

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

Methodology can be described as the framework associated with a particular set of paradigmatic assumptions that can be used to conduct research (O'Leary, 2004:85).

In the previous chapter, a literature study was conducted to explore the shortage of skills within South Africa, relevant skills development legislation, the National Skills Development Strategy and learnerships. Under learnerships issues pertaining to concept clarification, comparison with other skills programmes, components, benefits, role players, implementation and effectiveness were researched. Emphasis was placed on the development and availability of learnerships within the MERSETA, in line with the research topic of this study.

The first part of this chapter contains a description of the research objectives. The population and the selection of the sample are also discussed. This is followed by an explanation of the experimental procedure and a detailed discussion of the measuring instruments used. The chapter concludes with a discussion of the methods used for the statistical analysis of the data.

3.2 RESEARCH OBJECTIVES

3.2.1 General objective

- Determine organisational perspectives regarding learnerships within certain MERSETA organisations in the Sedibeng district municipal area.

3.2.2 Specific objectives

The specific *theoretical objectives* of this study were to:

- conduct a literature study regarding the origin of learnerships
- carry out a literature review regarding organisational perspectives towards learnerships.

The specific *empirical objective* of this study was to:

- evaluate organisational perspectives towards learnerships in manufacturing, engineering and metal organisations that fall under the MERSETA within the Sedibeng district municipal area.

3.3 TARGET POPULATION

Brynard and Hanekom (2005:43) explain that in research methodology, 'population' does not refer to the population of a country, but rather to the objects, subjects, phenomena, cases, events or activities specified for the purpose of sampling.

In this research study, the population consisted of small, medium and large manufacturing, engineering and metal organisations (N = 300), which fall under the MERSETA and which are situated in the industrial areas of Vanderbijlpark, Vereeniging and Meyerton, within the Sedibeng district municipal area (Slabbert, 2005:6-7; Emfuleni Local Municipality, 2008:2).

Heery and Noon (2001:334) define small organisations as those with up to 99 employees; medium organisations with between 100 to 499 employees; and macro or large organisations with 500 or more employees.

During 2006, the first database of organisations within the Sedibeng district municipal area was obtained from the local Emfuleni Municipality Information Services. During the same period, a second database was supplied by the Co-operative Education Department of the Vaal University of Technology. This department assists with work-integrated-learning and learnership placements of students with most of the prominent industries located in the Sedibeng district municipal area.

Approximately 300 (N = 300) organisations were identified in the industrial areas situated within the Sedibeng district municipal area. Of these 300 companies, 150 (n = 150) agreed to take part in the study.

Several organisations indicated that their head offices are not situated within the Sedibeng district municipal area and, therefore, some responses would come from areas outside the Sedibeng district municipal area. It was decided to incorporate these responses from head offices located outside the Sedibeng district municipal area.

3.4. STUDY SAMPLE

3.4.1 Sampling method

According to O'Leary (2004:103), sampling is a process that is always strategic and sometimes mathematical, which will involve using the most practical procedures possible for gathering a sample that best 'represents' a larger population.

Kumar (2005:179) motivates that purposive sampling is extremely useful when constructing a historical reality, describing a phenomenon or developing something about which only a little is known.

Hence, owing to the nature of the study, the decision was taken to use the non-probability purposive sampling technique. The study focuses on the defined purpose of determining the perspectives of learnerships within certain of the MERSETA organisations in the Sedibeng district municipal area.

Sampling of a population is used to:

- **simplify the research** – it is easier to study a representative sample of a population than to study the entire population
- **save time** – studying an entire population could be time-consuming
- **cut costs** – collecting data from a population can be costly if it is large and geographically distributed (Brynard & Hanekom, 2005:43).

Based on the above, the following was evident:

- It would be more manageable to target a representative sample of manufacturing, engineering and metal organisations, rather than the entire national population of such organisations.
- It would be more time efficient to target the MERSETA-registered organisations located within the Sedibeng district municipal area, rather than to target the thousands registered nationally.
- It would be more cost efficient to target the MERSETA-registered organisations located within the Sedibeng district municipal area, rather than to target the thousands registered nationally.

The primary consideration in purposive sampling is deliberating who can provide the best information to achieve the objective(s) of the study (Kumar, 2005:179).

