

CHAPTER FOUR: RESEARCH METHODOLOGY AND SAMPLING

4.1 INTRODUCTION

In a research study, two distinct stages characterise the transition from the research question to data collection, namely conceptualisation and operationalisation. In the first part of this study the conceptualisation is reflected in the theoretical framework where the most important theories, models and concepts relating to discipline and the disciplinary process were introduced. In the second stage, operationalisation takes the form of empirical research, whereby a measuring instrument is developed to collect data about the theoretical concepts. After the data has been collected and ordered as facts, they form the basis to support the theoretical body of knowledge.

In this study the theoretical framework, based on the literature, is presented in chapter 2.

This chapter presents the research methodology and is concerned with the empirical study which will answer the research question as stated in chapter 1. Sampling concepts, sampling methods and the data collection technique will be described in this chapter. The data collection method which was used in this study will also be described and thereafter a conclusion will be reached.

4.2 CHOICE OF RESEARCH METHODOLOGY

The nature of research, the unit analysis, the data sources and the academic field in which a specific study is undertaken, are instrumental in selecting the appropriate research methods (Brynard & Hanekom 1997:129). In the social sciences there are mainly two categories of data sources, namely human behaviour and human characteristics on the one hand, and products of human behaviour (like records, documents, reports and legislation) and human characteristics on the other hand (Mouton 1996:142). Quantative and qualitative research methods seem to be prominent in the social sciences in general as a means of making a study of human behaviour and characteristics of human behaviour (Wessels 1999:384), while methods such as reading and understanding of meaning are used

to make a study of the products of human behaviour and characteristics (De Beer 1999:436-463).

Qualitative research methods aim to produce rounded understandings on the basis of rich, contextual and detailed data (Mason 1996:4). It uses data-sets, diagrams, pictures, drawings, charts, as well as peoples's memories, notes and tape recordings of the spoken words (Wessels 1999:412). Qualitative methods enable the researcher to see the world from the point of view of the participant. Techniques for collecting qualitative data are *inter alia* unstructured individual or focus group interviews (Wessels 1999:404-405).

Qualitative research methods lead to exact measured quantities on which generalisations can be based (Guy, Edglea, Arafat & Allen 1987:256). These methods are designed to produce data-sets appropriate for statistical analysis (Babbie 1992:261) in order to exactly describe the phenomena that are studied. Techniques for collecting quantitative data are self-administered questionnaires or structured interviews (Wessels 1999:404-405).

The most frequently used techniques of data collection are interviews and questionnaires.

4.2.1 Interviews

The interview (telephone or personal) is a well known method of collecting data (Babbie 1998:264). Interviews can either be formal or informal. In formal or structured interviews prepared or standardised schedules or questionnaires are used to collect quantitative data. Informal or unstructured interviews, on the other hand are used to probe in-depth questions in order to gather qualitative data. Unstructured interviews can, for instance, serve to clarify certain quantitative data obtained by self-administered questionnaires. Personal interviews may be time-consuming, with time not only taken up by the interview itself, but also used to arrange appointments that suit both the interviewer and the respondent. The geographical dispersion of the employees in the sample population and the impracticalities of the distances involved precluded the application of the interview technique in this research study. Furthermore, the

restriction placed on the researcher (Appendix A), namely that employees should not be disturbed while performing their

duties rendered interviews impossible in this study.

4.2.2 Questionnaires

The self-administered questionnaire as a quantitative technique of data collection is generally acknowledged to be the most popular technique for surveying the opinions and perceptions of individuals (Dalton 1991:121). A questionnaire comprises a written set of questions to be personally completed by respondents. It is usually accompanied by general information on what is expected from respondents as well as instructions to respondents on how to complete the questions.

The use of questionnaires in survey research has both advantages and disadvantages. The advantage of a questionnaire is that respondents have time to think about the answers to the questions in the questionnaire. A researcher can send questionnaires to a large number of respondents distributed over a large geographical area. On the whole, the completion rate seems higher than for straightforward mail surveys when a researcher either delivers the questionnaire, picks it up, or both (Babbie 1998:258).

On the other hand, a researcher needs to take some disadvantages into account when considering the implementation of a questionnaire. Firstly, the researcher is not at hand to explain uncertainties which may result in biased or distorted answers given by the respondent. Secondly, the accuracy and completeness of responses to the questions are often inadequate. Thirdly, researchers cannot visually observe the respondent's reactions, physical characteristics or setting (in the case of mail questionnaires) (Babbie 1998:258).

