

## RESEARCH METHODOLOGY

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### 5.1 INTRODUCTION

The main objective of the study was to establish the brand equity of the provincial, regional and national rugby teams of South Africa. Primary research played a significant role in achieving this objective as very little secondary information regarding brand equity of these teams is available. The secondary objectives of the study, which constituted the secondary research dimension, included the following:

- To investigate South African rugby supporters' brand awareness of the various South African rugby teams
- To examine South African rugby supporters' brand associations with South African rugby teams
- To analyse South African rugby supporters' brand loyalty to South African rugby teams
- To examine South African rugby supporters' perceived quality of the South African rugby teams
- To identify future areas of research

The previous chapters dealt with the South African rugby industry, sports marketing and the aspect of branding and brand equity. The focus of this chapter is on the research methodology of the study. Marketing research will be discussed followed by an examination of the marketing research process, and how each of the steps in the process applies to this study.

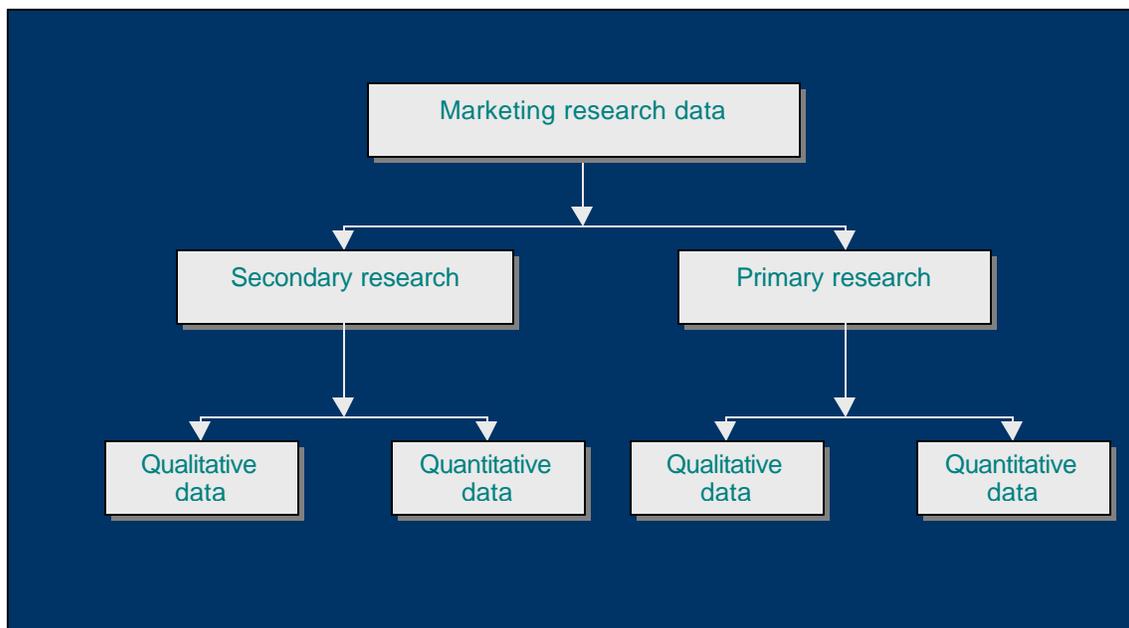
## **5.2 MARKETING RESEARCH**

Marketing research can be defined as the systematic and objective process of planning, gathering, analysing and reporting data which can be used to solve a specific problem or opportunity facing an organisation (Wegner, 2000:6). The information obtained by conducting marketing research can be used to identify and define marketing opportunities and problems, generate, refine and evaluate marketing actions and monitor marketing performance (McDaniel & Gates, 2001: 5). When conducting marketing research, researchers gather data which are then analysed and interpreted. Data are raw, unanalysed facts. They are first-hand responses obtained to the subject of investigation, which may include statistical figures and sales records. It is only when the data have been processed that they become information (Hair, Bush & Ortinau, 2000:32).

Data can be classified as either secondary or primary, and may also be either quantitative or qualitative. Secondary data comprise information that has already been collected, assembled and interpreted at least once for some or other specific situation as seen in chapters 2, 3 and 4 of this thesis. Primary

data, on the other hand, refer to first-hand information, facts or estimates that are derived through a formalised research process for a specific current problem or opportunity situation (Hair *et al.*, 2000:663 & 661). According to Steyn *et al.* (1999:7) there are two types of secondary and primary data, namely quantitative and qualitative data. Quantitative data refer to studies that use mathematical analysis which can reveal statistically significant differences, whereas qualitative data are research data that are not subject to quantification or quantitative analysis (McDaniel & Gates, 2001:98). The classification of marketing research data is illustrated in figure 5.1.

**Figure 5.1 Classification of research data**



**Source:** Adapted from Malhotra (2004:137)

Marketing research provides marketing managers with accurate and relevant information for marketing decision making. Marketing research plays the following three functional roles in marketing decision making (Cant, 2003:9):

- (1) Its descriptive function entails gathering and presenting statements and facts.
- (2) Its diagnostic function refers to the explanation of data or actions.
- (3) Its predictive function refers to the specification of how to use descriptive and diagnostic research to predict the results of planned marketing decisions. In other words, through marketing research, researchers can describe a target market and make projections about how it will react to certain product offerings.

Marketing research is conducted by following a series of carefully devised steps designed to attain a specific objective (Wegner, 2000:5). This is referred to as the marketing research process and will be discussed in the next section.

### **5.3 THE MARKETING RESEARCH PROCESS**

As stated earlier, marketing research is a systematic and objective process of designing, collecting, analysing and reporting data relevant to a specific marketing situation. There are certain steps followed in the marketing research process, and this provides a systematic and planned approach to the research study, which ensures that all aspects of the process are consistent, and should be dealt with as an integrated whole (Martins, Loubser & Van Wyk, 1996:80). The marketing research process is therefore formally defined as a sequence of steps in the systematic collection and analysis of marketing data (Malhotra, 2004:9) and is depicted in figure 5.2.