Therefore, prior to distributing the questionnaires, key people in the relevant organisations, who potentially had the required information and experience deemed important for the study, were contacted. Contact was made with potential respondents telephonically and via the electronic-mail (e-mail) facility. The questionnaire was then distributed to the appropriate persons who had agreed to participate in the study.

3.4.2 Units of analysis

Anderson (2004:209) argues that there are no clear answers with regards to how large a sample should be. Neuman (2006:241) suggests the general principal of the smaller the population, the bigger the ratio of the sample size to population size; for example, a ratio of about 30:100 (30 percent) for smaller populations (under 1000).

A sample of 150 ($n = 150$) small, medium and large organisations were included in the study. As the approximate size of the population is estimated at 300, this works out to a ratio of 50:100 (50 percent).

3.5 RESEARCH DESIGN

Methodological design is defined by O'Leary (2004: 85) as the plan for conducting a study that includes methodology, methods and tools involved in quantitative or qualitative research.

O'Leary (2004:99) describes quantitative research as producing quantitative data that can be represented through numbers and analysed using statistics.

Quantitative research is also underpinned by a distinctive theory as to what should pass as warrantable knowledge and it requires methods such as experiments and surveys to describe and explain phenomena (Anderson, 2004:204-207; Kumar, 2005:12).

Brynard and Hanekom (2005:29) mention that quantitative research methods could include techniques such as observation, pilot studies, quantitative analysis and questionnaires.

After thorough consideration, the decision was taken to utilise a survey design to shed more light on the general issues, phenomena and allegations pertaining to learnerships, which were identified in the literature study.

In order to collect the required data, a survey was conducted on a sample of organisations located within the Sedibeng district municipal area who are registered under MERSETA.

3.6 MEASURING INSTRUMENT

3.6.1 Rationale for the use of a questionnaire

Anderson (2004:208) contends that surveys using questionnaires are perhaps the most widely-used data-gathering technique in research and can be used to measure issues that are crucial to the management and development of human resources, such as behaviour, attitudes, beliefs, opinions, characteristics, expectations and so on.

Thus, the design and administration of a relevant questionnaire is appropriate for measuring organisations' perspectives on learnerships.

Prior to selecting the questionnaire over other data collection methods, the key advantages and disadvantages of questionnaires (Robson 2002:233-234; Denscombe, 2003:161; Brynard & Hanekom, 2005:38-39; Kumar, 2005:130-131) pertaining to the study were considered. These are outlined in Table 11.

Most of the disadvantages mentioned in Table 11 were not viewed as having any significant impact on the study. For example, the contact details of the researcher were made available to respondents in order to provide clarity on questions where necessary. Furthermore, the use of fieldworkers, e-mail and facsimile facilities rendered the distribution of the questionnaires substantially less costly.

Table 11: Advantages and disadvantages of a questionnaire

Advantages	Disadvantages
Less expensive - saving time, and less human and financial resources required.	Distribution of questionnaires might be costly as researcher will, in most instances, have to supply the respondent with an addressed envelope and affixed postage.
Large number of respondents can be reached.	Low response rates or incomplete and/or poorly completed answers.
Respondents have time to think about the answers to questions in the questionnaire.	Response to a question may be influenced by the response to other questions, as the respondents can read all the questions before answering.
Offers greater anonymity as there is no face-to-face interaction.	Opportunity to clarify issues is lacking, if respondents do not understand some questions.
Pre-coded data.	Limits and shapes the nature of answers.

(Source: Adopted from Robson, 2002:233-234; Denscombe, 2003:161; Brynard & Hanekom, 2005:38-39; Kumar, 2005:130-131)

Certain disadvantages over which the researcher had no control, for example incomplete or poorly completed answers, may possibly affect the research negatively.

Hamlet (2005:148) indicated that cost is often an important element when it comes to deciding on the best method of distributing a questionnaire and this will depend on the size and location of the sample. Owing to the fact that this study was conducted locally, the cost element was not a major disadvantage.

According to O' Leary (2004:182-183), a good survey has the potential to reach a large number of respondents, generate standardised, quantifiable, empirical data and offer confidentiality/anonymity.

Based on the above information and Table 11, the rationale for using a questionnaire can be indicated as:

- less expensive
- less time consuming
- greater anonymity afforded to respondents
- large numbers of respondents can be reached.

