CHAPTER 5

RESEARCH METHODOLOGY

5.1 INTRODUCTION

This chapter outlines the methodology employed in the design of the research study. Section 5.2 provides an overview of the data gathering and analysis process. Section 5.3 highlights the data requirements. Section 5.4 describes the development of the research instrument, including the initial pre-testing and piloting of the questionnaire. The sampling procedure followed is discussed in section 5.5. Section 5.6 identifies and discusses the statistical methods applied to the empirical data set.

5.2 OVERVIEW OF THE DATA GATHERING AND ANALYSIS PROCESS

As guided by the objectives formulated in chapter one, the following data was captured from respondents:

1. The relevance of Internet-driven marketing environmental changes to generic undergraduate marketing students.
2. The relevance of the principles guiding the use of the Internet as a marketing tool to generic undergraduate marketing students.
3. The most suitable approach to implementing Internet marketing content elements within higher education undergraduate business programmes.
4. Internet marketing learning outcomes relevant to generic marketing students at undergraduate level.

After the research instrument was designed (refer to Section 5.4), two experienced researchers initially vetted it to check for any obvious questionnaire design mistakes. It

was then scrutinised by two experienced information technology practitioners to check for any technological abnormalities. The initial questionnaire (refer to Annexure A) was pre-tested on a small group of 9 respondents using a combination of the protocol method with 2 respondents and the debriefing approach with 7 respondents. The purpose of this step was to ensure the clarity of questions and to establish the face and content validity of the instrument. After making the necessary adjustments and refinements, the questionnaire was then piloted on two groups – the first consisting of 113 respondents and the second of 50 respondents – to ascertain the reliability of the instrument. The revised questionnaire was then prepared for the final main survey part of the study.

Two groups of respondents were selected for the study – South African marketing lecturers and South African marketing practitioners. A census of the marketing faculties/departments of each of South Africa's 26 public higher education institutions was taken at the end of 2004. For marketing practitioners, a non-probability, judgement sample of 100 companies listed on the Johannesburg Stock Exchange (JSE) was taken at the start of 2005. The same self-administered questionnaire (refer to Annexure C), with adjustments to requested demographical data, together with a covering letter (refer to Annexure B) was e-mailed to potential respondents in both groups from whom telephonic permission had been solicited.

5.3 DATA REQUIREMENTS

The types of data required for the study are as follows:

1. Relevance of Internet-driven marketing environmental changes to generic undergraduate marketing students.
2. Relevance of the principles guiding the use of the Internet as a marketing tool to generic undergraduate marketing students.
3. Suitable approaches to implementing Internet marketing content elements within higher education undergraduate business programmes.

4. Internet marketing learning outcomes relevant to generic marketing students at undergraduate level
5. Demographical data.

5.4 RESEARCH INSTRUMENT DESIGN

The research instrument was designed on the basis of previous literature and research studies pertaining to Internet marketing, as reviewed in chapters three and four. Chapter two's framework of the fundamental elements of general marketing theory was used to guide the selection of published sources relating to Internet marketing. This is in accordance with the general objective of this study, as formulated in chapter one.

5.4.1 Generation of questionnaire items

The list of Internet marketing content elements from published sources in chapter three (Table 3.1) and chapter four (Table 4.1) were combined in table 5.1 below. These items are divided into two constructs. Construct one, Internet-driven marketing environmental changes, has five items. Construct two, principles guiding the use of the Internet as a marketing tool, has twenty-four items.

Table 5.1 Fundamental Internet marketing content elements relevant to generic marketers as derived from published sources

Fundamental Internet marketing content elements	Researcher(s)
Construct 1: Internet-driven marketing environmental changes	
Internet-driven global context of the marketing environment.	Quelch & Klein (1996); Hamill (1997); Day & Montgomery (1999); Arnott & Bridgewater (2002); Buick (2003)
Internet-fuelled data revolution and resulting knowledge-driven economy.	Evans & Wurster (1997); Olivia (1997); Achrol & Kotler (1999); Day & Montgomery (1999); Clarke (2001)

Table 5.1 Fundamental Internet marketing content elements relevant to generic marketers as derived from major published sources (continued ...)

Construct 1: Internet-driven marketing environmental changes	
Consumers' use of the Internet in conjunction with traditional marketing channels to make more informed decisions.	Hoffman & Novak (1996); Hoffman & Novak (1997); Alba *et al.* (1997); Peterson *et al.* (1997); Häubl & Trifts (2000); Bakos (2001); Rasch & Linter (2001); Sarel & Marmorstein (2002); Schoenbachler & Gordon (2002); Hammer (2003); Häubl & Trifts (2003)
Organisational buyers' use of the Internet in conjunction with traditional channels to optimise their purchasing activities.	Kaplan & Sawhney (2000); Kennedy & Deeter-Schmelz (2001); Porter (2001); Rajkumar (2001); Attaran & Attaran (2002); Webb (2002); Lichtenthal & Eliaz (2003); Berthon *et al.* (2003); Mahadevan (2003); Piercy & Lane (2003); Sain *et al.* (2004)
The Internet-driven network marketing environment.	Achrol & Kotler (1999); Day & Montgomery (1999); Srivastava *et al.* (1999); Walters & Lancaster (1999b); Pels *et al.* (2000); Awuah (2001); Porter (2001); Evans *et al.* (2002); Sawhney (2002); Kandampully (2003)
Construct 2: Principles guiding the use of the Internet as a marketing tool	
Using the Internet to optimise the marketing intelligence process.	Atwong & Hugstad (1997); Nour (2000); Siegel (2000); Benbunan-Fich *et al.* (2001); Castleberry (2001); Wee (2001)
Applying the Internet to improve the marketing research process.	Malhotra & Peterson (2001); Miller & Dickson (2001); Malhotra *et al.* (2002); Malhotra (2004)
Conditions under which it is suitable to choose the Internet over traditional offline alternatives as an instrument for gathering primary marketing research.	Miller & Dickson (2001); Nancarrow *et al.* (2001); Sweet (2001); Mohammed *et al.* (2003)
The design of Internet-based primary marketing research gathering instruments.	Dillman *et al.* (1998); Burke *et al.* (2001); Furrer & Sudharshan (2001); Malhotra & Peterson (2001); Miller & Dickson (2001); Sweet (2001); Malhotra *et al.* (2002); Mohammed *et al.* (2003); Malhotra (2004)
Using the Internet to profile market segments more precisely.	Kierzkowski *et al.* (1996); Jain (2000); Wind & Mahajan (2001); Randell *et al.* (2002); Rao & Ali (2002); Rowley (2002a); Mohammed *et al.* (2003); Ferrell & Hartline (2005)

