

**THE AWARENESS AND PERCEPTION OF CLOUD
COMPUTING TECHNOLOGY BY ACCOUNTING FIRMS IN
CAPE TOWN**

By

JACOBUS VAN DEN BERGH

Submitted in accordance with the requirements for the
degree of

MASTER OF COMMERCE

in the subject of

BUSINESS MANAGEMENT

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: PROF. S RUDANSKY-KLOPPERS

NOVEMBER 2016

DECLARATION

I declare that the work I am submitting for assessment contains no section copied in whole or in part from any other source unless explicitly identified in quotation marks and with detailed, complete and accurate referencing.



Signed

21 February 2017

Date

ACKNOWLEDGEMENTS

The following people have helped make this study a possibility, and deserve my deepest gratitude.

Prof. Sharon Rudansky-Kloppers has been a tremendous source of guidance. Her professional critique and encouragement has been excellent.

Dr. Deon Van Zyl for his invaluable input with regard to my research methodology and statistical analyses.

Ms. Adrienne Cleary for proofreading and editing my dissertation.

My father, Kobus senior and my mom Amanda.

My wonderful wife Uzo, for her love, support and encouragement.

Lastly, my beautiful daughter Reneé, who provides me with joy and inspiration every day.

I. ABSTRACT

Cloud accounting software (CAS) emerged as part of the overall development of cloud computing. The cloud, as it is referred to, has heralded a new age in information technology and offers new and unique opportunities and challenges for organisations of all sizes. The aim of this study was to determine the awareness and perception of cloud computing technology by accounting firms in Cape Town.

The findings of the survey reveal that significant awareness exists of CAS by firm managers and accountants. In some respects there are significant differences between small and medium-large firms regarding their perceptions of CAS. Smaller firms seem to be more positive toward CAS and also more agile and capable of deploying CAS than medium-large firms, and thereby are taking advantage of CAS more effectively.

It is evident from the study that there are opportunities for both small and medium-large firms to make use of CAS in their attempts to grow their businesses and it is important that they become familiar with CAS and the opportunities and threats which it presents. Marketers of CAS products need to consider the firm's size, as well as the organisational decision-making process for CAS acquisition, which can aid them in their marketing designs.

Keywords: Cloud Computing, Accounting information systems, Services marketing, Business to business marketing, Organisational buying behaviour, Accounting firms

II. LIST OF ABBREVIATIONS

| | |
|------|--|
| 4Ps | Refers to traditional marketing mix: Product, Price, Place and Promotion |
| 7Ps | Refers to extended marketing mix, which includes 4Ps, and then Process, Physical evidence and People |
| AIS | Accounting Information Systems |
| CAS | Cloud Accounting Software |
| B2B | Business to business (marketing) |
| B2C | Business to consumer (marketing) |
| CRM | Client relationship management |
| DMU | Decision-making unit |
| ERP | Enterprise resource planning |
| IT | Information Technology |
| POPI | Protection of Private Information (Act) |
| SARS | South African Revenue Service |
| SLA | Service level agreements |
| SME | Small and Medium Enterprises |
| WWW | World Wide Web |

III. CLOUD-RELATED ABBREVIATIONS:

| | |
|------|---|
| IaaS | Infrastructure as a Service (cloud terminology) |
| PaaS | Platform as a Service (cloud terminology) |
| SaaS | Software as a Service (cloud terminology) |

IV. Table of Contents

| | |
|---|-----------|
| 1 CHAPTER 1: BACKGROUND TO THE RESEARCH STUDY | 14 |
| 1.1 Introduction..... | 14 |
| 1.2 The background for this study..... | 14 |
| 1.3 The problem statement..... | 17 |
| 1.4 The objectives of the study | 17 |
| 1.5 Literature background..... | 19 |
| 1.5.1 Cloud Computing and Accounting software | 19 |
| 1.5.2 Services Marketing | 21 |
| 1.5.3 Industrial Decision-Making | 24 |
| 1.6 Research Methodology..... | 27 |
| 1.6.1 Secondary research | 28 |
| 1.6.2 Primary research | 28 |
| 1.6.3 Target population and sample | 29 |
| 1.6.4 Data collection | 30 |
| 1.6.5 Reliability and Validity | 31 |
| 1.6.6 Data analysis and interpretation | 31 |
| 1.7 Ethical considerations..... | 32 |
| 1.8 Limitations of the study | 32 |
| 1.9 Chapter layout | 33 |
| 1.10 Conclusion | 34 |
| 2 CHAPTER 2: CLOUD COMPUTING TECHNOLOGY - BACKGROUND AND CONTEXT | 36 |
| 2.1 Introduction..... | 36 |
| 2.2 The Origins of the Cloud..... | 36 |
| 2.2.1 Computing and computers | 36 |

| | | |
|----------|--|-----------|
| 2.2.2 | Cloud foundations | 39 |
| 2.2.3 | Cloud computing's growth prospects | 40 |
| 2.3 | Definitions and descriptions of cloud computing | 41 |
| 2.3.1 | Definitions | 41 |
| 2.3.2 | Characteristics | 42 |
| 2.3.3 | Types | 44 |
| 2.4 | Advantages and Disadvantages of cloud computing | 44 |
| 2.4.1 | Advantages | 44 |
| 2.4.2 | Disadvantages | 47 |
| 2.5 | Security and legal considerations | 48 |
| 2.5.1 | Security concerns | 48 |
| 2.5.2 | Legal considerations | 49 |
| 2.6 | Case studies..... | 50 |
| 2.6.1 | The New York Times archive | 50 |
| 2.6.2 | Quintile Pharmaceuticals | 51 |
| 2.6.3 | Sony Music Entertainment | 52 |
| 2.7 | Accounting in the cloud..... | 53 |
| 2.7.1 | Accounting Information Systems | 53 |
| 2.7.2 | Collaboration in the cloud | 55 |
| 2.8 | Conclusion..... | 56 |
| 3 | CHAPTER 3: SERVICES MARKETING AND THE INDUSTRIAL PURCHASING | |
| | DECISION-MAKING PROCESS | 58 |
| 3.1 | Introduction..... | 58 |
| 3.2 | Marketing..... | 58 |
| 3.2.1 | Marketing history | 58 |
| 3.2.2 | Marketing defined | 59 |

| | |
|--|------------|
| 3.3 Services marketing | 63 |
| 3.3.1 Services – background and context | 63 |
| 3.3.2 Services marketing defined | 65 |
| 3.3.3 The services marketing mix | 68 |
| 3.4 Business to business marketing (B2B)..... | 75 |
| 3.4.1 Definition and terminology | 75 |
| 3.4.2 The differences between B2B marketing and B2C marketing | 76 |
| 3.5 Industrial buying decision-making process..... | 84 |
| 3.5.1 Introduction to the industrial decision-making process | 84 |
| 3.5.2 Technology adoption curve | 90 |
| 3.5.3 The psychological world of those involved in the decision-making process | 92 |
| 3.5.4 Joint versus autonomous decision-making | 96 |
| 3.6 Conclusion..... | 98 |
| 4 CHAPTER 4: RESEARCH METHODOLOGY | 100 |
| 4.1 Introduction..... | 100 |
| 4.2 The Research process..... | 100 |
| 4.2.1 Step 1: Identify and formulate the problem | 101 |
| 4.2.2 Step 2: Determine the research objectives | 102 |
| 4.2.3 Step 3: Develop a research design | 102 |
| 4.2.4 Step 4: Conduct secondary research | 105 |
| 4.2.5 Step 5: Select primary research method | 105 |
| 4.2.6 Step 6: Determine the sampling frame | 115 |
| 4.2.7 Step 7: Conduct a pre-test | 118 |
| 4.2.8 Step 8: Collect the data | 119 |
| 4.2.9 Step 9: Process the data | 121 |

| | |
|--|------------|
| 4.2.10 Step 10: Analyse the data | 123 |
| 4.2.11 Step 11: Report the research findings | 127 |
| 4.3 Limitations of the study | 127 |
| 4.4 Conclusion..... | 128 |
| 5 CHAPTER 5: RESEARCH FINDINGS | 130 |
| 5.1 Introduction..... | 130 |
| 5.2 Sample characteristics..... | 130 |
| 5.2.1 Firm size | 130 |
| 5.2.2 Position of the respondent at the accounting firm | 131 |
| 5.3 Results pertaining to the research objectives..... | 132 |
| 5.3.1 Research objective 1: The attitude and perception toward cloud accounting software of managers of accounting firms | 133 |
| 5.3.2 Research objective 2: The acceptance and use of cloud accounting software by accounting firms | 142 |
| 5.3.3 Research objective 3: The intention of accounting firms to use cloud accounting software | 147 |
| 5.3.4 Research objective 4: How accounting firms foresee the growth of cloud accounting software in SA | 153 |
| 5.3.5 Research objective 5: Whether cloud accounting software will add to the customer base of accounting firms | 158 |
| 5.3.6 Research objective 6: How accounting firms will sell cloud accounting software to their customers | 164 |
| 5.3.7 Research objective 7: Opportunities and threats faced by accounting firms in SA, in the light of innovative changes. | 171 |
| 5.4 Conclusion..... | 179 |
| 6 CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS | 180 |
| 6.1 Introduction..... | 180 |
| 6.2 Addressing the research objectives | 181 |

| | | |
|----------|---|------------|
| 6.3 | Conclusions and recommendations | 182 |
| 6.3.1 | Attitudes and perceptions toward CAS | 182 |
| 6.3.2 | Acceptance and use of CAS | 184 |
| 6.3.3 | Intention to use CAS | 184 |
| 6.3.4 | Growth of CAS | 185 |
| 6.3.5 | CAS's ability to help firms grow their client base | 186 |
| 6.3.6 | Selling CAS to clients | 188 |
| 6.3.7 | Opportunities and threats presented by CAS | 191 |
| 6.3.8 | Differences between firm sizes | 193 |
| 6.3.9 | The awareness and perception of cloud computing technology by accounting firms in Cape Town | 195 |
| 6.4 | Synchronisation of research objectives with study findings | 196 |
| 6.5 | Limitations of the study | 203 |
| 6.6 | Recommendations for future research | 204 |
| 6.7 | Conclusion..... | 205 |
| 7 | LIST OF REFERENCES | 207 |
| 8 | APPENDICES | 218 |
| 8.1 | Appendix A – Email introduction to sample respondents | 218 |
| 8.2 | Appendix B – Data collection instrument : Questionnaire..... | 220 |
| 8.3 | Appendix C – Frequency Tables..... | 226 |
| 8.4 | Appendix E – Mean Rank Tables..... | 239 |

V. List of Figures

| | |
|---|-----|
| Figure 3.1 - The marketing mix | 62 |
| Figure 3.2 - A Supplier Evaluation System | 88 |
| Figure 3.3 - Technology Adoption Curve | 91 |
| Figure 4.1 - The research process | 101 |
| Figure 5.1 - Percentage of responses for “Firm size” (n=27) | 131 |
| Figure 5.2 - Percentage of responses for “Position at your firm” (n=27) | 132 |
| Figure 5.3 - Familiarity with the term ‘cloud accounting software’ (n=27)..... | 134 |
| Figure 5.4 - Combined responses toward the impact that CAS might have had on the firm (n=27) | 135 |
| Figure 5.5 - Comparing responses toward the impact that CAS might have had on the firm (n=27) | 136 |
| Figure 5.6 – Firms’ responses toward CAS’s potential contribution to the accounting industry (n=27)..... | 137 |
| Figure 5.7 - Combined view of strongest influence on respondents’ attitudes and perceptions towards CAS (n=27)..... | 139 |
| Figure 5.8 - Comparative view of strongest influence on respondents’ attitudes and perceptions towards CAS (n=27)..... | 140 |
| Figure 5.9 - Acceptance of cloud accounting software (n=27). | 143 |
| Figure 5.10 - Comparison between small and medium-large firms for acceptance (n=27)..... | 144 |
| Figure 5.11 - Choice of accepting or rejecting cloud accounting software (n=27) | 146 |
| Figure 5.12 - The intention of using cloud accounting software in the future (n=27) | 148 |
| Figure 5.13 - Likelihood of using CAS (n=27)..... | 150 |
| Figure 5.14 - Comparing options between firm sizes for not intending to use CAS (n=27) | 151 |
| Figure 5.15 - Foreseeable growth of CAS in future (n=27) | 154 |
| Figure 5.16 - Acceleration of CAS growth (n=27) | 155 |
| Figure 5.17 - Extent to which CAS will make desktop/server-based software redundant (n=27) | 157 |
| Figure 5.18 - Demand for CAS by clients as experienced by firms (n=27)..... | 159 |

| | |
|---|-----|
| Figure 5.19 - Comparison of whether firms think that CAS can help obtain more clients (n=27) | 161 |
| Figure 5.20 - “Does having cloud accounting software enable a firm to sell its services better?” (n=27) | 162 |
| Figure 5.21 - Combined percentage of responses - the best strategy to use to implement CAS (n=27) | 166 |
| Figure 5.22 - Percentage comparison between small and medium-large firms with respect to pricing strategy (n=27) | 167 |
| Figure 5.23 - Responses to whether firms would offer more than one cloud provider’s product (n=27) | 168 |
| Figure 5.24 - Preference by firms regarding branding aspects of cloud accounting software (n=27) | 169 |
| Figure 5.25 - Respondents’ feelings about CAS (n=27) | 172 |
| Figure 5.26 - Combined responses for whether cloud technology in accounting is beneficial for the accounting firm (n=27) | 174 |
| Figure 5.27 - Comparison between firm sizes for whether cloud technology in accounting is beneficial for the accounting firm (n=27) | 175 |
| Figure 5.28 - Firm size comparison as well as combined responses as to whether cloud technology is a perceived threat to the accounting industry (n=27) | 176 |
| Figure 5.29 - Responses as to whether cloud technology presents new opportunities to the accounting industry (n=27) | 177 |
| Figure 6.1 - The Secondary and Primary objectives of this study | 182 |

VI. LIST OF TABLES

| | |
|--|-----|
| Table 2.1 - The components of information technology contributing to modern-day cloud systems..... | 40 |
| Table 2.2 - Cloud service characteristics..... | 43 |
| Table 3.1 - A summary of the differences between B2B marketing and B2C marketing | 76 |
| Table 3.2 - The industrial buying decision-making process | 84 |
| Table 4.1 - Questionnaire structure in relation to the study objectives..... | 114 |
| Table 5.1 - The intention to use cloud accounting software in future (n=27)..... | 149 |
| Table 5.2 - Can cloud accounting software help a firm obtain more clients? (n=27) | 160 |
| Table 5.3 - Statements made in the multiple-choice grid (Question 2g) (n=27) | 173 |
| Table 6.1 - Pricing options for CAS | 189 |
| Table 6.2 - Summary of findings and conclusions | 197 |

1 CHAPTER 1: BACKGROUND TO THE RESEARCH STUDY

1.1 Introduction

The purpose of this chapter is to provide an overview and a background to the study. This chapter consists of a short background to help understand why this study has been conducted. Thereafter, the research problem will be explained and the objectives of the study will be listed. This is followed by a brief discussion of the literature that will be covered in the study. Next, an outline will be provided of the research methodology process that will be used in the study. In conclusion, the layout of the chapters will be presented as a framework for this study.

1.2 The background for this study

It is important to place some of the terminology used in this study into the appropriate context, although various definitions of the topics discussed are provided in the subsequent sections. The main clarification to make at this point is that “cloud computing technology”, as reflected in the title of this study, encompasses the term cloud accounting software (CAS) which is referred to frequently. CAS refers to the specific software that is used in accounting firms. Cloud computing technology is a broader term used to include the related technologies and historical developments of “cloud”. It is therefore necessary to use both terms, but also important to note the difference. CAS will be deemed to be a technology within its own right for the purposes of this study, although technically it is a sub-set of the overall domain of cloud computing technology. Many, if not all, the characteristics, advantages and disadvantages which apply to cloud computing technology will generally apply to CAS as well by this association.

The term “Cloud computing”ⁱ refers to “conducting business functions on shared, off-premises computing systems”, as opposed to on-premise software installed on servers and personal computers (Rader, 2012:36). Stated differently, it is about using the internet to deliver and use software programs and applications rather than servers or personal computers based on the business’s premises. Effectively, cloud computing technology allows business applications such as accounting software to be accessed through an internet browser such as Microsoft Internet Explorer, Google Chrome or Mozilla Firefox. In addition, cloud accounting software differs from on-premise accounting software in a few important ways, as illustrated by the following benefits (DeFelice & Leon, 2010:50-55):

- Lower up-front costs - many vendors charge only a monthly subscription and this can be cancelled anytime, versus the standard annual licensing (contracts) with most on-premise installations.
- Quick implementation – up and running in a few minutes, as there is no installation of software required on a computer or server at the business premises.
- Remote access – the software can be accessed from anywhere with an internet connection.
- Little or no hardware maintenance cost – it is the responsibility of the vendor to ensure hardware is maintained.
- Reduced in-house IT requirements as a result of the above-mentioned point.

Crucially, cloud computing is purported to offer businesses (both the accounting firm and its client) distinct advantages over the traditional way of preparing financial statements and producing management accounting information. For example, CAS allows online collaboration between the accountant and the client (e.g. the business owner). This means that the client can view exactly the same information as the accountant and in many cases also in “real-time”. The client can track and check the progress of the work done by the accountant, and therefore gain a snapshot of business performance without needing to ask

ⁱ A general term referring to large-scale computing resources over the Internet (Hui & Yu, 2010). Applications, such as online banking is an example. Only an internet connection and internet browser is required to access these computing programs and applications.

the accountant for it by way of requesting emailed reports, for example.

Additionally, some cloud accounting providers have developed the capability of daily bank transaction-feeds into the accounting software, directly from the business's bank account. This means much less manual capturing of the transactions by the accountant, especially in the case of large volume bank activity, and could imply a significant time-saving.

A further impact is that made on the accountants' revenue model. This is of course also a sensitive issue, as accounting firms traditionally charge by the hour for work done. But with the automatic importing of large chunks of information that cloud accounting offers, accountants may need to address the challenge of client demand for more cloud accounting. That is, as clients become more informed, it would be reasonable to anticipate that they may display increased demand for the use of cloud software by their accountant, as it has the potential for reduced bookkeeping fees as a result of shorter information processing time, as a result of the above-mentioned automation advantages. At the same time, it may be possible for accounting firms to establish pricing strategies that allow them to justify a similar pricing level, in spite of a switch to cloud accounting software. Therefore, there could be little or no revenue loss if clients switch to cloud-based applications.

In South Africa, the emergence of cloud computing is strongly correlated with the emergence of broadband internet, as cloud computing requires higher download speeds than the traditional dial-up modem type of connections. The term broadband refers to bandwidth of the connection to the internet, that can accommodate high speed downloads (Muller, 2010). South Africa first became connected to the internet, as we know it today, back in 1988 at Rhodes University (MyBroadband, 2014). The internet became recognised as a commercially-viable opportunity and in the 1990's internet service providers came into existence.

In terms of rates of adoption of cloud solutions in South Africa, McConnachie (2012) reports that by the end of 2011 only 9% of small to medium-sized enterprises (SME) made use of

cloud technology. Carroll and Ramsingh (2012) found that out of a comprehensive survey of South African businesses, including large enterprises (200 or more staff) and SME's (less than 200 staff), only 15% of respondents were not considering cloud solutions in the next 24 months. No research could be found regarding the use of cloud accounting software in accounting firms in South Africa.

This study's purpose is to look at the awareness and perceptions of cloud computing technology by accounting firms in Cape Town.

1.3 The problem statement

From the literature study, it is clear that there is an absence of information to reveal what levels of awareness accounting firms in South Africa have of the potential impact of cloud accounting.

As mentioned in the previous section, no research has been conducted that could be found in order to draw significant insight into the subject area within accounting firms in South Africa. This study will, therefore, endeavour to explore accounting firms' perspectives and related elements to address the problem of the lack of knowledge pertaining to the topic. This can be seen as the advantage of the research. If there are advantages that could be exploited by using the cloud, then it would benefit firms to acquire such knowledge and take steps to implement actions to make use of these potential opportunities. It is thus considered to be highly beneficial for research to be undertaken to make some headway into this frontier, specifically in South Africa.

1.4 The objectives of the study

The primary objective of the study is to determine the awareness and perception by

accounting firmsⁱⁱ in Cape Town of cloud accounting technology.

The secondary objectives are to determine:

1. The attitude and perception toward cloud accounting software of managers of accounting firms.
2. The acceptance and use of cloud accounting software by accounting firms.
3. The intention of accounting firms to use cloud accounting software.
4. How accounting firms foresee the growth of cloud accounting software in South Africa.
5. Whether cloud accounting software will add to the customer base of accounting firms.
6. How accounting firms will sell cloud accounting software to their customers.
7. Opportunities and threats faced by accounting firms in South Africa, in the light of innovative changes.
8. What differences, if any, there are between different firm sizes, regarding attitudes and perceptions toward cloud accounting software.

ⁱⁱ The definition of accounting firms for this study is those that include at least one Chartered Accountant.

1.5 Literature background

As mentioned previously, there is very little to be found in the way of cloud accounting research within accounting firms in South Africa. However it is quite different on an international level. In order to offer some background and scope, research and literature relevant to cloud computing are briefly summarised below. Thereafter, services marketing and the industrial purchasing decision-making process, which are both relevant to the study, are discussed in greater detail in Chapters 2 and 3.

1.5.1 Cloud Computing and Accounting software

Cloud computing can be divided into three main categories, according to Fershtman and Gandal (2012): namely, IaaS - Infrastructure as a Service (data storage), SaaS - Software as a Service (application software), and PaaS – Platform as a Service (infrastructure). There are multiple vendors providing clients with access to any or a combination of these types of services. Cloud accounting software suppliers offer their software as a service (SaaS).

