CHAPTER 3: METHODOLOGY

The methods used in this research consist of a combination of quantitative and qualitative approaches: a "mixed methods" approach, which is described in more detail in this chapter. The first section explains the rationale for using a mixed methods approach and ethical and practical issues. The second section is related to the quantitative phases of the research, namely, the preliminary data collection, the site observations, the pilot questionnaire study, the main questionnaire and its analysis. The last section deals with the qualitative phase of the research, namely, the semi-structured interviews as well as validity and reliability issues.

3.1 The Rationale for Using a Mixed methods Approach

Mixed methods approaches are also known as "multi-strategy" (Brayman, 2004) "multi-method" or "multiple methods" (O'Cathain et al., 2007). According to the latter, mixed methods are well known in health services research (HSR) in the United Kingdom. At the time of O'Cathain et al.'s (2007) study, it was estimated that at least half a dozen books related to mixed methods would be published by researchers in the United Kingdom, Europe and North America within two years. Bryman (2006) carried out a content analysis of 232 social science journal articles about research that combined quantitative and qualitative approaches, and concluded that the studies reported in these articles mainly employed a combination of survey methods and qualitative interviews. Thus, the combination of methods adopted in this current study is widely used in social science research. Doyle et al. (2009) identified eight benefits or rationales for using mixed methods, namely, "triangulation", "completeness", "offsetting weaknesses and providing stronger inferences", "answering different research questions", "explanation of findings", "illustration of data", "hypothesis development and testing" and "instrument development and testing".

Creswell et al. (2003) claimed that the triangulation design is the most common and well-known design. The mixed methods approach has been used as a means of triangulation in order for quantitative and qualitative approaches to help validate each other. It is a strategy to provide a wider evidence base (Baker,

1999) and "improve[s] the validity and reliability of research or evaluation of findings" (Golafshani, 2003, p. 603).

As Bryman said:

> "Bringing quantitative and qualitative findings together has the potential to offer insights that could not otherwise be gleaned. Thus, even when a fusion of the two sets of findings was not envisioned at the outset of a project, it may be valuable to consider whether the findings suggest interesting contrasts or help to clarify each other" (Bryman, 2007, p. 9).

Triangulation means "that the same phenomenon is investigated from different angles to determine its exact location, in the present context by including different informants and methods to determine its precise meaning and validity" (Kvale, 1996, p.219). However, others asserted that the mixed methods approach is not just about triangulation. Bryman (2007) argued that mixed methods research functions not only as a validation approach; it is also used to achieve a holistic perspective that combines the findings of different methods. This is supported by Jick (2006) who mentioned that triangulation can help researchers to improve the precision of their judgements and compensate for the shortcomings of each single method by the counterbalancing strengths of another.

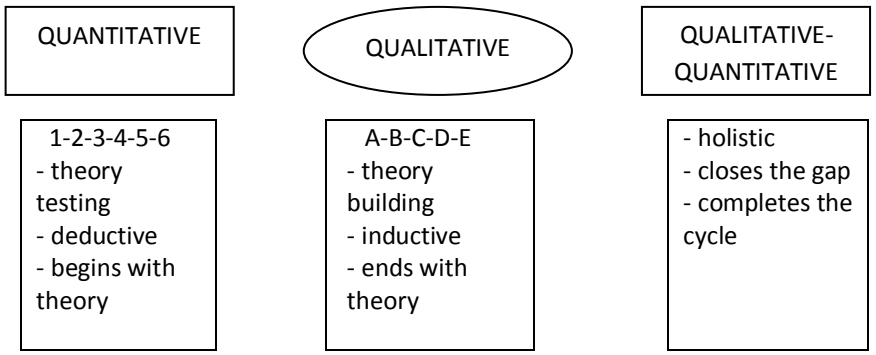

Figure 3.1 The qualitative-quantitative continuum of educational research methodology conceptualised (Source: Ridenour & Newman, 2008, p. 22).

In this study, the mixed methods approach was used as a triangulation to confirm and to verify quantitative results (from questionnaire surveys and site observations) with qualitative findings (from interviews). Its objective was to supplement the questionnaire results in instances where the questions asked during the interviews differed from the questionnaire. It was hoped that by using

this approach the multi-faceted nature of human experience in using recreational forests in Selangor, Malaysia could be revealed comprehensively.

3.1.1 The mixed methods approach used in this study

The study consisted of three main phases as a mixed methods approach: site observations, forest user interviews and questionnaire surveys. These three phases will be explained in detail in later sections. The site observations were conducted to understand attributes of the forest users and the physical sites, as well as to get a sampling frame for the survey. The approach chosen for conducting the questionnaire survey was a concurrent approach, with the survey and interviews being conducted simultaneously. Therefore, several research assistants were employed to help the researcher to distribute the questionnaires. The sample selected for the qualitative interviews was a "parallel sample" (Onwuegbuzie & Collins, 2007); the respondents who participated in the interviews were different from the quantitative survey respondents. This approach was chosen as a result of the researcher's own experience whilst conducting the pilot study, when it was difficult to get respondents who had answered the questionnaire to be interviewed afterwards. This was caused by the respondents being unwilling to give up more of their time to the research because, for example, they needed to go back home early, or wanted to get on with the activities they had planned, such as jogging or walking. Research frameworks and methods are also summarised in Figure 1.2 in Chapter 1.

3.2 Ethical and Practical Approach

As mentioned in Chapter 1, ethical approval for the research was gained from the University Ethics Committee. Research methods were described in the ethical forms and approved by the committee. Permission to carry out the research on the case study sites was gained from the Forestry Department Peninsular Malaysia (which manage recreational forests in Selangor and Malaysia) before the research was conducted.

3.2.1 Informed consent for questionnaire survey

A covering letter was attached to the questionnaire to inform the respondents about the aims of the research and other issues such as the anonymity of their answers. The research participants were not asked for their names in the questionnaire and a respondent ID number was used as the identifier within the coding and analysis procedure. The questionnaires were kept in a secure place to which only the researcher had access.