The survey instrument to be used in this study is a written questionnaire which was delivered personally to the sample population by the researcher and then collected after eight

days. The construction and administering of the questionnaire is described more fully in sections 4.5 and 4.6 of this dissertation.

4.3 SAMPLING CONCEPTS

In describing the sampling procedure in the following paragraphs, various technical terms will more often be referred to, and they are defined below.

4.3.1 Population

For the purpose of sampling, “population” does not refer to the population of a country but to objects, subjects, phenomena or activities which the researcher wishes to research in order to establish new knowledge (Brynard & Hanekom 1997:43). Welman and Kruger (1999:18) stated that a population encompasses the entire collection of cases or units about which the researcher wishes to make a conclusion. On the other hand, a population is defined as the theoretically specified aggregation of study elements (Babbie 1998:201). It is the purpose of a survey research to collect data from parts of the population in order to interpret relationships between the variables that are being measured. It should further be noted that a population will also consist of sub-groups which is an important consideration at the sampling stage in a research. In this study, all the SAPS employees constitute a population. A number of sub-groups characterise the population (SAPS employees) namely captains, inspectors, sergeants and constables.

4.3.2 Survey population

Babbie (1998:200) defines a survey population as the aggregation of elements from which the sample is actually selected. In this study, members of the SAPS in the North Rand area of the Gauteng Province is the survey population. Lor (in Dalton 1991:123) has pointed out that for

practical reasons, certain elements of the study population can be excluded from the survey. Employees of the SAPS in the North Rand area of the Gauteng Province from the rank of superintendent up to the rank of commissioner and civilians will be excluded from the study population in this study. The reason for the exclusion is mainly the large volumes of collected data which will have to be dealt with and in the end be confusing. Most of the employees above the rank of captain are also for instance station commissioners or unit commanders, and for that reason their responses to the questions in

a questionnaire may be biased. In this study, the survey population comprises 1439 employees of the SAPS in the North Rand area of the Gauteng Province.

4.3.3 Population element

An element is that unit about which information is collected and which provides the basis of analysis (Babbie 1998:200). Each member in each sub-group forms a population element in this study. A distinction is usually made between “elements” and “units of analysis” whereby the former concept is applicable at the sample selection stage, whilst the latter concept is used in data analysis (Babbie 1986:142). Furthermore, Mouton (2001:51) believes that what the researcher is interested in investigating, is referred to as a unit of analysis.

4.3.4 Sample

According to Line (1982:31) a sample is “a limited number of items or people from whom generalisations can be made about the whole number”. The subject of the whole population which is actually investigated by a researcher and whose characteristics will be generalised to the whole population is called a sample (Bless & Higson-Smith 1995:86). On the other hand, Brynard and Hanekom (1997:43) stated that a sample is the small group or portion selected from the population. A sample not representative of the population is inadequate for testing because the findings cannot be generalised to the population. For the purpose of this study, and because a relatively low response-rate (not more than 20%) was anticipated, a relatively big sample of a 30% of the survey-population was drawn. The result of this sample was that 500

elements were selected from the survey-population of 1439 employees.

4.3.5 Sampling

Sampling is a process of systematically selecting cases for inclusion in a research project (Neuman 1991:208). On the other hand, Bless and Higson-Smith (1995:85) pointed out that sampling is a technical accounting device to rationalise the collecting of information

and to choose in an appropriate way the restricted set of objects, persons and events from which the actual information will be drawn. The purpose of sampling is to increase the external validity of survey research. It is a critical process which involves selecting a sample which is a representative proportion of the survey population being investigated.

4.3.6 Sampling unit

A sampling unit is that element or set of elements considered for selection in some stage of sampling. In more complex samples, different levels of sampling units may be employed (Babbie 1998:201). Each member of the SAPS in the North Rand area of the Gauteng Province who has been included in the survey population represents a sampling unit in this study.

4.3.7 Sampling frame

A sampling frame is the actual list of sampling units from which the sample is selected. Welman and Kruger (2001:47) stated that a sampling frame is a complete list on which each unit of analysis is mentioned only once. According to Mason (1996:200) the unavailability of a sampling frame is a very common problem in a social research. During the sampling process it was discovered that a complete list of the sampling units was not available to compile a sampling frame. However, in this study, estimated numbers of employees at each police station selected for sampling purposes were available. It must be noted that these estimated numbers include members of the SAPS at each police station up to the rank of captain.

4.3.8 Sample size and sampling error

Bless and Higson-Smith (1995:96) stated that a very important issue in sampling is to determine the most adequate size of the sample. The major criterion to use when deciding on sample size is the extent to which the sample is representative of the population.

