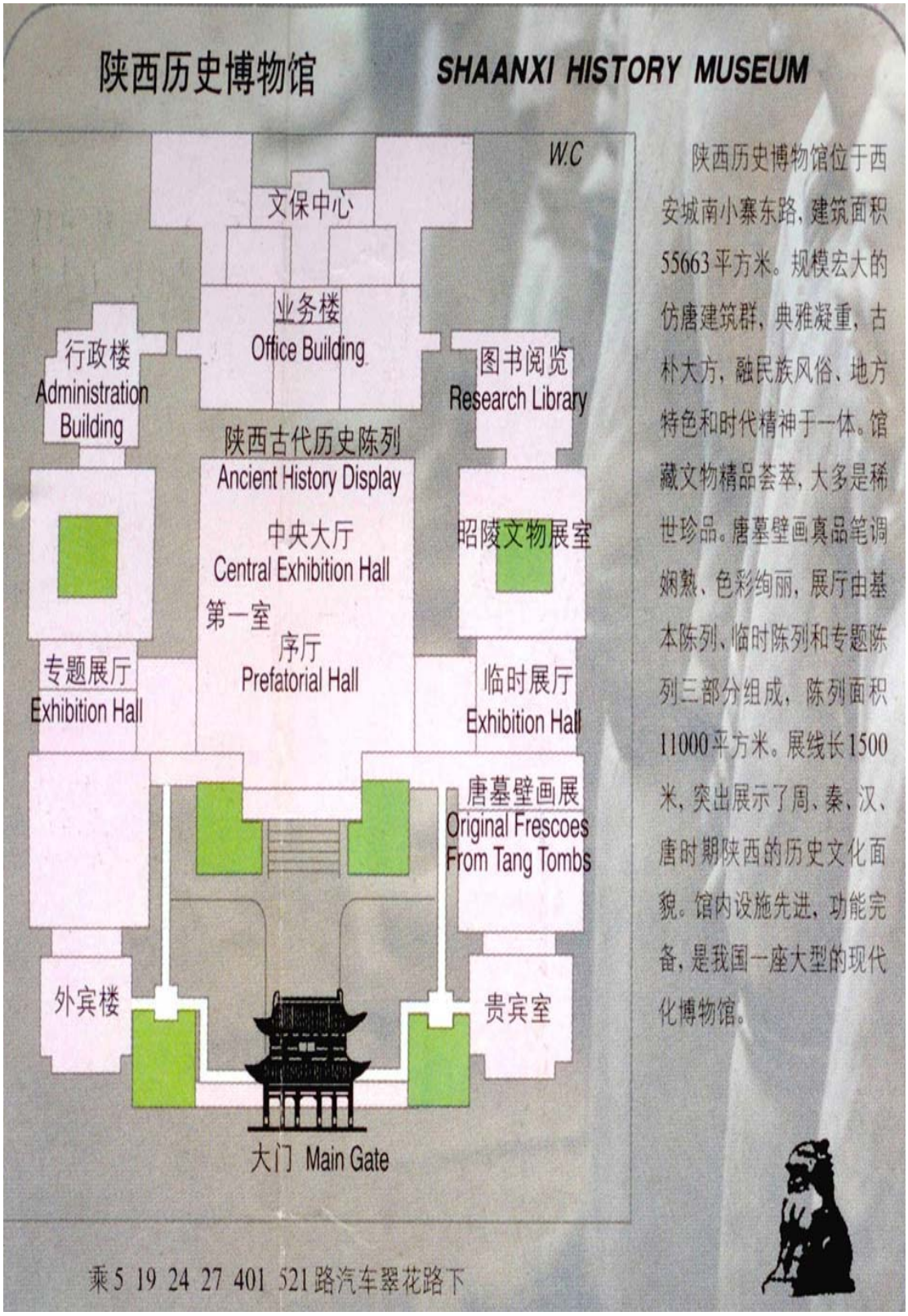
Sites in Xi'an

Museum of Qin Pottery Figures (the Terracotta Army Museum)