Table 5.1 Fundamental Internet marketing content elements relevant to generic marketers as derived from major published sources (continued ...)

Construct 2: Principles guiding the use of the Internet as a marketing tool	
Utilising the Internet as a tool for targeting the right customer with the right market offering.	Kierzkowski *et al.* (1996); Jain (2000); Wind & Mahajan (2001); Randell *et al.* (2002); Rao & Ali (2002); Rowley (2002b); Mohammed *et al.* (2003); Ferrell & Hartline (2005)
Applying the Internet to optimise the organisation's brand positioning.	Silverstein *et al.* (2001a); Sarel & Marmorstein (2002); Mohammed *et al.* (2003)
Using virtual online communities to enhance marketing efforts.	Armstrong & Hagel (1996); McWilliam (2000); Chen (2001); Balasubramanian & Mahajan (2001); Easley (2002); Mohammed *et al.* (2003); Sands (2003); Botha *et al.* (2004)
Utilising the Internet to improve service-marketing efforts.	Zeithaml & Bitner (1996); Pitt *et al.* (1999); Leong *et al.* (2003); Mohammed *et al.* (2003)
Using the Internet to augment the core product/service with customer-led added value.	Rayport & Sviokla (1995); Balasubramanian *et al.* (2001); Randell *et al.* (2002); Varadarajan & Yadav (2002); Chaffey (2003); Mohammed *et al.* (2003)
Exploiting Internet's real-time interactivity to implement a mass customisation strategy.	Gordon (1998); Kotler (1999); Sanches (1999); Byrne (2000); Lee *et al.* (2000); Balasubramanian *et al.* (2001); Wind & Mahajan (2001); Grenci & Todd (2002); Varadarajan & Yadav (2002); Mohammed *et al.* (2003); Ferrell & Hartline (2005)
Using the Internet to create a total ongoing service delivery offering for the customer.	Balasubramanian *et al.* (2001); Sawhney (2001); Wind & Mahajan (2001); Varadarajan & Yadav (2002); Mohammed *et al.* (2003); Oliver (2003)
Applying the Internet to optimise the new product development process.	Iansiti & MacCormack (1997); Watson & Zinkhan (1997); Howe *et al.* (2000); Allen & Fjermestad (2001); Balasubramanian *et al.* (2001); Hart (2003); Mohammed *et al.* (2003)
Using the Internet to enhance the pricing process.	Hanson (2000); Marn (2000); Baker *et al.* (2001); Pitt *et al.* (2001); Simon & Schumann (2001); Iyer *et al.* (2002); Diamantopoulos (2003); Mohammed *et al.* (2003); Fleischmann *et al.* (2004); Verma & Varma (2004)
Designing a compelling marketing Web site.	Aldridge *et al.* (1997); Oliva (1998); Shepherd & Fell (1998); Nielsen (1999); Geissler (2001); Silverstein *et al.* (2001a); Worthington-Smith (2001); Page & Lepkowska-White (2002); Reddy & Iyers (2002); Young (2002); Bocij *et al.* (2003); Kim *et al.* (2003); Mohammed *et al.* (2003); Botha *et al.* (2004)

Table 5.1 Fundamental Internet marketing content elements relevant to generic marketers as derived from major published sources (continued ...)

Construct 2: Principles guiding the use of the Internet as a marketing tool	
Applying Internet marketing communication tools optimally as part of an integrated marketing communication mix strategy.	Berthon *et al.* (1996); Kierzkowski *et al.* (1996); Geissler (2001); Page & Lepkowska-White (2002); Chaffey (2003); Mohammed *et al.* (2003)
Utilising the Internet to move from one-direction marketing communication to relationship-building interactive dialogue.	Berthon *et al.* (1996); Kierzkowski *et al.* (1996); Hoffman & Novak (1997); Peppers (2000); Wang *et al.* (2000); Deighton & Barwise (2001); Chen (2001); Geissler (2001); Sarel & Marmorstein (2002); Chaffey (2003); Quinton & Harridge-March (2003); O'Leary *et al.* (2004)
Applying the Internet to optimise personal selling efforts.	Berthon *et al.* (1996); Avlonitis & Karayanni (2000); Kleindl (2001); Porter (2001); Sawhney (2001); Donaldson (2003); Piercy & Lane (2003); Spiro *et al.* (2003)
Leveraging the Internet to enhance the management of sales force efforts.	Avlonitis & Karayanni (2000); Donaldson (2003); Piercy & Lane (2003); Spiro *et al.* (2003); Ferrell & Hartline (2005)
Using the Internet as a customer-oriented transaction channel.	Lohse & Spiller (1998); Novak *et al.* (2000); Rasch & Linter (2001); Reibstein (2001); Silverstein *et al.* (2001a); Silverstein *et al.* (2001b); Mohammed *et al.* (2003); Botha *et al.* (2004)
Integrating the Internet channel with traditional distribution channels to optimise the customer experience across channels.	Peppers (2000); Burns (2001); Porter (2001); Rasch & Linter (2001); Silverstein *et al.* (2001b); Worthington-Smith (2001); Schoenbachler & Gordon (2002); Webb (2002); Kotler (2003); Mohammed *et al.* (2003)
Using Internet technologies to build a customer-led value delivery network.	Jüttner & Wehrli (1994); Gordon (1998); Achrol & Kotler (1999); Walters & Lancaster (1999a); Awuah (2001); Porter (2001); Roberts (2001); Sheth & Sisodia (2001); Silverstein *et al.* (2001a); Wind & Mahajan (2001); Sawhney & Zabin (2002); Kotler (2003); Kotzab *et al.* (2003); Mohammed *et al.* (2003)

Table 5.1 Fundamental Internet marketing content elements relevant to generic marketers as derived from major published sources (continued ...)