**Figure 5.2 The marketing research process**



**Source:** Adapted from Cant (2003:36)

Each of these steps will now be discussed in detail.

### **5.2.1 STEP 1: IDENTIFYING AND FORMULATING THE PROBLEM OR OPPORTUNITY**

The marketing research process begins when a marketing problem or opportunity is identified (Malhotra, 2004:9). A marketing problem refers to

situations that might present real problems to marketing decisions makers, and a marketing opportunity refers to any favourable or unexploited situation, in one or more of the marketing environments, that decision makers can utilise proactively to the organisation's advantage.

Identifying a marketing problem or opportunity is probably the most important stage in the research process (Wegner, 2000:16). If the problem or opportunity is not properly defined, the data gathered may result in findings that do not answer the research question(s), and therefore lead to the research problem not being solved or the marketing opportunity not being exploited. The marketing problem or opportunity should therefore be clearly defined and formulated to ensure that the results obtained through research are relevant. Research should not only generate the kinds of answers needed, but should also do so efficiently.

In chapter 1, exploratory research was conducted to fully identify and formulate the research opportunity, which is to determine the brand equity of the national, regional and national rugby teams of South Africa.

### **5.2.2 STEP 2: FORMULATING THE RESEARCH OBJECTIVES**

A marketing research objective refers to the specific information needed to solve a marketing research problem (Cant, 2003:35). Researchers should state all the objectives in terms of the precise information needed. Since the formulation of research objectives is a crucial part of the research process,

researchers should ensure that they specify the exact information they require. The research question should therefore be stated as specifically as possible to support the purpose of the study.

The purpose of this study was to determine the brand equity of the provincial, regional and national rugby teams of South Africa. Research questions will provide researchers with the necessary information to solve the research problem or opportunity. Hence the research questions for this study were as follows:

- What is the brand awareness of the provincial, regional and national rugby teams of South Africa?
- What is the brand association of the provincial, regional and national rugby teams of South Africa?
- What is the brand loyalty of the provincial, regional and national rugby teams of South Africa?
- What is the perceived brand quality of the provincial, regional and national rugby teams of South Africa?

### **5.2.3 STEP 3: DEVELOPING A RESEARCH DESIGN**

A research design is a preliminary plan for conducting research. In this phase of the marketing research process, a research plan is developed for the research study. The format of the plan depends on the nature of the research the researcher is involved in. The research objectives formulated in the

previous stage of the process should therefore be translated into the specific data requirements. This means that the researcher should specify what information is required from the research and from what sources it will be obtained.

Once researchers have established the information required, they need to consider possible sources of data, and have two options when collecting data, namely secondary data and primary data. Secondary data involve information that already exists, while primary data, refer to primary information that has been collected for a specific purpose (Hair *et al.*, 2000:39). Researchers should always begin their research by exploiting secondary research sources.

#### **5.2.4 STEP 4: CONDUCTING SECONDARY RESEARCH**

As mentioned earlier, secondary research already exists in the sense that it was collected for another research purpose. When a marketing problem or opportunity arises, researchers should always begin with secondary research which can be gathered by consulting internal or external sources. Internal secondary data sources may include sales invoices, customer complaints, and so on. External secondary data sources may include libraries, the Internet, books and periodicals, government, media, trade associations, universities, institutes and banks, and are reflected in the discussion of chapters 2, 3 and 4. For purposes of this study, the secondary sources are collated in the bibliography at the end of the thesis.

If secondary research is insufficient to answer the research questions, researchers should not automatically conduct primary research, because it is usually extremely costly and researchers should estimate the value of the information that could be obtained. If the benefit gained by the research is greater than the cost involved, researchers should pursue primary research. However, if the cost is greater than the benefit sought, the researchers should reassess the necessity for primary research and consider using only secondary data. In this study, secondary research was undertaken to establish the brand equity of the provincial, regional and national rugby teams of South Africa. Various secondary information sources were consulted, but because the findings were insufficient to answer the research questions, it was necessary to conduct primary research.

### **5.2.5 STEP 5: SELECTING A PRIMARY RESEARCH METHOD**

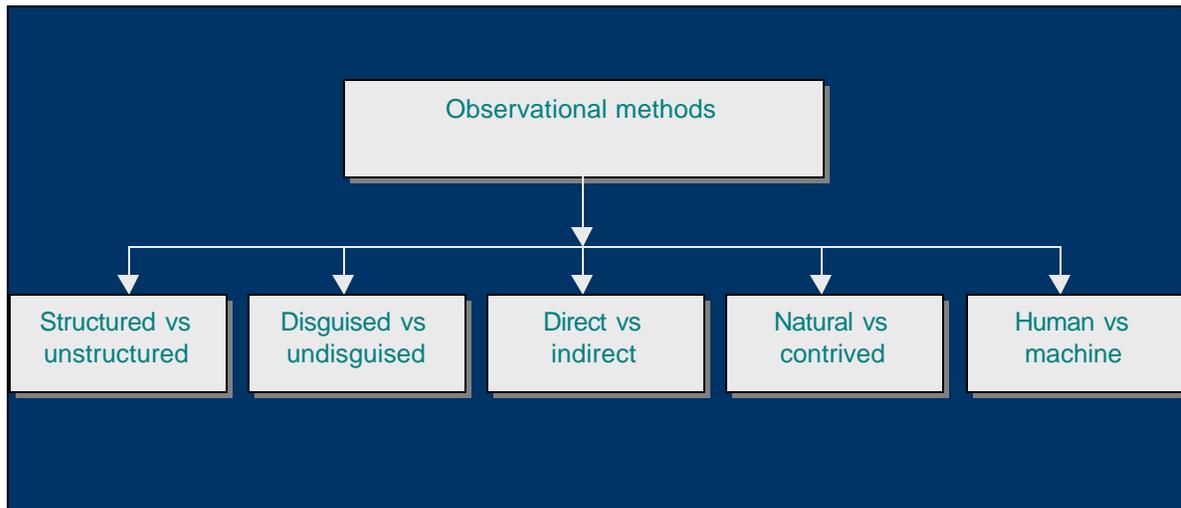
As mentioned previously, primary data are data gathered for the first time. Researchers can draw on three primary research methods, namely observational, experimental and survey research (Malhotra, 2004:187). No particular method is the best in all cases. Depending on the problem or opportunity, one, two or many methods may be appropriate. The decision to use a specific method depends on the problem or opportunity, as well as the resources available to the researchers.

