10 Analysing Mixed Methods Research

Introduction

As discussed in Chapter 6, mixed methods research will involve some form of combination of quantitative and qualitative techniques. It would therefore seem obvious that the nature of analysis within mixed methods will involve the combining of the processes discussed in relation to quantitative and qualitative research. To a large extent this is the case, but can be somewhat more complex than this.

Mixed methods research analysis

An important reason that mixed methods is not necessarily as straightforward as just combining quantitative and qualitative analysis is that, as noted in Chapter 6, there are several different types of mixed methods research, with Creswell (2009) suggesting there are six types, and two major groupings in this sixfold typology, and these depend on whether the methods are used *sequentially* or *concurrently* (Creswell 2009).

As outlined in Chapter 6, in the mixed method grouping 'sequential' research, one approach commences with qualitative research and is followed by a quantitative phase, and this is *sequential exploratory research* (Creswell, 2009). Research beginning with a quantitative approach, followed by a qualitative phase is referred to as *sequential explanatory research* (Creswell 2009). The third type of sequential research uses a specific theoretical perspective at the outset, which shapes the direction of the research. Here, the sequence of the two-phase research can begin with either a quantitative or a qualitative approach and Creswell terms this *sequential transformative research*.

As Chapter 6 indicates, in the second major grouping, concurrent research, there is *concurrent triangulation*, where qualitative and quantitative data are collected concurrently, and here equal weighting is given to each

of the qualitative and quantitative approaches (Creswell, 2009). However, in the *concurrent embedded approach*, there is one predominant approach, with the secondary supporting approach, (which can be quantitative or qualitative), embedded within the main approach. The last approach is the *transformative concurrent approach.* where the collection of both quantitative and qualitative data is guided by the use of a specific theory (Creswell 2009).

In relation to sequential mixed methods the process of analysis will be largely guided by whether quantitative or qualitative methodology was used first, and which came second. This will be so because it is very likely that the results of the first methodology used will have influenced precisely what was done in the second stage of research, when the other was used. Hence, if the first methodology was qualitative and made use of interviews, it is likely that the results from these interviews have helped in the second quantitative phase. If a questionnaire was used in the second phase, then interview results will probably have helped create questions that have been posed on the questionnaire that was used in the second phase of research.

Case Study 10.1 provides a discussion of the processes involved in an example where qualitative research preceded a quantitative phase. This case study is closely linked to Case Study 6.2. in Chapter 6, where the processes of design and conduct in the qualitative phase of mixed methods research are discussed and also to Case Study 9.4. where the process of analysis of the qualitative phase of the research is discussed. In Case Study 6.2 the details of the decision-making process of the exploratory qualitative research phase are discussed and there is brief reference to how this was linked to the second quantitative phase. However, the results from the first phase are not presented or discussed in Case Study 6.2. Case Study 10.1 shows how the results of the first qualitative phase were analysed and then contributed to the design of the research in the second quantitative phase.

Case Study 10.1: Tourism Destination Quality: Analysis of sequential exploratory mixed methods research

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As Case Study 6.1 indicates, the research involved was an investigation into what tourists understand by the concept of tourism destination quality (TDQ). As it was considered that little was known about tourists' understanding, in the first stage of the research a qualitative approach was used. This involved the use of in-depth interviews, which were initially pre-tested and then piloted before a total of 41 interviews were conducted until a saturation point had been reached.

The analysis of the results of the interviews using 'constant comparison' (Glaser and Straus, 1967) led to a number of attributes and dimensions associated with tourism destination quality and the step-by-step processes by which the data from the interviews was analysed is discussed in detail in Case Study 9.4. In addition, several initial categories that were generated in the analysis were reviewed and a number of them subsequently merged. However, in summary, the analysis revealed 75 attributes of destination quality which were then grouped into 12 dimensions.