As for the ethical procedure relating to the interviews, an information sheet and a consent form were given to forest users and their signatures were obtained to confirm their agreement to participate in the interviews. The interview procedure was anonymous in the sense that interviewees were not asked to give their names or to provide any other information that would establish their identity. However, some of them willingly described their occupation as additional information for the interviewer.

3.2.2 Informed consent for interviews

Informed consent is an important way of ensuring that prospective participants are well-informed about the project in which they are being invited to participate (Wiles et al, 2007). In this study, the informed consent of the interviewees was obtained through the use of information and consent sheets. The information sheet provided information about the project and how the interview data would be used and outlined, informed interviewees on their right not to answer or to withdraw from the interview process and also guaranteed the anonymity of the results. If, after reading the information sheet, the respondents agreed to be interviewed; their consent was obtained by asking them to sign the consent sheet. Most importantly, a signed consent protects the researcher from any potential accusations later on from the participants that they were not informed (Wiles et al., 2007). The interviewees understood the anonymity aspect and were generally happy to sign the consent sheet. However, a few of them took their time to thoroughly read all the information in the consent sheet, then agreed to participate and signed the sheet (Refer to Appendix 4).

3.2.3 Recording

The interviews were all recorded using a digital voice recorder. Voice recording was chosen because the method made it possible to have continuous conversations, whereas writing notes would have disrupted the flow of the interview. In addition, it provided an accurate representation of what was said. Without voice recording, only the basics of any conversation could be captured and might possibly be misinterpreted. It was very convenient for the researcher to listen to the voice recordings repeatedly for data transcription purposes.

3.2.4 Translation and transcription

The researcher herself translated all the interviews from the Malay Language to the English Language. This was to ensure that the translation would be genuine. The interviews were transcribed almost verbatim, including all 'urmms' and pauses, as far as possible. Even though the transcripts were verbatim, to make the meaning clearer, certain words were excluded in quotations used in the qualitative results if the words were repetitive, less meaningful or would cause confusion. Additional information was added by the researcher (Lin) to make the meaning clearer. Such information is indicated within square brackets ([ ]), for example:

Lin:	"What do you dislike about this forest?"
Mr. C:	"Facilities. There are no facilities, toilets, ... there are no jungle tracks, no other activities. Only these activities [swimming and picnicking]. Toilet cannot be used, leaking". (Ampang Forest)

Lin:	"When did you first visit a forest and where?"
Mrs. B:	"Ohh! 'That one' is when I was still small ..."
Lin:	"What was your age at that time?"
Mrs. B:	"Argh ... [trying to remember], maybe my aged six or five years old. My father originally from village 'kan'?" [right?] (Ampang Forest)

The researcher transcribed the interviews herself so that she would have the opportunity to be immersed in the data and experience emergent insights (Patton, 2002). In a few cases, some quotations were difficult to transcribe because of many repeated words or sounds or changing of the topic. In those cases, the researcher tried to describe and paraphrase the

interviews as closely as possible. The emotions and body language of the interviewees were recorded as far as possible. The researcher also used a notebook to record any actions or emotions from the interviewees at the conclusion of each interview. These helped the researcher to make sincere judgements about the contents of the interview. For example:

> Lin: "In terms of society and neighbourhood, how? Do you think it gives benefit?"
>
> Mrs. B: "Ermm, ... [thinking of an answer] maybe if they [nearby residents] don't have a water supply they can come here for bathing [laughing]. When I was small, when there was no water supply we bathed using well water, right?" (Kanching Forest)

The researcher used single spacing and signs in the transcription, as follows: (1) verbatim quotes (" ") indicated direct quotations from the interviewees; (2) single quotation marks (' ') were used to signify paraphrased wording (Kirk & Miller, cited in Silverman, 1993, p. 147) by the interviewer when using quotes could lead to confusion in interpretation; and (3) square brackets ([ ]) were used to show contextual data/fieldwork interpretations. Each interviewee in the two study sites was given an alphabetical code, for example, Mr. A, Miss B or Mrs. D. When she had finished transcribing each interview, the researcher summarised the interview duration, the interviewee's responses throughout the interview, the location, weather condition during the interviews, and the ethnic group, marital status, age and occupation of the interviewee. In the end, 150 pages were transcribed for the Ampang Recreational Forest and 66 pages for the Kanching Recreational Forest.

3.3 Preliminary Data Collection

Preliminary data was gathered from the preliminary site visits, exploratory interviews with forest staff and users as well as site observations. The purpose of the site preliminary visits was to have first-hand experience of the different recreational forests and their contexts, to observe users' behaviour and to take note of issues related to the sites, such as maintenance issues. Exploratory interviews with forest officers and managers were carried out in order to understand the concept of recreational forests, the issues faced by the management, the types of forest users

and the policies applicable. The interviews with staff were also helpful in choosing the days of the week suitable for user interviews in order to get many respondents for both interviews and surveys. The forest users' interviews aimed to pre-test the semi-structured interview questions and elicit feedback from the forest users regarding the interview procedure and questions asked, and to help the researcher to design further questions for the semi-structured interviews. These semi-structured interviews were to gather users' opinions and to understand the importance of recreational forests to them as well as the themes covered in the questionnaire and maintenance issues related to the sites. This method of collection is consistent with exploratory research. Based on the information gained from the Selangor State Forest Department, the researcher visited seven out of the nine recreational forests in Selangor State; the researcher decided not to visit the other two sites due to concerns about personal safety (Templer Recreational Forest and Gunung Nuang Recreational Forest).

The researcher gathered some information related to the recreational forests by engaging in informal conversation with the staff at the sites which the researcher visited. The site visits were conducted in August and September 2009. After considering the demographics, accessibility, geography, facilities provided, travel costs and time, and interviews with forest managers, the researcher decided to select two sites (Kanching Recreational Forest and Ampang Recreational Forest) as representative of the recreational forests in Selangor State. The criteria for selecting the two sites will be explained in detail in Chapter Four.

