CHAPTER FOUR
RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter describes the research methodology used in the study. Methodology is described as the application of various methods, techniques and principles in order to create scientifically based knowledge by means of objective methods and procedures within a particular discipline (Welman & Kruger, 1997). It is focused on specific ways and methods that can be applied to better understand the field and scope of study, which refers to the various methods and principles used within the general research process.

The aim of the study is to propose guidelines for a model for the management of professional sports coaches in South Africa. In order to achieve this aim, it was necessary to conduct a survey, based on the available literature, which formed the theoretical basis to describe the human resources function of professional sports coaches. In addition, a qualitative survey in the form of structured in-depth interviews was conducted to elicit perceptions and ideas of professional sports coaches as well as human resources managers in sport organizations with regard to the human resources management of professional sports coaches. The information obtained in both the literature survey and the in-depth interviews, contributed towards the development of questionnaires, which were utilized in the empirical part of the study.

Various aspects relating to particular research methods and techniques for this study are discussed in this chapter. It involves a discussion of the sample and sampling procedure, data collection methods, the empirical research design, the procedure for the design as well as administration of the questionnaires. It also describes the statistical techniques used in the study.
4.2 RESEARCH DESIGN

Tull & Hawkins (1993) describe research design as a specific procedure, which is adopted in the collection and analysis of data necessary to address a problem. This study addresses the fact that there are no researched guidelines for the human resources management of professional sports coaches in South Africa. In this study, an adaptation of the procedure for drawing a sample (figure 4.1) used by Churchill and Iacobucci (2002) was utilized. This included the identification of the population, the target population from which the sample was drawn, the sample frame, the research sample, the sampling procedure, the measurement technique and the data collection procedures.

![Figure 4.1 Procedure for drawing a sample](image)

Figure 4.1 Procedure for drawing a sample (Adapted from Churchill & Iacobucci, 2002)

4.2.1 The population

According to Boyce (2002), the population is the entire group of people about whom the researcher wishes to obtain information. It is sometimes referred to as
the “universe” or “universum”. For the purposes of this study, the population or universum comprises both male and female human resources managers as well as male and female professional sports coaches in sport federations in South Africa (refer to annexure 8).

4.2.2 Target population

Boyce (2002) describes the target population as a clearly defined group of entities that have some of the characteristics, relevant to the studies, in common whereas Hair, Bush and Ortinau (2002) view the target population as an identified group of elements that are of interest to the researcher. Boyce (2002) comments that, regardless of how well the research instrument is designed, the data will lose value if the wrong people are targeted. It is therefore important for the researcher to be precise in specifying exactly what elements of the population are of interest and what elements are to be excluded.

The target population in this study comprises human resources managers and professional sport coaches employed by sport federations affiliated to the South African Sports Commission (SASC). The SASC is a legislated national sport coordinating body governed by the South African Sports Commission Act (Act 109 of 1998). The sport organizations that are affiliated to the SASC are therefore deemed to be authentic sport organizations governed by the rules and objectives of the SASC.

For purposes of this study the organizations that were associated with soccer, rugby, cricket, swimming, tennis, boxing, gymnastics, athletics, basketball and netball were identified. The codes of sport were selected on the basis of spectatorship (annexure 6) and participation (annexure 7). With regard to spectatorship (annexure 6) the most common sporting codes amongst both White and Black spectators were soccer, cricket, boxing, rugby, athletics, tennis and swimming. With regard to participation (annexure 7) the most popular
sporting codes included soccer, netball, tennis and swimming. In addition to the above-mentioned sporting codes gymnastics which is ranked 7th among the spectator sport for Whites, and basketball which is ranked 6th among the spectator sport for Blacks, was also included in the study.

4.2.3 Sample frame

Churchill & Iacobucci (2002) suggest that once the target population has been defined, the researcher must assemble a list of all eligible sampling units, which is referred to as the sample frame. Lists of registered voters, customer lists and maps are amongst the most common sources of sampling frames. The sample frame consists of a list of all the elements in the population, which is of interest to the researcher, and a set of instructions that describe the process by which the sample elements are to be selected from the population.