The three primary research methods, observational, experimental and survey research, will now be discussed in turn.

### 5.2.5.1 OBSERVATIONAL RESEARCH

Observational research is descriptive research that monitors respondents' action without direct interaction (Cant, 2003:46). In other words, researchers use either a machine or a person to observe people and situations. As illustrated in figure 5.3, observational research may be structured or unstructured, disguised or undisguised, direct or indirect and natural or contrived. Observational research, for example, is used to determine how customers move through a store, or what products sell best.

**Figure 5.3 Observational research**



**Source:** Adapted from Malhotra (2004:187)

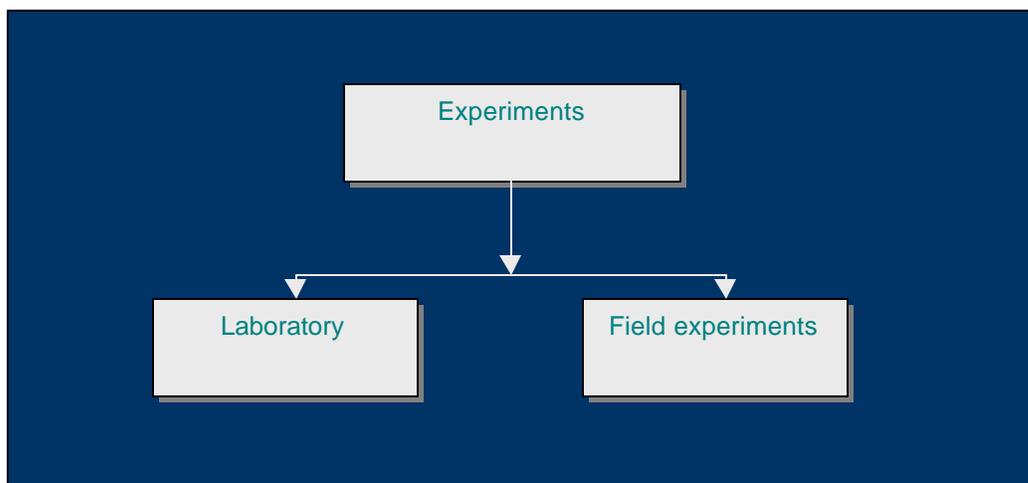
According to McDaniel and Gates (2001:136), observation as a primary research method has various advantages. Firstly, the researcher can observe what people are doing, rather than rely on what they say, which will reduce interviewer and respondent errors. Secondly, the researcher is not subject to

problems associated with the respondent's willingness and ability to answer questions. One of the disadvantages of observational research is that usually only the respondent's behaviour and physical personal characteristics can be examined while the research is conducted, making it unsuitable for the purpose of this study.

### 5.2.5.2 EXPERIMENTAL RESEARCH

Experimental research measures causality (Cant, 2003:46). The researcher changes one or more variables and the effect of the change(s) on another variable is observed. In other words, researchers test something under controlled conditions. As indicated in figure 5.4, this can either be done in a laboratory or field research can be conducted. Experimental research is used when an organisation, say, increases its advertising to determine whether its sales will also increase. As the current research is not interested in manipulating any variables, experimental research was not suitable for this study.

**Figure 5.4 Classification of experiments**

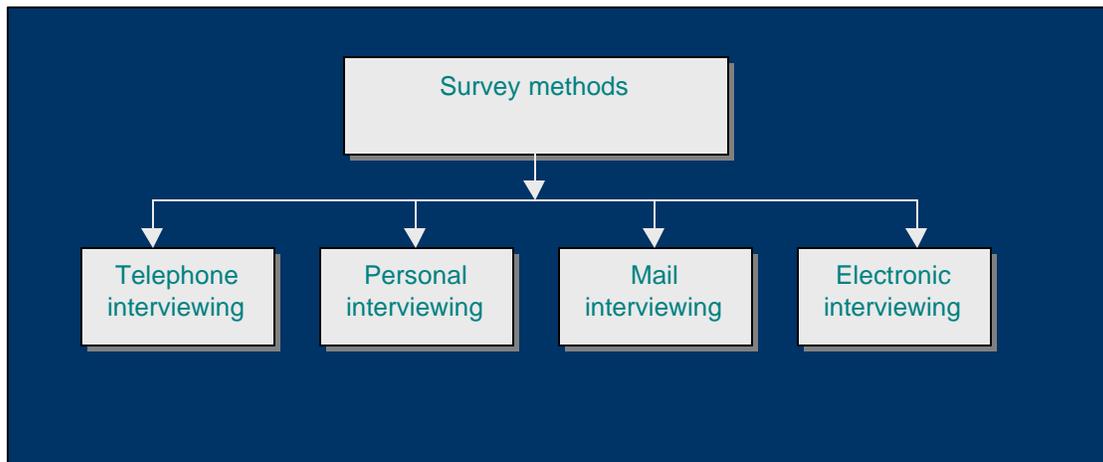


**Source:** Adapted from McDaniel & Gates (2001: 223)

### 5.2.5.3 SURVEY RESEARCH

Survey is a form of marketing research in which an interviewer interacts with respondents to obtain facts, opinions and attitudes (McDaniel & Gates, 2001:30). Survey research, as illustrated in figure 5.5, can be conducted by researchers moving from door-to-door, intercepting respondents in a shopping centre, arranging personal interviews, telephoning respondents, mailing questionnaires or using the Internet.