Construct 2: Principles guiding the use of the Internet as a marketing tool	
Leveraging the Internet strategically as an international marketing tool to optimise international marketing efforts.	Quelch & Klein (1996); Hamill (1997); Poon & Jevons (1997); White (1997); Palumbo & Herbig (1998); Johansson (2000); Bandyopadhyay (2001); Lynch & Beck (2001); Worthington-Smith (2001); Eid *et al.* (2002); Ho *et al.* (2003); Keegan & Green (2003); Kotler (2003); Melewar & Smith (2003)
Using Internet technologies in an ethical manner that fosters relationship-building trust.	Wang *et al.* (1998); Hoffman *et al.* (1999a); Hoffman *et al.* (1999b); Franzak *et al.* (2001); Gauzente & Ranchhod (2002); Sarel & Marmorstein (2002); Goldsborough (2003); Mohammed *et al.* (2003); Botha *et al.* (2004); Ferrell & Hartline (2005)

These 29 content elements were then formulated into 29 structured-undisguised statements. Four additional questions were included to answer research questions three and four in chapter one (refer to Section 1.2). Further, questions regarding demographical data were added.

5.4.2 Question format

Structured-undisguised questions were selected given their benefits of alleviating respondents' difficulty in replying to such questions, together with the greater reliability generally afforded by such questions (Churchill & Iacobucci, 2002: 271).

Questions were mainly of the fixed-alternative type. The fixed-alternative format was selected on the basis that such questions facilitate comparability of respondents' responses (Aaker *et al.*, 2004: 317) and, again, aid in ensuring reliability (Churchill & Iacobucci, 2002: 271.)

Although Mohammed *et al.* (2003: 646) advise against the use of open-ended questions in an e-mail questionnaire, the decision was taken to include one such question. Question

B30 was added to provide respondents with the opportunity to add an Internet marketing content element that had not been considered by the researcher. This served as a measure of the instrument's content validity in the pre-test (McDaniel & Gates, 1999: 310) and an ongoing measure of content validity in the final study.

5.4.3 Layout, phrasing and length of questionnaire

Regarding the layout, phrasing and length of the questionnaire, suggestions by a variety of authors were taken into account.

Firstly, an effort was made to arrange the questions in an order that would appear logical from the respondent's perspective (Boyed *et al.*, 1985: 289). Demographical questions were placed first, followed by questions related to Internet-driven marketing environmental changes, followed by questions pertaining to the principles guiding the use of the Internet as a marketing tool. Regarding this section, questions were arranged according to the flow typically associated with general marketing text, which marketing lecturers and practitioners alike are more likely to feel comfortable with. Questions pertaining to the implementation methods and learning outcomes were placed last.

Aaker *et al.* (2004: 321) advise that questions be phrased using "simple, direct and familiar" vocabulary. The researcher endeavoured to ensure that the language used was simple, direct and familiar. Even so, recognition was given to the necessity of including respondents for whom English represents a second, rather than first language in the initial pre-testing of the questionnaire. This is essential given South Africa's multilingual nature. Following the initial pre-test language was further simplified.

To alleviate potential problems of ambiguity, care should be taken to phrase questions in a clear, concise but complete manner and to avoid questions of a double-barrelled nature (Welman & Kruger, 2001: 168). Due care was taken to ensure that each question was formulated in a clear manner that only asked one question. The word 'and' was avoided in the body of all questions to prevent potentially double-barrelled questions. Following

the initial pre-test, the decision was taken to provide additional information or examples in certain questions for the purpose of increasing understanding. All questions were kept as concise as possible, without sacrificing their clarity.

Given the self-administered format of the questionnaire, the researcher endeavoured to ensure that all instructions regarding the answering of questions were clearly set out. Further, as advised by Miller and Dickson (2001) and Mohammed *et al.* (2003: 638), the questionnaire was tested to ensure that it could be completed in well under the 20-minute maximum prescribed for e-mail questionnaires.

5.4.4 Measurement scales used in the study

Measurement, by its very nature, necessitates the application of some type of scale. A large variety of measurement scaling techniques exist for researchers to select from (Dillon *et al.*, 1993: 272). Typically used attitude measurement scales include, the Likert scale, the semantic differential scale and the staple scale. For the purpose of this study, the Likert scale or summated rating scale was selected, given that such scales provide a reflection of the strength of belief held regarding a given attitude-object (Churchill & Iacobucci, 2002: 379). The Likert scale requires respondents to indicate the extent to which they hold a favourable or unfavourable attitude toward a series of evaluative statements regarding the attitude-object under investigation (Dillon *et al.*, 1993: 292).

The study made use of four-point Likert scales, ranging from 'highly relevant' to 'not relevant' in section B, and 'strongly agree' to 'strongly disagree' in section D. An even, rather than odd, rating scale was selected in order to mitigate the potential of respondents choosing the 'middle-of-the-road' response. Additionally, all questions using scaled responses included a no-response option to alleviate potential loss of validity arising from forced response.