3.6.2 Questionnaire design

A questionnaire can be defined as a list of carefully structured questions, chosen after testing, with the view of eliciting reliable responses from a chosen sample. The aim of a questionnaire is to find out what a selected group of participants do, think or feel (Meyer *et al.*, 2004:42-45).

A self-administered questionnaire was designed by the researcher, based on the steps outlined in the following sub-sections.

3.6.2.1 Questionnaire planning and components

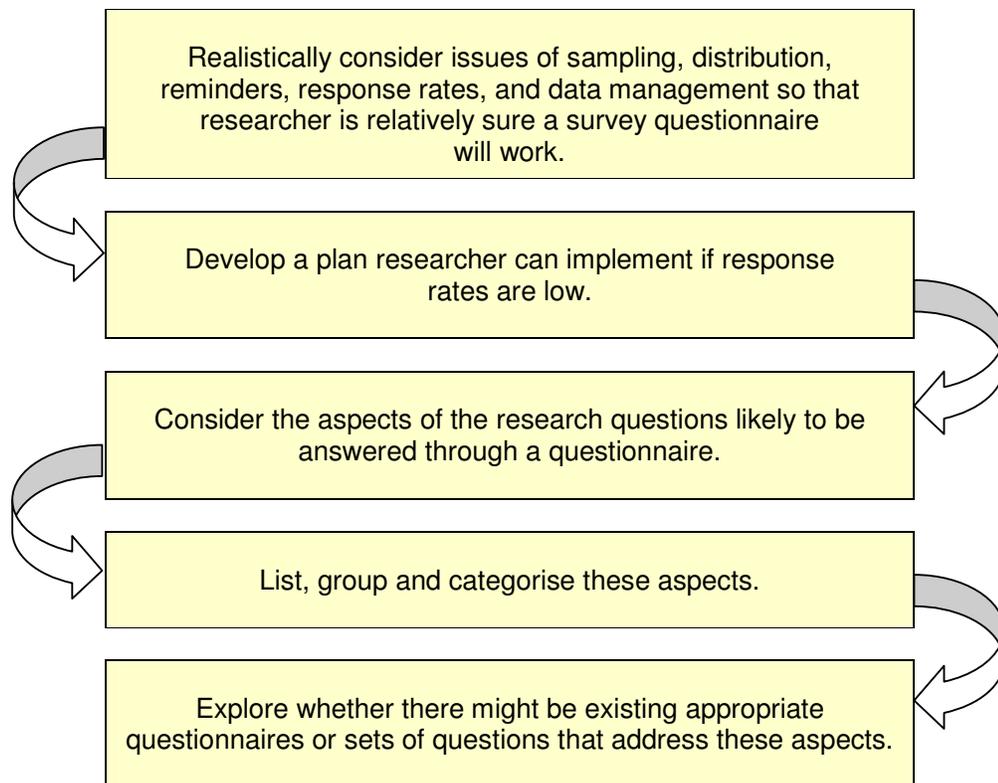
Denscombe (2003:147) indicates the elements that need to be considered during the planning stage of the questionnaire. These include:

- costs
- production or design time frames
- distribution, collection and analysis processes
- time-span for receiving results.

In line with the above, a budget was drafted to establish the costs involved in carrying out the study. In addition, time was scheduled for the design and piloting of the questionnaire. Furthermore, a reasonable amount of time was set aside for collecting responses and doing follow-up reminders. Time was also scheduled for gaining the required research funding, as well as for arranging assistance with the data analysis (refer to Appendix A).

Thorough planning, meticulous structuring and deliberate execution to comply with demands of truth, objectivity and validity are needed to create credible data (Brynard & Hanekom, 2005:28).

O’Leary (2004:155) proposes a number steps for planning a survey. These steps are outlined in Figure 13.



(Source: O’Leary, 2004:155)

Figure 13: Steps for planning a survey

In order to ensure that the questionnaire generated valid, credible and reliable data, the steps outlined in Figure 13 were duly followed in the drafting of the questionnaire (refer to Appendix B).

The main components of a questionnaire are described by Hamlet (2005:145-147) as:

- title
- cover letter
- instructions for completing the questionnaire
- respondent data: these cover matters such as age, education, job title, level of management and so forth.
- focal data: these items gather data on the opinions and views that lie at the core of the study
- open questions to capture topics that might otherwise have escaped notice
- closing remarks: a thank you note to the respondent and instructions on how to return the completed questionnaire to the researcher.