**Figure 5.5 Classification of survey methods**



**Source:** Adapted from Malhotra (2004:170)

The population of this study constituted all South African rugby supporters. In order to reach this geographically diverse population, while considering time and money constraints, it was decided to use telephone interviews. Telephone interviews involve contacting the respondents via phone to conduct the interview. This primary research method combines many of the advantages

of personal interviews and mailed surveys, at the same time overcoming many of the disadvantages of these two approaches (Wegner, 2000:76). Another reason why this method was selected was the elimination of interviewer travel costs (McDaniel & Gates, 2001:185).

In South Africa, only a limited amount of research has been done on sport support profiles of South Africans. No profile of rugby supporters was available and a total random sampling technique was followed for this research study. The aim of this study was to determine the brand equity of the various South African rugby teams, and not to provide a profile of rugby supporters. Therefore, no quotas on, for example race, gender and age of respondents were applied in conducting the research.

Once a primary research method has been selected, researchers should decide whether the information will be gathered via a questionnaire. The design of a questionnaire is influenced by the type of research being conducted (exploratory, descriptive or casual), and the way in which it is conducted (observation, experiments or survey research). Since telephone interviews were conducted in this study, it was necessary to design a questionnaire (see annexure A).

Both close-ended and open-ended questions were used in the questionnaire (see annexure A). Open-ended questions ask respondents to reply in their own words, whereas the close-ended questions asked respondents to choose between two or more answers (McDaniel & Gates, 2001:295 & 298). Some of the close-ended questions included noncomparitive scales such as the Likert

scale (Cant, 2003:112-113). The Likert scale shows a series of attitudes toward an object, which are assigned numerical values ranging from favourable to unfavourable (McDaniel & Gates, 2001:274).

The aim of this study was to determine the brand equity of the provincial, regional and national rugby teams of South Africa, which could only be determined by measuring the perceptions, attitudes, preferences and other relevant characteristics of South African rugby supporters. The measurement scales used to determine the brand equity of the various teams were as follows (Malhotra, 2004: 236-237):

- *Nominal scales.* A nominal scale uses numbers to identify and classify objects (eg male or female).
- *Ordinal scale.* In an ordinal scale, the numbers assigned indicate the relative positions of the objects but not the magnitude of differences between them (eg preference rankings).
- *Interval scale.* In an interval scale, the differences between objects can be compared, and the zero point is arbitrary (eg attitudes).
- *Ratio scale.* In ratio scales, the zero point is fixed and the ratio of scale values can be computed (eg costs).

During the development of the questionnaire, care was taken to ensure that the wording of the questions was clear, simple and easy for respondents to understand, without compromising the objectives of the study. Table 5.1 provides a summary of the questionnaire used in this study, as well as the objective of each question and the relevant measurement scales used.

**Table 5.1 Summary of questionnaire**

<b>Question</b>	<b>Objective</b>	<b>Scale</b>
1 To what extent are you a rugby supporter?	Determine extent of rugby support.	Interval
2 Which South African Super 12 rugby teams are you most aware of?	Determine unaided awareness of Super 12 rugby brands.	Ordinal
3 Which South African Currie Cup rugby teams are you most aware of?	Determine unaided awareness of Currie Cup rugby brands.	Ordinal
4 Which national rugby teams are you most aware of?	Determine unaided awareness of national rugby brands.	Ordinal
5 What is your trust and confidence in the teams mentioned in questions 2 to 4?	Determine perceived quality of various brands mentioned.	Interval
6 Which South African rugby team do you personally support?	Determine brand popularity.	Nominal
7 How long have you been a (team in question 6) supporter?	Control question on support.	Ratio
8 Which South African rugby team do you think is the most admired in South Africa?	Determine brand association.	Nominal
9 Do you know what the team colour(s) of the (teams mentioned in questions 2 to 4) is?	Control question on awareness.	Nominal
10 Do you know what the logo of the (teams mentioned in questions 2 to 4) is?	Control question on awareness.	Nominal
11 Out of every 10 games (team in question 6) plays, how many do you watch?	Determine support level.	Ratio
12 Out of every 10 games (team in question 6) plays, how many do you watch live at the stadium?	Determine support level.	Ratio
13 What are you prepared to pay for a ticket to watch (team in question 6) play?	Determine price premium.	Ratio
14 What are you prepared to pay for a (team in question 6) rugby jersey?	Determine price premium.	Ratio
15 What is the first thing that comes to mind when you think of (team in question 6)?	Determine brand association.	Nominal
16 Complete the sentence: The (team in question 6) are ... .	Determine brand association.	Nominal
17 What is most unique about the (team in question 6)?	Determine brand association.	Nominal
18 Questions 18.1, 18.3, 18.5, 18.7, 18.9 18.10 and 18.11: Questions about respondent's attitude towards South African rugby industry.	Determine attitudes towards South African rugby industry.	Interval
I am proud to be a South African rugby supporter. (18.2)	Determine organisational brand association.	Interval
I will recommend my team (team in question 6) to anyone to support? (18.4)	Determine brand value.	Interval
I am very loyal to the (team in question 6). (18.6)	Determine brand loyalty.	Interval
I will probably still be supporting (team in question 6) in two years' time. (18.8)	Determine brand loyalty.	Interval
19 Gender (by observation).	Demographic information.	Nominal
20 Race (by observation when possible).	Demographic information.	Nominal
21 Age	Demographic information.	Ratio

An essential step prior to collecting data, was to pilot the draft questionnaire and revise it if necessary. Pilot testing of questionnaires identifies shortcomings which can be resolved before the full study commences (Wegner, 2000:95). The questionnaire was pilot tested amongst 30 respondents and revised where applicable.

Although a screening question was used to screen for appropriate respondents, it was still necessary to first determine the sample frame. The research frame of the study is discussed next.