5.4.5 Pre-testing of questionnaire

Luck and Rubin (1987: 198) subject that questionnaire pre-testing is a mandatory research step in questionnaire design. Dhurup (2003: 225, 226) concurs, indicating that the objective of pre-testing is to ascertain whether the questionnaire elicits the data the researcher requires. According to Aaker *et al.* (2004: 329), the initial pre-test stage can utilise the protocol or debriefing approach. For this study, initial pre-testing was undertaken in three stages in order to ensure both the face validity and content validity of the research instrument. The questionnaire included an open-ended question asking respondents if any other item should be included. McDaniel and Gates (1999: 310) indicate that this is one approach to determining the content validity of the instrument.

Firstly, the questionnaire was vetted by two experienced researchers to check for any obvious mistakes and potential problems, as advised by Welman and Kruger (2001: 141). As suggested by Avlonitis and Karayanni (2000), the questionnaire was then turned over to two experienced information technology practitioners. The purpose of this step was to confirm the technical aspects regarding the commercial applicability of the Internet as a marketing tool, as indicated in the questionnaire.

Secondly, a protocol-based personal interview was conducted with an experienced marketing academic. During the interview the respondent was requested to verbalise his interpretation of each question. The purpose of this step was to clarify that each question was decoded in the manner in which was intended. The same procedure was then followed with an experienced marketing practitioner. The feedback gleaned from these two interviews was then used to refine the questionnaire. For example, to correct the vagueness of certain questions, examples or further explanations were added.

Thirdly, the debriefing approach to pre-testing was undertaken. The questionnaire was e-mailed to 2 marketing practitioners, 3 marketing lecturers and 2 senior marketing students. Four of these respondents were specifically selected for the fact that English represents their second, rather than first language. Given the multilingual context of the

South African environment, the understanding of English questions by non-English respondents is a salient questionnaire design consideration. During the follow-up process of debriefing, the 7 respondents were encouraged to share their comments and suggestions concerning each question, as well as their overall assessment of the questionnaire. These comments and suggestions were then used to refine the questionnaire further. For example, the word 'leveraging' was substituted with more familiar terms, such as 'applying/using/utilising' and the word 'seamlessly' was removed.

Following the initial pre-testing and consequent adjustments and refinements, the questionnaire was then piloted on two non-probability, judgement samples of respondents to test the reliability of the instrument. The first comprised 113 third year marketing students and the second, 50 fourth year marketing students. These pilot studies also provided an opportunity to do a trial run on coding and tabulating of data. The results of these pilot studies are reported in the following chapter.

5.5 THE SAMPLING PROCEDURE

McDaniel and Gates (1999: 406) outline a seven-step procedure for developing a sampling plan. The sequential steps in this procedure are illustrated in figure 5.1 below.

5.5.1 Target population definition

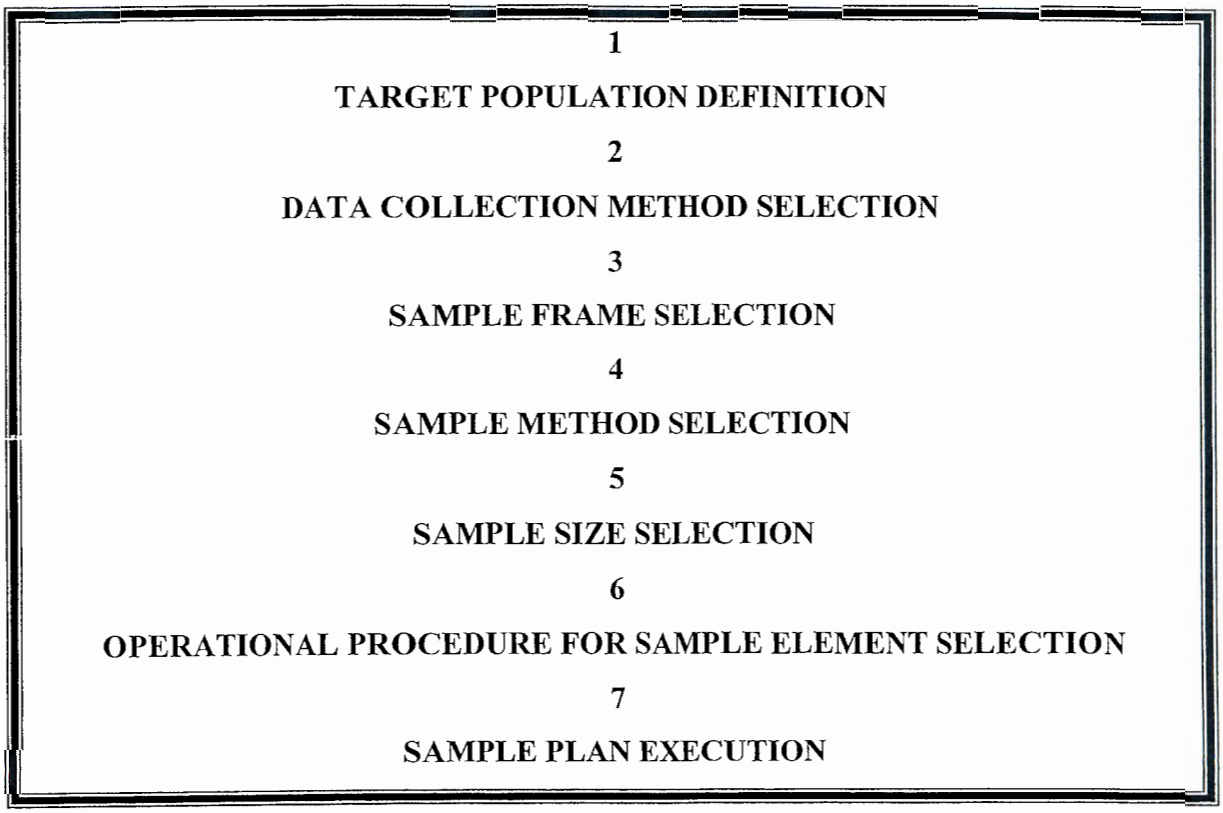
Churchill and Iacobucci (2002: 448), who define a target population to be "the totality of cases that conform to some designated specifications", highlight the importance of ensuring that the target population is defined in precise terms. For the purpose of this study, two target populations are defined - marketing academics and marketing practitioners. Firstly, the marketing academic target population is defined as full-time lecturers lecturing marketing and/or marketing related subjects in the marketing faculties/departments at South African higher education institutions. Secondly, the marketing practitioner target population is defined as individuals employed by companies

operating in the South African market, whose responsibilities are chiefly marketing or marketing related.