Having obtained results from the first qualitative phase of research it was now possible to consider what to do in the next phase. A decision was then made to follow up the qualitative approach with a quantitative one. The use of quantitative research in the second phase was intended to provide an opportunity for findings from the qualitative phase to be assessed and evaluated, using a larger, more representative sample of the population of tourists. Also, it was believed that a quantitative approach would enable an assessment of whether there were any significant differences in responses among tourists, based on their socio-economic and travel characteristics. Therefore, a quantitative survey research approach was adopted which involved collecting data about respondents' characteristics and opinions.

As the intention was to create generalisable findings from a larger, representative group of respondents than those involved in the qualitative phase, the quantitative research technique deemed appropriate was a questionnaire survey. Therefore, the attributes obtained in the qualitative stage were turned into statements which were inserted into a printed questionnaire. These were set within a 7-point Likert-scale, where '1' was 'Strongly Disagree' and '7 'Strongly Agree'. These statements became the key stimuli as questions on the survey used in the second phase, along with closed-ended questions focusing on respondents' demographic and travel characteristics.

The questionnaire was pre-tested using students from the University Business School, then piloted at a UK shopping mall involving 40 tourists, with minor modifications to the closed-ended questions being made. The revised questionnaire was then distributed at two airports (London Luton and London Stansted) which were regarded as 'neutral' locations – i.e. not specific tourism destinations. A total of 806 questionnaires were distributed and 752 completed, usable questionniares were obtained.

The respondents' score for each of the 75 statements had to be in the range 1-7, because of the use of the 7-point Likert scale, and descriptive data analytical techniques using SPSS for Windows were employed to indicate which attributes and dimensions tourists most strongly associated with TDQ. The most commonly used descriptive statistics, mean and standard deviation scores, were calculated for each attribute and dimension, and then ranked in a descending order, based on mean

scores values. The mean score values were interpreted as follows: the lower the mean score, the less tourists were considered to associate that particular attribute, or dimension, with destination quality, whilst the higher the mean score, the greater the extent to which tourists were considered to associate it with destination quality.

Statistical data analytical techniques for comparing groups were employed to investigate a number of hypotheses that had been established on the relationships between dependent and independent variables. The dependent variable was what tourists associated with TDQ (represented by the twelve dimensions), while the independent variables were the tourist demographic factors such as age, gender and education level. The main goal for investigating these hypotheses was to establish whether there were any significant differences in tourists' responses based on their socio-economic and travel characteristics. Two types of statistical data analytical techniques for comparing groups were used. They were: (a) tests to establish whether groups were significantly different, and (b) tests to ascertain the strength of association between the dependent and independent variable. As the main questions had used a Likert Scale it was possible to conduct both parametric and non-parametric statistical analysis.

The main reason for using both types of test is that there is debate about whether self-administered questionnaires using a Likert scale, meet the requirements of parametric tests, as some researchers argue Likert scales use an 'ordinal' scale, whilst others that they use an 'interval' scale. Given the significant amount of controversy, both parametric and non-parametric tests were employed. However, parametric tests were the primary statistical techniques on which the interpretation of the results of this phase were based. Depending on the hypothesis being investigated, the following tests were used to establish whether groups were significantly different: t–test for independent samples, the Mann–Whitney U test, the one-way between-groups 'Analysis of Variance' (ANOVA) and the Kruskal Wallis test.

As the t–test and the ANOVA test can only reveal whether group differences are statistically significant, and do not provide any indication as to the magnitude of the difference, it was necessary to conduct additional tests to assess the meaningfulness of such differences. Such information is particularly important given that small differences can be statistically significant, especially where relatively large samples are involved. One way of assessing the meaningfulness of statistically significant findings is to calculate the 'effect size'. This is a set of statistics which indicate the relative magnitude of the differences between mean score values. There are a number of different 'effect size' statistics that can be computed. In the TDQ study, a frequently used 'effect size' statistic, *eta* squared, was employed to ascertain the strength of association between the dependent and independent variables.

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