### **5.2.6 STEP 6: DETERMINING THE RESEARCH FRAME**

A research frame refers to all the elements from which information can be gathered to solve a marketing problem or opportunity. When conducting primary research, it is important for researchers to select respondents who are representative of all the elements (the total group of people) from whom the information is needed. This is known as the population or universe (McDaniel & Gates, 2001:328).

Depending on the problem or opportunity under investigation, the researcher will either conduct the research using a census or a sample. In a census, data are obtained from or about every member of the population of interest. A sample refers to a subset of the population of interest. Because census research is costly, researchers usually draw a sample from the population in which they are interested (Hair *et al.*, 2000:39). In this study, a sample was drawn, by firstly, determining who was to be sampled, how large a sample was needed, and finally, how the sampling units were to be selected.

### **5.2.6.1 SAMPLE FRAME**

When determining a sample, it is essential for a researcher to select sample units or elements (respondents) that will represent the population of interest. A sample frame is a list of population units or elements from which one can select units or elements to be sampled (Diamantopoulos & Schlegelmilch, 2002:14). For the purposes of this study, the telephone directories (supporters database) of the town or city headquarters of the 14 rugby provinces served as a sample frame for the population. This database consists of the names, addresses and contact details of potential rugby supporters by provinces.

The sample elements (respondents) or target population of this research include all rugby supporters in South Africa. For the purposes of this study, only adults aged 16 years and older were included in the research.

### **5.2.6.2 SAMPLE SIZE**

Sample size refers to how many respondents should be included in the investigation. This is an important consideration for researchers. The size of the sample drawn affects the quality and generalisation of the data. If the sample is too small, the data obtained may not be representative. However, according to Cant (2003:48), issues of resource availability in terms of time, money and personnel, also have an impact on the size of the sample. Factors such as nonresponse also need to be incorporated into the determination of sample size, as well the value of the information provided by different size samples in relation to their costs.

For the purposes of this study, the Bayesian approach to sample size determination was decided on. This approach provides a formal procedure for selecting the sample size that maximises the difference between the expected payoff of sample information and the estimated cost of sampling (Diamantopoulos & Schlegelmilch, 2002:17). Using this approach, a total sample of 50 respondents in each of Durban, Pretoria, Cape Town and Johannesburg and 30 respondents in each of the other smaller cities and towns were ultimately included in the study (n = 500). Table 5.2 shows the final sample size by rugby region.

**Table 5.2 Number of respondents selected in each rugby province**

	Sample size
Potchefstroom	30
Port Elizabeth	30
Wellington	30
Cape Town	50
Johannesburg	50
Witbank	30
Springs	30
East London	30
Pretoria	50
Bloemfontein	30
Kimberly	30
Durban	50
George	30
Welkom	30
Total	500

### 5.2.6.3 SELECTING THE SAMPLING METHOD

Researchers have two options when selecting a sample, namely probability sampling and nonprobability sampling. In the former, all the subsets of the population have a known nonzero chance of being selected, whereas in the latter, certain subsets of the population have little or no chance of being selected for the sample (Blanche & Durrheim, 2002:276-281). Probability sampling methods include simple random sampling, systematic sampling, stratified sampling and cluster sampling (Cant, 2003:49). Nonprobability sampling methods include convenience sampling, judgement sampling, quota sampling, snowball sampling and Internet sampling (McDaniel & Gates, 2001:347-350). This study used probability sampling. The selection of this sampling methodology is based on the availability of a sample frame and allows for calculation of sample error. More specifically a multistage sampling technique was applied to finally select the sample elements (respondents). The stages used to sample the population are shown below:

- **Stage 1**

With the target population being rugby supporters located across South Africa it was decided that a total random selection of respondents might result in some of the 14 towns or cities (being the headquarters of the 14 rugby unions under survey) not being included or not adequately represented in the sample.

South Africa was geographically divided into the 14 rugby provinces and the town or city where the specific rugby union was based (ie the headquarter, as discussed in chapter 2) was chosen as a stratum. The rugby unions based in each town or city were then listed. For example, the Leopards in Potchefstroom, Natal Sharks in Durban, Blue Bulls in Pretoria, and so forth.

- **Stage 2**

The potential sample units (households) per union were listed. For this purpose local telephone directories were used to initially select at least 30 sample units per rugby union systematically. According to systematic sampling, sample units are selected at regular intervals. A sample interval was calculated by applying the formula  $N/n$ , where  $N$  = total population and  $n$  = sample size ( $n = 50$  in four largest cities, and  $n = 30$  in smaller towns and cities). This approach allowed each sample unit an equal chance of being selected. Within each of the strata, the respondents were randomly selected by means of systematic random selection where one name from every  $n^{\text{th}}$  page was chosen.

The selection of the pages from the directories differed for each stratum because it was calculated by dividing the total number of pages by the sample size for that stratum. For example, the Pretoria telephone directory has 712 pages, divided by 50, equals 14. This implies that every 14<sup>th</sup> page in the telephone directory was selected. The household on each