Exploratory interviews were conducted in September with two senior forest officers and a site manager to obtain an overall view of recreational forests in Selangor State. The researcher made an appointment with them by faxing a letter of consent, followed by a phone call. The researcher managed to interview them after some follow-up phone conversations.

The staff interviews were conducted in staff offices located in Rawang and Shah Alam, Selangor. Informed consent to the interviews was obtained from all three interviewees in accordance with the Ethical Approval obtained for the research project. Two of the interviewees agreed to the interviews being recorded and one interviewee preferred notes to be taken instead (Table 3.1). Two interviewees were

happy to be identified by name, one wanted to remain anonymous. The interviews took 30 minutes to one hour. Both the recordings were transcribed and any issues related to the recreational forests were noted.

Table 3.1 Interviews with forest officers and a manager

Name	Role	Date	Nature of meeting
Mr. Abdul Ramlizauyahhudin Bin Hj. Mahli	Hulu Selangor District Forest Officer	01/09/2009	Semi-structured interview/written down
Anonymised	Product Manager	09/09/2009	Semi-structured interview
Mr. Samsu Anuar Bin Nawi	Sivilculture State Officer	29/09/2009	Semi-structured interview

Due to budget and time constraints, exploratory interviews with forest users along with site observations were all held in October 2009. The interviews were not transcribed at that time; only the substantive issues raised were noted along with any matters related to the format of the questions for the final stage interviews. An additional question about "the importance of recreational forest to users or in the neighbourhood area" was added to the final semi-structured interviews questions after the pilot interviews (See Appendix 3).

Site observations at the two selected study areas were undertaken mainly to understand the site context, the sites' attributes, users' behaviour and the activities they engaged in along with site issues. It is "fundamentally about understanding the routine rather than what appears to be exciting" (Silverman, 1993, p.30). The observations were also a means of obtaining sampling frames for the questionnaire survey.

The site observations were conducted in October 2009 by the researcher and four research assistants who were undergraduate Landscape Architecture students. The site observations were carried out during two sessions which took place in the morning and afternoon. The morning session lasted from 8.00 am to 11.00 am and the afternoon session was from 3.00 pm to 6.00 pm. The site observations in Ampang Recreational Forest took place over three days from Saturday (3/10/09) to Monday (5/10/09). Monday was included because the researcher wanted to avoid bias attributable to differences between users and their activities at weekends compared with weekdays. Moreover, according to the recreational forest staff interviewed, many users came to the Ampang Recreational Forest for exercise

purposes on Monday mornings. For the Kanching Recreational Forest, the same approach was applied and the observations were carried out from Saturday (10/10/09) to Monday (12/10/09).

During prior visits, the researcher had identified two focal areas suitable for data collection in Ampang Recreational Forest (next to a children's playground and the resting areas at the upper part of the forest) and three focal areas in Kanching Recreational Forest (open field areas, and waterfall areas level 3 and level 4). In order to collect data about the characteristics of users and their activities, the research assistants were instructed to walk routes that covered all these focal areas. They were given observation forms and a note book and requested to record what they observed, including users' activities and behaviour, and the characteristics of the weather. They were also invited to express their feelings about what they observed. The purpose of the notebook was to clarify the observations and to enable the assistants to record any events that were occurring simultaneously. For reliability and safety purposes, they were asked to observe the spaces together (Sullivan et al., 2004). Whilst this inevitably gave rise to the risk of double counting, the researcher was responsible for the safety of the research assistants. Therefore, she instructed them to walk in groups to avoid any unexpected incident. After the observations were conducted, the researcher asked the research assistants to compare their data and confirm the counts by cross-checking the results among themselves. In order to gain an overview of the profile of forest users, one of the research assistants was asked to monitor the number of each type of users (Table 3.2). He was instructed to sit in an area near the entrance so that it was easy to count the number of people entering the forest. He was told to count only people who entered the recreational forests, making a note of their gender and ethnicity. On the days when the observations were carried out, the researcher completed some of the questionnaire pilot study and the pilot interviews with forest users. She took several days afterwards to complete the whole questionnaire pilot study and pilot interviews.

Table 3.2 Population of forest users during three days observation

Ethnicity	Gender	Total	Overall Percentage	True population of forest users proportion, 95% confidence level
Ampang Recreational Forest				
Malays	Male	129	61%	56.0 – 66.0 %
	Female	97		
Chinese	Male	45	26%	21.5 – 30.5%
	Female	50		
Indians	Male	32	13%	9.6 – 16.4%
	Female	16		
	Total	**369**	**100%**	
Kanching Recreational Forest				
Malays	Male	305	74%	70.6 – 77.3%
	Female	211		
Chinese	Male	62	20%	16.6 – 22.7%
	Female	74		
Indians	Male	27	6%	4.8 – 8.5%
	Female	18		
	Total	**697**	**100%**	

3.4 Questionnaire Pilot Study

The aim of the pilot study was to test the questionnaire with forest users to see if there were any unclear questions regarding the questionnaire or structure of the questionnaire design. The questionnaire was first informally piloted with four colleagues in the Landscape Department, University Putra Malaysia, to test whether they could understand the questionnaire, which had been translated into the Malay language by the researcher. The more formal questionnaire pilot study was then conducted in October 2009 to ensure that the questionnaire could be understood by the forest users. The questionnaire was formally piloted with a sample of 30 forest users from across the two study areas, using a self-administered approach. The questionnaires were not analysed for their substantive results; instead, they were scrutinised for responses that had not been provided according to the instructions, or questions to which no answer had been given. One frequent comment was that there were too many questions, and some respondents did not understand the wording in one item: “In nature there is order and a sequence of events”. Therefore, this item was omitted in the final questionnaire. On the basis of the respondents’ feedback, the exploratory interviews and the site observations, a final version of the questionnaire was developed.