3.6.2.2 Ethical and general considerations

Ethical considerations

Welman, Kruger and Mitchell (2005:182) explain that ethical considerations and ethical behaviour are as important in research as they are in any other field of human activity.

As such, the ethical considerations highlighted in Table 12 underpinned this.

Table 12: Ethical considerations

Competence	A researcher should not embark on research involving the use of skills in which they have not been adequately trained. To do so may risk causing harm to subjects, abusing a subject's goodwill, damaging the reputation of the research organisation, and may involve wasting time and other resources.
Plagiarism	The use of other people's data or ideas without due acknowledgement and permission where appropriate is unethical.
Falsification of results	The falsification of research results or the misleading reporting of results is clearly unethical.

(Source: Adapted from Welman *et al.*, 2005:182)

General considerations

Unlike face-to-face interviews, with a distributed questionnaire there is no one to explain the meaning of the questions to respondents. Therefore, it is important that questions contained in a questionnaire be simple, clear and understandable (Gillham, 2000:10-11).

The layout of a questionnaire should also be presented in an interactive style, be easy to read, pleasant on the eye and the sequence of questions should be easy to follow (Kumar, 2005:126). The potential for mistakes increases dramatically when questionnaires are cluttered, cramped or messy (O'Leary, 2004:161).

Furthermore, the length of the questionnaire should be taken into consideration. If a questionnaire is perceived as being too long, it might be abandoned, returned incomplete or filled in randomly (O'Leary, 2004:161). The length of the questionnaire was determined during the piloting phase of the study.

Both ethical and general considerations were implemented during the design of the questionnaire for this study.

3.6.2.3 Steps in designing the questionnaire

Questions are used as the vehicle for extracting the primary research data. When designing questions, it is essential to have a substantial amount of knowledge regarding the subject to ensure that the most appropriate questions are asked. It is also important to keep the potential audience in mind, as this will guide the level of question complexity (Hussey & Hussey, 1997:164-165).

The length of a questionnaire depends on the type of respondent. Depending on the individual respondent, a questionnaire should only require up to ten minutes to complete. Longer than that may risk causing the respondents to 'put off' completing the questionnaire until they have more time (Allison, O'Sullivan, Owen, Rice, Rothwell & Saunders, 1996:73-74).

According to Hussey and Hussey (1997:163), some authors believe that classification questions are best placed at the beginning of the questionnaire, so that the respondents gain confidence in answering easy questions.

The design process proceeds with the development of the questions to be included in the questionnaire. This should be done in such a manner that it takes potential respondents into consideration and should require the minimum time and effort to respond.

The following steps were followed in the design of the questionnaire, as recommended by O'Leary (2004:155-156):

- Relevant sets of questions (Singh, 2002: Appendix C & D; Hamlet, 2005:236-243) which already existed were adopted, adapted and modified (refer to Appendix C).
- New questions were drafted in line with the literature review undertaken in Chapter 2 of this study.
- The response categories for each question were decided upon, taking into consideration the effect of the response category which translates to different data types that demand quite distinct statistical treatment.
- Each question and response choice was carefully analysed, with the view of determining whether the questions might be seen as ambiguous, leading, confrontational, offensive, based on unwarranted assumptions, double-barrelled or pretentious.
- The wording of certain questions was reformulated in line with the above considerations. These questions were then assessed by three peers and the research supervisor.
- The questions were put in an order that was deemed logical (refer to Section 3.6.3).
- The instructions for completing the questionnaire were then formulated. These instructions were assessed by three peers and the research supervisor to ensure that they appeared clear and unambiguous, and were reformulated where necessary.
- Every effort was made to construct a clear, logical, professional and aesthetically pleasing questionnaire layout and design.
- A cover letter was then drafted, which explained the purpose of the study and why the respondents' input was required.

3.6.2.4 Content

Denscombe (2003:146) indicates that questionnaires rely on written information supplied directly by people in response to questions asked by the researcher. The information in questionnaires tends to fall into two broad

categories – facts and opinions - as indicated in Table 13. Both categories were used in the questionnaire designed for this study.

Table 13: Broad categories of information

Facts	Factual information does not require much in the way of judgement or personal attitudes on the part of respondents. For example, their address, age, gender, marital status, number of children and so forth.
Opinions	Opinions, attitudes, views, beliefs and preferences reveal information about feelings, express values, weighed-up alternatives and, in a way, calls for a judgement about things, rather than the mere reporting of facts.