5.5.2 Data collection method selection

The e-mail survey questionnaire was selected as the data collection method, due to the advantages this mode offers in terms of cost, speed and geographic reach. The e-mail attachment mode was selected over the embedded questionnaire mode, given that it offers a more professional look (Churchill & Iacobucci, 2002: 281). This choice of data collection method necessitates first soliciting permission to forward the questionnaire to potential respondents. The telephone contact method was selected for this purpose. Both communication methods offer unlimited geographic reach at a reasonable cost.

Figure 5.1 Procedure for developing a sampling plan



Source: McDaniel & Gates (1999: 406)

5.5.3 Sampling frame, sampling method and sample size selection

As indicated by Churchill and Iacobucci (2002: 452), the selection of the sampling frame and sampling method go hand-in-hand, in that the chosen sampling method depends largely on the availability of a sampling frame.

The sampling frame of South African marketing lecturers selected consisted of the marketing faculties/departments at each of South Africa's then 26 public higher education institutions. A listing of these institutions is available on the Council of Higher Education's Web site (http://www.che.ac.za/links/links.php?link=12), which provides links to each of the listed institutions' Web sites, from which relevant contact details can be obtained. The size of the sampling frame then guided the decision to conduct a census of these institutions. It should be noted that these 26 institutions are the result of various mergers that sought to consolidate the 36 institutions, comprising 21 universities and 15 technikons, that existed at the start of 2002 (DOE, 2002). Following the merger of Rand Afrikaans University and Technikon Witwatersrand in early 2005, there were 25 institutions (DOE, 2004). Even so, at the time of the census, the sampling frame consisted of 26 institutions, as listed in table 5.2 below.

Table 5.2 South African public higher education institutions in 2004

Institution	Web Site Address
1. Cape Peninsula University of Technology	http://www.cput.ac.za
2. Central University of Technology, Free State	http://www.cut.ac.za
3. Durban Institute of Technology	http://www.dit.ac.za
4. Mangosuthu Technikon	http://www.mantec.ac.za/
5. Nelson Mandela Metropolitan University	http://www.nmmu.ac.za
6. North-West University	http://www.nwu.ac.za/
7. Rand Afrikaans University	http://www.rau.ac.za
8. Rhodes University	http://www.ru.ac.za/
9. Stellenbosch University	http://www.sun.ac.za/
10 Technikon Witwatersrand	http://www.tsa.ac.za
11 Tshwane University of Technology	http://www.tut.ac.za
12 University of Cape Town	http://www.uct.ac.za/

Table 5.2 South African public higher education institutions in 2004 (continued ...)

Institution	Web Site Address
13 University of Fort Hare	http://www.ufh.ac.za/
14 University of KwaZulu-Natal	http://www.ukzn.ac.za
15 University of Limpopo	http://www.ul.ac.za/
16 University of Pretoria	http://www.up.ac.za
17 University of South Africa	http://www.unisa.ac.za/
18 University of the Free State	http://www.uovs.ac.za/
19 University of the Western Cape	http://www.uwc.ac.za/
20 University of the Witwatersrand	http://www.wits.ac.za/
21 University of Venda	http://www.univen.ac.za
22 University of Zululand	http://www.uzulu.ac.za/
23 Vaal University of Technology	http://www.vut.ac.za/
24 Walter Sisulu University for Technology and Science (Border Technikon Campus)	http://www.bortech.ac.za/
25 Walter Sisulu University for Technology and Science (Eastern Cape Technikon Campus)	http://www.tktech.ac.za/
26 Walter Sisulu University for Technology and Science (University of Transkei Campus)	http://www.utr.ac.za/

Source: Council of Higher Education (2004)

A sampling frame of the top 200 companies, listed on the Johannesburg Stock Exchange (JSE) and ranked according to turnover, as published in the Financial Mail (2004) was selected. Published lists of top public companies according to sales turnover are often used as sampling frames of business practitioners (Kohli & Jaworski, 1993; Dutta & Segev, 1999; Farrall, 2000; Mitchell & Strauss, 2001). From this sampling frame a non-probability, judgement sample of the top 100 companies was selected. This size sample was deemed sufficiently large, given that it represented 30 of the 39 industry sectors in South Africa, that is, 77 percent. A list of these 100 companies, ranked according to turnover, is presented in table 5.3 below. Note, those companies highlighted in **bold** did not form part of the actual sample of 75 companies (refer to Section 5.5.5).