The sampling frame that was identified for the purpose of this study was a list of sport federations that were affiliates of the South African Sports Commission (annexure 7). There were 73 federations on the list. Only the affiliates of federations associated with soccer, rugby, cricket, swimming, tennis, boxing, gymnastics, athletics, basketball and netball were used in this study since they were the most popular with regard to either participation or spectatorship.

4.2.4 Research sample

A sample is a subgroup of the population to which findings are assumed to apply (Slavin, 1992). Sampling enables the researcher to study a portion of a population rather than the entire population, thereby saving time, money and energy. A sample is inclusive and representative of the group dynamics of a population (Gay, 1981).
For the purpose of this study the following criteria was used to draw the sample to be researched:

- Human resources managers (as clarified in chapter 1, page 16) and professional sports coaches, both male and female, employed by sport organizations affiliated to federations affiliated to the SASC formed the sample to be researched.
- The sport organizations had to be associated with any of the following sporting codes: soccer, rugby, cricket, swimming, tennis, boxing, gymnastics, athletics, basketball and netball.
- All nine provinces in South Africa were included in the study.

4.2.5 Sampling procedure

In this study the use of a combination of convenience and judgement sampling was used. Convenience sampling allows a large number of respondents to participate in the research over a short period of time (Boyce, 2002). Convenience sampling was used with regard to the availability and accessibility of the different professional sports coaches and human resources managers at sport organizations in the different provinces in South Africa.

Judgement sampling was used in the selection of respondents. In judgement sampling it is solely the researcher’s judgement that forms the basis on which the respondents are selected. It involves designating respondents that are believed to represent the population and relies on the ability of the researcher to judge whether the respondents selected meet the criteria set for the study (Boyce, 2000). The criteria used to select both professional coaches and human resources managers was based on the spectatorship data (annexure 6) and participation data (annexure 7) obtained from the SASC. In addition, the main source of income for professional coaches had to originate from coaching fees (refer to chapter 1, paragraph 1.6.2). Horseracing was not selected due to the
fact that most of the coaches in this code of sport coached in their own private capacity. Care was taken to ensure that the data collection with regard to the various codes of sport and organizations was not duplicated. To do this, the researcher had to ensure that as far as possible, only two questionnaires were distributed per organization: one for the human resources manager and one for the professional sports coach of the main code of sport being coached at that organization. In some instances where organizations offered two main codes of sport, the professional coaches from both the codes of sport were requested to complete the questionnaire.

### 4.2.6 Sample size and respondents

The determination of a sample size is complex because it depends on, among other things, the type of sample, the homogeneity of the population, the time, the money and the personnel available for the study.

According to Hair *et al.* (2002) sample size formulae cannot be appropriately used for non-probability samples. The determination of the necessary sample size is usually a subjective, intuitive judgement made by the researcher based on previous studies and available resources.

In the absence of prior research of a national nature related to this study, it was difficult to determine sample size through historical evidence or statistics. In addition, there is no integrated national list of professional sport coaches and human resources managers compiled by any organization. The researcher therefore used his judgement in selecting professional coaches and human resources managers in accordance with the criteria set (refer to paragraph 4.2.4, page 141).

According to Avikaran (1994), minimum sample sizes of between 300 and 500 are adequate for multivariate statistics, like factor analysis. The researcher
approached several organizations and individuals in different sporting codes in an attempt to obtain information concerning the number of professional sports coaches in South Africa, whose main source of income was coaching. In most instances, those organizations and individuals were able to give only approximate figures. The approximate number of coaches arrived at was 1600. With regard to human resources managers, the number of sport organizations, which was approximately 5000, was used as a guide. It was noted that not all the sport organizations had human resources managers. On the basis of the information received the researcher decided on a sample size of 450, which falls within the range suggested by Avikaran (1994) for both professional sport coaches and human resources managers respectively.