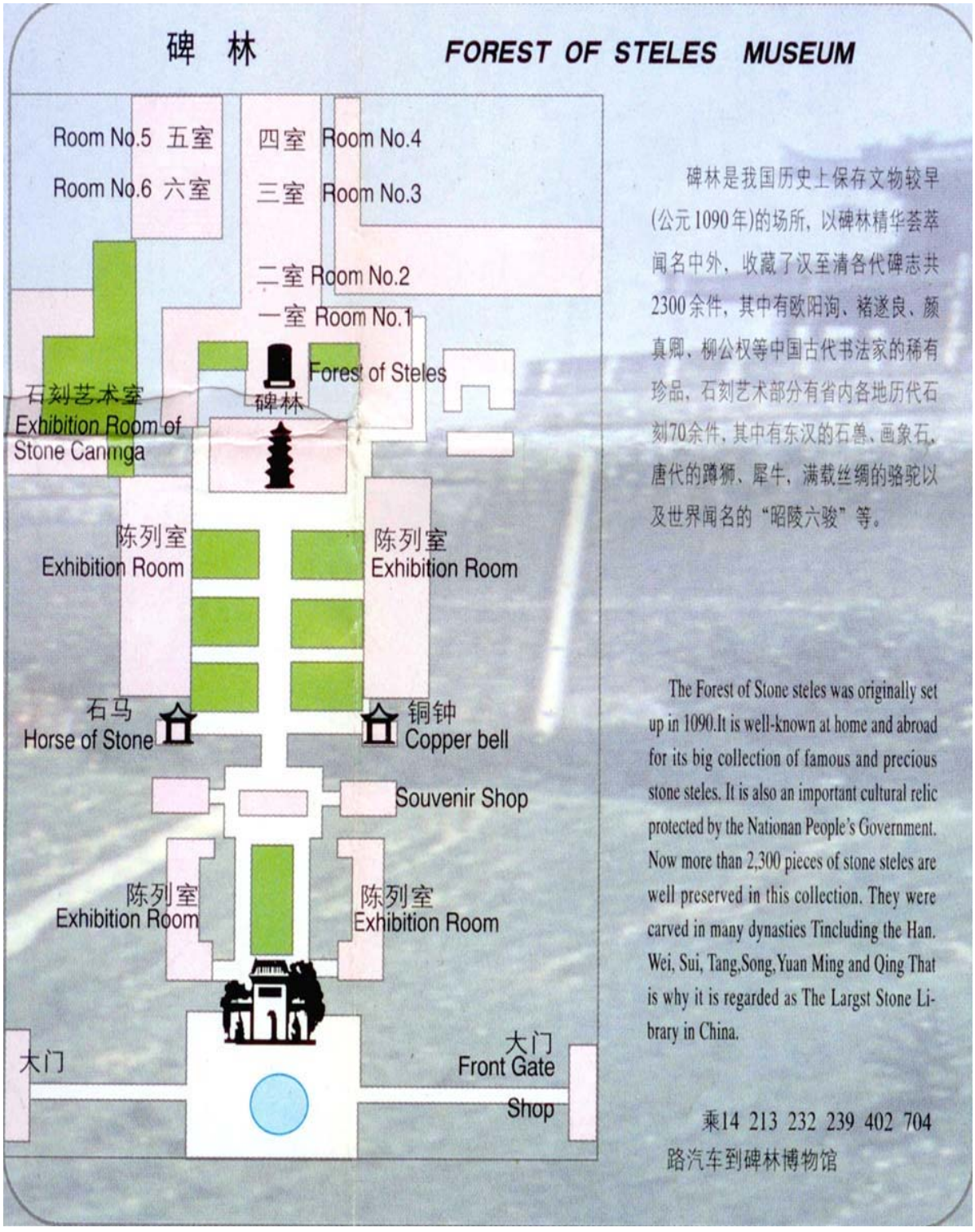


Shaanxi History Museum

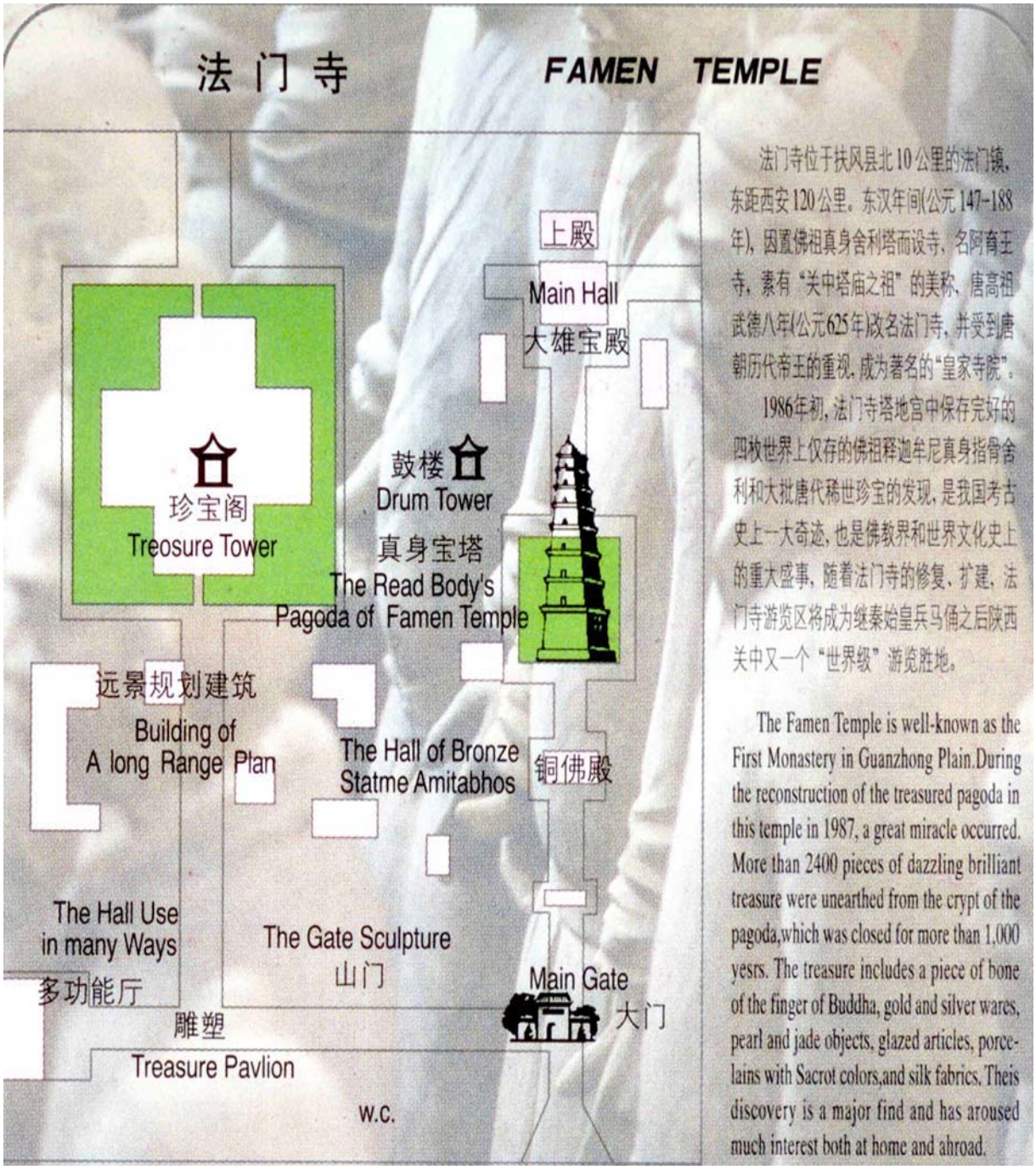


Huaqing Hot Spring

Forest of Stone Steles Museum



Famen Temple Museum



II. Visitor numbers in different periods in Cairns and Xi'an provided by the site managers. The numbers were summarized in Table 5.3.