3.4.1 Drawing the final sample for survey

Based on the sample calculation at the preliminary stage (Ampang Recreational Forest, N=369, Kanching Recreational Forest, N=697, See Table 3.2), a sample was identified for the final survey. The researcher decided to use a quota sampling approach based on the previous sample of people who visited the forest at the earlier site observations including the counts related to ethnicity (See Table 3.2). Using the Confidence Interval Calculator for Proportions software, the researcher calculated the true proportions of the population of forest users with 95% confidence level. The confidence intervals were calculated using the "exact" confidence intervals computed by Clopper and Pearson's (1934) method. Therefore, the researcher aimed to achieve a sample for the survey questionnaire that would correspond as closely as possible to the forest users' population (Table 3.2). However, there were very few Indians in the population and in order to estimate their attitudes, these numbers were bolstered.

The generalisations from the findings of this research clearly apply to those people who use the Ampang and Kanching Recreational Forests. However, as these two recreational forests are fairly typical of others in Selangor, it seems fair to suppose that these results will hold for users of other recreational forests as well.

3.5 Questionnaire

3.5.1 Self-administered questionnaire

A self-administered questionnaire was chosen after considering the cost and time of using an interviewer-administered questionnaire. It is costly in terms of both time and money to train interviewers and pay them, in comparison with the resources needed for a self-administered questionnaire. The participants generally completed the questionnaire by themselves without any assistance from the researcher or research assistants. Two versions of the questionnaire were prepared: a version in Malay and a version in the English Language. The Malay version of the questionnaire was used for most participants. The Chinese participants

generally used the English Language version. In the case of illiteracy or where Chinese participants did not speak Malay or English, the questionnaires were administered verbally by the research assistants in the participant's language of choice (Malay, English or Mandarin). Neither the researcher nor the research assistants were able to speak any of the language used by Malaysians of Indian origin (Tamil). In the case of these participants two approaches were used: either they were interviewed in the Malay language, or other family members translated the questionnaire for the benefit of the research participant.

Table 3.3 Questionnaire structure

Sections
Section 1: Visits to the recreational forest
Section 2: Attitudes towards physical features of the forest
Section 3: Motivation for forest use
Section 4: Feelings when in the forest
Section 5: Expectations towards recreational forest
Section 6: Demographic information

3.5.2 Questionnaire items

The questionnaire (Appendix 2) was devised based on a review of previous studies that have progressively built up an understanding of the nature of people's use and experience of recreational forests (Bixler & Floyd, 1997; Iso-Ahola, 1983; Jorgensen & Anthopoulou, 2007a; Ward Thompson et al., 2004). Items related to disgust were adapted from Bixler and Floyd (1997); items related to motives for forest use were adapted from Iso-Ahola (1983) and were also informed by the pilot-study; items concerning positive and negative feelings and experience were adapted from Jorgensen and Anthopoulou (2007a); and items related to childhood, feelings experience and attitudes to physical features were adapted from Ward Thompson et al. (2004). Both closed and open questions were used. The respondents were invited to respond to the closed questions by selecting the most suitable answer that indicated their level of agreement with a given statement. They did so by using a five-point scale that ranged from "strongly disagree" to "strongly agree", with the midpoint being represented by "not sure". There were

two open questions (Section 5: Q13 and Section 6: Q7) which invited the respondents to write down their own answers or opinions. The questionnaire was divided into six sections (Table 3.3). The items in Sections 2 and 4 were randomly arranged using randomiser software in order to avoid bias in responses. Table 3.4 explains the responses used in the questionnaire for the demographic items.

Section 1: Nature of visits to the recreational forest

The aim of this section was to build an understanding of the pattern of users' visits which would help to build a typology of the users. The answering format consisted of a mixture of binary (Yes/No) and categorical answering formats. Section 1 consisted of questions related to forest users' pattern of visits (refer to Q2 to Q7, See Appendix). This section was also used to establish whether it was their first visit (refer to Q1) and whether they were familiar with forest or rural environments (refer to Q8 and Q9). It was hypothesised that people who are familiar with forest environments tend to use recreational forests more frequently. Williams and Harvey (2001) found that a sense of compatibility and familiarity contributes to the forest users' transcendent experiences in the forest. Familiarity also influences peoples' landscape preferences; Buijs et al. (2009) found that immigrants from Islamic countries (Turkey and Morocco) preferred "agriculture" to "natural" or "wilderness landscape" compared to people of Dutch origin. The questions were all closed except question number seven (Q7) in Section 6 (*Please specify*: The postcode of the area you live in).

Section 2: Attitudes towards physical features of the forest

This section aimed to understand people's attitudes to the physical attributes of the forest and consisted of 17 items. There were questions related to forest characteristics, such as accessibility, as well as amenities provided by the management. Park amenities such as "water amenities" were one of the site attributes related to park preferences, visitation and perceived park benefits in Atlanta and Philadelphia, United States (Ho et al., 2005). In addition, park amenities and facilities were found to be

important for Latinos visiting the National Forests of Los Angeles and San Bernardino (Chavez & Olson, 2009). Their study focused on Latino forest users' activities and experience in four national forests in Southern California, and the Latinos user group rated basic facilities such as water faucets, trash cans and telephones as more important to them than the White respondents.

Section 3: Motivation for using the forest

The objective of this section was to understand what motivated people to use the recreational forests. This section consisted of 26 questions and its objective is to understand the users' reasons for using the forest. Types of motives listed in the questionnaire were based on the pilot study, site observations and on the literature. In Chapter 2, the summarised research indicates that people are motivated to participate in recreational activities because these activities give benefits in terms of the physical, social, psychological and emotional aspects.