DeFelice and Leon (2010) provide a good overview for anyone interested in cloud computing within the accounting profession, albeit from a United States perspective, and illuminate some of the benefits and risks to accounting firms, predicting that firms in the United States will have switched completely to cloud computing, with almost nothing remaining on-premise in terms of software installations, by 2020. The authors point out that worldwide cloud services revenue is forecast to reach \$68.3 billion in 2010, up from \$58.6 billion in 2009 (according to Gartner Inc.). More recently, Gartner (2016) predicts a 16.0% growth in public cloud services in 2016, with revenue of \$204 billion in 2016.

Rader (2012) argues that cloud computing offers a unique opportunity for firms intending to challenge established rivals, especially one which has fewer resources than the competitor(s). The author states that, "Cloud computing offers ubiquitous access to applications for interacting with all parts of a firm's value chain and it connects an organisation

with the rich learning opportunities percolating in communities formed by the users of the service” (Rader, 2012). The author developed a “capability-comparison matrix” which business owners can use to determine, analyse and rank opportunities where cloud technology may enable them to challenge bigger and more resourceful businesses in their industry. Insights from Rader’s (2012) views may enable accounting practices to consider ways in which larger firms may be challenged, by way of implementing cloud solutions. The research in this study aims to determine whether there is a sense of agreement in smaller firms with regard to this issue.

Attolini and Thompson (2014) conducted interviews with global leaders in accounting practices which provide relevant insights to this study. A level of comparison is offered to the South African context. Practitioners from the Small and Medium Practices Committee of the International Federation of Accountants were asked to give their comments to questions in relation to the impact of technology on accounting practice. One of the important areas mentioned concerns the perceptions by accounting firms of threats or opportunities by the rapid advancement of new technologies. Of the five committee members interviewed, two viewed it as both an opportunity and threat, while the other three viewed it as an opportunity rather than a threat. This study will cast light upon this issue, within the local context in Cape Town.

Herbert (2015) points out that research carried out with firms in the United States shows that firms deem IT solutions as a critical component in achieving their business objectives. Firms are increasing their IT budgets, suggesting an increased focus on investing in IT solutions for long-term gains and sustained profitability. Furthermore, the research found that 59.0% of firms have benefited from moving to cloud solutions. This recognition would certainly also be applicable in the South African landscape, although it is probably slightly behind those in the United States.

Ryan (2012) reviewed the evolution of accounting software in South Africa and quotes the managing director of Softline Pastel, Steven Cohen, as saying that cloud accounting

software's uptake in South Africa is not yet at speed. According to Ryan (2012), Softline Pastel has about 80% market share of all accounting software in the country and only 1% of their 200,000 clients are presently using a cloud system. The evolution of accounting is described as two-fold. Firstly, business intelligence is being built into software to make it more "intuitive or predictive". The second aspect refers to the mobility of cloud computing. Cohen, as quoted by Ryan (2012), is of the opinion that the final revolution in accounting software can be now witnessed, with "mobility being a new paradigm for the business world" as "web-based (cloud) software can be integrated with any process anywhere in the world." Staff do not need to be in the office to make changes to their work, and now even clients can make changes themselves. Another mobility advantage example is for audit firms: audit clerks can log into the client's system and complete their review including financial statements, banking information and tax documents without visiting clients.

As cloud computing falls under the domain of services marketing, it is worth a short discussion of the context.

1.5.2 Services Marketing

Wirtz, Chew and Lovelock (2012) base their definition of services marketing on the non-ownership perspective of services and therefore define it as follows:

"Services are economic activities offered by one party to another. Often time-based, these activities bring about desired results to recipients, objects, or other assets. In exchange for money, time, and effort, service customers expect value from access to labor, skills, expertise, goods, facilities, networks, and systems. However, they do not normally take ownership of the physical elements involved."

Services can be categorised according to their properties, i.e. tangibility and intangibility. Tangible services can be performed on either people's bodies or on physical objects or their possessions. Intangible services can be processed on people's minds and can be directed at people's intangible assets, such as their accounts and banking (Wirtz *et al*, 2012). Due to their nature, services cannot be inventoried, and are therefore temporary and perishable.

However, the example of a credit card being available when a dinner reservation may not be, shows that this type of financial service is not perishable (Ehrlich & Fanelli 2012: no pagination).

Accounting firms provide their clients with professional services, such as producing statutory financial reports and company tax returns, in exchange for payment. Accounting and tax work, given its nature, is generally performed and charged on a time-basis. In effect, the longer the work takes, the more it will cost to produce. Cloud accounting services are supplied without the customer (in this case, the accounting firm) buying the infrastructure or application; and it is simply rented for a period of time.

It is useful to point out how services are marketed as a part of the background of this study and hence a brief description of the “7Ps” that form part of services marketing (Wirtz *et al*, 2012). Traditionally the “4Ps” - that is, Product, Price, Place and Promotion - focused marketing efforts on manufactured goods. However, these are thought to be insufficient in order to address the marketing challenges posed by services. A further three Ps have been developed by marketers and they are called Process, Physical evidence and People (Gupta, 2006:22). These seven Ps are briefly discussed below and it is indicated how they relate to cloud computing in the accounting industry.

Firstly, product refers to the product or service lying at the heart of the firm’s offering to the market, designed to meet the customers’ primary needs. Businesses need financial information in order to make decisions and to track performance. In addition, there are statutory requirements for businesses to report their financial performance to Government institutions such as SARS, and to pay taxes on profits made and those deducted on behalf of staff on their payroll. Accounting firms assist businesses with bookkeeping, monthly management accounting and reporting, payroll, budgeting, tax planning, annual statutory reporting and company tax returns. Cloud accounting software enables the customer to capture all the business transactions via a web interface (a browser like Internet Explorer). Due to the nature of cloud technology, a business’s information can be accessed anywhere

and at any time, as long as they have an internet connection. What separates cloud software from traditional desktop systems, is that the client has direct access and can see what the accountant or financial adviser sees. This is not possible with desktop-based software systems – the accountant usually captures information and sends management reports to the client, typically via electronic means like e-mail. Therefore, the argument is that cloud-based accounting systems are superior in fulfilling businesses' needs in terms of accounting and tax services, because of its inherent efficiency advantages and collaboration features over traditional on-premise desktop- or server-based systems.

Price refers to the “value placed on that which is exchanged between a supplier and a customer” (Wilson, no date). Cloud vendors typically offer their software as a service by way of subscription: for example, at a charge of four hundred rand per month the business and/or accountant has access to the software and can continue to work. Most vendors allow cancellation at any time, with use of the software of course being disabled at the same time. Traditional accounting software packages require the purchase of annual licences and, in many cases, bind customers into longer periods (DeFelice & Leon, 2010).

The service must be performed using a specific place or channel (e.g. electronically or physically). For example, accountants may receive clients and deliver services to them through a face-to-face meeting (physical), or it may occur via electronic means such as e-mail communication (electronic). Cloud software is delivered and accessed through a web interface such as Internet Explorer or Google Chrome, requiring an internet connection.

Promotion encompasses the communication of the supplier with their customer or the intended buyers of their service (Wirtz *et al*, 2012). Services marketing entails educating customers to inform them of the benefits of the service. Cloud suppliers must have effective websites by which they inform potential and existing clients of the benefits of their service, as this is their “showroom”, having no physical location that clients visit. Accountants can also make their existing and new clients aware of CAS informally or formally.

Process is the first element of the extended services marketing mix and comprises delivering the services in such a way as to ensure effective delivery, by designing and implementing efficient customer service processes (Wirtz *et al*, 2012). CAS needs to provide a simple and easy way for customers to sign up and use their websites. Additionally, timely support services are crucial, especially if the customer needs assistance with anything.

The physical evidence that customers experience in the service to them must be carefully managed, as it can have a significant impact on customer satisfaction and service productivity. Customers using CAS will not visit any physical locations in order to obtain the service offering. Instead, what they will visit again and again is the website of the provider. It could therefore be argued that the more effective, user-friendly, and perhaps also visually pleasing the website, the better the experience by the customer.

Lastly, the people delivering services to customers must be adequately selected and trained in order to satisfy customers (Hatcher, 2013). A firm made up of highly-motivated, loyal and skilled staff that can work well as teams or independently, may well set it apart from competitors and is therefore the key to competitive advantage. As mentioned above, support is also a key element so that customers (including accountants that work on their clients' behalf) get the help they need to resolve any difficulties.

The process of decision-making involved in business to business purchasing forms a critical part of this study. Accounting firms (businesses) purchase or subscribe to the services of accounting software suppliers (also businesses). This is discussed in the following section.

1.5.3 Industrial Decision-Making

Industrial marketing, also called business to business marketing (B2B), refers to the transactional relationships between businesses in terms of trading various goods and services, as opposed to between businesses and consumers (B2C). Morris, Pitt and

Honeycutt (2001:3) define it formally as “the creation of mutually-beneficial relationships between organizational suppliers and organizational customers.” It follows from the essential Marketing Concept which is to “create value for customers with goods and services that address organizational needs and objectives.” (Morris *et al.*, 2001:3)

As an example in the context of this study, suppliers of cloud accounting software (which are businesses) offer their services to accounting firms (also businesses). Harrison, Hague and Hague (2013) highlight some of the distinguishing factors that help to illustrate the differences in purchasing behaviour between B2C and B2B, as follows.

Firstly, B2B markets have significantly more complex decision-making units (DMU). A business making purchasing decisions for new technology can be a much more intricate process that can involve teams of people (including managerial or executive level personnel) and over a much longer period of time, as opposed to a person in a household that needs to obtain items such as clothes, food and cigarettes.

Secondly, it is argued that B2B buyers are more “rational”, referring to the way the decision-maker’s emotions are different when buying on behalf of a business, compared to buying as an individual consumer (who may be more likely to buy impulsively). B2B buyers are not so easily swayed in terms of emotional marketing tactics. Harrison *et al.* (2013) point out that trust and security are essential elements for the suppliers to provide the customer, as the B2B buyers will not risk their livelihood or reputation by buying a product or service that turns out to be unreliable.

Thirdly, B2B products can often be a lot more complex. Consumer products in general may not require high levels of expertise or technical “tuning”, which can be very different from many B2B products.

The three areas mentioned above help to illustrate what sort of considerations an accounting firm might have to make when deciding on CAS solutions. An accounting firm looking to adopt

cloud accounting would need to take great care in selecting an appropriate supplier, given the sensitive nature of the data involved and other related issues. Section 3.5.1 discusses the process of the accounting firm acquiring accounting software in greater detail, while the following paragraphs provide a brief introduction.

The process of B2B buying decisions involves a number of different phases. Zimmerman, Blythe and Raman (2013:29) list eight industrial purchasing activities: namely, problem recognition or anticipation of arising need; determining the characteristics and quantities of the required product; development of specifications or description of needed product; search for potential suppliers and their qualifications; acquiring and analysis of supplier proposals; evaluating proposals and selecting preferred supplier(s); order routine selection; and lastly, performance feedback and evaluation. Havaladar (2005:36) follows a similar sequence of steps and has been alluded to in Chapter 3. There is thus an important chain of sequential decision-making stages through which the decision-maker(s) will be likely to move, before any final decisions are taken in terms of investing in any cloud accounting solution.

In the context of this study, the accounting firm will firstly recognise the need for cloud software, and if there is an established need, questions will then need to be addressed such as: What product will meet the needs of the firm? The technical specifications of a solution will also be an important element for consideration at this stage. Once general specifications have been determined, a precise “statement of specifications” (Havaladar, 2005:37) must be put together. The next stage is to search for and identify appropriate suppliers of the software. Following that, supplier offerings are then collated and an analysis is conducted to include detailed specifications, prices and terms. After an evaluation of the prospective suppliers, one or more is chosen. This is followed by the selection of an order routine. In the case of cloud accounting software, the purchase of a subscription is confirmed. Lastly, a post-purchase evaluation entails a formal or informal review of the performance of the selected product(s). If the product did not solve the problem, it may be necessary to revert to other options.

Perceptions and attitudes by the decision-making unit (DMU) are very much at play in the

B2B decision-making process. Chapter 3 (Section 3.5) deals with these elements in some depth, but a few of these are referred to in this section. The first includes the aspect of the psychological world of the members of the DMU - the behavioural characteristics of the buyer(s) may be influenced, for example, by the activities of people within a certain reference group, or the need for status and recognition within the organisation may drive their behaviour (Burda News Group, 2013). A second important aspect is how the DMU must deal with risk. Risk here refers to the potential of the decision having a negative impact on the organisation. The DMU may initially be an individual that may feel there is a lot of risk involved and would therefore choose to “spread” the risk by involving more individuals. However, this approach may prolong the process, as a result of more discussion and deliberating. Should the DMU consist of only one person, that person would be more likely to be cautious and less willing to take a high risk.

Thirdly, consideration must be given to the technology adoption curve which refers to categorising people (the DMU members) according to their disposition toward accepting and adopting new technology (see Section 3.5.2). Should the decision-maker(s) be a “later adopter” of new technology, this will logically result in a slower decision-making process (Lamb, 2013). Fourthly, decision-making may be either autonomous or joint (Sheth, 2001:156). The first refers to individual freedom to make a purchasing decision. For example, a small accounting firm with one owner-manager can more quickly decide to subscribe to a cloud accounting software solution (autonomous) than a large firm with multiple stakeholders in their DMU (joint).

1.6 Research Methodology

The research used in this study consists of two phases: namely, the secondary research phase and the primary research phase. After the primary research was conducted, the data were processed and analysed. The secondary and primary research phases, as well as the data processing and analysis process, are briefly explained below.

1.6.1 Secondary research

Secondary research is not obtained directly from a sample of respondents but rather by way of collecting information from other sources such as websites, journal articles and books which are much easier to obtain (Greener, 2008:21).

In this study, the secondary research was undertaken by consulting textbooks, published academic material, websites of cloud software suppliers and cloud industry associations, journal articles, and reports from consulting firms such as Deloitte. The information collected during this research phase appears in Chapters 2 and 3 of this dissertation.

Chapter 2 deals with the background and context of cloud computing technology, while Chapter 3 involves a detailed discussion of services marketing and the industrial purchasing decision-making process.

1.6.2 Primary research

Primary research is new or first-hand research collected directly from respondents. In order to gain insight into the market, it was necessary to explore and uncover the awareness, attitudes and perceptions of managers in accounting firms towards cloud technology. These are the people that make decisions in terms of adopting new technologies, if there is such demand. Thus, the primary research incorporated quantitative data collection. Quantitative methods focus on measures and comparisons of characteristics of people and events being studied, while qualitative methods involve research that describes characteristics of people and events without comparing these in terms of measurements or amounts (Thomas, 2003:1). This study aimed to determine what is happening in the market and intends to describe the conditions, the relevancy and the impact of cloud technology upon accounting firms, as managers perceive it to be. The primary research as conducted in this study is briefly

described in the sections below.

1.6.3 Target population and sample

For the primary research, it was likely that the most appropriate data would be obtained from managers of accounting firms in Cape Town, using a structured questionnaire, with closed-ended questions. Sets of questions were designed so as to address the study objectives (see Section 1.4).

A predefined list of accounting firms could be obtained under geographic regions (provinces), as made available by the South African Institute of Chartered Accountants (SAICA, 2012). Additionally, an online directory, the FindanAccountant online directory, listing accounting businesses under the Cape Town telephone code (021), was also available. There were, therefore, two main sources of potential participants that could be merged to form a target population of firms in the Cape Town geographic region. However, owing to the Protection of Personal Information (POPI) Act, SAICA decided not to provide this list and email addresses of its Cape Town members to the researcher.

As a result of the above, the main source of responses was the FindanAccountant online directory, offering a list of 99 possible participants. In order to help with maximising response numbers, the snowball sampling method was also used, as response rates out of the initial 99 were quite low.

The snowball method included three different phases, starting with acquaintances the researcher had in his network and inviting them, and any other individuals fitting the criteria (being of managerial level and based in Cape Town), to participate in the study. This phase was followed by another technique employing the LinkedIn Premium service (<https://premium.linkedin.com/>) which enables one to identify qualifying individuals and to invite them to participate. A third snowball method phase followed, involving performing a Google search to identify “organically” ranked firms in Cape Town (that is, any paid

advertising search results were ignored). The final snowball phase was to contact the known “big four” firms in Cape Town, and to speak to HR managers at these firms, in order to obtain participants from those firms.

As can be deduced from the above paragraphs, the survey was essentially performed on a non-probability sample due to predefined lists being used from which to draw participants and the snowball method employed as a result of limitations encountered in the course of the research process.

1.6.4 Data collection

A questionnaire was designed in order to investigate the perceptions and awareness of managers in Cape Town accounting firms regarding cloud computing technology. The intention was to gain insight into these individuals’ understanding and their stance on cloud technology. It sought to find out what level of awareness participants have, whether they are already using it, how they perceive cloud accounting software, and what opportunities or threats it presented to them. Participants were also asked to indicate their future anticipation for cloud technology adoption and whether they have had any indication of client demand for it.

The finalised questionnaire was delivered to participants via a URL link in an introductory email, which took each respondent to the online questionnaire (see Appendix A). Once all sections were responded to, the questionnaire could be submitted. The questionnaire was developed in, and data gathered via, Google Forms.

The questionnaire was preceded by a pilot study with the purpose of testing the questionnaire, before conducting the full survey on the sample. Five participants were asked to partake in

the pilot study, and provided useful feedback to clarify and enhance the effectiveness of the questionnaire.

1.6.5 Reliability and Validity

Reliability refers to the ability by other researchers to repeat the process of research as described and carried out in this study, and getting the same results (Drucker-Godard, Ehlinger & Grenier, 2001:196). Saunders, Lewis and Thornhill (2009:156) refer to consistency as an important concept around reliability - that is, a piece of research is more reliable the more it can be shown that consistent findings are produced by replicating the procedures and analysis, as carried out in the original research. Chapter 4 deals with this issue, and describes in detail the research strategy, process and methods used.

Validity has a few components, but in short can be said to be mainly concerned with two things: firstly, the accuracy and relevance of the research results, and secondly, the degree to which the results can be generalised (Drucker-Godard *et al.*, 2001:196). The elements that deal with these two main concepts are broken down into construct validity, the validity of the measuring instrument and internal validity. These three together address the first part, followed by external validity which refers to the generalisability of the research results. Section 4.2.10.3 discusses these concepts as they relate to this study.

1.6.6 Data analysis and interpretation

The primary data collection involved capturing the survey responses using the internet and was relatively problem-free. Participants took about 10 minutes on average (each) in order to complete their responses, including demographic details such as indicating their firm size and position at the firm. For analysis purposes, the firms were classified as follows in terms of size: small (less than 50), medium (between 51 and 200) and large (more than 200).

The data were converted into an Excel spread sheet before being exported to SPSS. All the questions were pre-coded and assigned categories and numbers during the design of the research instrument. Data are edited to ensure consistency across the respondents and to locate omissions (Cooper & Schindler, 2008:93).

Data analysis included descriptive and inferential analyses. In this study, frequency counts and the associated percentage, as well as the mean, were used to present the information obtained from the research and the results were indicated in graphs and tables to make the data easier to interpret. The inferential analyses used in this study are the Pearson correlation coefficient, the Pearson chi-square test, the Fischer exact test, the Mann-Whitney and the Kruskal-Wallis nonparametric tests.

The analyses led to a better understanding of the awareness and perceptions of cloud computing technology by accounting firms in Cape Town. The research findings are discussed in detail in Chapter 5.

1.7 Ethical considerations

This study adhered to the Policy on Research Ethics of the University of South Africa and the data collection instrument was evaluated by senior academics of the Department of Business Management. The importance of participation in the study was explained to the respondents in order to obtain information consent. Respondents were also informed of the confidentiality of the data and information collected (see Appendix A).

1.8 Limitations of the study

The first consideration given is to the researcher's background. The researcher is an accounting manager in an accounting firm, and may be subject to some level of bias.

A second anticipated limitation centres on the difficulty of finding an acceptable response rate from accounting firms in Cape Town. The study set out to obtain 100 or more responses.

Thirdly, the geographical boundaries that seemed necessary meant that the study is confined to the population of accounting firms in the Cape Town metropolitan area only. It seemed to make sense to put geographical boundaries around the sampling to limit the sample size from becoming too large or difficult to handle, taking into consideration that the study was at the Master's degree level. However, in retrospect the sample could have included other areas, if not the whole of South Africa.

Fourthly, due to the possibility of a less than expected response rate, the findings of the study would not be generalisable onto the Cape Town accounting firm population.

Finally, due to the swiftly-evolving nature of cloud technology and its related components, the study results and findings would be time-sensitive and some of the secondary research carried out might be irrelevant in respect of current reality.

1.9 Chapter layout

This section outlines the chapters of this study.

Chapter 1 introduces the background of the study, defines the study objectives and sets out the research methodology. Ethical considerations are addressed and, finally, limitations that may apply are recognised.

Chapter 2 is the first part of the secondary research section. The subject of cloud computing technology is discussed, starting with its origins within the genesis of personal computing and

the eventual development of the internet and resulting advances into what is today commonly referred to as the “cloud”. Related concepts are defined and explored and the chapter ends with reference to cloud technology and its impact on accounting software.

Chapter 3 continues the second part of the secondary research. The subject of marketing is discussed, followed by delving into sub-areas including services marketing, business to business marketing, and the industrial purchasing decision-making process.

Chapter 4 deals with the methodology of the study. This forms the starting point of the primary research section of the study. The chapter details the marketing research process and includes a description of the development of the research design, sampling frame, and the collection and analysis of the data.

Chapter 5 presents the results of the primary research following the collection of responses from the selected sample.

Chapter 6 discusses the results and findings of the primary research and links back to the theoretical parts (Chapters 2 to 3) of the study. Recommendations are provided in the light of the findings.

1.10 Conclusion

Chapter 1 served as an introduction to the study.

The background of the topic, problem statement and objectives were defined. A literature review was conducted on the areas of cloud computing technology, and marketing aspects as they relate to the study. Lastly, the proposed research methodology was set out and the associated ethical considerations and limitations of the study.