Table 5.3 Top South African listed companies according to turnover

Ranking by turnover	Company	Sector	Financial year end
1	BHP Billiton	Resources - Mining – Other Mineral Extractors & Mines	Jun 2003
2	Anglo American	Resources - Mining – Other Mineral Extractors & Mines	Dec 2003
3	Old Mutual	Financials – Life assurance	Dec 2002
4	SABMiller	Non-Cyclical Consumer Goods - Beverages	Mar 2003
5	Sasol	Resources - Oil & Gas – Oil & Gas	Jun 2003
6	Metro Cash & Carry	Cyclical Services - General Retailers	Apr 2003
7	Bidvest	Cyclical Services - Support Services	Jun 2003
8	Sanlam	Financials – Life assurance	Dec 2002
9	Standard Bank	Financials - Banks	Dec 2002
10	Telkom SA	Non-Cyclical Services - Telecommunication Services	Mar 2003
11	FirstRand	Financials - Banks	Jun 2003
12	Absa Group	Financials - Banks	Mar 2003
13	Barloworld	General Industrials - Diversified Industrials	Sep 2003
14	**Imperial Holdings**	**General Industrials - Diversified Industrials**	**Jun 2003**
15	**Richemont Securities**	**Cyclical Consumer Goods - Household Goods & Textiles**	**Mar 2003**
16	Nedcor	Financials - Banks	Dec 2002
17	Sappi	Basic Industries - Forestry & Paper	Sep 2003
18	Pick 'n Pay Stores	Non-Cyclical Services - Food & Drug Retailers	Feb 2003
19	Shoprite Holdings	Non-Cyclical Services - Food & Drug Retailers	Jun 2003
20	Tiger Brands	Non-Cyclical Consumer Goods - Food Producers & Processors	Sep 2003
21	Datatec	Information Technology - Software & Computer Services	Feb 2003
22	Massmart Holdings	Cyclical Services - General Retailers	Jun 2003
23	**MTN Group**	**Non-Cyclical Services - Telecommunication Services**	**Mar 2003**
24	Iscor	Basic Industries - Steel & Other Metals	Jun 2003
25	Nampak	Cyclical Services - Support Services	Sep 2003
26	Anglo American Platinum	Resources - Mining – Platinum	Dec 2003
27	Liberty Holdings	Financials – Life assurance	Dec 2002
28	Liberty Group	Financials – Life assurance	Dec 2002
29	AngloGold Ashanti	Resources - Mining – Gold Mining	Dec 2003
30	Dimension Data	Information Technology - Software & Computer Services	Sep 2003
31	Gold Fields	Resources - Mining – Gold Mining	Jun 2003

Table 5.3 Top South African listed companies according to turnover (continued ...)

Ranking by turnover	Company	Sector	Financial year end
32	**Aveng**	**Basic Industries -Construction & Building Materials**	**Jun 2003**
33	**Johnnic Holdings**	**Cyclical Services – Media & Entertainment**	**Mar 2003**
34	**Impala Platinum Holdings**	**Resources – Mining – Platinum**	**Jun 2003**
35	Naspers	Cyclical Services – Media & Entertainment	Mar 2003
36	Allied Electronics Corp	General Industrials – Electronic & Electrical Equipment	Feb 2003
37	Murray & Roberts Holdings	Basic Industries –Construction & Building Materials	Jun 2003
38	Steinhoff International Holdings	Cyclical Consumer Goods – Household Goods & Textiles	Jun 2003
39	Woolworths Holdings	Cyclical Services – General Retailers	Jun 2003
40	Edgars Consolidated Stores	Cyclical Services – General Retailers	Mar 2003
41	Harmony Gold Mining Co	Resources – Mining – Gold Mining	Jun 2003
42	**Remgro**	**Financials – Investment Companies**	**Mar 2003**
43	Santam	Financials – Insurance	Dec 2002
44	AECI	Basic Industries – Chemicals	Dec 2002
45	Kumba Resources	Resources – Mining – Other Mineral Extractors & Mines	Jun 2003
46	Unitrans	Cyclical Services – Transport	Jun 2003
47	**New Clicks Holdings**	**Cyclical Services – General Retailers**	**Aug 2003**
48	Afrox	Basic Industries – Chemicals	Sep 2003
49	Illovo Sugar	Non-Cyclical Consumer Goods – Food Producers & Processors	Mar 2003
50	Metropolitan Holdings	Financials – Life assurance	Dec 2002
51	**AVI**	**Non-Cyclical Consumer Goods – Food Producers & Processors**	**Jun 2003**
52	**Tradehold**	**Cyclical Services – General Retailers**	**Feb 2003**
53	**Afgri**	**Non-Cyclical Consumer Goods – Food Producers & Processors**	**Feb 2003**
54	Reunert	General Industrials – Electronic & Electrical Equipment	Sep 2003
55	Tongaat-Hulett Group	Non-Cyclical Consumer Goods – Food Producers & Processors	Dec 2002
56	Super Group	Cyclical Services – Transport	Mar 2003
57	Network Healthcare	Non-Cyclical Consumer Goods – Health	Sep 2003
58	JD Group	Cyclical Services – General Retailers	Aug 2003
59	African Life Association	Financials – Life assurance	Mar 2003
60	Mutual & Federal Insurance	Financials – Insurance	Dec 2002

Table 5.3 Top South African listed companies according to turnover (continued ...)

Ranking by turnover	Company	Sector	Financial year end
61	**Lonmin**	**Resources – Mining – Platinum**	**Sep 2003**
62	Sage Group	Financials – Life assurance	Dec 2002
63	Distell Group	Non-Cyclical Consumer Goods – Beverages	Jun 2002
64	Amalgamated Beverages Ind	Non-Cyclical Consumer Goods – Beverages	Mar 2003
65	**African Rainbow Minerals**	**Resources - Mining – Other Mineral Extractors & Mines**	**Jun 2003**
66	**Alexander Forbes**	**Financials - Insurance**	**Mar 2003**
67	Capital Alliance Holdings	Financials – Life assurance	Mar 2003
68	Afrox Healthcare	Non-Cyclical Consumer Goods - Health	Sep 2003
69	**Liberty International**	**Financials - Real Estate**	**Dec 2003**
70	**Kersaf Investments (Renamed Sun International Ltd in 2004)**	**Cyclical Services - Leisure and Hotels**	**Jun 2003**
71	Group Five	Basic Industries -Construction & Building Materials	Jun 2003
72	Allied Technologies	General Industrials - Electronic & Electrical Equipment	Feb 2003
73	Seardel Investment Corp	Cyclical Consumer Goods - Household Goods & Textiles	Jun 2003
74	Hiveld Steel & Vanadium	Basic Industries - Steel & Other Metals	Dec 2002
75	Astral Foods	Non-Cyclical Consumer Goods - Food Producers & Processors	Sep 2003
76	Foschini	Cyclical Services - General Retailers	Mar 2003
77	**Comparex Holdings**	**Information Technology - Software & Computer Services**	**May 2003**
78	Discovery Holdings	Financials - Insurance	Jun 2003
79	**Rainbow Chicken**	**Non-Cyclical Consumer Goods - Food Producers & Processors**	**Mar 2003**
80	**Wesco Investments**	**Cyclical Consumer Goods - Automobiles & Parts**	**Mar 2003**
81	Mr Price Group	Cyclical Services - General Retailers	Mar 2003
82	**Zambia Copper Investments**	**Resources - Mining – Other Mineral Extractors & Mines**	**Dec 2002**
83	Johnnic Communications	Cyclical Services - Media & Entertainment	Mar 2003
84	**Rebserv Holdings**	**Cyclical Services - Support Services**	**Jun 2003**
85	Bytes Technology Group	Information Technology - Software & Computer Services	Feb 2003
86	**Pretoria Portland Cement**	**Basic Industries -Construction & Building Materials**	**Sep 2003**
87	Mustek	Information Technology - Information Technology Hardware	Jun 2003