Section 4: Feelings when in the forest

This section was aimed at exploring emotional interactions with the forest, including negative, positive and "transcendent" feelings (Jorgensen & Anthopoulou, 2007a; Bixler & Floyd, 1997; Williams & Harvey, 2001). Forests can offer spiritual values (Xu & Bengston, 1997) such as feelings of awe inspired by the grandeur of the trees and waterfalls, and a sense of closeness to the Creator. The items were randomly arranged in order to avoid bias when the respondents answered the questionnaire. It was expected that users' responses in terms of feelings while in the recreational forest would vary according to users' age and gender. For example, it was anticipated that female users would feel less safe in the forest (Jorgensen & Anthopoulou, 2007a; Jorgensen et al., 2002), feel threaten by wild animals (Virden & Walker, 1999) or humans (Kong et al., 1997).

Section 5: Expectations towards the recreational forest

The expectation was that the results from this section would provide information for future management and planning of the recreational forests. Different people have their own preferences and expectations towards forests. Fleishman and Feitelson (2009) studied visitors' satisfaction regarding picnic activities in relation to carrying capacity and found that the provision of facilities is an important component of visitor satisfaction. Therefore, questions in this section were designed to explore the needs and expectations of the users. The section included one open question that invited respondents to specify the future improvements they wanted.

Section 6: Demographic information

The aim of this section was to gather background information about the respondents to help in interpreting the results. One of the research objectives was to examine the impact of demographic differences among the respondents on their use and experience of the recreational forests. Therefore, a selection of the demographic data collected by the questionnaire was also coded and transformed into a series of variables (Table 3.4).

The respondents' ages were divided into four categories to reflect demographic trends in the Malaysian population. Children and teenagers below 18 were excluded, as it was felt that the chosen methodology was not appropriate to access the views of this group. In general, Malaysians normally complete high school at the age of 18. They either start working or continue their tertiary education in institutions or higher learning such as colleges or universities. At the age of 25, they generally find a job and live on their own. Some may decide to start their own family. At 36 years old, their jobs and family life are usually more stable. At the time of this study, government servants retire at the age of 56 or 58. Age 56 and above is the mature adults group. Therefore, in the questionnaire, the participants were categorised into four groups: 19-25, 26-35, 36-55, and ≥56. The age data was coded and transformed into interval data. The

pilot study and site observations suggested that the oldest adults using the recreational forest were around 70 years old.

Table 3.4 Demographic questionnaire items

Demographic	**Answers given in the questionnaire**
Age	19-25 years
	26 – 35 years old
	36 to 55 years old
	56 years old and more
Gender	Male
	Female
Ethnicity	Malay
	Chinese
	Indian
Marital status	Single
	Married
	Divorced/living apart
Employment status	Student
	Employed
	Self-employed
	Retired
	Housewife
	Other
Highest qualifications	High school and below
	Vocational certificate/diploma
	First degree (e.g. BSc, BA)
	Postgraduate degree (e.g. MA, PhD)
	Other (specify)

The section concerning ethnicity was formulated to suit the Malaysian context. As mentioned in Chapter 1, three ethnicities (Malays, Chinese and Indians) were chosen because they reflect the three main ethnic groups in the Malaysian population. The ethnicity data was coded and transformed into nominal (categorical) data.

Respondents were also asked to describe their current employment status (Q5) and their highest qualifications (Q6, See Table 3.4). This data was coded and transformed into nominal (categories). Sasidharan et al. (2005) found that education has a positive association with the frequency of park visits among ethnic groups in Atlanta and Philadelphia, and it has also been found to influence how people use their discretionary time (McLean et al., 2008).

Respondents were asked to describe their marital status by ticking one box (Q4) which represented their current marital status (See Table 3.4).

This question was included in the questionnaire because marital status has been known to impact on patterns of recreational use (Loukaitou-Sideris, 1995; Kay, 1996). The marital status data was coded and transformed into nominal (categorical) data.

There was a further question asking respondents to specify "the postcode area [you] live in" that was included in order to establish the proximity of the respondents' homes to the recreational forest. It was expected that forest visitors would consist of more local people (those residing in Ampang and Rawang areas) than non-local visitors (those outside Ampang and Rawang areas).

3.5.3 Response rate and questionnaire completion

The questionnaire surveys were conducted during fine weather in April and May 2010, on Fridays, Saturdays and Sundays. The questionnaires were distributed by the researcher and research assistants. The survey was carried out during three two-hour sessions: morning (8.00 am-10.00 am), afternoon (12.00 pm-2.00 pm) and evening (4.00 pm-6.00 pm). Due to the spatial location of the forests and traffic congestion, the surveys were conducted at different times for both sites. Potential respondents were approached at the pre-determined focal areas and also in less used areas. Respondents who visited the forest on their own were given one questionnaire to complete. Respondents who were present in groups were given at least two questionnaires. This was an attempt to prevent "group completion" of the questionnaire or completion of a questionnaire by one spouse on behalf of another.

The respondents either returned the questionnaires in person to the researcher and research assistants or the research assistants collected the documents on site from the respondents. In total, 417 questionnaires were returned. Two of them were excluded due to missing information and two because they were not completed by members of one of the three target ethnic groups. In the end, there were a total of 208 respondents surveyed in the Ampang Forest and 205 in the Kanching

Forest. Table 3.5 shows the respondents' distribution according to gender and ethnicity for both recreational forests. The researcher believes the survey respondents were represented based on the forest users' population as previously mentioned.

Table 3.5 Respondents were surveyed

Ethnicity	Gender	Numbers	Overall percentage
Ampang Recreational Forest (N=208)			
Malays	Male	43	43.3%
	Female	47	
Chinese	Male	34	32.7%
	Female	34	
Indians	Male	27	24.0%
	Female	23	
	Total	**208**	100.0%
Kanching Recreational Forest (N=205)			
Malays	Male	81	63.4%
	Female	49	
Chinese	Male	27	23.9%
	Female	22	
Indians	Male	15	12.7%
	Female	11	
	Total	**205**	100.0%

3.5.4 Data analysis

The questionnaire data was analysed using the statistics package PASW 18. The detailed method of analysis is explained in the Chapter 6 and 7 which highlight the results. However, the following general principles are given as an overview: data was coded and transformed into different types of variables: nominal (binary), nominal (categorical), ordinal and scale. Descriptive statistics were generated for each variable by using frequency distribution.