The next chapter will look at the first part of the secondary research: namely, cloud computing technology.

2 CHAPTER 2: CLOUD COMPUTING TECHNOLOGY - BACKGROUND AND CONTEXT

2.1 Introduction

This chapter will focus on reviewing the literature surrounding the origins and nature of cloud computing and how it relates to the accounting context. First, the origins of the cloud will be explored as it has evolved out of the advances in computing and micro-computing; secondly, the main characteristics will be described and definitions proposed; thirdly, advantages and disadvantages will be discussed; then security and legal concerns to be addressed; fifthly, a look at the various applications of the cloud in private and public contexts, followed by consideration on how the cloud has formed a part of the accounting services sphere and how it impacts the accounting environment for accounting firms. Lastly, the chapter is summarised in the concluding section.

2.2 The Origins of the Cloud

The development of the personal computer in the twentieth century has brought about a tremendous change in the way people manage their lives and has brought great change for mankind on social and technological levels. This introductory section deals with computing, computers and the internet. These are some of the key components that must be considered in the light of gaining a better understanding of the Cloud.

2.2.1 Computing and computers

It is thought that mankind started to count at least 50,000 years ago (Eves, 1990:9). Humans gradually invented aids to help count objects such as livestock and eventually coins, so that better decisions could be made to improve their lives. For example, the abacus was the first calculation device for counting large numbers. It consisted of horizontal bars where beads could be inserted which could be used to represent units, tens or hundreds, for example (Goel, 2010). Several further developments fell in between the abacus and that of the first computer that occurred in the 1940s. The computers from this time are referred to as the First

Generation of computers which consisted of vacuum tubes. The Second Generation followed between 1956 and 1963 and used transistors in their hardware. From 1964 to 1971 followed the Third Generation of computers using integrated circuits, followed from 1971 until the present by the Fourth Generation which uses microprocessors. A present Fifth Generation is defined as essentially capable of learning and self-organising - that is, with the presence of artificial intelligence.

The term “Cloud Computing” is said to originate from the 1950s and is described as the result of an evolutionary process related to the technologies used to build mainframe computers during the aforementioned time (Winkler, 2011:10). The term was borrowed from the telecommunications industry where telephone networks would be represented by a cloud diagram to enable better understanding of an abstract idea. Some simply see the adjective “cloud” as a metaphor for the internet (Katzan & Dowling, 2010). Furthermore, it is suggested that the underlying idea represented by cloud computing can be traced to computing pioneers like John McCartney in the 1960s when he envisioned computing as becoming a “public utility” in the same way telephones already were at the time (Jiang & Jang, 2010:63).

During the aforementioned time, mainframe computers, which were very expensive to purchase and maintain, held databases and the computing power but this meant that it was acquirable only by the largest organisations. For example, in the early 1980s before Microsoft’s prominence and the existence of the personal computer, it cost R80 000 to have a computer that could be used for accounting purposes (Ryan, 2012). As computers were developed over time, they became smaller and more powerful with each new generation and in 1981 IBM released the first personal computers (also called “microcomputers”) that were sold for home use (Goel, 2010). The internet was slowly becoming available as a public tool in 1982, but only became fully commercially utilised during the 1990s. By the year 1995 the World Wide Web (WWW) was fully available to the public across the globe and the stage was set to give birth to the “Cloud” as we know it today. One of the first and most simple cloud applications that was commonly used was email and from 1996 onwards a number of providers became available such as Hotmail and Yahoo!. People could sign up for free

accounts, and could access their emails from anywhere with an internet connection and web-browser (Jones, 2003:176). This characteristic of being able to access a service from anywhere that is connected to the internet gave rise to new opportunities in commerce.

Cloud computing is purported by some (Buyya, Yeo, Venugopal, Broberg and Brandic, 2009) to fulfil the vision of early computer scientists such as Leonard Kleinrock, much like John McCartney mentioned earlier, who in 1969 saw computer networks as becoming a utility in the same way that electricity, gas, water and the telephone have become. It is posited that cloud computing, which is a computing paradigm following those of cluster and grid computing, has the potential to fulfil the required criteria for computing to become the fifth utility. This in effect means that billions of users will have access to applications anywhere in the world as and when they demand it. The infrastructure supporting this is made up of large datacenters located around the world which are constantly maintained and monitored while providing content and computing power over the internet. There are already many such datacenters run by large internet companies such as Amazon, Google, Microsoft, IBM and SalesForce.

Babcock (2010:xvi) highlights that the cloud is a result of a convergence of separately developed technologies including broadband communications, web standards, multi-core servers and "the ability to manage large groups of computers as if they were a single machine".

Today banking, shopping and many other aspects of daily life are performed in the cloud. In commerce, many services between businesses themselves and between businesses and organisations such as governments are performed via, and facilitated by, the cloud. The same counts for services by businesses to customers. An example of business to business cloud service is Salesforce (www.salesforce.com), which is a service that offers client relationship management software via the cloud. A company can manage its client database and relationships using Salesforce without having to install anything on their premises. It can be accessed on any device that can access the internet, such as laptops, tablets and

smartphones. Dropbox (www.dropbox.com) is an example of a business to customer service. It allows storage of an individual's personal electronic documents, photos, videos and other information. There is limited capacity for free; however, more storage space can be purchased if needed.

2.2.2 Cloud foundations

Cloud computing would not have emerged without preceding developments in hardware and software technologies. Erl, Puttini and Mahmood (2013) explain that a number of innovations out of established technologies laid the foundations for cloud computing to emerge. The first of these is clustering, which entails connecting together a group of homogenous IT resources so that it works together as one single system. The hardware and operating systems in a cluster would be closely comparable in specification so as to ensure easy replacement of any components that might fail, like a server. The features of redundancy and failover are characteristics of clustering, and are some of the core components of modern cloud platforms.

The second technology that enabled the development of cloud computing was grid computing. Grid computing facilitates a more heterogeneous system of computers and software which is its main differential from clustering. It can also be geographically dispersed which is not normally possible with clustering. A few important facets of grid computing have influenced cloud computing development and these include scalability and resiliency, resource pooling and networked access.

Thirdly, virtualisation has enabled physical IT resources to generate multiple virtual images of themselves in order to accommodate multiple users. It has meant that where software was previously limited to being coupled with and residing on static hardware, it could now achieve a level of independence and, as a result, other areas of improvement have been made such as performance, scalability and reliability.

In addition to the above, several other areas of technology have contributed to modern-day

cloud systems and these include broadband networks and internet architecture, datacenter technology, web technology, multi-tenant technology, and service technology. These concepts are clarified in Table 2.1.

Table 2.1 - The components of information technology contributing to modern-day cloud systems

| Cloud system component | Description |
|--|---|
| Broadband networks and internet architecture | Various network providers, communication protocols and hardware that facilitates this, such as physical network cabling, routers and wireless or mobile networks. |
| Datacenter technology | Specialised information technology infrastructure housing the software and hardware in one facility. This can comprise of thousands of server computers and storage components, and the software that monitors and controls it. |
| Web technology | Refers to a system of IT resources that are interlinked through the Internet. The basic components are Web servers and Web browser clients. |
| Multitenant technology | Application design with the purpose of allowing multiple users to access the same application at the same time. |
| Service technology | Involves the standardisation of various computing languages in order to form a common logical communication between various Web-based services. |

Source: Adapted from Erl, Puttini, and Mahmood (2013)

2.2.3 Cloud computing’s growth prospects

The growth of cloud computing in general has been exponential. The signs generally show that cloud computing is expected to continue on a high-growth path, encompassing billions

of United States dollars in revenue (Statistica, no date). Software as a Service (SaaS) contributes more than half the total market revenue (see Section 2.3.3 below for terms and definitions). The SaaS segment includes the cloud accounting software market.

Columbus (2016) reports statistics relating to global cloud growth and expectations. Using a compound annual growth rate, worldwide spending on public cloud services (which CAS forms a part of) will grow from \$70 billion in 2015 to \$141 billion in 2019. SaaS and PaaS (Platform as a service) software spending forecasts are expected to grow to \$55 billion in 2026 from \$12 billion in 2016. Emerging markets, which would presumably include South Africa, are anticipated to compose 21% of worldwide Public IT Cloud Services markets by 2018.

2.3 Definitions and descriptions of cloud computing

Due to its highly dynamic nature and broad scope of technological infrastructure, the cloud can be difficult to define comprehensively and, in fact, has many definitions (Rountree & Castrillo, 2013). This section will focus on the definitions of cloud, as well as cloud characteristics and types of cloud computing.

2.3.1 Definitions

There is no universal definition for cloud computing. However, Armbrust, Fox, Griffith, Joseph, Katz, Konwinski, Lee, Patterson, Rabkin, Stoica and Zaharia (2010) offer a useful view to help illustrate its nature. According to these authors, Cloud computing includes both the applications (software) delivered as a service over the internet, as well as the datacenters that facilitate the provisioning of these services (hardware and physical infrastructure). There are public clouds, which are available to the general public on a pay-as-you-go basis and there are private clouds that encompass internal datacenters that exist within organisations. These are not available to the general public.

Babcock (2010:4) reflects a similar view to that of the authors above in terms of defining the cloud. This author indicates that one reason why it is difficult to define the cloud is because it is viewed as a "rapidly-shifting formation" of technologies. The term software-as-a-service is most commonly recognisable when referring to the cloud, but this is only one form in which it exists and functions. Other forms and types of cloud are described in a subsequent section. The author argues that the cloud's enticing power is due to advances in multiple fields of technology: the datacenters, the world wide web's ability to accommodate different systems that do not know much about each other and to loosely integrate them and, lastly, the ability to "activate virtualised servers remotely via Web services" (Babcock, 2010:7). In addition, the cloud is not just seen as a new technological advancement, but also a new business model.

2.3.2 Characteristics

It is helpful to describe the characteristics of cloud computing to better understand the concepts that it encapsulates. This section deals with characteristics as identified in the literature reviewed.

The United States National Institute of Standards and Technology (NIST) describe five essential characteristics of cloud computing, as follows (Mell & Grance, 2011):

1. On-demand self-service: A consumer can access computing software and applications without any human interaction with the respective service provider(s), at any given point in time.
2. Broad network access: The computing software and applications are available over the network (internet) and via a variety of platforms such as laptops, personal desktop computers, tablets and smart phones.
3. Resource pooling: The provider pools its resources together and makes it available in such a way that the consumer is generally unaware of a physical location of the provided resources. These resources include storage, processing, memory and network bandwidth.
4. Rapid elasticity: The resources provided appear unlimited to the consumer, as a result of

the provider's ability to scale up or down in a rapid fashion, based on demand fluctuations for the provision of computing power by consumers.

5. Measured service: All of the provider's resources have built-in metering - that is, measurement systems that can report on storage, processing, bandwidth and active user accounts information. This helps to monitor and allocate resources effectively and data can be provided to the consumer such as data usage and its related cost implications.

Katzan and Dowling (2010) offer four cloud service characteristics which are: necessity, reliability, usability and scalability. Firstly, necessity refers to an established need for the service on a day-to-day basis. Reliability refers to service availability whenever needed. Usability entails user-friendliness (expert knowledge of underlying infrastructure is not required). Scalability insinuates that capacity is available for expansion, should it be needed. Table 2.2 contains examples to illustrate these points.

Table 2.2 - Cloud service characteristics

| | |
|-------------|--|
| Necessity | Services like email and internet banking are used almost daily to keep track of people's lives and they almost depend on them to make certain decisions |
| Reliability | It does not make sense to offer a service that is only occasionally accessible or might suddenly become unavailable whilst being used. It must be reliable |
| Usability | In using the service, no expert knowledge of how it works and what it is really made up of should be required |
| Scalability | If more storage space is needed for family pictures, for example, Dropbox offers additional space (seemingly endless) for a certain price |

Source: Adapted from Katzan and Dowling (2010)

2.3.3 Types

There are three cloud service delivery models. Software as a Service (SaaS) includes cloud accounting software which is accessed via the internet and is then divided into two categories: business and consumer services (Katzan & Dowling, 2010). Business services include solutions such as client relationship management (CRM), enterprise resource planning (ERP) and human resources (HR) systems. Consumer services include, for example, office applications via the web such as Google Docs (which is similar to the Microsoft Office suite of applications). Business services are typically provided at either a monthly subscription or metered cost (usage-based), while consumer services are frequently free, as they are supported by advertising revenues.

The other two cloud deployment models or service categories are Platform-as-a-Service (PaaS) and Infrastructure as a Service (IaaS) (Alali & Yeh, 2012). PaaS refers to providing a software platform for developing software and building cloud-based applications. IaaS encompasses making the computer hardware and system software available for use (the provider is still responsible for the installation and upkeep of the physical infrastructure).

2.4 Advantages and Disadvantages of cloud computing

The cloud's benefits and drawbacks are reviewed in the following sub-sections. As will be seen, just as with most technological advances, it is not perfect and because the cloud really is an evolving system of systems, there is substantial scope for improvement.

2.4.1 Advantages

There are a number of advantages offered by the cloud. One of the most significant is argued to be the avoidance of big capital outlay costs associated with implementing in-house software, systems and an IT-support function (Byrne, 2010). Cloud providers take care of all of these elements, for a substantially reduced cost. The other advantages include its central updating element, mobility, anywhere-anytime (ubiquitous) access, multi-platform access

(mobile phone, tablet, laptop, etc.), multi-tenancy and rapid scalability or expandability. These are elaborated upon in the next few paragraphs.

In contrast with traditional accounting information systems (AISs), cloud-based AISs do not suffer from the requirement of running updates for its software on each machine that uses it. Gill (2011) explains that cloud systems provide only one version of the software; there is no difference in this, wherever the program is accessed. Any customisation or configuration that is completed reflects everywhere, as if anyone accessing the system only accesses it on the one computer where all the changes and updates are made. Traditional AISs would typically require updates to be performed either on a server, and/or on each separate pc or laptop that uses the software. As can be deduced, this update function of the cloud is far superior to the traditional process and can potentially save vast amounts of time and money. Accounting firms are impacted significantly with respect to this point.

In addition to the above-mentioned, Gill (2011) reports on a number of key benefits when it comes to using the cloud for finance and, in particular, Enterprise Resource Planning systems (ERP) which include accounting software. One of the key benefits highlighted is the total cost of ownership advantage. The cost of implementing a cloud solution when compared to what it would have cost to buy, install and maintain all the necessary hardware to use the same software on-premise, is a major point of benefit. It is reported that an organisation that opts for a cloud solution could recoup up to 50% of its operational IT costs.

The cloud allows mobile access via smartphones, tablets and laptops. One can sit and work in a coffee shop, providing that connectivity to the internet is possible. The mobility factor facilitates a shift from being bound to one location to being location-free in terms of having access to important information, such as sales or purchases data. In the same way that email can be checked from a mobile device wherever the user is, certain accounting tasks such as issuing an invoice to a customer or checking a report could be performed as well. Remote-working potential therefore becomes very apparent (DeFelice & Leon, 2010).

Ubiquitous access refers to cloud applications being widely available (Buyya *et al.*, 2009). Due to the differing technologies in both hardware and software terms that are involved in delivering cloud applications to consumers, there are significant elements to consider in making them usable on the variety of platforms used by consumers.

There are two types of architectures that exist in terms of the different cloud models. One is a multi-tenant type and the other a single tenant type (Cook, 2013). The best way to illustrate the advantage of multi-tenancy versus single-tenancy (which in fact represents the traditional desktop or server only installation of software) is to quote the example as used by Cook (2013): “Multi-tenancy is like reading The New York Times' website through your Web browser. You're seeing the same stories and pictures that millions of other people see. If The New York Times updates stories or posts as breaking news, it makes a change to the server on its website and everyone sees those changes immediately. Single-tenant virtualised architecture, on the other hand, is a single instance of a software platform that is transmitted through the Internet to only one client. Other clients have to purchase their own software and have a separate way to access it through the Internet.” The characteristic of multi-tenancy is important in the accounting service context. The accountant and the client can see exactly the same information in real-time, even though they may be located in different countries. As soon as the accountant makes a change to the accounts, the client will be able to see the change reflected, upon refreshing their browser.

Rapid scalability or elasticity comprises the ability of the cloud infrastructure to allow quick capacity adaptation in line with fluctuating demand for things like processing power, memory or both (Schouten, 2012). Due to the multi-tenant infrastructure of the cloud (which consists of many computers, sometimes in multiple datacenters), there is the need for resource allocation as demand increases or reduces. Cloud vendors, including those that provision enterprise or accounting software, need to provide for additional users that may sign up for their services and will then start to enter their data. The data of course require storage (memory) and processing (computer process power) and the more users that use the system at the same time, the more the resources that will be required at the datacenter(s).

By using the example of a typical business day, the morning period when businesses start to trade and employees start up their computers and start using the internet connections to access cloud applications result in a high demand for computing resources. After the business day ends and staff leave the office, the network traffic would decrease for the night, and the cycle starts again the following morning. Cloud vendors have had to accommodate these fluctuating cycles of demand and have had to tackle the challenge of provisioning the required resources across different time zones too, as cloud providers are used across the globe and not just, for example, in the United States. When people start to work in London at 9am, those on the United States east coast start work about four hours later, while people in Japan are likely to be preparing for dinner. The thousands of servers contained in a modern datacenter have been developed specifically to adapt to these changing cycles and are able to reallocate resources (increase or decrease power, memory, etc.). An example of this was Sony's response to an overwhelming traffic increase upon the death of Michael Jackson in 2009 (Babcock, 2010:27). This example is elaborated upon in the case studies later in this chapter.

2.4.2 Disadvantages

The cloud has brought many advantages into daily life for both individuals and organisations. But like most technologies, it also has drawbacks that could negatively impact those that depend on it. One of the most obvious disadvantages of cloud computing is that, should the internet connection be lost, there is no way to continue operating or to access any of the applications that are totally cloud-based. And, of course, the longer it stays down, the bigger the negative impact can be.

Velte, Velte and Eisenpeter (2009:141) cite how, in 2008, Amazon's "Simple Storage Service (S3)" cloud went off-line and caused some applications to go down for up to eight hours. Depending on the services involved, this could cause significant disruption to business.

Perhaps somewhat strangely, one of the inhibitors of adopting cloud computing is the

ambiguity attached to the cloud (Rountree & Castrillo, 2013). Not understanding the cloud and what it entails may induce a sense of fear of the unknown, and therefore many people will be likely avoid it. It may simply mean that the cloud has to mature before more organisations will consider adopting it. The technology adoption curve model is relevant in this respect and is discussed in Section 3.5.2.

Another very important consideration with regard to cloud adoption, is the service level agreements (SLAs) offered by a cloud service provider. They are not all the same, and some may certainly be better than others. For example, there are cloud service providers guaranteeing service availability levels of up to 99.98%. This in essence means that a client of the service provider can be assured, by way of legal agreement, that there is only a 0.02% chance of the service becoming unavailable. And in case it does, the service provider may be subject to providing compensation to the client.

The following section addresses cloud security concerns, which will also include further risks and possible disadvantages of the cloud.

2.5 Security and legal considerations

This section reviews some of the important considerations for users or potential users of cloud computing.

2.5.1 Security concerns

A primary concern about cloud computing is security (Carstensen, Morgenthal & Golden, 2012). Cloud computing has effectively brought into existence a new realm within computing and has challenged existing governance, compliance and risk practices which were all developed for on-premise, static, physical IT infrastructures. Several new challenges and/or adaptations are required in terms of addressing the new security environment. These new challenges are driven by essentially three elements: dynamic infrastructures, shared or

pooled resources, and the deperimeterised environment. These concepts are elaborated upon below.

The dynamic cloud environment includes provisioning of computing resources at a rapid pace, as well as the rapid up- or down-scaling of resources for varied application topologies. Cloud computing uses a general, shared pool of resources to distribute amongst its shifting virtualised resources that are provided to host applications. Thirdly, deperimeterising the new cloud environment refers to opening up the cloud network environment to external users such as customers and partners, and stands in juxtaposition to the traditional way that network access would be tightly controlled. These concepts all imply the need for a paradigm shift in security considerations. The traditional methods and principles of applying security, governance and compliance all change with the cloud (Carstensen *et al.*, 2012).

One of the major concerns raised by accountants when it comes to the cloud has been data security: see Byrne (2010) and Allen (2011). With the cloud, the data are not stored in a computer on the site of the firm; they are stored somewhere else in the vendor's physical datacenter which could be located elsewhere (sometimes half-way around the world). However, it has also been pointed out that, even if the data are stored in-house, the fact that the same server is connected to the internet (which is the case for most servers, anyway) does not mean it is safer than in the cloud. A second concern was highlighted by what happened in Australia in 2008 when 80 companies were locked out of their data as they ended their contracts with the vendor. It is therefore strongly suggested that it is best to avoid service level agreements that do not include provisioning for access to data even after a contract expires.

2.5.2 Legal considerations

There are further important legal facets that must be reviewed carefully when service level agreements (SLAs) are entered into by customers. Gray (2013) argues that negotiations must

be completed in order to ensure that a number of things do not come back to bite the customer (in this case, the accounting firm). Firstly, the customer should have a right to employ an outside auditor to assess the controls and procedures related to the data that are handled and processed by the provider company. The client should also have a right to be informed of any security breach as soon as it happens. Secondly, ownership of the data must be clearly set out in a contract and, if the contract should be terminated, the provider should agree to hand over a copy of all the client's data and destroy all remaining copies of the data that it possesses. Thirdly, there are clauses that limit the liability of the provider to a fixed amount in case of damage or loss of data. This must be addressed so that sufficient cover is in place, should some kind of loss or breach of data take place. Fourthly, the so-called "acts of God" clause should not entitle a provider to have weak backup operations in place, should their main datacenter suffer a breach or damage due to something like terrorism or an earthquake and the backup centre has insufficient capacity to continue providing the client with the required service. Therefore, the provider must ensure that its primary and secondary facilities (physical buildings and equipment) are maintained to acceptable standards to prevent loss of any kind. Lastly, protection should be in place in case data are breached and the client is sued as a result. Old-fashioned due diligence is still an essential part of engaging services for cloud services. Accounting firms using cloud services for their clients are particularly subject to these types of considerations.