(Source: Adapted from Denscombe, 2003:146)

The questionnaire consisted of five sections (refer to Appendix B):

- **Section A** covered the company background details of the organisation, such as type of organisation, size, establishment, area and utilisation of learnership(s). This can be viewed as *factual* information.
- **Section B** sought information relating to perspectives towards learnerships, in terms of aspects such as costs, cultures, benefits, advantages, disadvantages and support structures, which can be viewed as *opinions*.
- **Section C** covered learnership levels and time-management as *opinions*.
- **Section D** concentrated on contact and assistance from the MERSETA and delivered both *facts* and *opinions*.
- **Section E** focused on skills development and training requirements of relevant organisations, again through both *factual* information and *opinions*.

It should be noted that emphasis was placed on the *opinions* of respondents in order to generate primary data from the questionnaire and to elicit perspectives of learnerships within relevant organisations.

As indicated in Table 14, both closed- and open-ended questions were used in the design of the questionnaire.

Table 14: Types of questions

<i>Open-ended questions</i>	Questions which require respondents to construct answers using their own words. Respondents can offer any information or express any opinion they wish, although the amount of space provided for an answer will generally limit the response.
<i>Closed-ended questions</i>	Questions which require respondents to choose from a range of predetermined responses and are generally easy to code and to statistically analyse.

(Source: Adapted from O’Leary, 2004:159)

The questionnaire comprised mostly of closed-ended questions, as open-ended questions sometimes tend to provide data that is difficult to code and analyse (O’Leary, 2004:159).

Closed-ended questions were utilised in order to retrieve the maximum amount of information without imposing on the time and resources of the respondents.

Examples of four types of closed-ended questions that were used:

- **Mark the correct space** type questions were used to obtain information regarding the demographics of the organisation, learnerships, the MERSETA exposure and skills development requirements.

- **YES/NO type questions** were utilised throughout the questionnaire to seek definite answers.
- **Indication of percentage** type questions required the respondent to indicate percentages spent on training within the NQF framework.
- **A Likert scale** was also used, where respondents were requested to indicate whether they strongly agree, agree, disagree or strongly disagree with statements.

Careful consideration was taken to avoid the type of questions discussed in Table 15 below:

Table 15: Questions to avoid in a questionnaire

Poorly worded	Complex terms and language, ambiguous questions, double negatives and double-barrelled questions.
Biased, leading or loaded	'Easy to agree' statements, 'hard to disagree with' statements and leading questions.
Problematical for the respondent	Recall-dependant questions, offensive questions, questions that assume knowledge, questions with unwarranted assumptions and questions with socially desirable responses.

(Source: Adopted from O'Leary, 2004:157-158)

3.6.3 Pilot study

A pilot study or pilot test is a small-scale study undertaken to explore areas that need more development and refinement. A pilot study is conducted prior to embarking on the full-scale research investigation (Kumar, 2005:10). Litwin (1995:60) indicates that pilot testing also predicts difficulties that may arise during subsequent data collection, which might otherwise have gone unnoticed. According to Welman *et al.* (2005:148), the pilot study essentially administers the questionnaire instrument to a limited number of subjects from the same population as that for which the eventual project is intended.

The purpose of a pilot study is summarised by Welman *et al.* (2005:148) as:

- to detect possible flaws or errors in the measurement procedures
- to identify unclear or ambiguously formulated items.

Litwin (1995:60) and Anderson (2004:218) concur that authors are so closely involved and absorbed with the project that they may overlook even the most obvious errors. Pilot testing allows a researcher the chance to correct errors and to redesign problematic parts before the survey is mass produced and used.

Pilot testing is strongly advised by Anderson (2004:218), as a survey which is inappropriately designed is likely to generate data that will be of little value.

Saunders, Lewis and Thornhill (2003:308-309) propose that a pilot run be done on a minimum number of 10 persons, who are of similar ability and background to the survey target population. This is done to obtain an assessment of the validity of the questions, as well as the likely reliability of the data that will be collected.