For categorical data, frequencies and percentages (%) were used to describe each variable for the population. When two categorical variables were compared, they were cross tabulated and Pearson Chi-Square used to test for association between the variables. In order to use the approximation to a Chi-Square distribution for the Chi-Square statistic, the expected value in any cell needs to be bigger than 5 (Agresti, 2007; Mehta & Patel, n.d). However, Fisher's exact test can be used when sample sizes are small and is normally used on 2 x 2 contingency tables

(Field, 2009; Mehta & Patel, n.d). When an exact probability is not easily attained (such as when the data is small, sparse or unbalanced), a Monte Carlo approximation is to be used instead (Agresti, 2007; Mehta & Patel, n.d). Table 3.6 shows a summary of the tests used for this study. A Mann-Whitney test was used for examining the gender differences. For some results, the categories were collapsed to facilitate analysis. For example, results for "number of respondents in agreement" in Table 5.4, Chapter 5, were collapsed for the "agree" and "strongly agree" answer.

Table 3.6 Statistical tests used and their functions

Test	Function
Chi-Square	Looks for an unequal distribution of cases in a frequency table or cross-tabulation of two nominal variables
Mann-Whitney	Looks for a difference in the mean rankings of cases according to the ordinal or scale variable between two categories of the nominal variable
Kruskal-Wallis	Looks for a difference in the mean rankings of cases according to the ordinal or scale variable between the two categories of the nominal variable

Source: Adapted from Jorgensen, 2003.

Exploratory Factor Analysis (EFA) was also used. According to Pallant (2007), the purpose of factor analysis is both exploratory and confirmatory. Principal Component Analysis (PCA) with varimax rotation was used for data analysis and the Kaiser Criterion (all factors with eigenvalues greater than one) was used. Kaiser Criterion was chosen because it is thought to be accurate when the sample exceeds 250 (Field, 2009) and the total sample for this study was 413. In addition, a sample size of 413 falls within the 'good' to 'very good' range (300 and 500 cases, respectively) for factor analysis (Comrey & Lee, 1992 cited in Walker et al., 2001, p. 269).

Overall factor analysis was used to identify the underlying factors or constructs that influenced each respondent's experience in the recreational forests. According to Pallant (2007), "In factor analysis, the factor refers to the group or clump of related variables; in analysis of variance (ANOVA) techniques, factor refers to the independent variables" (p. 180). One-way analysis of variance was used to examine possible differences in mean responses to the usage attributes between

age groups, ethnic groups, and groups of respondents with differing marital, employment and education status. Tukey multiple comparison tests were used to determine which means were different among the independent variables.

There were essentially two types of variables used in the study: independent variables (demographic variables) and dependent variables (visits to the recreational forest, attitudes towards physical features, motives for forest use, feelings when in the forest and expectations towards recreational forests).

3.5.5 Validity and reliability

Altheide and Johnson (1994), cited in Whittemore et al. (2001), explained that *reliability* refers to the constancy of findings, whereas *validity* symbolises the truthfulness of findings. Both validity and reliability can be achieved through triangulation, which was discussed earlier. Triangulation and theoretical sampling can theoretically achieve internal validity (Ridenour & Newman, 2008, p.41). Ridenour and Newman defined this as follows:

> "Internal validity is the extent to which any causal difference in the dependent variable can be attributed to the independent variable. External validity is the extent to which the results of the research study can be generalised to other settings or groups" (Ridenour & Newman, 2008, p.40).

To increase external validity, Ridenour and Newman (2008) suggested sampling participants across several strata which reflect the world in which the results will be generalised, such as age, socioeconomic status and occupation. Ridenour and Newman (2008) stated that construct validity is the most difficult to estimate and they suggested that factor analysis can be used as a statistical technique to estimate construct validity, adding that "Construct validation is involved whenever a test is to be interpreted as a measure of some attribute or quality which is not 'operationally defined' " (p.100). This researcher placed emphasis on this issue of validity and reliability both in the quantitative and qualitative methods, and this is discussed in the next section.

In this study, the reliability was gained from the reliability test which will be explained in detail in Chapter 6. The internal validity of this study also came from results that can be linked to the previous studies referred to in the literature review. For example, in Chapter 2, Virden and Walker (1999) and Kong et al. (1997) found that women, compared to males, felt threatened and fearful of the unknown, and especially in natural environments. The results in Chapter 5 and 6 (quantitative) and Chapter 7 (qualitative) confirm these studies in the sense that female respondents are more likely to experience feelings of insecurity and fear in the forest compared to male respondents.

3.6 Semi-structured Interviews

The aim of using semi-structured interviews (Appendix 3) was as a complement to and a means of triangulation with the questionnaire surveys. It was hoped that the interviews would give a more holistic view of Malaysian patterns of use, activities and experience in the recreational forests.

3.6.1 Qualitative interviewing rationale

The qualitative interviews were used to elicit additional details relating to the issues covered in the questionnaire. The researcher explored similar variables to those covered in the questionnaire. However, any differences encountered or new insights gained were also explored. In addition, the interviews gave further in-depth understanding of respondents' feelings and emotions concerning their experience in the recreational forests. However, there were also questions asked under themes which were different from those covered in the questionnaire, such as "cultural identification with the forest environment", "future improvements" and "the general importance of recreational forest to you" in order to give a comprehensive understanding of the use and value of recreational forests to the respondents.

As one of the research questions is about the impact of ethnicity and gender on the use of the recreational forests, the researcher believed that a qualitative approach is one of the best options to take because she

could also explore the underlying meaning of the interviewee's subject of interest in his or her own words.