4.2.7 Data collection

In order to determine the extent to which human resources management practices are applied to the management of professional sports coaches at sport organizations affiliated to the SASC, an essential starting point was to identify the dimensions of human resources. The literature survey contributed in part to identify the dimensions. In order to obtain a more comprehensive idea of how human resources are managed at sport organizations, ten in-depth interviews each were held with professional sports coaches and human resources managers at sport organizations. In-depth interviews generate a large amount of information for the design of the questionnaire and provide vital information that can contribute to improving the measurement instrument (Shao, 2002). The in-depth interviews, in conjunction with the literature study, also provided the researcher with an opportunity to gain preliminary insights into the field being researched. It also provided the researcher insights in developing constructs. The development of constructs is an integrative process, which focuses on identifying the subjective properties for which the data should be collected for investigating the defined research problem and formulating possible solutions. Researchers may also gain additional information that is not found in the
available literature. The key steps followed in the collection of data are illustrated in figure 4.2.

Figure 4.2  Key steps followed in the collection of data

4.2.7.1  Literature study

An appropriate literature study, both nationally and internationally was conducted to investigate and elucidate the nature of human resources management in sport organizations. The literature studied involved a systematic and factual description of human resources management. Documentation such as textbooks, magazines, articles, newspaper and media reports, as well as information on the internet were referred to and was integrated into the existing data.
4.2.7.2 In-depth interviews

The researcher conducted the in-depth interviews. Both human resources managers and professional sports coaches were interviewed separately and individually. The in-depth interviews consisted of open-ended questions to establish the experience, knowledge and perceptions of the respondents with regard to the management of professional sports coaches. Responses were documented during the interviews as opposed to the interviews being recorded.

4.2.7.3 Questionnaires

An empirical investigation was conducted through the development of two structured questionnaires: a questionnaire for professional sports coaches (annexure 2) and a questionnaire for human resources managers (annexure 3). The literature study discussed in chapter 3, the in-depth interviews (annexure 4 and annexure 5) and discussions with human resources managers and professional sports coaches contributed to the development of the questionnaires.

The questionnaires consist of two sections; demographics and human resources practices. The demographics questions consisted of items that sought information with regard to: gender, age, highest level of professional qualification, number of years experience, main code of sport and the province in which the respondent worked.

The human resources practices section for human resources managers consisted of 32 items (annexure 2, section B) to measure recruitment and selection, compensation, training and development, labour relations and job security.
The human resources practices section for professional sport coaches consisted of 35 items (annexure 3, section B) to measure recruitment and selection, compensation, training and development, labour relations and job security.

The different human resources dimensions in both questionnaires were scored on a 5-point Likert-type scale (also known as the summated rating scale) with 1 expressing strongly agree, 3 indicating neither agree nor disagree and 5 expressing strongly disagree. The respondents were requested to select choices within the given range.

4.2.7.4 Pre-testing the questionnaire

Regardless of the experience and expertise of the designer of the questionnaire, pre-testing must be undertaken to ensure that the questionnaire communicates the information correctly and clearly to the respondent. There is always a chance that some questions could cause problems therefore questionnaires need to be pre-tested in order to identify and eliminate problems that might occur (Sudman & Blair, 1998). Thus the goal of pre-testing is to affirm that the questionnaire captures the information sought by the researcher or to validate it.

After the draft questionnaires were developed, ten questionnaires each for both professional sports coaches and human resources managers were pre-tested. Pre-testing was undertaken by vetting the questionnaire by human resources managers and professional sport coaches. The researcher interviewed the human resources managers and professional sports coaches, who satisfied the criteria. The objectives of the study were then explained to the participants. The time taken to complete each questionnaire was noted. Each participant completed the questionnaire individually and separately. The questionnaires were completed in the presence of the researcher. This was then followed by a
debriefing session where the respondents were asked to share their thoughts regarding the clarity of the questions, discussing their answers and any shortcomings, in their opinion, in the questionnaires. Based on their comments and suggestions the necessary adjustments regarding relevance, vagueness and ambiguity were made on the questionnaires.

The purpose of the research is to obtain data in which people can have confidence (Boyce, 2002). In order to ensure accuracy, data must be obtained through the use of measurement procedures and devices that are both reliable and valid. Reliability and validity are two standard criteria for assessing the appropriateness of any measuring instrument (Nel, Pitt & Berthron, 1997). There is a one-way relationship between reliability and validity. A scale must be reliable to be valid. However, it does not have to be valid to be reliable (Shao, 2002). For this study to be beneficial, it is therefore necessary to prove the reliability and validity of the particular study in question.