2.6 Case studies

This section highlights some examples of how companies and organisations have implemented models of cloud computing. Specific cases are mentioned in each subsection below.

2.6.1 The New York Times archive

The potential of using cloud computing is well illustrated in a case noted by Carstensen *et*

al.,(2012). In 2007 the New York Times newspaper completed an archiving project of all their printed papers between 1851 and 1922 which had been converted to digital format. Using conventional computing technology at the time would have cost one hundred thousand dollars and would have taken several months. However, with the use of newly-available cloud computing technology, the project was completed for a mere two hundred and forty dollars over a weekend, by a single software engineer. The engineer performed this task by hiring space on Amazon's cloud "Simple Storage Service (S3)" and moving all the Times's digital paper images onto it. Then he converted all the images using Amazon's "Elastic Compute Cloud (EC2)" into the desired format so that the Times could make their archive available over the World Wide Web. After the job was done, the S3 storage was released, having occupied four terabytes (four thousand gigabytes) of space for the duration of the conversion.

2.6.2 Quintile Pharmaceuticals

The new research director at Quintile, a pharmaceutical company that researches drug tests, was faced with a significant delay in being allocated in-house computing resources which he needed in order to analyse a database for various characteristics for over eight and a half million patients (Babcock, 2010:20). Using the company's existing Oracle database, it took him a minute and a half just to identify one subset of characteristics. He needed to identify and analyse hundreds more characteristics. The director realised that it was going to take him weeks to perform the required tasks that he had planned.

As a second example of turning to Amazon's EC2 cloud platform, the research director identified the database system he needed, which was installed and available for use by paying on an hourly basis. He then proceeded to prepare and submit all the required research program and data which he was able to do in fifteen minutes. He was then able to provision a set of servers and the job was finished in one evening, taking up one hour's time. The cost of this job was minimal, "a direct expense that could be covered by most organisations' petty cash" (Babcock, 2010: 21).

2.6.3 Sony Music Entertainment

The third case study involves the MichaelJackson.com website that is owned and operated by Sony Music Entertainment (Babcock, 2010:26-28). In 2009 the then senior system engineer at the company felt that it had sufficient infrastructure in place to manage the site and enough surplus capacity in place. The site could handle up to two hundred shoppers on the site simultaneously. However, upon Michael Jackson's unexpected death in June of that year, the site was overwhelmed with the volumes of people who wanted to leave comments of condolences and also buy his music. In the twenty-four hours following his death, more than a million people tried to access the music store, but not everyone could access the content and areas of the website that they desired to. A large number of potential customers simply could not complete their requests.

In the aftermath of the event, the senior management of Sony Music expressed their dissatisfaction at "leaving customers hanging" and wanted to assure them that the company would avoid any such future situations. The senior systems engineer was left with an enormous task, and it was considered that he would have to acquire a large number of additional servers and network infrastructure to solve the problem. As a consequence, there would be inefficient use of infrastructure, as the spikes in demand, such as with Michael Jackson's death, do not occur that frequently.

Again, Amazon EC2 was part of the solution. It was decided that the traffic flow would be split into two, one for the online shopping which would still take place on Sony's own servers, and one for those who wanted only to access information. In the agreement that Sony has with Amazon, their servers would scale up to accommodate three and a half to five million visitors per day.

2.7 Accounting in the cloud

An overview of the function of accounting systems and its context in the cloud follows in this section. The advantages, in terms of collaborating in the cloud by accountants with their clients, are also highlighted by using the example of an accounting software provider.

2.7.1 Accounting Information Systems

Accounting information systems (AIS) “collect, record, store, and process data to produce information for decision makers” and may be composed of an integrated set of components (Accounting Information Systems, 2013). Although paper- or book-based systems can be included in its definition, AIS is more commonly computer-based and used by organisations of all sizes. The purpose of AIS is to help organisations with collecting, storing and to facilitate the efficient production of information that can be used to inform decision-making (Bendovschi, 2015). AIS have evolved from much simpler systems into complex computerised systems, including its adaptation into cloud accounting systems in the 2000’s. Bendovschi (2015) refers to one of the significant drivers of AIS into the cloud environment. Cloud technology have enabled a shortened time-period from when a transaction (or set of transactions) take place, to getting a “real-time view” of a company’s finances, which management uses for decision-making. The adoption of CAS, therefore, could be said to be driven by its accelerated summation of financial data. Accounting practices are very much in the middle of this process, between their clients and the providers of these new technologies.

The advent of the personal computer in the 1980s greatly advanced the development and dynamic nature of AIS. Before cloud computing became a reality in the mid-2000s (Marinescu, 2013), AIS would be installed on computers situated on business premises which would record, process and provide reports for management decision-making. In order for anyone to access the information contained, they would need to be at the premises of the business. The only way people could access information off-site would be with a laptop computer that had the software installed on it. Installing software does not apply with cloud computing and the only required technologies are an internet connection and browser

(besides the device to access those with), which are basically the same tools needed for access to an email account like Gmail.

Cloud accounting providers have emerged in various parts of the world, including South Africa. In the United Kingdom, for example, the majority of cloud accounting vendors are targeting small- to medium-sized businesses, as there is the potential of a significant savings advantage for small businesses in that they will not have to purchase annual licences for premise-based software (which would need installing on a laptop or personal computer at their office). Medium to large enterprise level systems are also available, but larger firms are less likely to replace their accounting systems with cloud-based versions in the short-term (Stokdyk, 2013). Examples of cloud accounting systems available in South Africa are:

- Ping Accounts (http://www.pingaccounts.co.za/PingOnline_Home.html)
- Pastel MyBusiness Online (<https://www.pastelmybusiness.co.za/>)
- Webaccounting (<http://www.webaccounting.co.za/>)
- SmartEdge (<http://www.smartedge.co.za/public/home.asp>)
- Bluubin (<http://www.bluubin.co.za/>)
- Sage One (<https://sageone.co.za/>)
- Xero (<https://www.xero.com/za/>)

Accounting information systems need to encapsulate all the various components, as set out in its definition: that is, to record, process and report financial information. Cloud accounting packages need to provide the same components, which they mostly do at their core. In addition, it has been pointed out that as a part of the cloud evolution, building in intuitive or predictive technology is part of the Business Intelligence included by cloud providers (Ryan, 2012).

Cloud accounting packages offer the typical suite of features that traditional accounting software packages do, including creating sales and supplier invoices, recording bank

statements and petty cash transactions, entering payroll information and producing financial reports such as cash-flow, income statements and balance sheets for management decision-making purposes. Detailed reports like a general ledger or value-added tax can be exported for audit purposes as well. The different cloud software providers' product offerings vary mostly in terms of the interface (what the user sees on their screen) and in functionality. However, at their core, all these products do what every other accounting package does and that is to record, process and project information onto reports useful to management.

2.7.2 Collaboration in the cloud

The unique ability of being able to view and use exactly the same information by accountants and their clients, in real-time and just using a web-browser, is one of the significant drivers of adoption. O'Bannon (2012) refers to two main drivers of the real "mass adoption" of cloud systems that is now suggested to be in progress. The first is that there is now general acceptance of using cloud in business and personal life, after a period of testing and trying it for more than a decade. The second is the rise of a younger generation of technology-'savvy' professionals who are slowly occupying more management and senior positions in organisations who are demanding mobile and real-time access to information.

One cloud accounting software company which originates from New Zealand has summarised the idea of the "single ledger" concept (Xero, 2016). Rather than working from separate records, both the accountant and the business access and work from the same central information database. In many instances when the clients keep their own records, such as electronic spreadsheets, the accountant cannot always see the same information as the client and this can be compounded when the clients do not realise they are inadvertently withholding relevant information from the accountant. By using the traditional example of preparing annual financial statements, the accountant would be provided with a year's worth of paperwork or even a shoe-box full of receipts and paper-based bank statements that the accountant would then need to capture on the firm's in-house computerised system. After processing the information, reports can then be produced to be reviewed by the client for comment and/or approval. There would most likely be a period of exchange of

communication due to the fact that there might be some missing information along the way and the accountant would need all the necessary answers in order to prepare final reports and tax returns.

Taking out a monthly subscription with a cloud accounting software provider such as Xero allows the clients to share their financial information with their accountant, by simply inviting them by way of emailing them out of their Xero account. The accountant can then accept the invitation and will have access as adviser to the business. Another feature, depending on the country, is that there are "live bank feeds" available, which means that Xero enables the clients to set up a connection with their bank in order to download daily bank statements automatically, keeping this crucial element of the business finances up-to-date. The clients can also invoice their clients, capture expenses that have been paid out of their own pocket (that relate to business activities), review the latest bank transactions, and view reports on the financial status of their business such as whether it is being profitable or not. The accountant and client therefore work out of the same data contained in only one system.

This example illustrates how real-time collaboration is possible between accountant and client as a result of the cloud. In the accounting industry, this advantage is likely to be a significant one.

As part of this study, firms in Cape Town were asked about the demand they might have experienced from clients for cloud accounting software. That is, firms may be continuing a traditional service using traditional on-premise software, while there could be a gradual increase in demand from the end client to be able to have a real-time view of their business's performance.

2.8 Conclusion

The cloud has heralded a new era of computing. Some even see it as fulfilling the idea of a "fifth" utility, following that of electricity, water, gas and telephones where consumers will

simply tap into the service and pay for what they use. The cloud allows access to computing power across geographical boundaries and businesses and consumers can save significant amounts of time due to the advantages that it offers. The only necessities are an internet connection and a smartphone or laptop. Accounting firms could potentially benefit from substantial time- and cost-savings as using a cloud application allows them to roll out accounting software by subscriptions on a month-to-month basis, with no lengthy and costly commitments to longer term licensing. There is no more updating of software application required on a server or desktop computer, as this is taken care of by the software supplier, in most cases with minimal or no disruption to the user. Cloud accounting facilitates collaboration better by allowing the accountants and their clients to view and amend data in real-time and wherever they may be located (even if in different countries).

Cloud computing for accounting firms is not a perfect solution, just yet. There are caveats when it comes to the legal aspects, such as who owns the data and how securely the data are kept against data theft or hackers. However, some see the benefits that the cloud brings as worth the risk, when compared to more traditional ways of computing.

Accounting software based in the cloud is marketed by cloud vendors to accounting firms and businesses directly. This facet and the industrial decision-making process by the accounting firm wishing to subscribe to a cloud solution are discussed in the next chapter.

3 CHAPTER 3: SERVICES MARKETING AND THE INDUSTRIAL PURCHASING DECISION-MAKING PROCESS

3.1 Introduction

As stated in the first chapter, the primary objective of this study is to determine the awareness and perception by accounting firms in Cape Town of cloud computing technology. In the context of the current chapter dealing with the marketing aspects of the study, the stated objective is further elaborated upon as follows: this study is setting out to understand accounting firms in Cape Town's awareness and perceptions of cloud computing technology and how it can benefit their clients, and as a result advance their business.

This chapter will review the literature surrounding marketing and then will narrow down to subject areas including services marketing, business to business (B2B) marketing, and finally the industrial decision-making process. These concepts relate to, and help explain, what happens in the marketing and purchasing processes as experienced by accounting firms in relation to CAS. These help set the study in its appropriate context and provide a framework for achieving the objective of the study.

3.2 Marketing

3.2.1 Marketing history

Over the years, marketing has evolved through various phases of management thinking: namely, the phase of production orientation, the phase of sales orientation and, lastly, the marketing orientation phase.

Production orientation was the primary focus of enterprises in the 18th, 19th and beginning

of the 20th century. In the face of a "seller's market", enterprises had virtually limitless demand, so the emphasis was on producing as much as possible in order to sell. Repeat purchases were assumed to be automatic. However, following on from the effects of the United States' recession in the 1920s and 1930s, and entering a state or situation where more goods were being produced than there were customers for them, firms realised that selling is an important subsequent step in order to keep sales at acceptable levels.

A sales-oriented approach developed out of the production orientation as a result of demand becoming less dominant, due to the fact that supply outstripped it. Therefore, selling became a largely adopted orientation in both the United States and the United Kingdom. Some, like Reynolds and Lancaster (2013), argue that marketing still has a bad reputation as a result of the sales orientation which included "tricking" consumers into buying products that they did not really need.

The marketing orientation developed out of the sales orientation, and assumes that long-term success is dependent on identifying, understanding and satisfying customer needs and wants (Reynolds & Lancaster, 2013) while capturing value in return (Kotler & Armstrong, 2012:29). The marketing orientation is discussed in more detail in the next section.

3.2.2 Marketing defined

A key concept relating to marketing is that of exchange (Cant, 2011:2-3). A person interested in obtaining something they want must be willing to give up something in their possession, in order to obtain what they want. There are five conditions to be satisfied for any kind of market exchange to be possible. The first is there must be at least two parties; secondly, each party must have something of value wanted by the other; thirdly, there must be a means of communication and delivery in order to complete the desired exchange; fourthly, the freedom to choose between accepting or rejecting offers between each party must exist; and, lastly, there must be a desire by both parties to deal with each other.

The concept of marketing is a broad one but can be defined as "...the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual and organisational objectives.." (Reynolds & Lancaster, 2013).

Hamper (2013:6) posits that the marketing concept is a management philosophy, highlighting that it is a company's primary role to determine multiple target markets and the wants and needs of these, so that the relevant services and products may be delivered to those markets in a manner that is more efficient and effective than its competitors.

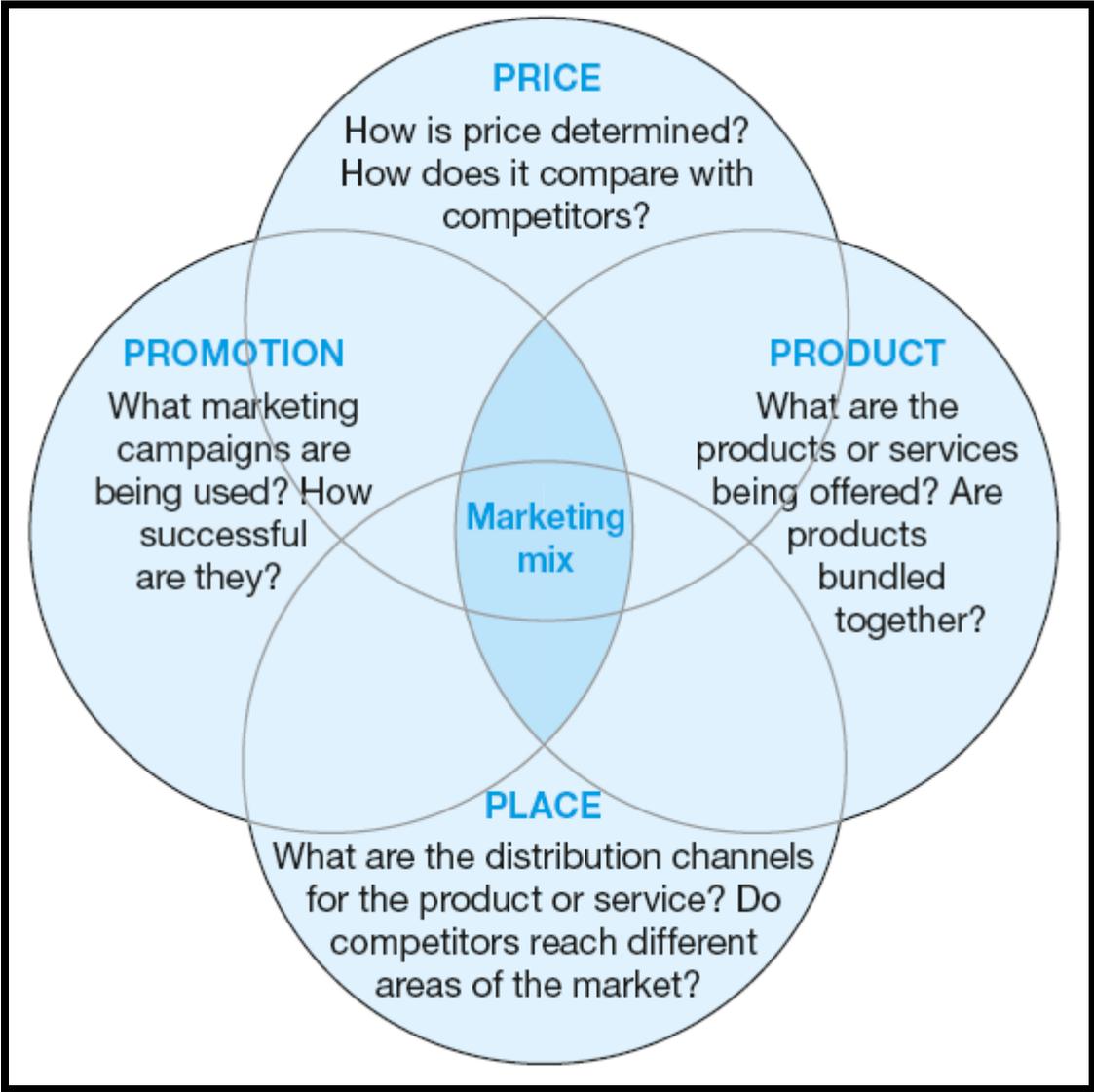
In line with this, Reynolds and Lancaster (2013) offer a number of key statements to form an integrated view of the various "features" of marketing. On its own, none of these features explains or defines marketing. Only by putting them all together can its essence be properly captured.

- Marketing is both operational and dynamic and therefore requires action, planning and control.
- It requires a business organisation in an improved form.
- Marketing is a managerial area of function based in a single location.
- It should be seen as a business philosophy to be adopted by all people throughout the organisation.
- The key to long-term sustainable growth is the identification, satisfaction and retention of customers.
- The customer's needs should be assessed before making business decisions.
- Attention is given to the needs and wants of the marketplace, moving away from a focus on production.
- By offering items of value to the market, value can be gained from the market.
- The above point is achieved by defining target markets and then developing goods and services that will meet the wants and needs of these markets.
- An organisation with the marketing orientation attains distinction by endeavouring to

achieve its business goals by satisfying customers.

A significant part of the marketing concept is what is known as the four Ps. These are product, place, price and promotion. These are also known as the "marketing mix" and may be used when a firm plans to bring a new product or service to the market (Weiss, 2012). The benefit of the marketing mix is that it encourages critical analysis of the elements involved in the offering of a product or service. When price is looked at, considerations must be given to the charge for the product or service. Product includes branding and looking at customer needs. Place refers to the delivery of the product or service and considers vendors, sales outlets and teams, amongst others. The promotion aspect involves advertising, marketing budgets and campaign plans. Figure 3.1 illustrates the marketing mix. A further three Ps have been added in order to address a more comprehensive theory under services marketing. These will be discussed under "Services Marketing" in Section 3.3.

Figure 3.1 - The marketing mix



Source: Weiss (2012)

McDonald, Frow and Payne (2011) refer to marketing as being a process designed to "match supplier capabilities with customer's needs". The marketing mix is described as being an adaptable coupling between the customer and the business.

Kotler and Armstrong (2012:4-5) state that, in its simplest form, "Marketing is managing profitable customer relationships." The authors quote Peter Drucker, the management guru, as saying that marketing's aim is to render the concept of selling unnecessary. By developing superior value-providing products, competitive prices, and then distributing and promoting them effectively, these products will be easy to sell. Marketing can be defined as a "social and managerial process" using exchange between individuals and enterprises and others that enables the capturing of value for all parties involved.

In summary, marketing is comprised of various concepts and functions, but these must be integrated in order to perform optimally. It is also seen by many as a management process. The essence is to create value for customers, in order to gain value from them. The next section will deal with services marketing, in order to look more closely at the subject and the research that is included in this study, being that of accounting and tax services provided by firms in Cape Town.

3.3 Services marketing

3.3.1 Services – background and context

Verma (2011) helps to place services marketing in the macro-economic context to illuminate its origins, definition and evolving nature. After the Second World War, corporations emerged out of the United States and Europe that were spearheading the industrial revolution. This was as a result of increased demand following burgeoning affluence in these nations. However, steep competition came from Japanese manufacturers that were responding to market demands more dynamically and came into play in various industries which challenged United States' and European enterprises. Later on, in the 1970s, change took place in the patterns of consumption as a result of a shift in the creation of wealth away from the "giants of the children of industrialisation" to new kinds of companies. New kinds of demand were appearing, driven by increased spending power and affluence. This was the birth of the

service sector, which eventually would overtake the industrial sector in terms of contribution to gross domestic product and also creation of employment. The areas of communication, education, health, banking and entertainment have become major contributors to economies in the Western countries, but countries like India, China and Vietnam are rapidly heading in a similar direction in their economies.

Countries like Canada, the United Kingdom, Japan, France, the United States of America and Australia all have service-dominated economies. The United States makes a case in point in understanding the progression from an industrial economy to a service one. In terms of employment, about thirty percent of employment was in the service sector in the early twentieth century, but by the 1950s the figure was fifty percent, and by 1996 it stood at seventy five percent. That is, at least seven out of every ten working people were employed in the service sector at the end of the twentieth century in the United States. Services now drive the economies of the countries listed above, as well as most of those in Europe.

Countries like India have also seen economic transformation from an industrial base to that of services. In the 1970s more than seventy percent of employment was based in primary, or extractive, activities such as agriculture, mining, fishing and forestry. The percentage of these activities has declined to just under sixty percent in 2005. While at the opposite end, service-based (tertiary) activities have increased from fifteen percent to above twenty-three percent during the same time-span. Tertiary services include: restaurants and hotels; barbers and beauty salons; dry cleaning and laundry services; and repairs and maintenance services. The services sector as a whole has seen a growth in GDP contribution from just above thirty percent in 1950, to over fifty percent in 2008.