3.6.2 Approach to interviewing

The researcher used semi-structured interviews because she believed that "with reasonably specific topics combined with being very flexible in the order and follow-up questions" (Beaney, 2009, p. 90). They are also less time-consuming to analyse compared to unstructured interviews (Silverman, 1993). Throughout the interview process, the researcher also asked open questions to "generate data which give an authentic insight into people's experiences" (Silverman, 1993, p. 91) in the recreational forest. In addition, the open questions were designed to encourage the interviewee to keep on cooperating with the interviewer. These open questions provided variations in terms of questions asked and to achieve different insights from the interviews. As Baker (1984) mentioned that interviews are actively constructed and are as self-evident about the person that the researcher is interviewing as about the subject under discussion. It means that each interviewee has his/her own characteristics and should be dealt with differently.

An interview topic guide was used to structure the interviews. The researcher (interviewer) asked the main questions as stated in the topic guide and in the same order as in the guide for reliability purposes (Silverman, 1993). However, the interviewees were allowed to talk more freely about topics that interested them or that seemed important to them.

3.6.3 Obtaining interview sample

As the research approach used mixed methods for triangulation purposes, the researcher had intended to interview 15 people per site or to carry on increasing the sample until she felt that the answers given were saturated. Guest et al. (2006) found that the data was saturated when they completed and analysed 12 interviews. Data saturation occurred when no new data were gained from the interview process. However, they mentioned that their findings were not applicable to unstructured and highly exploratory interview techniques. Difficulties in finding forest

users, who were willing to be interviewed, combined with time constraints, meant that this researcher could not get data saturation for some of the questions asked.

The interviews were done by the researcher herself concurrently with the field survey in April, May and early June 2010 on Fridays, Saturdays and Sundays. She had intended the interviews to last for at least 30 minutes but as can be seen in the Table 3.8 below, the duration of the interviews ranged from a minimum of 8 to 45 minutes. This was due to some constraints faced by the researcher during the interviews, such as interpretations from family members or friends of the interviewees, and some of the respondents only wanted to be interviewed for a short time. In addition, some respondents were not willing or able to express their opinions regarding the questions asked (Table 3.7). Despite the issues faced by the researcher, she believes the interview data to be valid because when the interviews were disrupted, she ended them as soon as possible to avoid any bias occurring. Furthermore, the researcher had to make use of all the interview data even though the duration of some interviews was short because of the time constraints and difficulties faced in getting users who were willing to be interviewed.

There were eventually 17 respondents at Ampang Recreational Forest, consisting of 11 males and six females. There were also five males and one female respondent from the pilot study interviews. The respondents numbered 23 in all, including 12 Malays, 5 Chinese and 6 Indians. Their ages were varied, ranging from 29 to 60 years old (Table 3.7).

In the final interviews for Kanching Recreational Forest, there were 12 respondents consisting of four males and eight females. There were three males and two females respondent from the pilot study interviews. The total number of respondents was 17, including 9 Malays, 5 Chinese and 3 Indians. Their ages were varied, ranging from 19 to 48 years old.

Table 3.7 Characteristics of interviewees at Ampang and Kanching Recreational Forests:

	Respondents	Gender	Races	Age	Duration
	Ampang Recreational Forest				
1	Mr. A.-pilot study	Male	Chinese	29 years	12 min.
2	Mr. B.-pilot study	Male	Chinese	43 years	45 min.
3	Mr.C-pilot study	Male	Malay	39 years	14 min.
4	Mrs. A.-pilot study	Female	Indian	30 years	10min
5	Mr. D.-pilot study	Male	Malay	30 years	18 min.
6	Mr. E-pilot study	Male	Malay	45 years	20 min
7	Mrs. B.	Female	Malay	52 years	16 min.
8	Mr. F.	Male	Indian	Mid 50s'	10 min.
9	Mr. G.	Male	Chinese	52 years	8 min.
10	Mr. H.	Male	Malay	52 years	13 min.
11	Mr. I.	Male	Malay	40s'	29 min.
12	Mr. J.	Male	Indian	58 years	20 min.
13	Mr. K.	Male	Malay	30 years	20 min.
14	Mrs. C.	Female	Malay	29 years	12 min.
15	Mrs. D.	Female	Indian	40 years	16 min.
16	Mrs. E.	Female	Malay	50s'	19 min.
17	Mr.L.	Male	Malay	55 years	21 min.
18	Mr.M.	Male	Malay	52 years	22 min.
19	Mrs. F.	Female	Indian	41 years	15 min.
20	Mr.N.	Male	Chinese	60 years	8 min.
21	Mr.O.	Male	Indian	50s'	13 min.
22	Mrs.G.	Female	Chinese	41 years	24 min.
23	Mr.P.	Male	Malay	43 years	21 min.

	Respondents	Gender	Races	Age	Duration
	Kanching Recreational Forest				
1	Mr. A.-pilot study	Male	Malay	40s'	14 min.
2	Mr. B.-pilot study	Male	Indian	34 years	15 min.
3	Miss. A.-pilot study	Female	Malay	19 years	10 min.
4	Mrs. A.-pilot study	Female	Malay	34 years	10 min.
5	Mr. C.-pilot study	Male	Malay	46 years	10 min.
6	Mrs.B.	Female	Malay	33 years	19 min.
7	Mrs.C.	Female	Malay	31 years	13 min.
8	Mrs.D.	Female	Chinese	48 years	12 min.
9	Mr.D.	Male	Malay	30s'	22 min.
10	Mr.E.	Male	Chinese	33 years	9 min.
11	Mrs.E.	Female	Indian	25-30 years	12 min.
12	Mrs.F.	Female	Malay	41 years	15 min.
13	Miss.B.	Female	Malay	20 years	17 min.
14	Mr.F.	Male	Chinese	33 years	23 min.
15	Mrs.G.	Female	Chinese	37 years	15 min.
16	Miss.C.	Female	Chinese	30 years	15 min.
17	Mr. G.	Male	Indian	43 years	12 min.

3.6.4 Analysis stages

The researcher decided to use open coding, inspired by a grounded theory approach, for the analysis stages. The researcher believed that it

was easier to analyse data by grouping them into categories or sub-categories before combining them into themes, rather than developing themes and then fitting all the data into the themes.