Table5. 3 Visitor numbers in different periods, 2007

Name	Capacity (visitor No. per day)	Average (visitor No. per day)	Peak Time (visitor No. per day)	Off-time (visitor No. per day)	Maximum (visitor No. a day in the Christmas or the Golden Week)
RS1 Cairns					
PS1 Cairns					2,000
PS2 Cairns					
ZS1 Cairns					1,500
AS1 Cairns					
AS2 Cairns					3,000extra
MS1 Xi'an	2,000	300			500
MM1 Xi'an	None	None	None	None	1,000 extra
MM2 Xi'an	10,000	2,000	3,300	700	5,000 extra
OM1 Xi'an	5,000	1,500	None	None	4,000
TM1 Xi'an	20,000	800 – 1,000	None	None	None
OM2 Xi'an	40,000	3,800	None	None	11,400
MM3 Xi'an	None	1,000	None	600	8,000
CL1 Xi'an	50,000 – 60,000	3,000 – 4,000	None	None	20,000
CL2 Xi'an	20,000	3,000	None	None	23,000
ML1 Xi'an	None	8,000 – 9,000	10,000 – 14,000	1,000 – 2,000	53,000

III. A sample questionnaire targeting tourists for Study 1 and Study 2

Questionnaire of Kuranda Rainforestation

A. Past travel experiences

1. When did you last visit Kuranda Rainforestation?
   1) Less than one month ago
   2) One to three months ago
   3) Three to six months ago
   4) More than six months ago

2. Who did you visit Kuranda Rainforestation with? (Circle one only)
   1) Alone
   2) Friends/ family travelling together with children or seniors
   3) Friends/ family travelling without children or seniors
   4) An adult couple (i.e. partners in a relationship)
   5) Other (please specify)

      _____

3. How did you arrange your last trip to Kuranda Rainforestation?
   1) A fully inclusive package tour
   2) A partially packaged tour with transport and accommodation only
   3) Non-packaged/ independent travel

B. Tourists' attitudes to the environment and to others

1. According to your previous experiences to Kuranda Rainforestation, please indicate your agreement with each of the following factors (please tick one answer in only in each row)

	(1) Strongly disagree	(2) Somewhat disagree	(3) Neutral	(4) Somewhat agree	(5) Strongly agree
1) Worry about I can't meet and talk to the staff					
2) Concern about the facilities (such as the rubbish bin, sign posts)					
3) Feel too many people there and they cause unfriendly atmosphere					
4) Worry about there are not enough staff to look after me					
5) Need to see or experience the attraction on my own as much as possible					
6) Get concerned about my safety					
7) Worry about lots of people getting very close to me					
8) Get concerned about diseases which are likely to be transmitted					
9) Feel I will not be able to see the attraction if there are too many people					
10) Worry about long queues					
11) Feel too many people will damage the environment					

C. Tourist's ideas to tourism management for crowding

1. Could you think of any suggestions to reduce crowding problems in Kuranda Rainforestation?

   In the area of pricing and ticketing:

   _____

   _____

   In the area of improving facilities:

   _____

   _____

   In the area of service:

   _____

   _____

   In the area of special strategies in busy periods:

   _____

   _____

D. On the following pages are some pictures of major areas in Kuranda Rainforestation you might experience while visiting the attraction. Please have a look at the pictures and answer the related questions based on your past experience.

1. What number of people would you tolerate to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

2. What number of people would you prefer to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

3. How much would you like to be at the location with this number of people as showing on the photograph?

□	□	□	□	□
1	2	3	4	5
Not like to be there at all	Like to be there a little	Neutral	Like to be there a lot	Like to be there a great deal

4. What number of people would you tolerate to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

5. What number of people would you prefer to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

6. How much would you like to be at the location with this number of people as showing on the photograph?

□	□	□	□	□
1	2	3	4	5
Not like to be there at all	Like to be there a little	Neutral	Like to be there a lot	Like to be there a great deal

7. What number of people would you tolerate to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

8. What number of people would you prefer to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

9. How much would you like to be at the location with this number of people as showing on the photograph?

□	□	□	□	□
1	2	3	4	5
Not like to be there at all	Like to be there a little	Neutral	Like to be there a lot	Like to be there a great deal

10. What number of people would you tolerate to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

11. What number of people would you prefer to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

12. How much would you like to be at the location with this number of people as showing on the photograph?

□	□	□	□	□
1	2	3	4	5
Not like to be there at all	Like to be there a little	Neutral	Like to be there a lot	Like to be there a great deal

13. What number of people would you tolerate to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

14. What number of people would you prefer to see compared to the number of people showing in the photo? Please rate on a scale of "1= half as many as the number of people showing on the photo" to "5= eight times as many as the number of people showing on the photo".