The South African economy has seen a similar trend. Economic growth has been mainly driven by the tertiary activities, including the key industries of communications (ICT), wholesale and retail trade, and tourism since the 1990's (Media Club South Africa, no date). According to Statistics South Africa (2015), the various contributing sectors to the economy's GDP for 2014 include the primary sector at eleven per cent, the secondary sector with twenty-

one per cent, and, finally, the tertiary sector with sixty-eight per cent.. The tertiary (or services) sector is a major contributor to the South African economy and therefore drives a significant proportion of growth.

Services have become a major contributor to economic activity and growth in the world's major and developing economies. As a result, marketers and academics have specifically looked at how marketing can and should be applied in the services economies, and as a consequence in service businesses. It is also important to note that cloud computing forms part of the services economies of countries, including South Africa.

3.3.2 Services marketing defined

In the introductory chapter to this study, services marketing was briefly introduced. It is considered that services marketing can be seen as economic activities where a consumer is granted access to labour, skills, expertise, goods, facilities, networks and systems, in exchange for money, time and effort (Wirtz *et al.*, 2012).

Services are more difficult to define than goods, due to their differing properties. However, by examining key characteristics of services, their nature can more easily be understood and explained. The main characteristics of services are: lack of ownership, intangibility, inseparability, perishability and heterogeneity (Learn Marketing.Net, no date). These characteristics are described below:

- Unlike goods, a service cannot be owned. It cannot be taken off a shelf in a store and brought home to the purchaser. An air travel ticket lasts for the duration of the flight only, as an example. A service cannot be stored or held on to and is hired for a specific period of time.
- Where products can be touched, services are the opposite and therefore intangible. Services are experienced by the consumers.
- Services are inseparable from the service providers. Without a provider of the service,

it will be unavailable to the consumer.

- Perishability refers to the limited time a service is available, after which it is never available again in the exact same way.
- Although it is the aim of a service provider, it is nearly impossible to ensure that each instance of the service experienced by the customer is identical to another. Services, therefore, have a heterogeneous nature.

The above points can be applied in the context of cloud services. With regard to ownership, cloud services are typically offered on a subscription and/or metered basis (e.g. total amount of storage). Depending on the requirements of the consumer (in this context, a business or other organisation), the cloud service(s) is rented for a short or longer term, but does not own the infrastructure of the cloud supplier. That is, the datacenter equipment and associated software platforms that facilitate the cloud service are not owned by the consumer, but by the provider.

In terms of intangibility, cloud services are delivered via networks and the end-user experiences it typically via a web-browser. Without the cloud service provider, there is no service. The end-user is completely dependent on the provider's website and the physical network infrastructure in order to consume the cloud service. Therefore, they are inseparable.

Cloud services are not, owing to their nature, perishable. A consumer may rent a cloud service for a long time - many years, in fact, if not perpetually (assuming the provider continues to exist).

With regards to the heterogeneity of services, cloud services, like other software services, seem to be more product-like in nature on this point, as each instance of consumption can be identical to another. The example of a dining experience is useful to illustrate that a cloud service is more fixed in its nature. A dining experience, even at the same restaurant, on more than one occasion, can result in different experiences. Therefore cloud services could potentially be seen as homogenous.

Wirtz *et al.* (2012) illuminate the processing perspective of services, which looks a bit deeper into services' properties. Significant differences appear when considering services from the perspective of who or what the service is being applied to. Some services can, it is argued, have a tangible nature, such as those services performed on people's bodies, or on their physical possessions. Intangible services are typically applied to people's minds and their intangible possessions or assets. Four broad categories arise out of this context: people processing, possession processing, mental stimulus processing and information processing.

People processing includes those services administered to people such as transport, food and beauty salons. Typically, the creation and consumption of these services occur simultaneously and the consumer has to be physically present in the same location and must willingly participate in the process of consuming the service.

Possession processing refers to those services taking place on people's physical property, including houses, vehicles or other physical objects. The production and consumption of these services do not necessarily occur simultaneously, and customers do not have to be present in all instances.

Mental stimulus processing involves services that affect people's minds, and can impact their behaviour and attitude. Examples of these are media such as music or news (including digital content), consulting services and religious ceremonies. Physical presence is not required, as people can store and access content like news or music remotely. Services in this category can, therefore, be "inventoried".

Lastly, information processing can be performed by people or by machines and is the least tangible of services. Professional and financial services like medical diagnosis, accounting, management consulting, law and marketing are typically included in this category, as well as cloud computing services. Converting information into physical reports, CD-ROMs or books could help make it into more tangible forms. However, due to

some straddling in the definition between mental stimulus and information processing, they are sometimes just combined under "information processing".

The next section delves into the services marketing mix, which has been developed to expand the traditional "4Ps", which are product, place, promotion and price.

3.3.3 The services marketing mix

Kotler and Armstrong (2012:51) describe the marketing mix as a set of tactical marketing tools, used by a business to elicit a desired response from the targeted market. This mix is made up of all the things a firm can do to influence the demand for its product.

The "traditional" four p's (4Ps) of marketing were developed by E. Jerome McCarthy in 1960 (Hatcher, 2013). By 1981 it was deemed that the existing model was restrictive in its ability to assist managers in their attempts to comprehensively market increasingly complex products but more specifically, services. In the following paragraphs, the 4Ps (product, price, place and promotion) are therefore looked at from their traditional perspective, followed by the extended three new areas of people, physical evidence and process. Each of the Ps will be related to cloud accounting services. According to Rao (2011), the seven Ps of marketing are designed to meet seven objectives. In order, they are: to match client's wants and needs, expectations in terms of quality, perception, satisfaction, relationships, consumer's welfare and, lastly, the all-round wellbeing of society.

3.3.3.1 Product

Product refers to the product or service lying at the heart of the firm's offering to the market (Wirtz *et al.*, 2012). The product or service in question ought to be designed to meet a customer's primary need, in the midst of competing offers from other providers. It can include a "goods-and-services combination" (Kotler & Armstrong, 2012:51), such as when purchasing a new car together with a service plan and warranty. In terms of a service

configuration, Hatcher (2013) adds that further parameters may be included such as user numbers, usage, training and support. Cloud accounting providers design their product in order to meet the needs of both the accountant and their client. Both have somewhat different needs as well. The accountant requires a full range of accounting-specific functions, including manual journal creation and in-depth reporting (e.g. general ledger drill-down details). The client, on the other hand, does not typically require the full functionality that the accountant has. In fact, it would be best in most cases if the client has more restricted functionality, as he/she might otherwise be able to change figures without intending to do so and therefore cause problems.

When it comes to branding, some but not all CAS providers offer a “white-label” solution. This entails leaving it down to the accounting firm to wrap the product in their own branding scheme, making it appear to the end client as if it is the firm’s own product. In this study, Cape Town accounting firms will be probed for their preference in this regard, as well as the areas of offering multiple CAS solutions through their firm(s) – there is not necessarily anything preventing firms from subscribing to and providing their clients with more than one CAS product.

3.3.3.2 Price

Price refers to the value placed on the offering. From a customer perspective, a key consideration in the purchase decision process is the cost of the item or service in order to gain its benefits. However, other factors such as effort or time involved can also form a part of the consideration (Wirtz *et al.*, 2012). Price may also refer to the process of establishing the value of what is being marketed and then applying the price in accordance (Hatcher, 2013). Rao (2011) suggests that customer price sensitivity is higher with services than with goods and that value perception by the customer forms a key aspect in determining pricing strategies.

Cloud service providers, including the accounting software vendors, charge for their product on a subscription basis. For example, there could be a set monthly fee of four hundred rand per organisation that is being used by the accounting firm. If there are one hundred clients on the cloud system, and each costs four hundred rand, the total monthly cost to the accounting firm is forty thousand rand. The firm can then decide to either break-even, accept a loss (absorb the cost), or “monetise” the cost. The break-even option includes recharging the client the exact same price as it has cost them. Absorbing the cost would presumably be the least desirable, as the firm would have to bear the expense without recovering it or would have to find another way to mitigate it. Lastly, the accounting firm has the option of “monetising” the cloud service which involves re-charging the cost of the software to the client, and adding a margin on it. Cloud accounting providers also make different packages of their product available, each different type designed to suit the needs of different types or sizes of business. A micro-business or freelance-type business does not necessarily require the same level of accounting as an SME business would or a VAT registered or non-VAT registered business would, so the cloud provider can cater for both but vary the price from less than four hundred rand per month to more than that. In this research, firms in Cape Town will be asked about their view on a pricing strategy for CAS.

3.3.3.3 Place

Place concentrates on the means of delivering the product to the customer. Under the original 4Ps model, the emphasis was on providing products to customers through retail outlets. With services, however, place is more widely considered to encompass various channels of delivery, including digital as well as physical (Hatcher, 2013). Rao (2011) refers to the “production, distribution, and consumption” of services as activities that happen simultaneously. The internet enables information-based services to be delivered very efficiently. Modern banking services and transacting, for example, can be delivered through physical branches or automatic teller machines (ATMs), and telephone and on-line banking services available at any time of the day (Wirtz *et al.*, 2012). A distinction is also important

between information-based core products, and supplementary services that support non-information-based products. Cloud accounting software, being an information-based service, is delivered through the internet. The end-user (accountant or client) needs an internet connection and a web-browser to access it. Another important aspect in terms of the delivery and accessibility of cloud accounting applications is that providers have developed the software so that it is easily available on various devices such as laptops, mobile (smart) phones and tablets.

3.3.3.4 Promotion

Promotion entails telling customers about the firm's products and services. Kotler and Armstrong (2012:52) refer to persuading the customer to make the purchase by highlighting the advantages of the product. Effective communication is therefore the key concept here (Wirtz *et al.*, 2012). In addition, educating customers is very important. As a result of being intangible (not experience-able by the natural five senses people have), services are harder to understand and to visualise. It is therefore important to boost the ability of customers to comprehend what a firm's service offering actually entails. Hatcher (2013) includes direct marketing, public relations, sales promotion, personal selling and advertising under the domain of promotion. Additionally, it is extended to cover branding which in turn deals with corporate image, social media and other internet-based promotional activities. A view is put forth by Rao (2011) that consumers are "co-producers" in terms of their service experience in that the better the consumer understands the service, the better his/her experience of it will be. The onus, therefore, rests upon the service providers to promote their service by using educational formats so that the consumer has an enhanced service experience. It would seem that cloud accounting providers are following this approach, as many typically develop extensive online tools to help inform potential customers about their product. Xero and Sage One, for example, publish various videos on their websites which feature either real people or animated visuals to instruct and inform the accountant and/or client about their product. A further important aspect that applies with cloud accounting software providers is that some

offer a white-label approach, which entails offering a “white” space visually where the accounting firm may place its logo and branding, so as to give the impression to their clients that it is an in-house or owned system.

The next three paragraphs form the extended elements of the 7Ps marketing mix and have been developed with services marketing in mind. These are: people, process and physical evidence.

3.3.3.5 People

People include all the different staff in the firm such as those answering phones, making deliveries, fronting a retail store or restaurant, agents and the consumers as well. People can be indirectly or directly involved in the service, and have a very acute impact on the customer's experience (Hatcher, 2013). As suggested previously, the delivery and consumption of the service is considered to occur simultaneously. Wirtz *et al.* (2012) allude to the point of difference there can be between the abilities and attitudes of the staff of different service providers. A key competitive advantage lies in having a human resources function that effectively selects, trains and finds ways to motivate employees. The customer's experience of good quality service is largely determined by the service provider's staff quality and behaviour (McDonald *et al.*, 2011). Due to its technologically-based nature, cloud accounting providers' main interface with customers (both consumer- and business-wise) is their website. However, with a business-to-business service, an account manager would typically be assigned to a client (accounting firm). This person could be key to the accounting firm's experience of the service provided, as they provide the “human touch”. Additionally, the support function in case of queries by the accounting firm or its client is important and superior service will be likely to play a significant role in the long-term retention of customers and the generation of new ones.

3.3.3.6 Process

Process envelopes the way a firm executes its service delivery (Wirtz *et al.*, 2012) and can be an indication of how “customer-friendly” a firm is towards its customers (McDonald *et al.*, 2011). It is really about the chain of activities that exist in order to create the service or product element right through to the point of it being consumed by the customer. Effective processes help to ensure more consistency in service delivery. In contrast to services, the product assembly process in a factory, for example, is easier to control and to ensure consistency in terms of quality. Hatcher (2013) describes the process element as the “most eclectic” in the way it can be engineered to influence the customer experience. Process includes all the interactions from start to finish, and post-delivery of the service experience by the customer.

Amazon, for example, has spent many millions of dollars to get the customer-purchasing experience optimised. Consider the process of buying a book. The customer will search for the product on the Amazon website, try and look inside, if possible, to read some of it and see whether it is what they are looking for. Then they might consider the price, and whether they could buy a secondhand book instead of a new one. The customer may then want to read reviews by others to help get informed. Once they have made their choice, before paying for it they may want to know where it can be delivered to and how long it will take. All these elements form a chain that can significantly impact the decision by the customer: the more relevant and easier it is, the better the chance of the sale being made. Rao (2011) calls the encounters of service with the customer as the “moments of truth”. These encounters entail all interactions between customer and service provider, including those between the customer and service employees, the service environment and systems. Improving process with these encounters in mind, can improve these “moments of truth.”

The process involving an accounting firm considering subscribing to (purchasing) a cloud accounting service requires that the provider’s website is up-to-date, contains the correct pricing, speaks to frequently-asked questions and possibly very importantly, uses the power of video to facilitate a more efficient on-boarding process. The website is the port of entry for

an accounting firm looking to explore their options in terms of the right cloud accounting provider. Once a provider has been selected and subscribed to, the support infrastructure is critical to ongoing retention management. Few things are more important to the client than getting a technical query resolved as soon as possible, without having to follow up on a support ticket submitted.

3.3.3.7 Physical evidence

Physical evidence refers to physical or tangible cues that customers can look for when considering a service offering, specifically in relation to the lack of tangibility in services (Wirtz *et al.*, 2012). These tangible cues may include a host of different objects, including digital property such as a website, blog and social media; printed media like brochures and business cards; physical premises and their ambience (restaurants, hotels), hygiene factors, and building design and accessibility. These cues or physical objects facilitate the forming of an opinion by the consumer of the service (Rao, 2011). The physical environment is also described as the "servicescape" (Wirtz *et al.*, 2012) which includes the physical and non-physical elements aforementioned and should be designed to facilitate and direct customers through the service experience. Cloud accounting providers may have physical cues such as an office where a customer may have interaction with them, but it is more likely that the customer will be using the provider's website as their most frequent visiting point. Perhaps a physical meeting with the cloud accounting provider's account manager or a Skype-call will also contribute as tangible factors.

McDonald *et al.* (2011) prefer to view "customer service" as the seventh element of the service marketing mix and argue that it would be more appropriate to consider physical evidence as part of the product element. Their view is that physical evidence should be seen as a "sub-element of the product element of the mix." The argument is that customer service should be seen as an important tool and, if used correctly, the company can differentiate itself and could thereby gain competitive advantage.

In order to explore accounting firms' considerations with regard to adopting cloud software from cloud accounting providers, the next section looks more closely into business to business marketing (B2B). Accounting firms (being businesses) planning to purchase cloud accounting software (provided by other businesses) face important purchasing decisions and the next section will delve further into this aspect. There are significant differences between businesses buying from other businesses, as opposed to consumers buying from businesses.

3.4 Business to business marketing (B2B)

3.4.1 Definition and terminology

In order to define the business to business (B2B) market, Zimmerman *et al.* (2013:2) include the services and products that organisations buy in order to produce other services and products to be supplied, sold or rented to others. In addition, they also include wholesale and retail enterprises that purchase goods for the purpose of renting or reselling to others. However, it is considered by the authors that this definition ought to be broadened to include institutions such as charities, hospitals and all levels of government. Lastly, not only does the business market include physical products, but also services. Many large institutions, for example governments, purchase both goods and services at the same time.

Accounting firms purchase software that enables them to complete bookkeeping and compliance work, such as annual financial statements and company tax returns. The software that accounting firms buy can be either desktop- or server-based, and installed on their premises, or it can opt for a cloud solution. Suffice it to say, the transaction is between the accounting business and the provider, which is another business.

Regarding the terminology, the terms "business to business marketing" and "business marketing" is deemed to be synonymous (Brennan, Canning & McDowell, 2011:6). The term

"industrial marketing" alludes to the primary (agricultural and extractive) economic activities and was more commonly used in the 1980's and 1990's. The term "B2B" is found pervasively on the internet to refer to business-to-business marketing and selling, whilst being contrasted with business to consumer (B2C). "Organisational marketing" has been argued to be a more comprehensive term to include non-profit making organisations such as charities, but the term has not yet become popular.

3.4.2 The differences between B2B marketing and B2C marketing

This section will delve into the distinguishing factors between consumer marketing and B2B marketing which should assist in elaborating on the defining characteristics of both. The following table summarises the differences discussed in this section.

Table 3.1 - A summary of the differences between B2B marketing and B2C marketing

| <u>Type of difference</u> | <u>Business to business (B2B)</u> | <u>Business to customer (B2C)</u> |
|------------------------------------|--|--|
| <u>Scale</u> | | |
| Transaction volumes | Fewer, but high in economic value. | Higher, but lower in economic value. |
| Unique purchase | B2B transactions may occur continually for many years, e.g. software supplied over a number of years of repeat transactions. | A consumer purchase, e.g. a laptop computer purchased from a selected supplier may occur once and then never again at the same supplier. |
| <u>Internal differences</u> | | |
| Departmental interdependence | Involves various business units and individuals. | Can involve only one department, e.g. marketing. |
| Product management | More general-manager-like | More straightforward, |

| | | |
|---|--|--|
| responsibility | in approach. | dedicated/single focus. |
| Product manager background | Typically technical. | Typically marketing. |
| <u>Customer and marketing aspects</u> | | |
| Purchase decision-making | Rational. | Irrational. |
| Customer base | Scarcity / fewer customers. | Economy of scale. |
| Decision-making unit (DMU) | Can consist of multiple individuals. | One or perhaps two individuals involved (e.g. married couple). |
| Market segmentation | Size, location, price sensitivity, product application, classification codes and product importance to the specific buying firm. | Psychographic or demographic factors. |
| Distribution channels | Multiple. | Single. |
| Personal customer contact | High technical proficiency required of salesperson. | Lower technical proficiency required. |
| <u>Environmental / Uncontrollables</u> | | |
| Technology | High risk involved with even small or incremental technological change. | Lower risk. |
| Derived demand | Marketing activities dictated by ultimate demand generated by final consumer, not by the business customer. | Demand by consumer directly dictates marketing activities. |
| End-user information | Depending on the product and industry, end-user data | End-user information more readily available from |

| | | |
|--|---|----------------------|
| | for analysis and marketing purposes can be difficult to obtain. | market data sources. |
|--|---|----------------------|

Source: Adapted from Zimmerman *et al.* (2013:7-10)

With regard to the **scale differences** indicated in Table 3.1, Zimmerman *et al.* (2013:7-10) indicate that a consumer purchase happens only once, whereas B2B purchases happen again and again and on a much larger scale. The process of producing a hairdryer, for example, consists of many sequential steps that include multiple B2B transactions before a final product purchase is concluded with a consumer. That is, from mining the raw materials to refining them to the manufacturing firm that assembles all the different parts (plastic casings, heating elements, motor and fan, controls and switches, and a wire and plug) into one final product, there can be as many as 18 different transactions that take place before a final (single) purchase by the consumer. The economic value of B2B transactions is far more than those in the business to consumer markets (B2C). In 2010, the US government spent \$365.9 billion on purchasing goods and services, when the Ford motor company only spent \$65 billion by contrast.

Following the differences in scale, Table 3.1 lists differences that are **internal** to the B2B firm. There are three elements: firstly, no single department can develop and/or make a final decision as to a product offering, as it requires approval from all the firm's departments such as information sources, engineering and manufacturing. Secondly, the business marketing manager has various responsibilities that include a more general-manager-like approach than being the product manager for a single product in a consumer market. For example, if the business supplies office furniture to other businesses, the product manager must involve the various other functions such as marketing, finance, engineering and manufacturing and gain their cooperation in order to finalise a plan for rolling out a new design for production. This process can take a long time, perhaps even years in advance. The product managers are also typically of a technical background, as opposed to an advertising background which would be found in consumer marketing firms. Thirdly and lastly, the marketing strategy is

likely to be synonymous with overall corporate strategy, for the same reasons as set out above - that is, all functional areas of the business must be in cooperation with each other to achieve the objective of selling.

The third section shown in Table 3.1 revolves around differences **between customer and business marketing** and there are a number of factors to mention. The first is that, in general terms, a consumer purchase tends to be more irrational as opposed to the more rational approach by a business purchaser. By way of example, a business will not have the same judgment in the purchasing decision for an office-wide computer upgrade when it comes to the colour of the desktop units, as a single consumer would have when considering aesthetic qualities. An individual consumer will be more likely to use his/her individual discrimination and perceptions about an item that would fit his/her needs and personal style. This set of criteria will be much more rationalised in the case of a business purchase decision. An accounting firm considering adopting cloud software, will be less inclined to choose the one that has the best-looking website, although that might be a point of consideration. More heavily weighted factors could include verifiable security guarantees and the technical functioning of the system – this would entail a more rational approach.

Another factor is that of the customer base, which in B2B markets is a lot sparser than consumer markets that can consist of millions of people. As a result of this scarcity in B2B markets, the sellers have less power than the buyers. In the airline industry, the providers of jet engines have very few potential customers - for example, the likes of Airbus and Boeing who make the majority of commercial airplanes. In consumer markets, the emphasis is placed on economies of scale, where there are potential markets of millions of people who can buy – thus, a much wider customer base is prevalent. The customer base for cloud accounting software suppliers in the South African market is much narrower than the customer base for a consumer banking institution, for example.