Table 5.3 Top South African listed companies according to turnover (continued ...)

Ranking by turnover	Company	Sector	Financial year end
88	Tiger Wheels	Cyclical Consumer Goods - Automobiles & Parts	Jun 2003
89	SA Eagle Insurance	Financials - Insurance	Dec 2002
90	Dorbyl	Basic Industries -Construction & Building Materials	Mar 2003
91	Medi-Clinic Corp	Non-Cyclical Consumer Goods - Health	Mar 2003
92	**Assmang**	**Resources - Mining – Other Mineral Extractors & Mines**	**Jun 2003**
93	Caxton & CTP Publishers & Print	Cyclical Services - Media & Entertainment	Jun 2003
94	Combined Motor Holdings	Cyclical Consumer Goods - Automobiles & Parts	Feb 2003
95	Oceana Group	Non-Cyclical Consumer Goods - Food Producers & Processors	Sep 2003
96	Durban Roodepoort Deep	Resources - Mining – Gold Mining	Jun 2003
97	**WBH-Ovcon**	**Basic Industries -Construction & Building Materials**	**Jun 2003**
98	Bell Equipment	General Industrials - Engineering & Machinery	Dec 2002
99	**Omnia Holdings**	**Basic Industries – Chemicals**	**Mar 2003**
100	Truworths International	Cyclical Services - General Retailers	Jun 2003

Source: Financial Mail (2004)

5.5.4 Operational procedure for sample element selection

McDaniel and Gates (1999: 416) highlight the importance of developing a clear operational procedure for selecting sampling elements.

In order to select the sample elements for the census of marketing lecturers, the decision was taken to phone each of South Africa's 26 public higher education institutions. The operational procedure to be followed included soliciting permission to forward a questionnaire via e-mail from the contacted marketing lecturer. Further, the contacted marketing lecturer would then be telephonically requested to forward the questionnaire on to the other full-time marketing lecturers at that institution. To mitigate the out-of-

office problem, the decision was taken to establish contact in November 2004, the month when most South African lecturers are more likely to be office-bound due to the marking of examination scripts. Taking into account the December holiday, a follow-up of non-respondents was planned for the beginning of February 2005.

To select the sample elements for the non-probability, judgement sample of marketing practitioners, use was made of the Profile's Results and Earnings 4th Quarter book (Oldert, 2004). The company secretary of each of the 100 companies was to be telephonically contacted to obtain the name of a senior marketing staff member and permission to contact that person directly. The identified marketing practitioner was then to be telephonically contacted to obtain that person's permission and e-mail address, upon which, the e-mail questionnaire would be sent. The decision was taken to establish contact mid-January 2005 – again taking into account the December holiday – and to allow the survey to continue through to February 2005, to take into account potential respondents' busy schedules.

To avoid the sin of excessive e-mail reminders (Section 4.3.3), only two follow-up reminders would be sent out to non-respondents. For the purpose of maintaining the ongoing goodwill of respondents for future researchers wishing to use this contact mode, respondents would be sent thank-you e-mails, upon receipt of a completed questionnaire.

5.5.5 Sample plan execution

The sample plan was then duly executed according to the operational procedure established above. Permission to forward e-mail questionnaires was obtained from all 26 public higher education institutions. Responses were received from 19 of these 26 institutions, yielding a response rate of 73 percent. A total of 47 responses were received; with 9 institutions providing responses from 1 marketing lecturer, 3 institutions providing responses from 2 marketing lecturers, 2 institutions providing responses from 3 marketing lecturers, 3 institutions providing responses from 4 marketing lecturers and 2 institutions providing responses from 7 marketing lecturers.

The questionnaire was e-mailed to 75 of the 100 companies from which telephonic permission had been obtained. This provided coverage of 27 of the 39 sectors. The non-response portion of the original sample of 100 companies comprises 54 companies of which, 15 companies were automatically deselected after telephonically indicating that they were either not involved in any type of marketing activity or were not operational in the South African market. A further 10 companies indicated no inclination to take part in the study. Responses were received from 46 companies. This translates into a 46 percent response rate from the base of the original 100 identified companies and a filtered response rate of 61 percent from the base of the 75 companies actually sampled. A total of 51 responses were received; with 42 companies providing responses from 1 marketing practitioner, 3 companies providing responses from 2 marketing practitioners and 1 company providing responses from 3 marketing practitioners. The companies that did not form part of the actual sample of 75 companies are indicated in **bold letters** in table 5.3.