4.2.7.5 Reliability

Bless & Hogson-Smith (1995) define reliability as the extent to which empirical measures that represent a theoretical concept are accurate and stable when used for the study of the concept in several studies. A measurement device is considered reliable if it is free from random error (Boyce, 2002; Trochim, 1997). A good attitude scale must be both valid and reliable. There are three major ways to assess reliability: test-retest, equivalent form and internal consistency. For purposes of this study internal consistency was used to test reliability as it required only one administration of the measuring instrument and is purported to be the most effective, especially in field studies (Sureshchander, Rajendran & Anantharaman, 2002).
Internal consistency implies a high degree of generalisation across the items within the measurement. According to Hair et al. (2002), summated scales (Likert scale) tend to be most appropriate when investigating multidimensional constructs such as human resources. Constructs are measured by an entire scale and not by just one component of a scale. Split-half tests and coefficient alpha are two popular techniques to measure internal consistency.

In this study the researcher applied coefficient alpha (Cronbach alpha) to the questionnaire to test the reliability of the measurement scale. Coefficient alpha is a technique for judging internal consistency of a measurement instrument by averaging all the possible ways of splitting the items in the instrument and then examining the degree of correlation. The range of the coefficient values is from 0 to 1. An instrument with high reliability will have a score as close to 1 as possible whereas a score that is very close to 0 is an indication that the instrument has a very low or no reliability. It is generally accepted that a score of 0.7 and above is an indication that the instrument is reliable. Furthermore, coefficient alpha provides a summary of the inter-correlations that exist amongst a set of items. For purposes of this research study the statistical program for the social sciences (SPSS – version 11) computer program was used. According to Churchill & Iacobucci (2002), if the alpha value is low, some of the items that do not share equally in the core should be eliminated, provided that the item pool is sufficiently large. The reliability test, based on the proposed dimensions, yielded the results shown in table 4.1 (human resources managers) and table 4.2 (professional sports coaches).

<table>
<thead>
<tr>
<th>DIMENSIONS</th>
<th>CRONBACH ALPHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruitment and Selection</td>
<td>0.7599 ~ 0.76</td>
</tr>
<tr>
<td>Training and Development</td>
<td>0.5800 ~ 0.58</td>
</tr>
<tr>
<td>Job Security</td>
<td>0.7673 ~ 0.77</td>
</tr>
<tr>
<td>Compensation</td>
<td>0.6459 ~ 0.65</td>
</tr>
<tr>
<td>Labour Relations</td>
<td>0.8473 ~ 0.85</td>
</tr>
</tbody>
</table>
The coefficient alpha of all the dimensions with the exception of two, namely the compensation dimension and the training and development dimension, were close enough to or higher than 0.7. This, according to Nunally (1978) was sufficient to conclude that the results were reliable.

Table 4.2 Reliabilities of dimensions for professional sports coaches (n = 10)

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>CRONBACH ALPHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruitment and Selection</td>
<td>0.3990 ~ 0.4</td>
</tr>
<tr>
<td>Training and Development</td>
<td>0.8487 ~ 0.85</td>
</tr>
<tr>
<td>Compensation</td>
<td>0.5722 ~ 0.57</td>
</tr>
<tr>
<td>Job Security</td>
<td>0.7132 ~ 0.71</td>
</tr>
<tr>
<td>Labour Relations</td>
<td>0.6965 ~ 0.70</td>
</tr>
</tbody>
</table>

The coefficient alpha of all the dimensions with the exception of two, namely the compensation dimension and the recruitment and selection dimension, were higher than 0.7. This, according to Nunally (1978) was sufficient to conclude that the results were reliable. Due to the exploratory nature of the research, both the recruitment and selection and compensation dimensions were retained in the questionnaire for the main survey.

The central aim of a research design is to establish a relationship between the independent and dependent variables on a high degree of certainty. The potential of a research design to achieve this aim is referred to as the validity of the design. Validity (Cooper & Schindler, 1998; Parasuraman, 1991) addresses the problem of whether a test measures what it is supposed to measure and, whether it measures it consistently and accurately (Boyce, 2002). Validity thus refers to the measuring instruments applied, and that these measuring instruments are only valid to the extent that it measures what it is intended to measure. It is the extent to which the scale fully captures all aspects of the construct to be measured (Parasuraman, 1991). Furthermore, if a measure is to be valid it has to be free of both random error and systematic error.
4.2.7.6 Validity

Although there are many types of validity, the most common techniques used to assess the validity of a measuring instrument are: content validity, construct validity and criterion-related validity.