The buying unit or decision-making unit (DMU) is the next element for consideration. The B2B buying unit is often comprised of different individuals performing different roles which

influence the DMU. It is therefore more complicated and rational by nature, as opposed to a consumer's decision-making process. Additionally, the members of the DMU are inclined to be more risk-averse than consumers (Zimmerman *et al.*, 2013:19). The kind of individuals that make up a DMU are (Brennan *et al.*, 2011:43): initiators who first recognise a problem or need; gatekeepers who are in control of the flow of knowledge; buyers who are responsible for the sourcing of suppliers and negotiations, and sometimes the only contact that suppliers have with the buying organisation; deciders include senior managers and those who "sign-off" a purchase but rely heavily on other members of the DMU; users are those people in the organisation that will ultimately be using the products bought and could also be the initiators; lastly, there are the influencers who can be both internal and external individuals that advise the deciders.

The initiators of adopting new cloud software in an accounting firm can include the accountants that work day by day with clients and the demand may be either reactive or proactive. Clients asking for online access to their accounting information would be an example of reactive demand, while some proactive accountants or staff may bring up the issue of online accounting with their superiors before their clients ask about it. The gatekeepers in accounting firms would typically include partners, managers and senior accountants. These same levels of staff would also be the buyers of the software products in firms. The person signing off a contract would mostly be senior, like a partner. The users of the software can include everyone, even a partner who personally manages some clients, but normally accountants and bookkeepers would access it from day to day. In the primary research section of this study (see Chapters 4 and 5), demographic details will be gathered which will include identifying what levels of senior level personnel are involved in the decision-making process (e.g. managers, partners, accountants).

Members of a DMU are likely to be more risk-averse than consumers. Reasons for this include the associated suffering in their professional persona, or the risk of missing a promotion or target which will affect their personal career prospects or even their income. Choosing a sub-optimal cloud software supplier could result in client dissatisfaction and other

consequences that could include lost revenue and reputational damage.

As indicated in Table 3.1, the way that business markets are segmented is different from that of consumer markets. Business markets are characterised by factors such as size, location, price sensitivity, product application, classification codes and product importance to the specific buying firm. Consumer markets are typically segmented by psychographic or demographic factors which are not applicable to business markets. From a cloud accounting software provider perspective, the order in which B2B market characteristics is most relevant can be seen to be: product importance, product application, price sensitivity, and then the other characteristics mentioned.

Business services and products are often provided using multiple channels. Large producers - for example, manufacturers of roofing shingles - supply their product to big retailers that supply home builders or contractors, as well as to various smaller merchants, lumber yards and other outlets. A different marketing strategy is required for each different distribution channel. Cloud software can only be distributed and consumed via the internet. However, the internet may offer various digital channels in itself, which the CAS provider may want to exploit to its advantage.

The final essential difference highlighted by Zimmerman *et al.* (2013:9) when it comes to the customer marketing aspects, is the importance of personal contact. It is also stated that a business marketing budget is often largely taken up by the sales force. One of the associated reasons for this is the fact that in some B2B relationships technical proficiency by the salesperson is the key to success. For example, some B2B salespeople have to have engineering or medical degrees, as otherwise it could be hard or unlikely to convince a business buyer to buy the product or service. A cloud accounting provider should have a salesperson or team dedicated to demonstrating the product to accounting firms. A significant level of technical competence may be required, due to some specific requirements that may need to be met for accounting firms, such as whether the software supports integration capabilities with Microsoft Excel, or whether any other specific software can be combined with

it.

The last section of differentials between B2B and B2C, indicated in Table 3.1, include the **environment and related "uncontrollables"**. The first of these is technology, which involves the rapid change that can take place in the industry. While a consumer can find new technology exhilarating, a business customer would look for more certainty and stability, as even an incremental change can result in significant risk of negative financial implications. An example is that of circuit board manufacturers that supply to personal and office computer sellers like Hewlett-Packard or Acer. Should an error arise on a manufacturing line, it could stop the assembly line process and halt production, which could be a very costly exercise in terms of revenue lost. On a different note, technology can also be used to make a positive impression by presenting to customers using modern computing and projection equipment. Cloud computing is a relatively new technology and even newer for the accounting industry. In terms of risk, there has been a lot of discussion around issues like security and ownership of the data, as mentioned in Chapter 2. If a cloud provider's database is breached, there can be serious consequences for the accounting firm using that provider - for example, the client's financial data can be stolen or compromised. On the other side of the coin, cloud computing has revolutionised modern business processes, and the ability of clients and their accountants to view and work off the same real-time data is highly advantageous. If implemented correctly, accounting firms can obtain increased reputation - for example, if seen by the market as a leader in using cloud technology to enhance their client's experience.

The second uncontrollable aspect and perhaps the most defining characteristic is that of derived demand. B2B markets are driven by "ultimate demand" - that is, the demand by the final consumer. In the example above, those firms involved in supplying materials and parts, as well as the manufacturers of the hairdryer, depend on demand existing in the market for this product. The needs and wants of consumers are what drives demand in markets, so a business marketer is inclined to keep abreast of the needs of the final consumer, not necessarily its immediate business customer, which may seem like the obvious thing to do.

This leads to the final element of a lack of end-user information that could be key for business marketers, but might not exist or is hard to come by. By way of example, the AC Nielsen Company frequently publishes supermarket purchasing data in the United States, which helps firms predict future consumer spending and the related market opportunities. However, in order to gain knowledge in the area of access flooring (Zimmerman *et al.*, 2013:10) - "a product which provides a false floor on top of an original floor to allow a plenum for housing wiring and passing air conditioning" - a firm wanted to investigate the size of the Far East market, but could not because of the difficulty of finding the data.

The demand for cloud accounting software is ultimately driven by the consumer, too. The consumer in this instance is the client of the accounting firm, typically a business owner or owners. However, there can be a distinction between cloud accounting designed for accounting firms only (so the firm is the end-consumer), and those that will ultimately be used by consumers like small business owners who want to view and peruse their financial data online.

Brennan *et al.* (2011:5) have a different view from that of Zimmerman *et al.* (2013), regarding the differences between B2B and B2C marketing. According to these authors, the differentiating characteristic of B2B markets is that the final customer is an organisation rather than an individual. At the same time, one cannot clearly demarcate between business markets and consumer markets just based on the nature of the product (or service) as, for example, both consumers and businesses buy products such as computers and maintenance services for cars or property.

This section dealt with the differences between B2B marketing. A definition was followed by the contrasts with B2C marketing. The next section will discuss the industrial buying decision-making process.

3.5 Industrial buying decision-making process

3.5.1 Introduction to the industrial decision-making process

This section introduces the industrial buying decision-making process.

Zimmerman *et al.* (2013:29) outline eight stages in the process of industrial purchase decision-making process. These essentially form a chain of decisions. Kotler and Armstrong (2012:176) follow a similar process, as well as Havaladar (2005:36) who refers to eight “buyphases”. These phases are: problem recognition or anticipation of arising need; determining the characteristics and quantities of the required solution; development of specifications or description of needed solution; search for potential suppliers and their qualifications; acquiring and analysing supplier proposals; evaluating proposals and selecting preferred supplier(s); order routine selection; and, lastly, performance feedback and evaluation. Table 3.2 illustrates these steps.

Table 3.2 - The industrial buying decision-making process

| Steps | |
|-------|---|
| 1 | Problem recognition or anticipation of arising need |
| 2 | Determining the characteristics and quantities of the required solution |
| 3 | Development of specifications or description of needed solution |
| 4 | Search for potential suppliers and their qualifications |
| 5 | Acquiring and analysing supplier proposals |
| 6 | Evaluating proposals and selecting preferred supplier(s) |
| 7 | Order routine selection |
| 8 | Performance feedback and evaluation |

Source: Adapted from Zimmerman *et al.* (2013:29)

These authors point out some important caveats with regard to these steps, one being that a

supplier might contact a prospective buying firm with a solution for a problem that it didn't know it had. This situation could result in the buying firm skipping steps in the model. A second assumption is that buying firms are rational in their approach, especially in comparison to consumers (see section 3.4.2), but Zimmerman *et al.* (2013:29) argues that business buyers can also be subject to emotional influences. Brennan *et al.* (2011:38) point out that there may be variations in the buying process and it is possible that some phases might be skipped completely. These potential variations could come about as a result of the way that the decision-makers view the associated risk with the buying decision. As far back as 1994, Day and Barksdale had already considered the buying decision-making process specifically within the context of professional services firms and since their views still hold true, they are included where applicable to enhance the theoretical nature of the process from that perspective. Accounting firms acquiring CAS are referred to in the course of the following sections as part of going through the steps in the decision-making process.

The **first** stage starts with the acknowledgment of the requirement to solve a problem or fulfil a need. This can happen internally but also externally to the firm (Havalдар, 2005:36), for example by a smart marketer at a supplier firm. Alternatives to meeting the required need can include using in-house resources or personnel, contracting an external supplier, or even ignoring it (Day & Barksdale, 1994). Although not always clearly defined, purchase goals are an important part of the process. Typically, quality is a running theme throughout the criteria-establishing process. The accounting firm may find that cloud software can enhance their service delivery and can improve workflows and efficiencies (internal). It is also highly possible that more and more clients demand on-line access as they have heard others talk about this type of collaboration that is now possible (external). This may force the hand of the firm to start the process of solving this problem.

Secondly, in order to help determine the quantities of the product needed and characteristics that must apply to the product or solution, key questions are asked about how the problem identified is to be solved (Havalдар, 2005:37). Technical aspects may have to be considered by the technical department (for example, by departments like research and development or

engineering). Day and Barksdale (1994) consider that an initial set of options are collated, forming the consideration set. Varying criteria are to be established through a process of evolution by which risk and uncertainty are minimised. A prequalification phase is followed to establish potential service providers, based on a number of selected criteria. It has been mentioned previously what may be included in these criteria e.g. price and the reporting ability of the accounting software. Potential service providers may be selected from those that the firm is aware of, and also from referrals as mentioned previously. One example of obtaining a referral or of using word-of-mouth is where two accountants were once colleagues and one left the firm to start his/her own or join another one, and these two individuals are later in managerial positions. As a result of a collaborative history, these two individuals may still have contact and may occasionally “compare notes”, and it may arise that cloud accounting software is discussed where one provider’s service is recommended to the other. Another example is at a conference or at professional development training courses where accountants may discuss these issues with each other and at the same time make their own recommendations.

Thirdly, refined specifications for the product are developed (Havaladar, 2005:37) and a "shortlist" is created, refining the initial consideration set to those for further comparison, based on specific criteria applied in the process (Day & Barksdale, 1994). Presumably, the criteria at this stage become more stringent in order to eliminate those options that are likely to be less suitable. For example, it may be determined by the accounting manager(s) that the two overriding criteria against which the shortlist is measured is the reporting functionality of the software - for example, can it display an income statement that includes the actual and budgeted figures in columns next to each other? A second important criterion could be security aspects such as industry standard digital security certification.

Cloud software providers for small to medium companies typically allow a free trial subscription period. For a limited time - for instance, thirty days - access is granted to the software and functionality can be investigated. With most such trials, a demonstration company with data is available to “play around with”. This allows an accountant or manager

at an accounting firm to measure the functionality against its own desired specifications - for example, the types of management reports that can be viewed, downloaded (and in which format) and shared with a client. It is also possible to view the functionality from the client's perspective to obtain a good idea of the impression it might leave with the client. The better the firm knows its clients, the better it can make decisions around the best cloud solution fit.

The **fourth** step involves the search for what is deemed to be qualified vendors or suppliers (Havaladar, 2005: 38). Day and Barksdale (1994) refer to the evaluation of the shortlisted consideration set. Difficulty arises due to the lack of specific "search properties" or "attributes" available for verification. The typified methods employed here include referring to factual information provided by the supplier directly or from feedback obtained by referring to the firm's prior experience with the provider or other firms' experience with that provider. This helps to establish "surrogate indicators or cues" used to verify the likelihood of adequate quality expected from the shortlisted consideration set. The advantage that a trial version of the cloud software offers, is that it can help clarify greatly what attributes are either present or lacking. This will help inform optimal evaluation of the shortlisted candidates.

Fifthly, supplier proposals are obtained from the selected shortlisted suppliers and analysed (Havaladar, 2005:38). Day and Barksdale (1994) view this stage as entailing an assessment of how well each candidate rates on the defined evaluation criteria, or by "determinant attributes". It is reasonable to assume that all candidate providers at this stage have already met some kind of minimum criteria. The selection process is best served by clearly defined selection criteria and their relative importance. It is also possible that an additional elimination round follows, to narrow down the shortlist even further.

The next (**sixth**) step is to evaluate the supplier proposals with a view to selecting the optimal choice in terms of the compatibility with the firm's internal selection criteria (Brennan *et al.*, 2011:38). Supplier selection may be aided by rating the desired attributes using a weighting system - that is, apply a measure of importance to each attribute. Once these have been collated, an overall "score" per supplier solution can be established. Similarly, Havaladar

(2005:38) refers to an evaluation system, as illustrated in Figure 3.2. Furthermore, additional negotiations may ensue with selected suppliers with regard to delivery, price or payment terms (Havalдар, 2005:38). Once the shortlist has been evaluated to the desired level, a preferred supplier is selected. It is also possible to subscribe to more than one cloud accounting solution. There is nothing prohibiting an accounting firm from using more than one provider’s product. For example, one solution would be ideal for freelancers and micro-business, while another is better suited to a medium-sized enterprise.

Figure 3.2 - A Supplier Evaluation System

Table 3.1 A Supplier Evaluation System

| <i>Attribute (or Factor)</i> | <i>Weight (Importance)</i> | <i>Supplier Performance</i> | <i>Supplier Rating (or Score)</i> |
|----------------------------------|--------------------------------|---------------------------------|---------------------------------------|
| Quality | 30 | 0.8 | 30 × 0.8 = 24 |
| Delivery | 25 | 0.4 | 25 × 0.4 = 10 |
| Price | 15 | 0.6 | 15 × 0.6 = 9 |
| Service | 20 | 0.6 | 20 × 0.6 = 12 |
| Flexibility | 10 | 0.2 | 10 × 0.2 = 2 |
| Total | 100 | | 57 |

Source: Havalдар (2005:39)

The **seventh** phase entails establishing the order routine selection which refers to order placement, order quantity, order frequency, delivery schedules, levels of inventory, delivery follow-up and adherence to payment terms by the customer firm (Havalдар, 2005:40). Accounting firms subscribing to the cloud accounting software may entail signing a partner agreement which may include minimum end-client numbers in order to meet a discounted price agreement. In addition, accounting firms may then qualify for additional discounts, depending on the numbers of clients that they are able to add to the CAS platform. Some CAS providers may offer a certain level of membership (bronze, silver, gold) to accounting firms, once they reach a certain number of clients using the CAS’s solution. A certain level of

membership unlocks further resources and support from the CAS provider.

The **eighth** and final step in the buying process includes post-purchase evaluation and performance feedback (Havaladar, 2005:41). Essentially, an answer should be provided in terms of whether the initial problem or requirement has now been sufficiently addressed. The evaluation process might be either formal or informal (Brennan *et al.*, 2011:38). The firm adopting cloud technology would mostly look for the reliable delivery of up-time (that is, no issues with the cloud provider's website while operating on it), speed of access, ease of processing information and technical support, especially around the beginning stages.

Brennan *et al.* (2011:58-82) refer to some of the inadequacies of traditional approaches to business marketing and highlight the importance of a more two-way relationship that happens in the process of selling and buying between firms. It is not just that vendors market and sell their products to passive buyers, but that there is pushing and pulling, and various other dynamic forces at play. In essence, "value-creating exchange" takes place. A partnership between the buyer firm and seller firm can serve as a strategic differentiator (Brennan *et al.*, 2011:31-37). This concept applies very much to accounting firms who may wish to utilise a cloud provider's product for strategic advantage. Furthermore, accounting firms may wish to partner with CAS suppliers as much as they would want to do so with clients, being aware of the significance of these relationships to their ultimate profitability. This study will determine Cape Town firms' perceptions regarding the growth of CAS and their possible attitudes toward partnering with CAS providers.

In closing, various models have been developed over a significant period of time in order to understand and explain organisational buying behaviour (Zolkiewski & Hopkinson, no date). These models and theories address different aspects of the process of industrial purchasing, such as the buyphases which were introduced above, and other factors such as the environment the buyer firm finds itself in, interaction within the DMU, and influences on the individual. Of these, Sheth (2001) has done extensive work on factors that have an effect on individuals within the DMU and factors that have an effect on the DMU, and although his

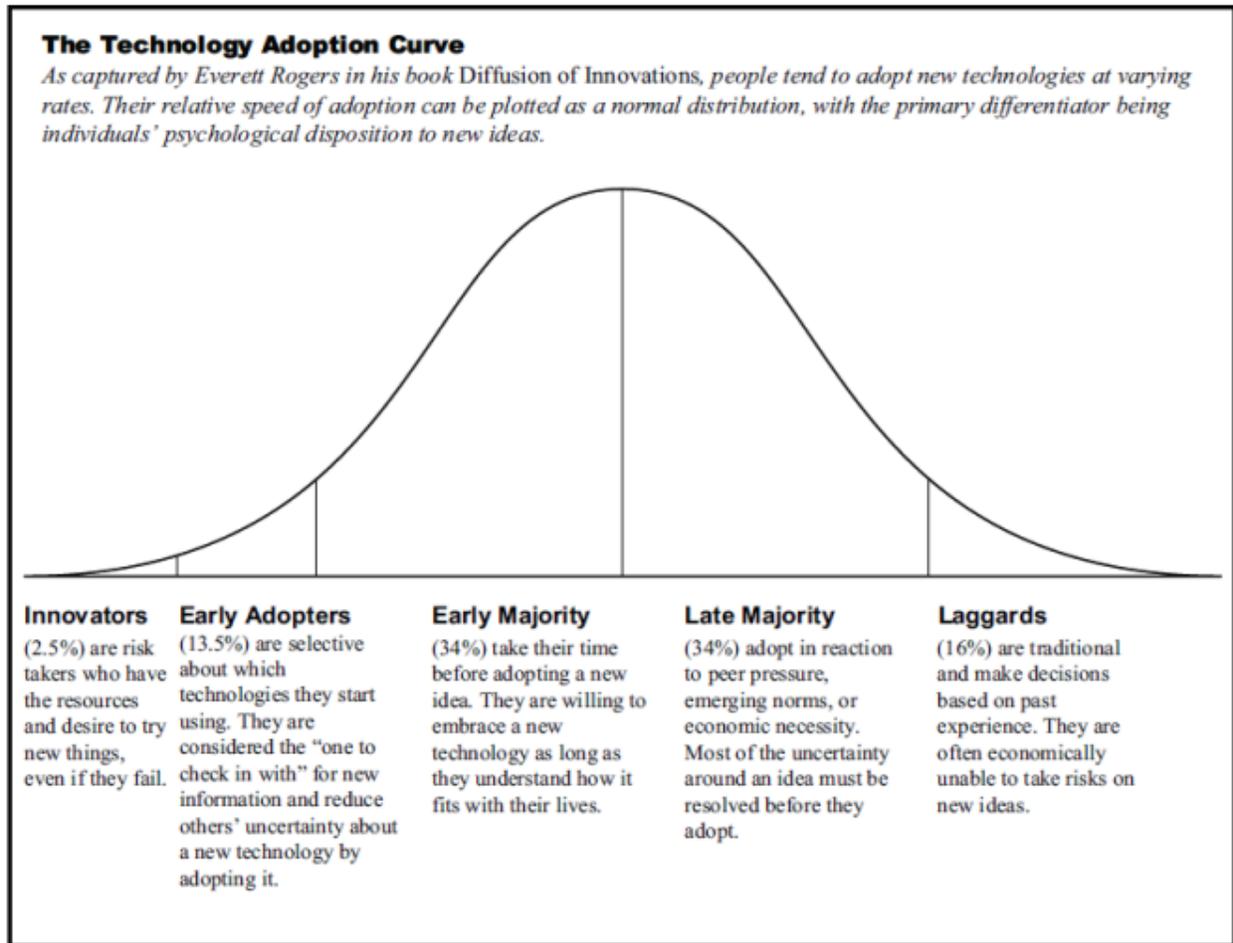
significant work is dated as far back as 2001, it is relevant to this study and will thus be used as a reference. These aspects are discussed in Section 3.5.3. Additionally, the author's theory reflects the concept of the factors that influence joint versus autonomous decision making within the DMU. Since this study will involve assessing the attitudes and perceptions of accounting managers at many small accounting firms as well as larger ones, it is expected that the issue of joint versus autonomous decision-making will be highly relevant. Many small firms typically only have one buying decision-maker, while larger firms will have a more formalised buying unit (DMU). Section 3.5.4 addresses this second facet.

The following section introduces the technology adoption curve, after which there will be further discussion on the nature and dynamics of those individuals involved in decision-making toward CAS.

3.5.2 Technology adoption curve

The technology adoption curve model was made popular by Everett Rogers in 1962 (Lamb, 2013). The theory states that people can be divided into groups of early or late adopters in terms of accepting and using new technology and innovations. Figure 3.4 illustrates the adoption curve.

Figure 3.3 - Technology Adoption Curve



Source: Smart Idea Store (2014)

The curve represents a normal distribution of individuals in terms of their disposition toward accepting and adopting new technology. Innovators (2.5%) jump onto new technologies with reckless abandon, and are the least risk-averse. Early Adopters (13.5%) come next, and want to get ahead of the "crowd", believing they may gain a competitive edge as a result. The Early Majority (34.0%) await some level of proof that a product is viable and would likely compare options, looking to get a good deal. The Late Majority (34.0%) are more sceptical and more effort will have to be made to convince them. The Laggards (16.0%) only adopt once they are left with no other options and exhibit a reluctance to spend their resources on new technology.