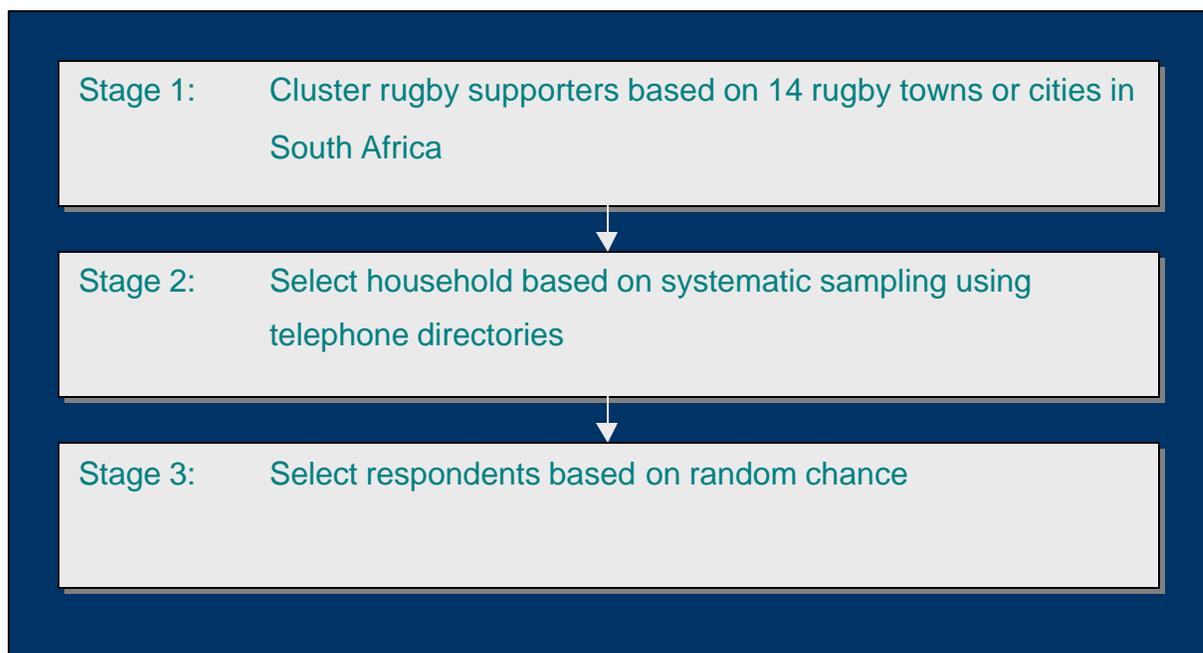
of these pages was selected randomly, by folding the selected pages in half and then choosing the name in the middle of the page in the first column. The first column was selected by means of simple random sampling.

- **Stage 3**

The sample elements (respondents) were finally selected by random chance. Once a sample unit (household) was contacted, any rugby supporter in the household was selected for interviewing purposes.

This process is illustrated in figure 5.6 below.

**Figure 5.6 Multistage sampling process followed in this study**





## 5.2.7 STEP 7: GATHERING THE DATA

In this stage of the research process, the researchers collect the data. The survey methodology is finally put into practice and the fieldworkers complete the research instruments.

Although fieldworkers are trained and supervised while collecting data, errors may still occur. These are referred to as non-sampling errors. Non-sampling errors are attributable to factors other than sampling errors, which may include the following (Cant, 2003:50):

- selecting the wrong sample elements to interview
- securing subjects who subsequently refuse to participate or are not at home when the interviewer arrives/phones
- interviewing subjects who supply wrong information intentionally
- hiring interviewers who cheat and fill out fictitious survey questionnaires

The primary data collected in this study were gathered over a period of four weeks by contract fieldworkers, managed by *Complete Statistical Solutions* CC. The telephone conversation lasted from seven to 20 minutes. All the questions were properly understood by the respondents. Some minor changes were made to the questionnaire after the pilot study, thus ensuring that the responses provided could be captured. (See annexure A for a copy of the questionnaire.)

Once the questionnaire has been finalised, a total number of 12 interviewers were assigned to telephone the selected respondents. To minimise sampling errors, 20% of the number of questionnaires that each interviewer completed, were back-checked. Back-checking involves telephoning respondents again and verifying that they had been interviewed and confirming information on one or two of the questions.

Fieldworkers phoned after working hours, and had difficulty in locating respondents that were willing to participate in the study. Furthermore, respondents that were in fact willing to participate in the study were often not suitable for the survey because they were not interested in rugby. Consequently, a total of 4 122 telephone calls were made, resulting in 511 interviews. The fieldwork was completed over a period of approximately four weeks.

### **5.2.8 STEP 8: PROCESSING THE DATA**

During this phase of the marketing research process, the data collected during the primary research phase need to be converted into a format that will answer marketing management's questions. The data structures should therefore be transformed into information that can be communicated to management.

When data are processed, they are first prepared and then analysed. Data preparation is the process of extracting data from questionnaires so that they

can be read and manipulated by computer software. During data preparation, the data are validated, edited, coded, entered and then cleaned. Essentially, number codes are assigned to represent each response to each question. These numerical codes are entered into the computer and analysed. SPSS 11.0 was used to perform all the analyses. After validating and editing each questionnaire, the data were directly entered into SPSS.

Since nominal, ordinal, interval and ratio data were used in this study, various statistical calculations were performed (Malhotra, 2004:237). Table 5.3 indicates the applicable statistical test for each of the measurement scales used.

**Table 5.3 Relevant statistical tests**

Measurement scale	Permissible statistics	
	<i>Descriptive</i>	<i>Inferential</i>
Nominal scales	Frequencies, mode	Chi-square
Ordinal scales	Percentile, median	Rank-order correlation, ANOVA
Interval scales	Range, mean, standard deviation	T-tests, ANOVA, regression factor analysis
Ratio scales	Geometric mean	Coefficient of variation

**Source:** Adapted from Malhotra (2004:237)

As indicated in table 5.3, researchers have two options when analysing data. Descriptive statistics are used to describe data, and inferential statistics are

used to determine significance levels. Descriptive statistics will be discussed next.

#### **5.2.8.1 DESCRIPTIVE STATISTICS**

Descriptive statistics describe the characteristics of the sample. As indicated in table 5.3, descriptive statistics use frequencies, means, modes, medians and standard deviations to summarise the characteristics of large sets of data. In this study, the following descriptive statistics were used:

- *Frequencies*. Frequencies refer to the actual number or percentage of responses to a certain question (Martins *et al.*, 1996:305). These are presented in this study by means of bar charts or tables.
- *Cross-tabulation*. Cross-tabulation is the process of simultaneously treating (or counting) two or more variables in the study. This process categorises the number of respondents who have responded to two or more questions consecutively (Hair *et al.*, 2000: 652).
- *Mean*. A mean is the sum of the values for all observations of a variable divided by the number of observations (McDaniel & Gates, 2001:410). It measures the central tendency – in other words, the average response of respondents.
- *Standard deviation*. The standard deviation is the measure of the average dispersion of the values in a set of responses around their mean (Malhotra, 2004:431).