Content validity

Content validity answers the question of whether each question on the scale has a logical connection with the object (Boyce, 2002). It represents the extent to which the content of a measurement scale seems to tap all relevant facets of an issue that can influence respondents’ attitudes. According to Shao (2002), one way to judge the validity of a scale is to request professionals or experts in the relevant field to evaluate the scale. Scales that pass this test are said to have content validity. The test of content validity can be highly subjective because the personal experiences and beliefs of the experts inevitably come into play.

Content validity is sometimes referred to as face validity because it is evaluated by examining the measure with an eye towards ascertaining the domain that is sampled. This implies that content validity is a matter of judgement. It is therefore important that the collection of items in the preliminary stages must be large enough so that after scale refinement the measure still contains enough items to adequately sample each of the variables in the domain. In this study a qualitative data collection process, namely in-depth interviews, was undertaken to ascertain human resources managers’ and professional sports coaches’ perceptions of human resources management in sport organizations. Furthermore, content validity was also ascertained by pre-testing the questionnaire with human resources managers and professional sports coaches in sport organizations.
Construct validity

Construct validity (Zikmund, 2000) is established by the degree to which the measure confirms a network of related hypotheses generated from a theory based on the concept. It is during the statistical analysis of the data that construct validity is established. Construct validity questions the nature of the underlying variables or constructs measured by the scale (Parasuraman, 1991).

Constructs are highly abstract and unobservable concepts. Due to their intangibility and abstract nature, they have to be measured in indirect ways, as there is no direct manner to measure the concept. Therefore the observable phenomenon that theoretically demonstrates the presence of the construct has to be measured. Construct validity thus attempts to assess how well ideas or theories are translated into real measures. When construct validity is not found, it may be due to either the lack of construct validity or a flaw in the theory. In order to avoid problems with construct validity, the researcher must have already determined the meaning of the measurement by establishing what basic researchers call convergent validity and discriminate validity (Zikmund, 2000). Construct validity exists if both convergent validity and discriminate validity exists.

Convergent validity

Convergent validity is the ability of a scale to correlate with other scales that purport to measure the same concept. The logic is that two or more measurements of the same concept using different scales should agree unanimously. Convergent validity analysis therefore pertains to the extent to which scale items assumed to represent a construct do in fact converge on the same construct. In this study this was assessed through factor analysis.
Factor analysis was performed on the pooled data without constraining the number of factors. The objective of factor analysis was to construct a small number of variables called factors containing the same information that is available in a larger number of variables. A discussion on the extracted factors is discussed in detail in chapter 5.

4.2.7.7 Administration of the questionnaires

After constructing the questionnaires, 450 questionnaires each were distributed to the identified sample of professional sports coaches and to human resources managers at sport organizations (refer to paragraph 4.2.4, page 140). Questionnaires were either hand delivered, posted (with a prepaid, reply envelope) or e-mailed to participants in each of the nine provinces in South Africa. People who had contacts at different sport organizations were identified to hand deliver the questionnaires. They were given an explanation of the purpose of the research as well as the criteria employed to identify the respondents. Questionnaires were e-mailed to those human resources managers and professional coaches whose e-mail addresses were known to the researcher. In other instances questionnaires were posted to the human resources managers and professional sports coaches.

The questionnaire included a covering letter on the Rand Afrikaans University letterhead explaining the reason for the study (Annexure 1). The initial response rate after 6 weeks was 27% (123) for professional sports coaches and 16% (74) for human resources managers. In order to facilitate a higher response rate, a follow up of the questionnaire was done telephonically enquiring whether the participants responded or not. If they did not, they were persuaded to complete and return the questionnaires. Furthermore, personal visits were made to certain sport organizations, which were within accessible distance for the researcher, to persuade participants to complete the questionnaires. The eventual response
rate was 54% (242) for professional sports coaches and 51% (231) for human resources managers. The questionnaires were administered over a 3-month period: October to December 2002.