Accounting managers and firm owners (or partners) could feasibly be classified within this adoption model and it is assumed that there would be a variety of these different types of adopters within firms. That is, it could be expected to find a distribution of managers within this model, and assuming the distribution is more or less normal, it should reflect similar proportions - for example, 34 out of 100 firms would fall in the Early Majority category.

Herbert (2015) refers to the opportunity for IT suppliers (which, for the sake of argument, will include CAS providers) to look at the technology adoption curve as a guide in terms of developing and offering appropriate solutions at each section of the adoption curve – a challenging task, but one that may offer significant returns.

The technology adoption curve model is relevant to the participants in this study. It is posited that the responses given in the results of this study could have some dependency on where the respondent fits on the model - for example, Early Adopters would be more likely to be familiar with, accept or are already using CAS. Laggards would be those respondents having neutral stances or negative stances. Innovators, Early Adopters and the Early Majority would show a positive perception and attitude toward CAS and be receptive to accompanying opportunities rather than threats.

Lastly, as Lamb (2013) suggests, from a sales/buyer perspective an Early Adopter as sales adviser representing a CAS vendor would find it difficult to sell to a Laggard accounting manager. It is conceivable that like will attract like, and therefore CAS vendors would tend to have better success at firms who deem themselves Innovators, Early Adopters and, lastly, the Early Majority.

3.5.3 The psychological world of those involved in the decision-making process

There are a number of individuals involved in the decision-making process, as illustrated by

the DMU discussion in Section 3.4.2. Brennan *et al.* (2011:45-47) offer an important reminder that it is in fact human beings that end up making buying decisions, even though the subject matter for study is organisational purchasing. With various personalities, backgrounds and “learned experiences”, human beings’ ability to make rational decisions is limited. There are “personal factors” at play in business buying and B2B marketers need to comprehend these in order to influence buying decisions.

Zimmerman *et al.* (2013:18) state that members of the DMU are impacted by both emotional and rational stimuli. Examples of scenarios that may apply include: business buyers may be motivated by a pending promotion, trying to secure their position out of a fear-response, or they may be carrying out a personal “vendetta” against a colleague or rival. There are, therefore, a number of factors that can be involved in the process at an individual level, which then makes up the DMU.

Sheth (2001:152-154) points out the importance of assessing the differences and similarities in the “psychological worlds” of the individuals forming the DMU. Each individual would presumably have his/her own unique expectations as well, regarding brands and suppliers. These expectations are argued to be the primary criteria within the psychology domain. Before exploring the above elements, a note on what is meant by expectations: this “refer[s] to the perceived potential of alternative suppliers and brands to satisfy a number of explicit and implicit objectives in any particular buying decision.” (Sheth, 2001:154). Explicit objectives include price, after-sales service (where applicable), quantity of supply, delivery time and product quality. Implicit objectives include the lifestyle, technical expertise, personality and salesmanship of the sales representative as well as the supplier's reputation, location, size and supplier relationship-reciprocity. An example of an engineer, user and purchasing agent is used to illustrate how expectational differences can affect the buying process. These three individuals would typically look for, and at, different aspects in the process. Engineers look for product superiority in terms of quality, purchasing agents look for the best economic value (i.e. price), while the product user wants to know about timely delivery and ease of installation. The implicit and explicit objectives mentioned above can

apply also to the accounting firm's DMU looking to adopt cloud software. The firm may, for example, have the managing partner, a senior accountant and, perhaps to a lesser extent, a client administrator involved. It is expected that the accounting firm's DMU would have less diverse perspectives between members as compared to the previous example involving an engineering firm. That said, it is reasonable to assume that the managing partner or director would view price and cloud security with more scrutiny than the senior accountant. The senior accountant, dealing on a day-to-day basis with clients, would quite likely emphasise the importance of functionality and reliability.

Within this context, Sheth (2001:154-156) includes four processes which determine different expectations applicable to the purchasing process:

1. the background of the individuals
2. information sources and active search
3. perceptual distortion
4. satisfaction with past purchases

The first of the processes mentioned above, is the **background of the individuals** involved Sheth (2001:155). One of the key background elements is the various individual education differences which are said to give rise to varying values and goals, professionally speaking. Task expectations, such as what functions of the accounting process are actually going to be satisfied by a product, is another element that can generate perceptions at conflict with another. Last but not least, personal lifestyles have a role to play in terms of creating varying expectations. In accounting firms, some accountants and managers are more "technologically-inclined" than others. These more technologically-keen individuals (the Early Adopters, see Section 3.5.2) can be expected to look at adopting cloud software with less risk or uncertainty than, say, an older generation accountant (the Laggards) used to more established software like those that have been built on desk-tops or servers since the 1990's.

The second factor that drives different expectations are the **information sources** and types

that decision-makers are exposed to, and their involvement in **active search**. By way of example, purchasing agents are privy to more industry or "commercial sources", although these sources can be easily biased toward a specific brand or supplier. Engineers or staff in the production process are typically less exposed to the same information as purchasing agents. In some organisations, the active search element is left to purchasing agents only, as it is their primary role. The accounting firm's DMU would have varying access and awareness of information sources and not everyone will be actively searching at the same level. As mentioned with the previous point, the more technology-inclined individuals would most likely take a more proactive role towards actively searching for information. The gatekeeper role mentioned in section 3.4.2 also comes into play within this process and is relevant for consideration. The primary research phase of this study will include prompting responses from participants around the information sources relied upon in making decisions around CAS.

The third factor, **perceptual distortion** involves the individual decision-maker's attempt to reconcile objective information with their own expectations and extant knowledge by "systematically distorting it" (Sheth, 2001:155). In relation to the process of deciding on a solution, the differing values and goals amongst those in the DMU will create a distortive effect when interpreting the information that they are exposed to. The main point is that because of the differing backgrounds and experiences of each individual, there is a psychological or cognitive filtering that takes place, causing varying interpretations of what could in essence be the same objective information. Brennan *et al.* (2011:45) add that differing learned experiences and personalities have an effect on decision-making and contribute to the dynamics within the DMU. An example, in terms of CAS referred to, is again with reference to the technically-aware, as opposed to the less aware individuals in the accounting firm's DMU. Cloud accounting software is a newer technology and as such it would be more likely to be adopted by technologically-'savvy' individuals or firms.

Fourthly and lastly is the factor of **satisfaction with past purchases** (Sheth, 2001:156). Whichever brand or supplier has been used before will have left some impression on those

involved, or at least its brand perceptions would have some influence on the current decision-making process. It is also difficult for the supplier to meet the needs of each of those in the DMU on an equal basis. As mentioned previously, the purchasing agent may look for the best price, engineers for superior quality, while the user wants the solution that is the easiest to install and use. With an accounting firm adopting cloud for the first time, it is more difficult to determine what brand awareness and other factors would determine the decision-making, as it is completely new territory. However, as discussed in Section 3.5.1, potential suppliers can be identified by referring to other firms and their approach could well be a good starting-point under such circumstances.

The primary research will attempt to uncover a level of understanding of how firm managers in Cape Town view CAS, and relevant components making up the psychological world of these people, as discussed in this section. For example, the expectation that cloud accounting software adoption will grow and/or accelerate in South Africa could have an influence on the perceptions and attitudes of firm managers. Additionally, specific research questions were developed in order to assess firm managers' views toward the benefits CAS might provide, and whether it is seen as a threat or opportunity.

3.5.4 Joint versus autonomous decision-making

A further facet worthy of analysis is that of the determinants contributing to a buying decision being made jointly or by one party only. Very few industrial purchasing decisions are made autonomously, according to Zimmerman *et al.* (2013:18). It is supposed that it is in the interest of the cloud accounting service marketer to establish whether the decision-making is joint or autonomous and, if the latter applies, who the individual decision-maker will be. One of the major themes that influences the decision-making involvement and process is that of risk. A significant force at play within a DMU and its individual members will be to mitigate and reduce perceived financial, performance or social risk (Brennan *et al.*, 2011:44-45).

Sheth (2001:156-157) discusses six factors that direct the overall result, as to whether decision-making takes place jointly or autonomously. Three are considered to be product-

specific, and another three are company-specific.

The first product-specific factor is "perceived risk". The higher the perceived risk, the higher is the probability that it will be joint decision-making (Sheth, 2001:157). Brennan *et al.* (2011:45-47) point toward the influence that manager(s)' risk-tolerance may have on the extent of joint versus autonomous decision-making. Related to this could be the benefit of experience, which aids in reducing perceived levels of risk. Secondly, if the type of purchase is "once-in-a-lifetime" or "first-time", it would seem logical that joint decision-making is likely. Thirdly, if a great deal of time-pressure (e.g. in an emergency) is involved, it is likely that a single party will be responsible for the decision-making. For many accounting firms, cloud adoption will be a first-time experience, together with significant consideration towards data security aspects as well. This would normally result in joint decision-making. However, should a large revenue-contributing client urgently demand implementation of a specific cloud solution from the accounting firm, there may be the need for a single party's (managing partner or director) decision.

Company-specific factors are also at play in the decision-making process (Sheth, 2001:157). The first is the company orientation - for example, if it is a technology-orientated company, then it is likely to be dominated by engineers and decisions will most likely be made jointly by them. If the orientation is that of production, then the production staff would most likely be involved in decision-making. Presumably, the technologically-'savvy' accounting firm will more easily adopt cloud, while the opposite will also apply (more time will be taken to make the decision due to a more cautious approach). The second company-specific factor is size. If the company is a large corporate, decision-making is likely to be joint.

Furthermore, differing types of purchase situations or "buyclasses" (Havaladar, 2005:41) may further impact joint or autonomous decision-making. Firstly, if it is a new or first-time purchase, it would be more likely to involve more people in the process. Higher perceived risk levels would likely entail more consultation requirements to make an informed decision. Secondly, a change in supplier also carries risk and input would be required. Various departments may

be involved or technical expertise required. Lastly, a repeat purchase should normally be less risky and therefore more straightforward to complete, possibly requiring only one (autonomous) person in the process.

Thirdly and lastly, the lower the degree of centralisation, the more likely it will be joint decision-making. For example, a small privately-owned company with, say, a technology orientation will veer towards autonomous decision-making, as mentioned above. In contrast, a large decentralised public corporate (or a big four accounting firm) is expected to have more joint decision-making. For example, a large accounting firm like KPMG will most certainly differ in terms of its decision-making from a small accounting firm.

These factors of joint and autonomous decision-making will be explored in the primary research, in order to understand and uncover more about how firms of various sizes in Cape Town operate in this respect. For example, what could be a popular reason for initiating the CAS acquisition process? Is it because it is a trend, so other firms are doing it and being left behind can hurt the firm? Or could it be because a significant portion of clients are starting to demand it? These and other components will be explored and described.

3.6 Conclusion

This chapter revolved around the theoretical aspects of services marketing under which cloud computing and accounting firms fall. It is important to note the differences between business to customer, and business to business marketing. B2B marketing provides the context and serves as an important framework for cloud providers offering their products to accounting firms. In South Africa, economic activity in the tertiary (services) sector has increased significantly since the advent of democracy and continues to drive growth. This follows the pattern of services as found in the world's developed countries, such as in the United Kingdom and the United States. The importance of the industrial buying decision-making process highlights some of the complexities involved for an accounting firm to make a final decision on a solution, but also points out important considerations for a cloud provider in

terms of marketing its offering and the overall value proposition of cloud accounting software for accounting businesses. The next chapter expands the research methodology for this study, as introduced in the first chapter.

4 CHAPTER 4: RESEARCH METHODOLOGY

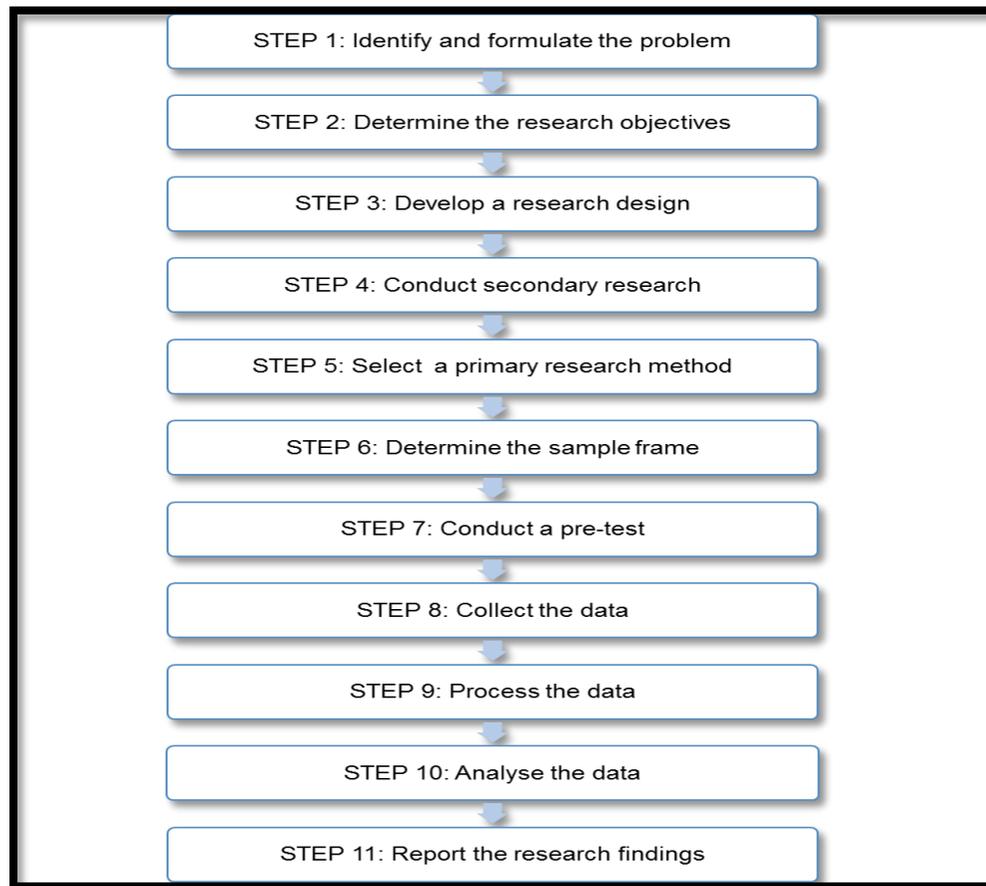
4.1 Introduction

The main purpose of a research methodology chapter is to provide the reader with the ability to reproduce the study, to replicate it (Biggam, 2011:115), irrespective of the research design employed. Credibility and replicability is established through revealing, in as much detail as possible, all the steps, methods and techniques employed in a logical flow in this chapter. The aim of this chapter is to depict how the research was carried out - in other words, the steps taken in order to do so. More importantly, it serves to discuss the considerations taken into account for methodological choices made and to present justifications that can support the rigour of the research design. Therefore, the sections in this chapter will clarify a series of steps through which the primary and secondary objectives of this study are addressed. The main purpose of this research project is to determine the awareness and perception of cloud accounting technology by accounting firms in Cape Town and, in order to accomplish this, a set of secondary objectives were detailed in Section 1.4.

4.2 The Research process

Lamb, Hair and McDaniel (2011:298) identify the main steps in a typical research process. These steps are summarised in the following table.

Figure 4.1 - The research process



Source: Lamb *et al.* (2011:298).

These steps, and how they apply to this research study, are discussed in more detail in the following sections.

4.2.1 Step 1: Identify and formulate the problem

The research process's first step is to identify the problem and/or opportunity associated with the study topic. Section 1.3 refers to this step. It is also indicated that no academic research has been conducted in South Africa regarding the subject of this study: namely, the acceptance, use and perceptions toward cloud computing technology by accountants and managers in accounting firms. The following databases were interrogated in the course of a

literature review on cloud accounting (Chapter 2) in this study: EBSCOHost, Emerald, Google Scholar, Proquest, ScienceDirect, SpringerLink and SA ePublications.

4.2.2 Step 2: Determine the research objectives

The primary and secondary objectives have been stated in Chapter 1, and are mentioned again in this section.

The primary objective of the study is to determine the awareness and perception by accounting firms in Cape Town of cloud accounting technology.

The secondary objectives are to determine:

1. The attitude and perception toward cloud accounting software of managers of accounting firms
2. The acceptance and use of cloud accounting software by accounting firms
3. The intention of accounting firms to use cloud accounting software
4. How accounting firms foresee the growth of cloud accounting software in SA
5. Whether cloud accounting software will add to the customer base of accounting firms
6. How accounting firms will sell cloud accounting software to their customers
7. Opportunities and threats faced by accounting firms in SA, in the light of innovative changes.
8. What, if any, differences there are between different firm sizes, regarding awareness and perceptions toward cloud accounting software.

4.2.3 Step 3: Develop a research design

Developing an appropriate research design strategy involves establishing an appropriate

scientific approach toward the topic being studied, and can be quantitative, qualitative or a combination of both. Lamb *et al.* (2011:301) refer to research design as specifying which questions must be answered, how and when the data will be gathered, and how and when the data will be analysed.

Quantitative research comprises collecting quantitative data for measurement and comparison purposes, often for descriptive and/or explanatory purposes (Saunders *et al.*, 2009:414). Examples of quantitative research data are the number of accounting firms in Cape Town that use cloud accounting software, or the number of businesses in South Africa that do not trust their accountants. Qualitative research is associated with studying things in depth and takes a more explorative approach to phenomena. Qualitative data are also described as non-numeric data, such as saying someone is intelligent (Babbie, 2008:25). Examples of qualitative data include most of what people actually try to describe and assess in life, including aspects of business such as sustainable performance of a company, which in quantitative terms would be measured in profitable growth (numerical), or employee motivation levels which can be given numerical values using self-scores. In business research, and as a consideration for this study, it is possible to interview managers at firms to achieve the goal of this study in qualitative terms (such as each individual manager's in-depth views and descriptions of their attitude and perception toward CAS), but there are significant considerations, the most important being in terms of time and availability both for the researcher and the prospective respondents. Qualitative research looks at the "why" questions, whereas quantitative research looks at "how", generally speaking (Biggam, 2011:131).

The research design for this study is quantitative, using descriptive research methods and is cross-sectional. Descriptive research is pre-planned and structured in design so the data collected can be statistically analysed, and it is often the aim of studies to be able to infer results onto a defined wider population. The main idea behind using this type of research is to better describe the opinions, attitudes or behaviours held by a group of people on a given subject (such as accounting managers' views of CAS). Structured, closed-ended questions

may not give in-depth insights on the issues like exploratory research would, but they have the advantage of offering measurable data which will help address the objectives of this study. Grouping responses into predetermined choices aids in the attempt to provide statistically-inferable data. However, the inferences drawn are limited to the sampling frame and what it represents in terms of the overall population studied (Babbie, 2008:221). Although the small sample in this study makes it difficult to define the overall population, valuable, inferable data are still available.

Given that this study is descriptive in nature, the research strategy employed is that of a survey, using a questionnaire as the data-gathering instrument. Abbott (2013:206) mentions the following about the survey approach:

"The survey is a non-experimental design that uses a series of written and verbal prompts/items to quantify the personal opinions, beliefs and ideas from a group of respondents. The survey instrument (typically a questionnaire or interview schedule) translates unobservable content (e.g. beliefs) into numerical or other empirical referents in order to observe patterns across a group of respondents."

As has been pointed out in Section 1.3, no specific research seems to have been carried out in accounting firms in South Africa to look at the proposed topic of this study. Therefore, this study should be of value in adding insight into this area.

A number of techniques are available for marketing researchers to address research problems. These include experimentation, observation, focus groups, interviews and questionnaires (Richardson & Gosnay, 2010:49).

Of the three main types of surveys that can be used – namely, face-to-face, questionnaires and telephonic interviews (Abbott, 2013:206), the questionnaire is the most appropriate when considering the sample size and time restrictions involved in this study (see Section

4.2.6). It is anticipated that, by asking questions directly linked to the research objectives, the answers to the research objectives can be sufficiently achieved (Biggam, 2011:122).

4.2.4 Step 4: Conduct secondary research

A critical literature review was conducted and the main findings reported in Chapters 2 and 3. The literature review was a necessary part of this study, so as to establish an overview of what cloud technology is, how it has been affecting accounting firms, and how it relates to marketing aspects and the business-to-business purchasing decisions involved between accounting firms and cloud software suppliers.

Chapter 2 reviewed and discussed cloud technology in general and narrowed it down to its application in the accounting industry globally and with reference to the South African context. Chapter 3 revolved around services marketing and ended with a review of the industrial purchasing decision-making-process as it pertains to accounting firms and the use of cloud technology for the benefit of firms and their clients.

These chapters contributed towards determining what data are available (and unavailable) for the purposes of addressing the objectives of this study.

4.2.5 Step 5: Select primary research method

What this study attempts to find out is what awareness and perceptions are held by accounting managers and firm owners toward CAS. In the opinion of the researcher, given his experience and resources, it made sense to convert what is essentially qualitative data (perceived value of a software solution in the mind of an accounting manager or owner of a firm) into quantitative data which can offer numerical measurement and comparison. Therefore, a quantitative approach was chosen. As a result, the primary research method used was that of a survey employing an online questionnaire as the data-gathering tool to achieve the study objectives.

Other research strategies could also have been considered in this study, so it may be

worthwhile to consider the main feasible alternatives within the deductive approach that this study is following. Case studies primarily aim to study a contemporary topic in depth (Biggam, 2011:119), and are argued to be advantageous in the context of exploratory and explanatory studies (Saunders, 2009:146). It is therefore not deemed to be an appropriate alternative, given the descriptive approach that this study is taking. The second alternative considered would be an experiment. The primary purpose of an experiment is to investigate links between variables (Saunders, 2009:142). A “true” experiment would involve randomly assigning participants to two groups, one control and one experimental group (Marczyk, DeMatteo and Festinger, 2005:124), which would allow studying dependent and independent variables and the effect of the independent variable on the dependent variable. Experiments tend to be concerned with ‘how’ and ‘why’ questions and are thus exploratory and explanatory in nature – again, this contrasts with the notion of the descriptive aims of this study and supports the final choice of a survey strategy instead.