Among others Welman and Kruger (2001:64) identified four principles which guide the determination of a sample size. Firstly, the desired sample size does not only depend on

the size of the population but also on the variance of the variable. The larger the variance of the variable the larger the sample that is required. Secondly, when the size of the sample is determined, the size of the population should also be kept in mind.

In general, it holds that the smaller the total population, the relatively larger the sample should be to ensure satisfactory results. Thirdly, if each stratum of a highly heterogeneous population is relatively homogeneous, a relatively smaller stratified sample than that required for a random sample may be sufficient. Fourthly, in determining a sample size, the researcher should also bear in mind that the number of units of analysis from whom he/she eventually obtain usable data may be much smaller than the number which he/she drew originally.

All sampling procedures involve some degree of error because the measurements of the units selected for the sample will differ from those which would have been obtained from a survey of the survey population. The accuracy of the sample statistics is expressed in terms of the sampling error and must be taken into account in survey research, because it reflects the degree of accuracy of the study (Dalton 1991:125). There are two types of sampling errors, namely chance factors and bias in selection (Bless & Higson-Smith 1995:97).

Chance factors imply that it may happen that in a particular sample one element and not the other has been included. Bias in selection comes about when an element of the sample does not respond to a measurement instrument for unknown reasons. According to Bless and Higson-

Smith (1995:97) such elements are excluded from the group, a move which changes the constitution, and thus the representativeness of the sample. However, according to Babie (1998 :216) and Neuman (1991:224) the sampling error may be reduced by two factors in the sampling design, namely a larger sample produces a smaller sampling error than a small sample, and a homogeneous population produces samples with smaller sampling errors than does a heterogeneous population.

As indicated in section 4.3.7, it was impossible to have a sampling frame. However, a conclusion was reached and it was decided to use a sample of 500 members from the

estimated survey population of 1439 employees. The selected sample would then correspond to a representative sample of 34,7 %. A 20 % response rate of the selected sample was therefore anticipated in order for the sample to be representative of the study population.

4.4 SAMPLING METHODS

Sampling theory distinguishes between two types of sampling methods, namely probability sampling and non-probability sampling (Bless & Higson-Smith 1995:88). Probability sampling occurs when the probability of including each element of the population can be determined. Non-probability sampling refers to the case where the probability of including each element of the population in a sample is unknown.

As the probability sampling method will be followed in this study, it is necessary to have a brief explanation of it.

4.4.1 Probability sampling

Probability sampling fulfils two criteria as a sampling method, to wit representativeness and equal probability of selection. According to Welman and Kruger (2001:46) there are four

methods of probability sampling, namely simple random sampling, stratified sampling, systematic sampling and cluster sampling. These methods are briefly explained below.

4.4.1.1 Simple random sampling

In a simple random sampling, the researcher develops an accurate sampling frame and selects elements from the sampling frame according to a mathematically random procedure. Furthermore, the researcher locates the exact element that was selected for inclusion in the sample (Neuman 1991:208). Once a sampling frame has been properly estimated the researcher assigns a single number to each element in the list. Accordingly, simple random sampling is a sampling procedure which provides equal opportunity of selection for each element in a population. Usually a table of random numbers is used to generate a sample.

Simple random sampling is seldom applied in practice, especially if a very large population is involved and it is impossible to compile a list of elements (Welman & Kruger 2001:55).

4.4.1.2 Stratified random sampling

The principle of stratified random sampling is to divide a population into different groups called strata, so that each element of a population belongs to one and only one stratum (Bless & Higson-Smith 1995:90). In general, stratified sampling produces samples that are more representative of the population than simple random sampling if the stratum information is accurate. However, Brynard and Hanekom (1997:44) pointed out that under-representation of strata in a sample, or the non-response of the elements in the sample, could result in bias in the conclusion reached by the researcher.

4.4.1.3 Systematic sampling

In practice, systematic sampling is virtually identical to simple random sampling. According to Bless and Higson-Smith (1995:90) the technique of selection, instead of relying on

a random number table, is based on the selection of elements at equal intervals, starting with a randomly selected element on the population list. Like the other two sampling methods referred to above, there are some criticism of systematic sampling.

Firstly, the arrangement of elements, usually periodicity, in the list can make systematic sampling unwise (Babbie 1998:214). If the list of elements is arranged in a cyclical pattern that coincides with the sampling interval, a grossly biased sample may be drawn. Secondly, like simple random sampling, systematic sampling relies on the availability of a complete, unbiased population list (Bless & Higson-Smith 1995:91).