In this study, the following three steps were undertaken:

- **First**, the questionnaire was circulated to three peers in the human resources field, who were requested to make recommendations for amendments in the layout, contents and instructions.
- **Secondly**, the process proceeded to an extended piloting of the questionnaire on a group of 10 respondents, including the research supervisor. The necessary changes were made to the questionnaire in line with applicable recommended feedback, as indicated in Table 16.
- **Thirdly**, a statistician's assessment of the feasibility of the questionnaire design was obtained.

Table 16: Feedback on questions and changes addressed through the pilot study

Focus	Description	Feedback and recommended changes
Content	Is the content of the questions appropriate to the research? Are the questions relevant?	<ul style="list-style-type: none"> • It was established that the content of the questions were appropriate to the research project and would be able to provide the information sought. • A recommendation was made to substitute the word 'perceptions' with 'perspectives'.
Instructions and cover page	Are the instructions clear?	<ul style="list-style-type: none"> • The cover page was viewed as effective, instructions were clear and relevant contact details supplied. • Certain instructions at the end of Section B were unclear and changes were made to the wording thereof. • Instructions were typed in different fonts to draw attention to them.
Questions	Are all the questions clear or ambiguous?	<ul style="list-style-type: none"> • Certain duplications of questions were picked up and deleted from the questionnaire. • Double-barrelled questions were changed to two separate questions. • Recommended specific categories were inserted, for example Health and Safety under training needs. • The word 'portion' was substituted with 'percentage' under Section C, relevant to the NQF. • A few ambiguous questions were ratified. • Initial numerical rating scale of 1 to 10 provided too many options. The scale was changed to four options under a Likert scale - strongly agree, agree, disagree and strongly disagree. • Standardised scales were implemented for consistency, as recommended.
Layout	How appropriate is the layout of the questionnaire?	<ul style="list-style-type: none"> • Despite the fact that the majority of the group indicated that the layout of the questionnaire appeared appropriate, certain recommendations were implemented to give a better and more professional look to the questionnaire. • Areas that were viewed as cluttered, for example 1-to-10 numerical scales, were also adjusted. • A few typographical errors were corrected. • More relevant sections of the questionnaire were arranged at the beginning of the questionnaire, and the less relevant questions at the end.
Length	Time taken to complete the survey? How acceptable are the length of the survey to the respondents?	<ul style="list-style-type: none"> • Time estimated to complete the questionnaire was between 10 and 15 minutes. • A length of approximately 10 minutes was viewed as reasonable by the respondents. Duplicated questions were deleted and rating scales standardised to shorten the questionnaire.

3.6.4 Administration of the questionnaire

The final set of decisions regarding the survey related to determining which would be the best way to distribute the questionnaire to respondents. In order to optimise the response rate, it is vital to ensure that the questionnaire reaches all those in the sample (Anderson, 2004:219).

E-mail facilities, fieldworkers and facsimile facilities were used to distribute the questionnaires.

To ensure that the questionnaire reached the applicable and knowledgeable qualified respondents, each organisation was contacted to clarify who worked with learnerships or who had experience related to learnerships. Specific individuals were then contacted either by e-mail facilities, telephonically and/or via fieldworkers to brief them on the purpose of the survey and to request their permission to deliver the questionnaire. Questionnaires were then faxed, e-mailed or hand-delivered to those respondents who indicated a willingness to participate in the research. This was the *first* step initiated to ensure an acceptable response rate.

Secondly, the cover page and the questionnaire instructions were supplied to respondents. The cover page and questionnaire instructions explained to respondents how the questionnaire was to be completed and what was expected from them (Welman & Kruger, 2001:38).

The cover page included some information on the university involved in the study and clarified the purpose of the survey. An assurance of anonymity and confidentiality was provided. In addition, the cover page gave a deadline date for returning the completed questionnaire and thanked the respondents for their time and assistance. The researcher's contact details were also communicated to enable respondents to make contact if clarification of any

sort was needed, as recommended by O'Leary (2004:160) (refer to Appendix D).

Potential disadvantages regarding the administration of the questionnaire were limited to:

- a concern about anonymity by respondents
- a concern regarding respondents potentially altering the questionnaire.

The administrative advantages were viewed as:

- speedy transmission
- no interviewer bias
- the fact that respondents could complete the questionnaire at any time suitable to them.

The sample's responses were monitored and recorded. During the week, before the closing of submissions for the completed questionnaires, it became evident that the response rate was lower than expected.