### 5.2.8.2 INFERENCE STATISTICS

Cozby (1998:142) states that inferential statistics allow researchers to make inferences about the true differences in the population on the basis of the sample data. A basic tenet of statistical inference is that it is possible for numbers to be different in a mathematical sense but not significantly different in a statistical sense (McDaniel & Gates, 2001:413). Statistical differences are defined by the selected significance level. The smaller the chosen significance value, the smaller the degree of risk that the research will be willing to accept. The significance levels of 0,05 and 0,01 are used by most researchers when performing statistical tests. For the purpose of this research, the significance level of 0,05 was considered sufficient.

A selected significance level should always be compared with the p-value statistic. The p-value is the probability that the test statistic of the possible outcome of the research question, is equal to the observed value of the test statistic, or is more extreme in the direction suggested by the alternative outcome (Steyn *et al.*, 1999:420). The lower the p-value, the stronger the evidence will be against the stated statistical finding (Diamantopoulos & Schlegelmilch, 2002:146).

As indicated in table 5.3, when testing statistical significance, the appropriate test must be used because not all tests are equally relevant. Hence the following significant tests were used in this study:

- ***Chi-square***

If a relatively large number of observations of a stochastic variable are represented in a one-way contingency table, chi-square is used to decide whether the frequency distribution can be reconciled with an assumed theoretical distribution (Steyn *et al.*, 1999:549). The chi-square ( $\chi^2$ ) statistical test tests statistical differences by examining patterns of responses within and between categorical random variables such as (Wegner, 2000: 550):

- tests for independence of association between two categorical variables
- tests for equality of proportions between two or more populations
- goodness-of-fit tests

- ***T-test for independent means***

A t-test is commonly used to measure whether the difference between two means is significant (Salkind, 2000:173). The t-test is appropriate if one wishes to test significance of the mean of a set (or sets) of numerical data (Malhotra, 2004:448). T-tests are appropriate for not only smaller sample sizes, but also larger sample sizes, where  $n > 30$  (McLaughlin, 1999).

- ***Analysis of variance***

Analysis of variance (ANOVA) is used for examining the differences in the mean values of the dependent variable associated with the effect of the controlled independent variables, after taking into account the influence of the uncontrolled independent variables (Malhotra, 2004:469). ANOVA test calculates both an F-value, and a p-value. A p-value of 0,05 or less is considered significant.

- ***Correlation analysis***

Correlation analysis is the analysis of the degree to which changes in one variable are associated with changes in another (McDaniel & Gates, 2001:448). In other words, it determines whether a linear relationship exists between variables. The most frequently used measure of relationships is the Pearson product moment correlation (Salkind, 1994:205). This technique is usually used when two or more scales measure on an interval or ratio scale.

The descriptive measure coefficient of correlation ( $r$ ) is a measure of the degree of association between two variables and indicates the estimated extent to which the changes in one variable are associated with changes in the other on a range of +1,00 to -1,00. A correlation of +1,00 indicates a perfect positive relationship, a correlation of 0.00 indicates no relationship, and a correlation of -1,00, a perfect negative relationship. In the case of a positive correlation between two variables, a higher score on one variable

tends to indicate a higher score on the other. If the correlation is negative, a higher score on one variable tends to indicate a lower score on the second.

The aim of this study was to determine the brand equity of the provincial, regional and national rugby teams of South Africa. By determining the awareness of, associations with, loyalty to and perceived quality of the various teams, brand equity can be determined. This will be the focus of the next section.

### **5.2.8.3 DETERMINATION OF BRAND EQUITY**

Brand equity can be measured in a number of ways (Walker, 2002:2; Aaker, 1996:319; Duffy, 2003:38). Methods range from consumer-driven brand diagnostic tools (loyalty, repeat purchase intent, etc) to financially driven brand valuation techniques, which include the net present value of future cash flows derived from the brand and comparable brands that have been sold (Gregg, 2003:12). Since the Finance Director of SA Rugby was reluctant to provide financial information (ie net cash flow, expected future cash flows, etc) on their rugby brands for the purposes of this study (Bloom, 2004), Aaker's Brand Equity Ten Model was used to determine the brand equity of the provincial, regional and national rugby teams of South Africa.

Aaker's Brand Equity Ten Model attempts to measure brand equity by grouping various brand equity measures into five categories (see figure 5.7). The first four categories represent customers' perceptions of the brand along

the four dimensions of brand equity (ie brand awareness, brand association, brand loyalty and perceived brand quality), while the fifth category includes two sets of market behaviour measures (Aaker, 1996:319):

**Figure 5.7 Aaker's Brand Equity Ten Model**

<b>Brand loyalty measures</b>	
1.	Price premium
2.	Satisfaction/loyalty
<b>Perceived quality</b>	
3.	Perceived quality
4.	Leadership/popularity
<b>Associations/differentiation measures</b>	
5.	Perceived value
6.	Brand personality
7.	Organisational associations
<b>Awareness measures</b>	
8.	Brand awareness
<b>Market behaviour measures</b>	
9.	Market share
10.	Market price

By determining an index for each of the above-mentioned categories (Gregg, 2003: 14) brand equity can thus be determined by:

$$\text{Brand equity} = \sum x$$

where

$$x = \{x_1, x_2, \dots, x_{10}\}$$

and

$x_1$  = Price premium. The amount customers are willing to pay above or below the average price for a product.

$x_2$  = Satisfaction/loyalty. Customers' willingness to stick to a specific brand.

$x_3$  = Perceived quality.

$x_4$  = Leadership/popularity of a brand.