4.4.1.4 Cluster sampling

Leedy (1985:158) pointed out that sometimes it is not feasible to make up a list of every person living within a particular area and, from that list select a sample for study through normal randomisation procedures. This method is called cluster sampling. In terms of the

cluster sampling method the researcher draws pre-existing, heterogeneous groups, called clusters, and all the members of the selected clusters are the eventual sample (Welman & Kruger 1999:60). Furthermore, Neuman (1991:211) stated that a researcher who uses cluster sampling must decide on the number of clusters and the number of elements within clusters.

The procedure which was followed in this study to determine clusters was as follows: Firstly, as the police stations together with their estimated personnel were already known, they were divided into two categories, A and B. Category C was created and comprised only the personnel placed at the area commissioner's office. Police stations with their estimated personnel were categorised as follows:

- Category A: 1. Tembisa - 206
- 2. Benoni - 194
- 3. Daveyton - 191

4. Johannesburg International Airport - 142
 5. Kempton Park - 133
- Category B :
1. Putfontein - 32
 2. Sebenza - 38
 3. Olifantsfontein - 51
 4. Crystal Park - 54
 5. Etwatwa - 66
 6. Norkem Park - 78
 7. Ivory Park - 79
 8. Edenvale - 85
 9. Midrand - 91
- Category C : Personnel placed at the area commissioner's office - 140

Secondly, the police stations in all the categories were placed in numerical order. Consecutive numbers were assigned to each police station to ensure that each police station has the same chance of being included in the sample. Thirdly, an entry number to the sample was determined. Number three in category A was chosen as an entry number and thereafter every third police station was chosen and included in the sample. The

following police stations were chosen as part of the sample: Tembisa, Daveyton, Putfontein, Crystal Park and Ivory Park. Personnel placed at the area commissioner's office were also included in the sample.

4.5 DATA COLLECTION TECHNIQUE

Researchers may collect data for the purpose of the research projects using various techniques, for example interviews, questionnaires, literature reviews and direct observations. In this study, the first step that was taken to collect data was the literature review technique (chapter 2). In the second step, a questionnaire was used to collect data. In the following sections the emphasis will be placed on the development and design of a questionnaire.

4.5.1 Questionnaire design

A structured self-administered questionnaire was designed for the purpose of this study.

4.5.1.1 Purpose of the questionnaire

The purpose of the questionnaire is to collect data from the respondents' answers given in the questionnaire.

4.5.1.2 Physical format

It is the policy of the SAPS that all correspondence should be in both English and Afrikaans. However, in the North Rand area of the Gauteng Province all correspondence is in English. For that reason, the questionnaire was also constructed in English only.

4.5.1.3 Length

The questionnaire for this study was divided into five sections and comprised forty two

questions.

4.5.1.4 Types of questions

There are two types of questions in survey research, namely open-ended (unstructured) questions and closed-ended (structured) questions (Babbie 1998:260 & Neuman 2000:148).

In open-ended questions the respondent is asked to provide his/her own answer to the question. In closed-ended questions, which Welman and Kruger (2001:172) also refer to as the multiple-choice variety, the respondent is asked to select an answer from a list of answers provided by

the researcher. The latter type of questions facilitates easy quantification of the answers because coding space is built into the questionnaire format at the time of its design.

The closed-ended type of questions were used predominantly in the questionnaire used in this study with a list of alternatives from which to select. In three cases (questions 22; 25; 39) a response of “other” was included in the list of responses.

4.5.1.5 Instructions

It is useful to begin every self-administered questionnaire with basic instructions for completing it (Babbie 1998:158). Since the survey research followed in this study was a structured self-administered questionnaire, it was important to ensure that the instructions were clear and unambiguous. Bold typeface was used for instructions in each section.

4.5.2 Structure of the questionnaire

According to Neuman (2000:251) the researcher should arrange questions in the questionnaire so that they flow smoothly. Furthermore, Welman and Kruger (2001:170) pointed out that researchers should preferably group their questions that are related to the same aspect so that respondents do not repeatedly have to switch their focus. The

organisation of the questions in the questionnaire used as a measurement instrument in this study is briefly described below.

Neuman (2000:265) stated that researchers should sequence questions to minimise the discomfort and confusion of respondents. Requests for less important, demographic data should generally be placed at the end of a self-administered questionnaire. Placing these items at the beginning gives the questionnaire the initial appearance of a routine form, and the person receiving it may not be motivated to complete it (Babbie 1998:158). These two principles were adhered to as closely as possible in this study. The questionnaire used in this study comprised

five sections, that is section A - E.