4.3 THE MEASUREMENT PROCESS

Measuring is a fundamental activity in any research project (Boyce, 2002). Measurement (Hair et al., 2002) is viewed as an integrative process of determining the intensity or the amount of information needed about constructs, concepts or objects of interest and their relationship to a defined problem or opportunity. The measurement process in this study consists of two different development processes: the construct development (factors) and the scale development (attributes or items that contribute to the factors).

4.3.1 Construct development

Construct development can be viewed as an integrative process in which the researcher focuses on identifying the subjective properties for which the data should be collected for investigating the research problem. In this study factors for the human resources management of professional sports coaches were developed (Churchill, 2001).

The qualitative data collection method used in this study was in-depth interviews and preliminary information arising from such interviews, as well as a literature study as a guideline for collecting data from a representative sample of human resources managers and professional sports coaches.

An important activity in construct development is that of assessing the validity of the construct, especially if the construct is multidimensional, as was the case with this study. The validity of a construct is actually an after-the-fact activity, as the
researcher is required to create a set of scale measurements for each of the constructs and then collect data on these constructs. In order to do this, the researcher has to perform statistical analysis to test for content validity discussed in paragraph 4.2.7.4 (page 146).

4.3.2 Scale development

According to Hair et al. (2002), various data types, namely state-of-being data (verifiable facts), state-of-mind data (mental thoughts and emotional feelings), state-of-behaviour data (past and current feelings) and state-of-intentions data (planned future behaviour intentions), can be collected during the primary research phase. In this study the state-of-being data and state of behaviour data were used.

The state-of-being data relates to physical, demographic or socio-economic characteristics of the respondents. The state-of-being data collected for this study took the form of demographic data such as age, gender, number of completed years experience, professional qualification, main code of sport and province in which the respondent was employed.

The state-of-mind data relates to the mental attributes or emotional feelings of respondents (data which exists in the minds of respondents) that cannot be directly observed through external sources. In order to collect such data the researcher asked respondents to answer questions in section B (annexure 2 and annexure 3) of the questionnaires. The data was subjected to factor analysis and the following dimensions were extracted: recruitment and selection, training and development, compensation, job security and labour relations.
4.4 ATTITUDE SCALES USED IN THE STUDY

There are several methods used by researchers to measure attitudes. The scales normally used by researchers to measure attitude fall into three categories: the semantic differential scale, the staple scale and the Likert-type scale.

The 5-point Likert-type scale, which is also known as the summated rating scale, was used in this study. Likert-type scales are both relatively simple to construct and easy to administer. Respondents were asked to indicate the extent to which they agreed or disagreed with a series of statements about a given construct such as human resources management. They were then asked to select choices ranging from strongly agree to strongly disagree. The responses of the respondents may be analysed individually or in total, that is, summation. The respondents’ overall score can thus be calculated by the summation of weighted values associated with the statements rated.

4.5 DATA PROCESSING AND STATISTICAL ANALYSIS

STATKON, the Statistical Consultation Service at the Rand Afrikaans University, was approached by the researcher to assist with the empirical part of the study. STATKON provided assistance in respect of sampling design, experimental design, questionnaire design, statistical analysis and interpretation of results. The returned questionnaires were first screened for completeness. Thereafter, the various responses from the relevant research questionnaires were captured, coded and entered into a database using the statistical program for the social sciences (SPSS – version 11).
The following statistical methods were used on the empirical data set:

- Reliability analysis
- Factor analysis
- Analysis of variance

The analysis and interpretation of the empirical data is explained in detail in chapter five.

4.6 CONCLUSION

In this chapter the research methodology applied, namely, the sampling procedure, the empirical research design and the measurement process was reviewed. In this particular study relevant and applicable methods were used in order to investigate and test the research problem and objectives.

The target population was identified from which a suitable sample frame was derived. The next step was to conduct in-depth interviews and thereafter draw up a preliminary questionnaire in order to finalise the research questionnaire. The relevant data was captured by means of statistical programmes, edited, coded and finally analysed. The various methods applied to determine the reliability of the research questionnaire and final results of the study are clearly discussed within the scope of this chapter. The study now advances towards the data analysis stage, which is discussed in chapter five.