5.6 STATISTICAL ANALYSIS

The captured data was analysed using the SAS and STATISTICA software packages.
The following statistical methods were used on the empirical data sets:

- Reliability and validity analysis
- Descriptive analysis
- Hypotheses tests

5.6.1 Reliability and validity analysis

In order for research to be considered scientific it is necessary for both the validity and the reliability of the said research instrument to be assessed (Peter, 1979; Boyd *et al.*, 1985: 30). The validity of a research instrument refers to the degree to which an instrument truly measures that which it is meant to measure. Reliability, on the other hand, concerns the degree to which a research instrument is devoid of random error and thereby yields consistent results (Peter, 1979; McDaniel & Gates, 1999: 304, 308).

While the reliability of a research instrument is not a sufficient condition of validity, it is most definitely a necessary condition (Peter, 1979; Dillon *et al.*, 1993: 294; Churchill & Iacobucci, 2002: 414). While there are a number of different methods available for assessing reliability, for the purpose of this study the internal consistency estimate of reliability was selected, more specifically the Cronbach alpha coefficient.

- **Internal consistency reliability:** This measure of reliability is suitable for determining the reliability of instruments containing multiple point items. The test involves splitting items in the measurement instrument into two halves, either randomly or according to odd and even numbered items. The data sets are then correlated to determine the correlation coefficient. The problem that arises here is that the use of different criteria to split the items gives rise to different correlation coefficients and, hence, different reliability coefficients. For this reason, and in accordance with common research practice, the Cronbach alpha coefficient was selected. This technique enables the mean reliability coefficient to be computed according to all possible ways of splitting the items in the measurement instrument into half (Peter, 1979). The resulting coefficient alpha value can range between 0 and 1, where correlations close to 0, in most cases values of 0.60 or lower, are indicative of low internal consistency and, hence, low reliability (Churchill & Iacobucci, 2002: 416). Typically, a Cronbach alpha of 0.70 and above is recommended (Litwin, 1995: 31).

As indicated above, the validity of a research instrument necessitates that the instrument truly measures that which it is purported to measure. As with reliability, there are several ways of estimating the validity of a research instrument. For the purpose of this study, the following estimates of validity were selected: face validity, content validity and construct validity.

- **Face validity:** This method involves the subjective evaluation of the research instrument by experienced researchers and/or experts in the field under study to

determine whether or not the instrument 'appears' valid. In other words, to subjectively evaluate if the research instrument is devoid of any obvious mistakes.

- **Content validity:** Content validity, closely related to face validity, again involving the subjective evaluation of the measuring instrument, focuses on determining whether the instrument adequately covers the subject under investigation. There are several approaches to assessing content validity. Firstly, a comprehensive literature review can be conducted in order to obtain all possible items that need to be included in the scale. Secondly, a sample of experts can be requested to subjectively evaluate the relevance of items included in the scale. Lastly, use can be made of an open-ended question, requesting respondents to indicate if any other item should be included (McDaniel & Gates, 1999: 310).

- **Construct validity:** This refers to the degree to which a research instrument measures the construct it is intended to measure, as opposed to irrelevant constructs. The existence of construct validity requires the presence of both convergent validity and discriminant validity. Convergent validity necessitates that the scale exhibits a high level of internal consistency, that is, high item-to-item correlation. Yet, at the same time discriminant validity should exist, in that the item-to-item correlation should not be so high as to not capture distinguishable traits (Churchill & Iacobucci, 2002: 412, 413). Clark and Watson (1995: 316) recommend that the average item-to-item correlation should fall within the range of 0.15 to 0.50 to infer construct validity.

5.6.2 Descriptive analysis

Descriptive analysis typically involves summary measures of data, that is, measures that summarise the salient characteristics of data sets. Such summary measures form the foundation for more involved statistical analysis, such as hypotheses testing. There are three basic categories of summary measures: measures of central tendency, measures of dispersion and measures of skewness.

5.6.2.1 Measures of central tendency

A measure of central tendency for a data set describes the position where the readings are concentrated. This study will make use of two measures of central tendency: the arithmetic mean and the median.

- **Arithmetic mean:** This refers to the average value of the readings within a data set. It is computed by dividing the sum of the values of the readings by the number of readings taken.

- **Median:** The median is the value of the middle reading in a data set. To determine the median it is necessary to list the value of the readings in an ascending order and then to take the midpoint of those readings.

5.6.2.2 Measures of dispersion

When data sets are summarised, the variability of the readings within the data set, that is, the extent to which reading values vary around the centre, is essential to interpreting measures of central tendency. This study utilises the standard deviation for this purpose.

- **Standard deviation**: The standard deviation is the square root of the variance in the data set, where variance is the average squared distance of the readings from the computed arithmetic mean.

5.6.2.3 Measures of skewness

Measures of skewness provide a summary of the degree to which the readings are symmetrically distributed. A data set is normally distributed when the mean and median are equal or close to equal. Kurtosis measures the peakedness of the distribution, that is, the extent to which the distribution is flattened or peaked.

5.6.3 Hypotheses testing

Once data has been summarised, it is necessary to interpret and make inferences about the findings through the use of significance tests. Hypotheses, which are suppositions about a population, are formulated and sample results are used to test those hypotheses. The methodology of significance tests involves setting up the test alternatives, the null hypothesis, denoted as Ho, and the alternative hypothesis, denoted as Ha. Next the significance level is selected, which is the desired coefficient of risk, as denoted by *a*. This is followed by the setting up of the statistical decision rule, the computation of the test statistic from the sample evidence and the making of appropriate inferences about the population from the decision rule (Neter *et al.*, 1993: 323).

5.7 SYNOPSIS

This chapter discussed the methodology used in the design of the research study. Section 5.2 gave an overview of the data gathering and analysis process, while section 5.3 highlighted the data requirements. Section 5.4 described the development of the research instrument, including the initial pre-testing and piloting of the questionnaire. The sample procedure followed was described in section 5.5. Finally, section 5.6 identified the statistical methods applied to the empirical set.

Chapter six that follows, reports on the empirical research findings of the study.