Section A (questions 1 to 10) comprised questions about the preferred role players and their duties during the disciplinary process. However, question 10 was a more specific question which asked the respondents to indicate how they feel about the disciplinary process as it presently exists in the SAPS.

Section B (questions 11 to 15) comprised questions about the preferred execution of duties by the role players during the disciplinary process, while questions 16 and 17 refer to the perceived imposition of disciplinary measures by the employer. Section C (questions 18 to 28) were designed to determine how the employees would prefer the execution of the disciplinary process. Section D (questions 29 to 32) were follow-up questions to Section C. However, the questions required respondents to weigh their responses on a four point scale on how they prefer the disciplinary process.

Section E (questions 33 to 42) comprised general items that elicited both demographic and personal data about the respondents.

4.5.3 Pretesting the questionnaire

According to Babbie (1998:159) there is always a possibility of error no matter how carefully a researcher may design his/her questionnaire. The surest protection against such errors is to pretest the questionnaire on a limited number of subjects from the same

population as that for which the eventual project is intended (Welman & Kruger 1999:146). Three weeks before the final draft of the questionnaire was distributed, a preliminary draft questionnaire was administered as a pretest on a small group of ten respondents with the aim of refining the final survey instrument. The pretesting was done at the Kempton Park police station where the draft questionnaire was randomly given to the respondents. The respondents were given seven days after which they had to return the completed questionnaire to the human

resource manager for collection by the researcher.

4.5.3.1 Selection of subjects

Neuman (2000:250) stated that a researcher should pretest a questionnaire with a small set of respondents similar to those in the final survey. The researcher should ask the respondents whether the questions were clear and explore their interpretation to see whether his/her intended meaning was clear. This approach was adopted for the pretest of the questionnaire in this study. A preliminary draft of the questionnaire was given to the human resources manager at one police station (which was not included in the sample stations) for distribution among ten members.

4.5.3.2 Response

Of the ten distributed questionnaires, nine were returned fully completed with no comments. It seems that the respondents understood all the questions in the questionnaire. As a result it was decided to retain the draft questionnaire in its original format.

4.6 DATA COLLECTION

Data collection is concerned with the design of the questionnaire, while the data collection technique, which is the focus of this section, explains the administering of the questionnaire to gather the survey data (Dalton 1991:136).

4.6.1. Administering the questionnaire

In administering the questionnaire in this study, four steps were involved.

In the first step a covering letter (Appendix B) was written in English and signed by the researcher. It explains the purpose of the investigation and informs the respondent that permission to undertake the investigation was granted by the employer (Appendix A). In the letter the respondent was asked not to add his/her name to ensure anonymity. A deadline return date was also stated in the letter. Furthermore, the respondents were requested to seal their completed questionnaires in the envelopes supplied, and hand them to their respective human resource managers before the deadline.

Assembling the package for distribution to the sample was the second step. Each package consisted of a questionnaire, with a covering letter, copy of the letter granting permission to undertake the research and an envelope. Delivering the questionnaires to the various police stations was the third step. The delivery was done on the third week of May 2002 with the return deadline set for the last week of the same month and year.

Step four involved the collection of the questionnaire from the various police stations. Out of the 500 questionnaires that have been distributed, 186 were returned, constituting a response rate of 37,1%. This response rate was higher than the anticipated 20%.

Although this is still considerably lower than the 50% to nearly 100% that constitute an “adequate” to a “very good” response rate (Dalton 1991:136 & Babbie 1990:182), the response was considered a fair representation of the survey population.

4.6.2 Data reduction: analysing the questionnaire

Once the completed questionnaires were received, it was necessary to extract and collate the data in some form for analysis and interpretation. Record numbers were manually assigned to each received questionnaire. Coding the responses was another time-consuming task and was also done manually. Thereafter, all the questionnaires were

handed over to the Department of Computer Services (Section Research Support) at the

University of South Africa for data capturing and analysis. The database comprised 186 records and each record format was characterised by 42 fields where each field represented a response in the questionnaire. The measures for the individual fields were dependent upon the content of the question and the scaled responses. In the case where a respondent did not answer a question it was recorded as missing in the statistics.

4.7 CONCLUSION

This chapter outlined the research methodology and sampling for the empirical study carried out to determine the preferences of the members of the SAPS regarding the disciplinary process. Survey research and the use of a questionnaire formed the framework of the research methodology to answer the research question as stated in chapter 1. Step by step sampling procedures which were followed were also explained. The section on the data collection technique also described the design, pretesting and administering of the survey instrument. The steps which were followed in data capturing and analysis were briefly described. An in-depth data analysis and interpretation will follow in the subsequent chapters.