Reminders were forwarded to all respondents who were linked on the e-mail database. Owing to the anonymity clause, it was unfortunately not possible to determine which of the respondents who had requested faxed questionnaires responded. As such, reminders could not be sent out to them.

3.7 SCORING OF THE QUESTIONNAIRE

Three steps were followed in the scoring process:

Step 1:

Facts, questions and uncertainties were raised through the literature review and were investigated. These aspects can be summarised as:

- understanding and awareness of the concept of learnerships (Section B)
- impact of learnerships within organisations (Section B)
- perspectives towards learnerships (Section B)
- culture of organisations (Section B)
- external and internal support available for learnership implementation (Section B)
- barriers and challenges facing learnership implementation (Section B, D and E)
- benefits of learnerships (Section B)
- communication and assistance from the MERSETA (Section D)
- learnerships within the NQF context (Section C)
- skills development and training needs (Section C and E)

Step 2:

A questionnaire was designed and numbers were allocated to the different aspects to represent the different ranges of information. This is indicated in Table 17.

Different measurement scales were used to allocate scores, which included:

- **Nominal scale** which are numbers arbitrarily assigned to represent categories, for example 1 = Vanderbijlpark, 2 = Vereeniging and 3 = Meyerton.
- **Ordinal scale** which rank orders the categories in some meaningful way through the use of the Likert scale, for example 1 = Strongly agree, 2 = Agree, 3 = Disagree and 4 = Strongly disagree.
- **Ratio scale** which are 'real' numbers, for example a percentage figure.

Table 17: Numbering of questions in designed questionnaire

Questionnaire	Numerical allocation
Section A	Numbers were used to represent the biographical information. For example, the first question was scored: 1 = Vanderbijlpark, 2 = Vereeniging, 3 = Meyerton and 4 = Other
Section B	<p>This section consists of 20 questions in which the respondents were requested to indicate their choice on a four-point frequency rating scale: 1 = Strongly agree, 2 = Agree, 3 = Disagree and 4 = Strongly disagree</p> <p>For the last two questions, the allocation was as follows: Organisations falling under the MERSETA = 1 Organisations not falling under the MERSETA = 2 Organisations utilising learnerships = 1 Organisations not utilising learnerships = 2</p>
Section C	<p>Numbers were used to represent the learnership information in the first question, as: 1 = NQF Level 5 to 8, 2 = NQF Level 2 to 4 and 3 = NQF Level 1</p> <p>The rest of the questions required a percentage allocation.</p>
Section D	<p>Numbers were again used to represent the MERSETA information.</p> <p>The first two questions under Section D was numbered from first to last, for example: 1 = Never, 2 = Once or twice since existence of SETA, 3 = Annually, 4 = Quarterly, 5 = Monthly and 6 = Other</p> <p>The last question in this section was a YES/NO allocation: 1 = Yes and 2 = No An option for a brief description was also allowed under this question.</p>
Section E	<p>Again YES/NO questions was utilised, scored as: 1 = Yes and 2 = No</p> <p>Several of the questions were numbered from first to last option, for example Question 5 was indicated as: 1 = Management skills, 2 = Interpersonal skills, 3 = Technical job-related skills, 4 = Financial skills, 5 = Engineering skills, 6 = Computer skills, 7 = Health and Safety, 8 = ABET, 9 = HIV awareness, 10 = IT skills and 11 = Other</p> <p>The remainder of the questions were scored in accordance with the Likert scale: 1 = Strongly agree, 2 = Agree, 3 = Disagree and 4 = Strongly disagree</p>

Step 3:

Summation was used to convert categorical variables to continuous variables. Negative questions were inversed in order to compute the realistic values of the continuous variables.

3.8 ANALYSIS OF THE QUESTIONNAIRE

According to Heather (2003:59), quantitative analysis of the question responses obtained from the questionnaire need to be summarised and portrayed clearly. Furthermore, most empirical studies are analysed on a statistical basis to offer the researcher the opportunity to analyse the responses and identify whether the results are skewed (Heather, 2003:59).

Statistical analysis using the Statistical Package for Social Sciences (SPSS), version 15.0 for Windows was undertaken to process the raw data obtained from the questionnaires.

Frequency analysis and comparisons were done through the *Mann-Whitney U test*, based on probability values of $p > 0.05$, $p > 0.01$ and $p > 0.10$.