Open coding was used at the beginning to open up the data to every potential and all possibilities contained within them. Open coding, as defined by Corbin and Strauss (2008), is: "Breaking data apart and delineating concepts to stand for blocks of raw data. At the same time, one is qualifying those concepts in terms of their properties and dimensions" (p.195). After considering meanings related to the data and examining the context, interpretive conceptual labels can then be put on the data (Corbin & Strauss, 2008). They stated that identifying the meaning of data is more important than the actual procedures used for analysing data. This researcher selected most of the key phrases that were special to the interviewees and gave coding to the phrases that were relevant to fit research questions and the issues in which the researcher was interested. As Corbin and Strauss (2008) stated, "...coding requires searching for the right word or two that best describe conceptually what the researcher believes is indicated by the data" (p.160). In the examples below, the researcher used different colours for different coding to make it easy to recognise the same coding as the same colour was used throughout the coding process.

	Quotations	**Coding keywords**
Lin:	"What does the forest mean to you?"	
Mr. A:	"It is a place where we can **enjoy the natural activities**, err ... **we treasure [appreciate] like those trees and everything, the greenery, sometimes we saw animals, insects. Those we can't see in the city"** (Ampang Forest)	**The importance of forest**
Lin:	"Yeah! Correct, okay! How do you relate yourself with the forest?"	
Mr. A:	"Just like I said**, we came to the forest just to relax, that's the main point** 'lah'! Just **to relax**, I don't have any [memory] related to the forest. Just **for fun**, do something different**. Because what we do every day is stay and work in the city"** (Ampang Forest)	**Motivation** **Activity** **Positive feeling** **To get away/being away**

Figure 3.2 Examples of quotations and keywords

When the process of coding was completed, cross-case analysis was done to look for patterns and themes that cut across individual experiences (Patton, 2002). According to Glaser and Strauss (1967) cited in Patton (2002) "this helps ensure that emergent categories and discovered patterns are grounded in specific cases and their contexts" (p. 57). The researcher extracted themes and sub-themes for both sites separately. The purpose of doing that was to understand the relationship between individual cases and sites and to look for any similarities, nuances or differences in themes or sub-themes between sites.

The process of data coding and analysis was done repeatedly until the researcher felt satisfied that data gathered was saturated and that she could build up a logical explanatory story (Corbin & Strauss, 2008). For example, the researcher felt confident that data about the "first visit of interviewees to a forest" was saturated when she received feedback about village experience from most of the interviewees. Some themes that emerged were influenced by the researcher's initial thematic structure (used in the questionnaire), such as "Activities and Experience in the Recreational Forests"; and "Expectations towards the Recreational Forest". However, several new themes also emerged from the interviews: "Value of the Recreational Forest", "Forest Culture and Memory", and "Issues and Concerns regarding the Forest Environment". The researcher also looked for patterns in the qualitative data based on the ethnicity and/or gender of the research participants. This was to look at the relationship between those two factors and the emergent themes in accordance with the overall research objectives.

3.6.5 Validity and reliability

In order to ensure the validity and reliability of the data and methods, semi-structured interviews were used as a means to have standardised interviews which can "generate data which hold independently of both the research setting and the researcher or interviewer" (Silverman, 1993, p.92). The concepts of reliability and validity can be formularised as trustworthiness, rigour and quality in the qualitative paradigm

(Golafshani, 2003). Lincoln and Guba (1985) suggested five major techniques to make the findings trustworthy, which were:

> "... credible findings and interpretations (prolonged engagement, persistent observation, and triangulation); an activity that provides an external check on the inquiry process (peer debriefing); an activity aimed at refining working hypotheses as more and more information becomes available (negative case analysis); an activity that makes possible checking preliminary findings and interpretations against archived "raw data" (referential adequacy); and an activity providing for the direct test of findings and interpretations with the human sources from which they have come – the constructors of the multiple realities being studied (member checking)" (Lincoln & Guba, 1985, p. 301).

In this study, triangulation (observations, questionnaire surveys and interviews) was used to get credible findings. Literature reviews were also used to support the findings. According to Lincoln and Guba (1985), the key concept categories under the conventional definition of reliability are stability, consistency and predictability. They mentioned that reliability is normally shown by replication and it can be established when there are two or more repetitions of similar inquiry process under basic similar conditions which produce similar findings with replicable previous research. Silverman (2004), cited in Corbin and Strauss (2008), mentioned that reliability can be achieved by tabulating categories if a researcher so chooses, and being sure that all aspects of data transcribed. From literature regarding validity and reliability, Corbin and Strauss concluded that:

> "If the research findings are 'credible'; that is, believable or plausible and 'applicable' in the sense that findings can be readily used because the findings provide insight, understanding, and work with diverse populations and situations to bring about desired change, then it seems to me all this philosophic debate about 'truth', 'validity' and 'reliability' is superfluous" (Corbin & Strauss, 2008, p. 301).

There is another point of view regarding validity from a realist approach. According to Maxwell (1992), "understanding" is a more basic concept for qualitative research than validity.

Another aspect to be considered in qualitative research is the art and creativity of interpretation and the tension between rigour and creativity

(Whittemore et al., 2001). As Loftus et al. (2011) stated, "... we can give ourselves permission to open up new intellectual spaces and be creative,… what we have found and what it means" (p. 10). Considering all the above-mentioned points of view, the researcher decided to allow creativity in interpreting data by immersing herself in the data and research process; and trying to understand the underlying meanings of data rather than being too restricted by the theoretical concepts of validity and reliability discussed earlier.

3.7 Conclusion

This section highlighted the development and the administration of the pilot study, questionnaires and semi-structured interviews including both theoretical and practical issues. It also explained the reason that each method was used and the implications for later stages of the research, such as the final questionnaires and interviews. The next chapter will discuss the characteristics of the study sites and those of the respondents as well as the results from the site observations.