$x_5$  = Perceived value.

$x_6$  = Brand personality. Admirable characteristic of brand.

$x_7$  = Organisational associations.

$x_8$  = Brand awareness.

$x_9$  = Market share. The performance of a brand as measured by market share.

$x_{10}$  = Market price. The average price at which the brand was sold during a specific period.

Although there are a number of ways to measure brand equity in goods and services marketing, there have been few published attempts to look at the brand equity of sports teams (Shank, 2002:271). Hence, for the purposes of this study, the brand equity of the provincial, regional and national rugby teams of South Africa was determined by applying Aaker's Brand Equity Ten Model to these rugby teams. It was assumed for this study, that each component was equally important and therefore each component in the model was allocated a weight of one point, totalling 10 points. Translated to the survey instrument the following summary could be given:

Thus:

$$\text{Brand equity} = x$$

where

$$x = a \{x_1, x_2, \dots, x_{10}\}$$

and

$x_1$  = Price premium. The relative amount supporters are willing to pay for a rugby ticket<sup>1</sup> (*question 13*).

$x_2$  = Loyalty. Likelihood of supporters to still support their team in two years time (*question 18.8*).

$x_3$  = Perceived quality. The level of trust and confidence that supporters have in the various rugby teams<sup>2</sup> (*question 5*).

$x_4$  = Popularity. Level of support that each team has (*question 6*).

$x_5$  = Perceived value. Level to which supporters will recommend their team to someone else to support<sup>2</sup> (*question 18.4*).

$x_6$  = Brand personality. Admirable qualities of the team (*question 8*).

$x_7$  = Organisational associations. Level to which supporters are proud to be a South African rugby supporter<sup>2</sup> (*question 18.2*).

$x_8$  = Brand awareness. Level of unaided awareness of supporters (*questions 2, 3 and 4*).

$x_9$  = Market share. Ticket sales of rugby teams for the 2003 rugby season (*section 2.3*).

$x_{10}$  = Market price. Relative price of a ticket<sup>3</sup> (*section 3.5.2.3*).

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<sup>1</sup> Prices calculated as a proportion of the highest price supporters are willing to pay.

<sup>2</sup> Responses expressed as a percentage, where highest point on a five-point scale = 100.

<sup>3</sup> Prices calculated as a proportion of the highest ticket.

To ensure that the findings of the above-mentioned model are trustworthy, the responses obtained from the questionnaire must be reliable and valid. These factors will be discussed in the next section.

#### **5.2.8.4 RELIABILITY AND VALIDITY**

According to Salkind (2000:105), reliability and validity are the hallmarks of good measurement and the key to assessing the trustworthiness of any research study. Thus, for the survey results to be trustworthy, it is vital for the data to be reliable and the measuring instrument valid. These aspects will now be discussed.

- ***Reliability***

Reliability is the extent to which a scale produces consistent results if repeated measurements are made on the characteristic (Malhotra, 2004:267). In other words, reliability tests whether a questionnaire will measure the same phenomenon more than once and result in the same outcome. Various procedures can be performed to ensure reliability. These include the following (McDaniel & Gates, 2001:255):

- *Test-retest reliability.* This reliability measure uses the same instrument a second time under relatively similar conditions. The correlation between the answers to the first and second tests is then examined.

- *Equivalent form reliability.* In this approach, two instruments are used which are as similar as possible in order to measure the same object during the same time period.
- *Internal consistency reliability.* This approach compares different samples of items being used to measure a phenomenon during the same time period. This can be done by means of a split-half reliability test or coefficient alpha (also called Cronbach's alpha).

In this study, the internal consistency reliability method was used to determine the reliability of the scale questions (questions 5 & 18), by determining the coefficient alpha. This coefficient ranges from 0 to 1, and may be used to describe the reliability of factors extracted from dichotomous and/or multi-point formatted questionnaires or scales (Malhotra, 2004:268). The higher the coefficient alpha is, the more reliable the test will be. A value of 0,6 or less generally indicates unsatisfactory internal consistency reliability (Nunnally, 1978). In this study, the coefficient alpha value across the entire set of questions is 0,72, which indicates an acceptably high internal reliability consistency.

- ***Validity***

The extent to which a particular measure is free from both systematic and random error indicates the validity of the measure (Diamantopoulos & Schlegelmilch, 2002:33). Validity can be defined as the extent to which differences in observed scale scores reflect true differences between objects

on the characteristics being measured, rather than systematic or random errors (Malhotra, 2004:269). In other words, validity addresses the issue of whether what was attempted to be measured was actually measured.

Validity can be examined from a number of different perspectives. These include the following (Diamantopoulos & Schlegelmilch, 2002:34):

- *Content validity.* Content validity is the extent to which a measurement scale appears to measure the characteristic it is supposed to measure. Agreement between expert and/or nonexpert judges regarding the suitability of the measure is often used to establish content validity.
- *Criterion validity.* This is a type of validity that examines whether the measurement scale performs as expected in relation to other variables selected as meaningful criteria. Examination of the relationship between the measure and a criterion is often used to establish criterion validity.
- *Construct validity.* Construct validity measures the extent to which a measure behaves in a theoretically sound manner. An investigation of the relationships between the measure concerned and measures of other concepts or characteristics within a theoretical framework are often used to establish construct validity.

In this study, validity was established by gauging content validity. Agreement was reached between expert judges on sports marketing and branding about the validity of the measure.

### **5.2.9 STEP 9: REPORTING THE RESEARCH**

In this phase of the process, researchers interpret the information, draw conclusions and communicate the findings. A report should then be prepared to formally communicate the conclusions and recommendations to the marketing decision makers. This is done in the next chapter.

## **5.3 CONCLUSION**

In this chapter the research methodology of this study was discussed. Marketing research was focused on, and following from that the marketing research process was discussed. Of specific interest was how each step in the marketing research process pertained to this study. In the next chapter the research findings of this study are discussed.