□	□	□	□	□
1	2	3	4	5
Half as many as showing	Same as showing	Twice as showing	Four times as showing	Eight times as showing

15. How much would you like to be at the location with this number of people as showing on the photograph?

□	□	□	□	□
1	2	3	4	5
Not like to be there at all	Like to be there a little	Neutral	Like to be there a lot	Like to be there a great deal

E. Overall satisfaction to Kuranda Rainforestation

1. According to you previous experiences, please indicate you overall satisfaction of Kuranda Rainforestation on the scale of "0=very dissatisfied" to "10=very satisfied" (please tick one only).

□ □ □ □ □ □ □ □ □ □ □

0 1 2 3 4 5 6 7 8 9 10
Very Dissatisfied — Very Satisfied

F. Personal questions

1. Which age group are you in? Are you…
   1) 18 – 24 2) 25 – 34 3) 35 – 44 4) 45 – 54
   5) 55 – 64 6) 65 – 74 7) 75+ 8) Refused

2. Please complete the following:
   Are you…
   □ Female
   □ Male

3. Where are you from?

   _____

4. Have you visited any of the places: Tjapukai, Green Island, Tropical Zoo, and Lagoon?
   □ No.
   □ Yes. (If yes, please specify.) _____

5. How many times in the last 5 years have you traveled?

   _____

IV. Invitation Letter for Study 3

Dear Manager,

James Cook University is currently conducting a study exploring tourist crowding and congestion in China and Australia. The study investigates perceptions of tourist crowding at selected attractions, its influence on tourist satisfaction, and management strategies to address congestion problems. This research involves completing several case studies of tourist attractions in Cairns and Xi'an. I would like to invite you to take part in this study.

I have selected your attraction because I feel that it has played a proactive role in the local tourism industry. As a tourism operator, you no doubt have a unique perspective of the Australian or Chinese market and its importance to the growth of the Australian or Chinese Tourism Industry. The study will involve an interview of 30 minutes during which I would like to discuss a number of aspects related to the tourism crowding problems. Specifically, I will be seeking your views about:

- your perceptions and awareness of the crowding and congestion
- your perceptions and awareness of crowding at your own special attraction
- your suggestions for improving or avoiding crowding problems
- your prediction and ideas for the future crowding management

In general, my study will present the overall perceptions that attraction operators have of both Australian and Chinese crowding problems, find out the differences of the two markets, and identify new ideas for facing the difficulties and problems of the two countries.

I wish to stress that the University requires the information you provide to be treated confidentially. I can assure you that your attraction will not be identified by name in any material released by the University or me. I have included a summary of the interview questions for your consideration.

If you are prepared to assist the University with this study please contact me by phone (0747816780) or e-mail (Qian.Jin@jcu.edu.au). I would anticipate that the study would take place from 15th July 2007 to 15tht August 2007 in Cairns, from 15th January 2007 to 15th February 2008 in Xi'an. If you would like to be involved in this research, please contact me at your earliest convenience by phone or e-mail, and we will arrange a time for the interview. This survey has got the Ethics Approval. If you have any ethics problems, please contact the Ethics Office by the phone ((07) 4781 4342) or by e-mail (Tina.Langford@jcu.edu.au). Thank you very much.

I hope to hear from you as soon as possible.

Kind Regards

Qian Jin

PH D Student

V. Public presentations of this research

Conference paper 1:

A modified and condensed version of one part of the thesis, the three studies for the tourism sites in Xi'an, was presented at the 8th Asia Pacific Forum for Graduate Students Research in Tourism Conference, Seoul, Korea, 2009.

Jin, Q., & Peace, P. L. (2009, July 8). *A Tourism Crowding Management for the Cultural Sites in China.* Paper presented at the 8th Asia Pacific Forum for Graduate Students Research in Tourism Conference, Seoul.

The conference paper received a best paper award at the conference.

Conference paper 2:

A modified and condensed version of Chapter 5 in this thesis was presented at the Association for Chinese Economic Studies Australia (ACESA) Conference, Townsville, Australia, 2008.

Jin, Q. (2008, July 11). *Tourism Crowding Recognition and Management in Chinese Cultural Tourist Sites.* Paper presented at the Association for Chinese Economic Studies Australia (ACESA) Conference, Townsville.