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Quantitative Data Analysis

Introduction

We have already discussed the first stage of analysis. This is connected to the organisation and presentation of your results. During this first stage, you will be gaining familiarity with your results, and you may have begun to notice patterns in your data. The answers to certain questions may have stood out from the overall responses. You may have also seen differences in the answers of some respondents to the responses of others. The analysis process will involve you in finding similarities, clearly identifying patterns, confirming differences and providing explanations for your results.

The analysis process

When you are analysing in your study, you are continuing to ask questions. In the preparation of, for example, your questionnaire, you will have considered the questions to which you need to find answers in relation to your aim(s) and objectives. At the early stages of the primary research in your study, you will have prepared the questions you included on your questionnaire and may have piloted these in an attempt to reveal if they are appropriate questions, that respondents understand and to which respondents can give you useful answers.

In the analysis of your results, you will continue to ask questions, as you now need to consider, not just what your respondents have provided as answers, but what these responses actual mean. In other words, you want to find answers to the specific questions you provided, but more importantly at this stage of the dissertation, why you have received the answers that you have. This is likely to be the most difficult part of the dissertation and, you may not be surprised to find that, it is very likely to be the one that your supervisor and examiner will study particularly closely and assess very carefully. The section: 'Writing this chapter in your study' discusses this in more detail.

In the conducting of your analysis, you are attempting to explain your results (this is mainly trying to answer the question why?) so that you can get a better understanding of them. However, in attempting to understand your results the key process in which you are involved is *comparison*. Analysis is largely a process of comparison, and in your dissertation will involve:

- comparison between the answers of one respondent to each of the questions on, for example, a questionnaire;
- comparison between answers given by different respondents to each of the specific questions on the questionnaire; and
- comparison between your primary research and literature, including the research already published on the topic you are researching.

Conducting your analysis is likely to be the most important process that is required in your dissertation. The reason for this is that, through the processes of comparison outlined above, you will be attempting to answer the question 'What do my results actually mean?'

However, the approach you take to analysing your data will depend very much on the type of data you have collected. Also remember, as stated in Chapter 3, that it is always a good idea to decide on how you will analyse your data before you actually start to collect it, although this is not always done by students.

Questionnaire analysis

Probably the most common technique used by very many students, requiring quantitative analysis, is a questionnaire survey. Certainly, if your survey is made up mostly or completely by closed-ended questions, then it is feasible to analyse it in a quantitative manner. The first stage of quantitative analysis involves converting your responses into some kind of numeric form. In its simplest form this can mean for example, actual 'real' totals of respondents in a specific response category. The variety of questions on a survey means that there are a number of ways of displaying the results. The presentation of data requires the processes of summarising and organising material. This process of displaying actual figures from a summary of responses, and also converting these to percentages, has been discussed in Chapter 7 in relation to how to present your results. Likewise, the use of various diagrams (bar charts, pie charts and graphs) to present your results has also been discussed. However, as a reminder, it is important to be aware that actual numbers of respondents and responses to specific answers can be shown, although these are frequently converted to percentages, so that it

is easy to compare results for different but related questions on the survey. Using percentages can also make it possible to compare your results with results from published sources including those in your literature review. Closed-ended questions such as the 'Yes/No' type can be displayed as percentages, while more complex closed-ended questions can be displayed using bar charts and/or pie charts. Some data may be appropriate to show as line graphs, or scatter graphs.

However, the presentation and mere summarising of your results is not what is required in the analysis chapter. It may be the first stage of analysis, but there is much more to do in attempting to answer the vitally important questions: What do the results mean? The following section discusses how you can answer this.

■ What do your results mean?

Some of your questions may involve factual information, including demographic-type questions where you will have asked for information on, for example, gender, age, income levels, education and place of residence. This will certainly be the case if you have attempted to achieve a representative sample and may have used some of these demographic factors to achieve this sample. Note that some of the questions you used to gather such information may have been in the form of checklists or 'tick box' type questions, but the common factor is they were intended to gather factual information and were closed-ended. Nevertheless, whatever the format of the closed-ended question, the comparison process here involves the comparison of answers from certain types of respondents to those of others and you may notice differences between some respondents' answers. For example:

- men may give different answers compared with women;
- older respondents may give different responses compared with younger ones;
- those with high education qualifications may give different responses to those with lower qualifications;
- some nationalities may give different responses compared to other nationalities.

It is also possible that respondents from the different groups indicated above may provide very similar responses, but you will not know until you study the responses carefully. Nevertheless, it is important to be aware that the process of comparison involves looking for similarities, as well as differences, and these similarities can be just as important as differences.

■ Factual type questions

However, as suggested above, the main 'factual type' questions on your survey may produce different answers from different types of respondents. I have used, earlier in the book, the example of my research at the Sidmouth International Festival. If I return to this now, one topic I was interested was the characteristics of those who purchased season tickets and day tickets. I wanted to find out if those who had purchased a season ticket (which included free accommodation at the Festival campsite) stayed in different accommodation (i.e. the campsite) to those who purchased a day ticket, which did not include any accommodation. So, in this case, I was comparing the type of ticket held with the type of accommodation of respondents.

I was also interested, in this particular research, in other factual responses, such as the method of transport to get to the Festival. Additionally, I wanted to discover how much money attendees at the Festival spent on food, drink and entertainment. The results from the responses to these questions were displayed in various diagrammatic representations. In terms of the analysis of them, I compared responses, for example, on the type of ticket and type of accommodation, and this revealed that a great majority of those who bought season tickets did stay at the Festival campsite, while the great majority of those buying a day ticket did not stay at the Festival site.

What I was also able to do with these responses to questions on ticket type, transport and how much money was spent on food and drink and entertainment, was to compare these 'topic' related question responses, with the demographic information I had collected. Hence, if I wished, I could focus in on very specific groups, such as 'males, between the ages of 51 and 60, with the educational qualification of a post-graduate qualification, with a household annual income of between '£50,000 – £60,000' to investigate if they had bought a season ticket or a day ticket. For this same group, I could also find out how much they had spent on, for example, food and drink or entertainment. There were many other groups (such as 'women, aged 31-40, with at least an undergraduate qualification and an annual household income of £21,000-30,000') with which I could compare the responses of with the group of males referred to above. There were, of course, yet other groups that could be compared with each other. This comparison of results, using demographic information and my main themes, was a major part of how I analysed my questionnaire responses.

When I analysed the data in this way, I could make some claims about my respondents and why they did what they had informed me about on their