The Mann-Whitney U test is a well known test that works by producing one overall ranking which is made from both groups being investigated. These combined rankings are then used as the basis for calculating whether there is a *statistically significant difference* between the two groups (Denscombe, 2003:262).

Statistical significance refers to a measure of 'p-value', which assesses the actual probability that research findings are more than coincidental. Conventional p-values are .05, .01 and .001, which indicates the probability of the findings occurring by chance as 5/100, 1/100, or 1/1000 respectively. Generally, the lower the p-value, the more confident researchers can be that findings are genuine (O'Leary, 2004:192).

Welman *et al.* (2005:230) and Robson (2002:230) also describes the Mann-Whitney U test as the non-parametric counterpart of the *t*-test for independent or unpaired groups.

Another non-parametric technique, called the *Spearman's rank correlation coefficient* (r_s) was used to obtain a measure of the linear association between variables in Section B of the questionnaire. According to Hussey and Hussey (1997:232):

- When $r_s = 1$, there is perfect positive linear association.
- When $r_s = 0$, there is no linear association.
- When $r_s = -1$, there is perfect negative linear association.

3.9 RELIABILITY AND VALIDITY

A key issue for any investigative enquiry is its credibility - the extent to which the data that have been obtained are both relevant and valuable. To make this assessment, it is necessary to consider how reliable and valid the data are (Anderson, 2004:111).

Reliability

O'Leary (2004:58) describes reliability as being concerned with internal consistency; that is, whether data collected, measured or generated are the same under repeated trials.

In this study, trials were not repeated and therefore there was no opportunity to compare different results as an indication of the reliability. The study concentrates on perspectives of learnerships in a specific area and no need arises from the research to repeat the study.

Internal consistency was measured under reliability by calculating the Cronbach's alpha coefficient (α). This coefficient reflects the homogeneity of the scale as a reflection of how well the different items complement each other in their measurement of different aspects of the same variable or quality (Litwin, 1995:6).

Correlations through Cronbach's alpha coefficient estimate the extent to which the changes in one variable are associated with changes in the other variable. A positive correlation reflects a direct relationship, one in which an increase in one variable corresponds to an increase in another variable. Two variables that are indirectly or inversely related would produce a negative correlation, indicating that an increase in one variable is associated with a decrease in the other. Therefore, a coefficient of -1,00 represents a perfect, inverse relationship. A coefficient of +1,00 indicates a perfect, direct relationship. A coefficient close to zero indicates no relationship at all (Welman *et al.* (2005:234).

This occurrence is demonstrated in Figure 14, as adopted from Denscombe (2003:263).

+1	0	-1
Perfect positive correlation	No relationship	Perfect negative correlation

Figure 14: Correlation of Cronbach's alpha coefficient

According to Robson (2002:231), the reliability of responses can also be proved if all respondents are presented with the same standardised questions, carefully worded after piloting. The abovementioned proof was obtained in this study.

Validity

Validity is defined as the degree to which an instrument measures that what it was intended to measure (Kumar, 2005:153). O'Leary (2004:61) further elaborates that validity is premised on the assumption that what is being studied can be measured or captured, seeks to confirm the truth and accuracy of any findings or conclusions drawn from the data, indicates that the conclusions drawn are trustworthy and indicates that the methods warrant the conclusions.

A pilot study was used to ensure content validity. Content validity is defined as a subjective measure of how appropriate the items seem to a set of reviewers who have some knowledge of the subject matter (Litwin, 1995:35). For content validity, the questionnaire was circulated to three peers.

Face validity was sought through the circulation of the questionnaire to ten pilot respondents, who made recommendations regarding the layout, content and instructions.

According to Anderson (2004:112), no one project is going to be able to produce findings that are 100 percent reliable and valid. However, it is necessary to address these issues in order to be able to determine an approach to data-gathering that indicates that an attempt was made to take an open-minded approach to gathering data, that steps were taken to minimise the limitations of the study and to maximise its credibility.

Based on the above, a planned approach to gathering the required data was followed. The research instrument was pilot tested to maximise the reliability and validity of the study, and to justify the decisions taken.

3.10 CONCLUSION

In this chapter the research objectives and target population were described. The chapter also described and justified the methodology used in the research design, measuring instrument, construction of the questionnaire, sampling process, data collection method and statistical package used for the statistical analysis.

The results of the data collected through the questionnaire are presented and interpreted in Chapter 4.