In identifying the most appropriate tool to be used for data gathering with the survey method, there is a choice between questionnaires or structured interviews. The reason for not opting for structured interviews can be explained from the perspective of the constraints around gaining access to participating managers (and sufficient numbers of them) at accounting firms, the time it would cost those participants and the researcher (no financial incentives could be offered which might have made the case stronger), as well as the data collection, recording and analysis procedures. The tool opted for was an online questionnaire, which offered the most economical data gathering, and more efficient data processing and analysis than interviews would have done.

The following sub-sections discuss the use of a survey questionnaire for this study, and how it was implemented.

4.2.5.1 Questionnaire development

The development of the questionnaire and its relation to the study objectives are discussed

in this section. The chief goal with the questionnaire development was to be able to match each question with a secondary objective, the latter of which would speak to the primary goal of the study (as described in Section 4.2.2) when combined. Firstly, general questionnaire development is discussed in this section - from a theoretical perspective, including its advantages and limitations, as well as how these concepts were applied to the questionnaire used in this study. Secondly, online (self-administered) questionnaires are discussed, followed by a breakdown of the questionnaire structure and how this related to the study objectives.

In constructing the questionnaire for this study, the advantages and limitations of questionnaires in general, as well as online, were placed under consideration, as discussed by Abbott (2013:210-11) and Rea and Parker (2014). The theoretical advantages of questionnaires (versus telephone or face-to-face interviews) are as follows:

1. Most people in today's age have been part of a questionnaire (either on paper or online) and are thus familiar with completing questionnaires, which helps them not to view questionnaires as totally foreign. This would apply from high school and university or college ages.
2. Questionnaires can be made to be more complex than telephone or face-to-face interviews, due to the fact that higher reading comprehension is required than the aural comprehension required during an interview method.
3. Better control over the data is available, as a result of the ability to construct open-and/or closed-ended questions.
4. Online (web-based) questionnaires offer:
 - a. A convenient and effective technique, including the ability for the participant to complete it either from home or office.
 - b. Rapid data processing.
 - c. Following up with respondents is possible via email reminders.

- d. Useful for extracting data from specifically identified populations with email addresses readily available (see Section 4.2.6 on data collection for the target population and sample details).

It was found that participants in this study were easily able to complete the questionnaire, so it appears that all participants were familiar with what was asked of them. Secondly, although complexity can be useful, depending on the desired data, it was not necessary to make the questionnaire complex (no “skip” questions or re-routing past irrelevant sections). Only closed-ended questions were used, which aided the economical approach that was preferred. This meant participants were forced to choose the most relevant responses as it appeared to them amongst various alternatives. Being online, respondents could (within 15 minutes) complete the questionnaire either from home or the office. The tool used, Google Forms, allows an immediate summary of responses online, together with simple descriptive graphs, as well as being download-able into spreadsheet format (MS Excel). The initial mailing list (out of the target population) could be identified and followed up on, by personal email address.

In contrast, some of the theoretical limitations of questionnaires are noted as follows:

1. Complex questionnaires can include “skip” questions which respondents may have to navigate through and may become a cumbersome process for the respondent, resulting in a loss of interest.
2. Questionnaires are limited to literate participants, so depending on what is meant to be studied, they may not be suitable.
3. Lower response rates are associated with questionnaires, as opposed to face-to-face or telephone interviews.
4. Participants may easily opt out.
5. As there is no interviewer present, unclear questions cannot be explained.

The above-mentioned limitations were addressed as follows. The questionnaire in this

research did not include any “skip” questions, and flowed sequentially through each of the secondary research objectives. Secondly, all participants were deemed to be literate (“managers”, “owners, “accountants”), and had personal email addresses. Thirdly, a low response rate was a challenge, despite a follow-up process being in place (by further email, and telephone, where applicable). It is therefore noted that interviews might have offered better response rates when compared for this factor alone. However, it was noted in the previous section that the feasibility for interviews was considered to be very low (cost, time, access to participants). Fourthly, it is clear that around 70-80% of the initial targeted sample did opt out of participating. Lastly, questions which were considered to include some room for misunderstanding or requiring further explanation was given an additional explanatory sentence, as shown below:

2f - Would you consider offering more than one cloud accounting software product as an offering to clients?

That is, would you subscribe to two or more cloud accounting software products (from different vendors) and use those in your firm?

This study made use of online questionnaires, which are discussed in the following section.

4.2.5.2 Online questionnaire

Online questionnaires have the advantage of being available for participation at any time during the day or night from a participant’s computer, and even at any location. Mobile phones, laptops and tablets make it very easy to partake in a survey. It is purported that due to the modern way of life, with people highly dependent on the internet and their mobile devices, an online questionnaire is a "natural way" to conduct research, and a request to participate in an online survey is quite common and therefore acceptable. Online surveys are also very cost-effective, especially with large-scale research. With regard to the

disadvantages, online questionnaires are biased in that they only involve people with email addresses and an online survey could therefore fail to represent the population at large. However, the target population of this study consists of professionals who are all presumably relatively informed users of contemporary information technology, and all have email addresses.

Brace (2013), citing Bradly (1999), summarises the main types of online questionnaire mediums:

1. Open web - a website open to anyone to participate.
2. Closed web - participation by invitation to complete the questionnaire.
3. Hidden web - a specific trigger makes the questionnaire appear to a visitor, for example on a certain date, or on a specific page. It includes "pop-up" surveys.
4. Email URL embedded - invitations go out to respondents, in which a URL or web address appears on which the respondent can click.
5. Simple email - questions are contained within the email.
6. Email attachment - a questionnaire is attached to the email.

These alternatives were sifted through, as follows. With regard to the first option, given that there are very efficient and effective web-survey sites already available for use, a new website dedicated to this questionnaire was not deemed to be a feasible option. The second alternative (closed web) was rejected on a similar basis. The third option possessed feasibility, but seemed to present more complicated demands and costs, and was therefore left aside. The last two methods are said to be rarely used because of the associated low rates of response (Brace, 2013). A simple email containing the questionnaire within it contains drawbacks such as the layout being distorted, depending on what email software is being used, possibly leading to confusion or being incomprehensible. Lastly, attaching a questionnaire within emails would entail respondents downloading the attachment, completing it, and then uploading and emailing it back – thus, a high level of cooperation is required which can be difficult and easily avoidable.

Therefore, this study used the fourth-listed method illustrated above: an email was sent out to the identified sample of potential respondents with a URL embedded in it. Respondents were able to click on the URL/web address contained within the email and directed to the online questionnaire, provided by Google Forms.

4.2.5.3 Questionnaire design

In this study, a structured questionnaire (see Appendix B) was sent to a sample of respondents, as described in Section 4.2.6 below. The language of the questionnaire is English, with closed-ended questions only.

In order to investigate the perceptions and awareness of accountants and managers at accounting firms towards cloud accounting software, the questionnaire questions were structured to address the primary and secondary objectives of the study. Therefore, the questions in the questionnaire were designed to illuminate each individual secondary objective as much as possible. Answering the secondary objectives will feed into achieving the primary objective of the study, as the secondary objectives are sub-dimensions of the main objective.

The layout, flow, question development and questionnaire length were influenced by the researcher, drawing on his experience with other accountants, managers and firm owners. On this basis, it was assumed that the participants would be busy professionals with limited time for additional tasks, especially when there is no obvious incentive for them to spend that additional time. To paint a picture of what is meant by 'busy', managers and owners, as defined for the purposes of this study, would have email inboxes with various types of requests from internal colleagues, superiors, employees and also their external clients. There are significant demands placed on these professionals, with profits being a primary concern in private enterprise. It is said that 'time is money', and that is no truer than in accounting firms – billing by the hour or per project. Senior partners in particular have meetings with

various stakeholders and clients, as well as with their management teams, and will probably see little value in participating in surveys to ascertain what they think and how they feel about cloud accounting software. Even with financial compensation, it is likely that many of these professionals would easily have to make a note to complete the questionnaire “out of hours”, as it would be difficult to justify doing it during business (billable) hours!

With this in mind and the need to balance the research objectives against it, it was deemed appropriate to design the questionnaire so that it would not take more than fifteen minutes to answer. This time limit was confirmed with the pre-test (see Section 4.2.7). As a consequence of this, the numbers of questions for each secondary objective were limited to a maximum of four questions. In total, there are twenty-three questions related to the secondary objectives. There are two additional questions at the end of the questionnaire in order to capture demographic data, including the firm’s size, and the position of the respondent at the firm. These would enable a comparison between the sizes of the different firms.

Closed-ended questions offer comparability because of uniform answers that can be gathered, they limit irrelevant responses, aid direct transfer into statistical analysis packages, and encourage cooperation from the respondent by being less onerous (Rea & Parker, 2014). As a consequence of this theory and the reasoning set out in the paragraphs above, the questions are closed-ended (fixed responses, so as not to leave it to respondents to use their own words) and there is a mixture between scaled (Likert-type) and category (multi-choice) responses. Scaled questions (ordinal) can be ranked, while categorical (nominal) answers can be labelled and thereby measured in terms of frequency. Being able to measure the responses in this way enables description. For example, setting open-ended questions would have required more cooperation from respondents, and would have taken more time to analyse. For instance, asking, “Does having cloud accounting software enable a firm to better sell its services?” (Question 3e), would require more significant effort if left open-ended than offering a scale to indicate agreement or disagreement. Table 4.1 summarises the questionnaire structure.

The questions were formulated with each of the secondary objectives in mind. These are summarised in Table 4.1, which provides an overview of the objectives and the structure of the questionnaire. Question phrasing and formatting was considered within guidelines, as provided by Rea & Parker (2014). These include the level of wording – in essence, getting straight to the point of the question, avoiding highly technical language, using terms that are generally understood by the population studied, avoiding ambiguous phrases and terms (to be as specific as possible), avoiding double-barrelled questions, and to reduce bias as far as possible.

It should be noted that a pre-test was carried out in order to aid the clarity and eliminate issues. The pre-test is discussed in Section 4.2.7.

Table 4.1 - Questionnaire structure in relation to the study objectives

| Primary objective: to determine the awareness and perception of cloud accounting technology by accounting firms in Cape Town | | | | |
|---|---|------------------|----------------------------------|---------------------------------------|
| Secondary objectives as sub-dimensions | Total number of questions in questionnaire | Question numbers | Number of multi-choice questions | Number of Likert-type scale questions |
| A. Attitudes and perceptions | 4 | 1a-4a | 4 (Q1a, Q2a, Q3a, Q4a) | - |
| B. Acceptance | 3 | 1b-3b | 2 (Q2b, Q3b) | 1 (Q1b) |
| C. Intention to use | 3 | 1c-3c | 2 (Q1c & Q3c) | 1 (Q2c) |
| D. Growth | 3 | 1d-3d | 2 (Q1d, Q3d) | 1 (Q2d) |
| E. Addition to customer base | 3 | 1e-3e | 2 (Q1e, Q2e) | 1 (Q3e) |
| F. Selling cloud accounting | 3 | 1f-3f | 3 (Q1f, Q2f, Q3f) | - |
| G. Opportunities and threats | 2 | 1g-2g | 1 (Q1g) | 1 (Q2g) |
| H. Differences between firm sizes | Not applicable. Determined by analysis of the questions above and below. | | | |
| X – Demographic and further descriptive information | 2 | 1x-2x | 2 (Q1x, Q2x) | - |
| | | | | |
| TOTAL | 23 | | 18 | 5 |

4.2.5.4 Assumptions regarding the completion of the questionnaires

A number of assumptions are noted in this section which relate to the collection of data via the questionnaire in this study.

Firstly, it is expected by the researcher that participants will provide honest responses to the questionnaire questions. Secondly, it was assumed that accounting managers, as identified in the working sample, had a measure of purchasing authority and experience in relation to accounting software.

4.2.6 Step 6: Determine the sampling frame

A convenience sampling approach was deemed to be appropriate in this study. Convenience sampling is a common non-probability sampling method which is chosen instead of probability sampling by researchers, often because of resource restrictions such as time and budget available (Weathington, Cunningham & Pittenger, 2012). Therefore, convenience sampling entails targeting members of a certain population that are easy to access. Although the method makes it easier for the researcher to conduct the research, the results are approached with caution - that is, the inferences made from the results will be interpreted within certain limitations as a result of being from a non-probability sample. This sampling method was used for the following reasons. The researcher had limited time and resources, and it would also seem appropriate as the study is exploratory in its approach. It was not feasible to consider doing in-depth interviews to meet the research objectives. It was also not feasible to use physical postage or visits to accounting firms' premises. Due to more efficient tools such as online surveys, it was considered appropriate to focus on this method as the main data collection technique.

The target population for the purposes of this study is accounting firms in Cape Town. The sampling frame for accounting businesses in Cape Town can be found by way of online directories.

The two directories initially identified for the purposes of this study are the South African Institute of Chartered Accountants (SAICA), and the FindanAccountant.co.za online directory. SAICA is deemed to be South Africa's pre-eminent chartered accounting body, while FindanAccountant.co.za is the most highly listed online directory when using the most popular search engines for accounting firms in Cape Town, and claims to be independent. However, the SAICA-published list of members and their contact details was found to be prohibited for the use intended for this study as a result of the Protection of Personal Information (POPI) Act.

As a result of this, the targeted sample was limited to 99 individuals found by way of FindanAccountant.co.za. This is an online directory of accountants in South Africa. From the homepage (<https://www.findanaccountant.co.za/>), it is possible to select, from a drop-down box, all accountants listed under the Cape Town "021" telephone code. The results offer a list detailing all directory members and their commercial contact details, including email addresses, making the individuals on this list easily accessible. This list does not necessarily contain chartered accountants, but that was not an issue as the goal of the study was to ascertain the attitudes and perceptions of accountants, managers or owners of accounting businesses toward cloud accounting software. It did not really matter whether they were chartered accountants or not, as long as the individual was a decision-maker or at a managerial level or above.

Faced with the obstacle of finding a good response rate for inferential purposes, and the SAICA list being excluded from the sample, the researcher had to consider extending the sample by other means which would still be acceptable for academic research purposes. Under the circumstances, it was deemed appropriate to extend the sampling by employing the snowball method, which is another nonprobability sampling method. Perusing the definition by Weathington *et al.* (2012), the managers meeting the criteria in this study form a cohort, or group of people sharing a set of features (e.g. senior level and based in Cape Town). When study participants are difficult to access normally (e.g. via a public directory),

the snowball sampling method offers a way of accessing these individuals, as was done in this study. The researcher did happen to know members of the cohort, and used these members to access more members of the same cohort or group. Individuals belonging to the cohort were invited to participate in the study, and were also asked by the researcher to refer to similar individuals, whom they might know and who would meet the criteria, in order to invite those to participate in the study (Babbie, 2008:205). On this basis, individuals in the researcher's network (being an accounting manager working in an accounting firm in Cape Town) who qualified under the sampling criteria, being managerial level and based in Cape Town, were contacted and invited to participate.

With the problem of a low response rate becoming more prevalent, a third phase was conducted which involved further convenience sampling, by way of using LinkedIn Premium which allows identifying and sending a personal message to individuals, and setting search criteria to target managers at accounting firms in Cape Town. Ten individuals were identified for this purpose and the online link was sent to them to invite them to participate.

A fourth phase included searching for the top-listed firms in Cape Town using Google (organic) search. The "paid" search results can include advertised firms which are not necessarily based in the Cape Town geographical area, so this was ignored. The "organic" search results included firms fitting the criteria. Only the top listed firms were included and contacted. It also happened that these were firms mainly medium and large in size.

A fifth and final phase involved contacting the traditional "big four" accounting and audit firms. These four firms are PricewaterhouseCoopers, Ernst & Young, KPMG and Deloitte.

When contacting each of the firms in the fourth and fifth phases, the researcher telephoned the central switchboard number as listed on their website and asked to be put in touch with the Cape Town office HR manager. The purpose of the study was explained to HR managers who were available and the email invitation was sent to them directly after they had provided their email address. Not all the firms in these phases were cooperative and limited further

respondents were obtained within the approximate two-month period during which this was carried out.

4.2.7 Step 7: Conduct a pre-test

The pre-test is required in order to assess the questionnaire construction and to gauge whether there are any problems with the questionnaire itself - for example, ambiguity with any of the questions, and whether the question sequence is appropriate. This should be done before the distribution of the questionnaire to the sample determined. The pre-test for this study was conducted on five respondents. Skipping over the pre-test phase of the questionnaire can be a significant step toward delivering an ineffective questionnaire and should always be avoided (Bajpai, 2011). Rea *et al.* (2014) identify three critical assessments required with a pre-test. These are clarity, comprehensiveness and acceptability. Firstly, the questionnaire must be clearly understandable and should avoid confusion. The choices offered should be clear enough to extract the required information from respondents. Secondly, the questionnaire should be comprehensive, which entails covering a sufficient range of alternatives so that the stated questions gather the data required to meet the study objectives. Thirdly and lastly, the questionnaire should meet the acceptability assessment. Potential issues such as the questionnaire being too long in length or crossing an ethical border must be identified and addressed. These three critical assessments all contribute towards enhancing the reliability and validity of measurement. The questionnaire in this study was designed with these principles in mind.

The process of the pre-test was as follows:

1. The first draft questionnaire was analysed by a statistician in order to test the general structure and statistical validity.
2. The questionnaire was edited according to the statistician's recommendations.
3. The amended (2nd draft) of the questionnaire was sent to the five pilot study respondents' email addresses. These respondents were informed of their participation in a pre-test stage and were asked for their feedback.

4. A third draft was compiled as a result of the above stage, and was sent to the statistician for final input.
5. A final draft was prepared and delivered to the main sample by email.

The following section explains the data collection process.

4.2.8 Step 8: Collect the data

The data collection phase took place from January to March 2016. A period of approximately one and a half months was given so that a sufficient amount of time would be available for following up the survey respondents and distributing reminder emails. The survey did not offer any incentives for participating.

The data collection process involved the following steps:

1. On Wednesday 27 January 2016 the questionnaire link was sent to all participants in the FindanAccountant list.
2. A follow-up email was sent on 2 February 2016 to the same list (but targeted to those who had not “opened” the invitation)
3. The snowball method of inviting participants within the researcher’s network (totalling five) to the study was initiated on 4 February 2016, with a further three follow-up exercises during February and March.
4. During the same time-frame, the top listed firms on Google’s organic ranking and the “big four” were contacted systematically between 14 and 23 February 2016.
5. The online questionnaire was closed on 10 March 2016.

Survey research is subject to various errors that can be encountered in the process of collecting research data.

Firstly, it was expected that respondents could cause some errors, including not responding and being biased in their choice of answers. Secondly, survey research has the challenge of

obtaining the best possible response rates, and as a result the questionnaire was designed with this factor in mind. What this meant was that the length of the questionnaire was limited to what seemed reasonable, to help encourage a higher response rate. In addition, a follow-up process was performed so as to remind participants about the questionnaire. In terms of completing each question, the online tool used did not allow non-responses for any questions, as the only way to submit the completed questionnaire was to select answers to all given questions. That is, with each question the respondent had to choose one answer (multiple-choice or scaled) but could not choose more than one, either.

Steps were taken to minimise errors with data capturing in general. Firstly, an introductory email was composed to briefly describe the purpose of the study, as well as the URL link to the full questionnaire (see Appendix A). Once having clicked on the link, the respondent was taken to the browser where the online questionnaire, starting with the full introduction to it, was contained (see Appendix B). The introduction helped to clarify the topic and purpose of the study. Another technique used to look for and sort out any problems was with the pre-test (as described in the previous section).

As mentioned previously, one of the advantages with an online questionnaire is that it can be completed at any time by respondents and there is no specific time-slot applicable. The literature in this regard suggested that online questionnaires (together with appropriate follow up techniques) can support a higher response rate, as opposed to interviews or paper-based questionnaires. This study did not achieve a very high response-rate with 27 questionnaires submitted. The initial aim was to achieve closer to 100 responses, but this was also based on the assumption that the researcher would be able to target the SAICA (2012) directory, which for data protection purposes (POPI Act) was not allowed by SAICA. The second list (FindanAccountant.co.za) was thus the primary list (consisting of 99 potential respondents) as part of the convenience sampling which was described previously in Step 6.

Respondent bias refers to respondent error where answers to the research questions are distorted, whether intentionally or unintentionally (Marketing Research Association, 2015).

One of the respondent errors that is possible is inability error, where the respondent is unable to answer the question posed as he/she did not understand the question or could not remember certain information pertaining to the question or was unable to articulate the answer to a question. It is expected that accounting managers would have a reasonable understanding of software in general, as computer-based accounting systems have been the accepted standard for a number of decades. However, although cloud technology and, specifically, cloud accounting software is not that new, there might be accountants who are relatively uninformed about it or some of the terminology around it (there was, however, very little technical terminology used in the questionnaire). Although there were respondents indicating that they had no familiarity with the term 'cloud accounting software', their responses add value to the extent that these can be included and described as well. It is considered valuable to find out that there are accountants and managers that are not familiar with cloud accounting software, although it has become a generally-known advancement in accounting software technology.

Another respondent error (or bias) is the compulsion felt by the respondent to appear in the best possible light, thereby providing a biased answer, and lastly, respondents may also be subject to social group norms and therefore their answers can be biased as they attempt to conform to expected behaviour instead of providing their true motivations and perceptions. The questionnaire introduction specifically states that there are no right or wrong answers in the study, which was provided to help counter these types of errors.

4.2.9 Step 9: Process the data

This section describes the data capturing and data processing followed in this study.

4.2.9.1 Data capturing

The online questionnaire data (responses) was electronically collected by the survey provider (Google Forms). The survey provider stores the data automatically and was available for

exporting into spreadsheet format.

4.2.9.2 Data coding

Data coding involves assigning numbers to each category of response so that the data can be summarised in tabular form for analysis by way of descriptive statistics (Smith & Albaum, 2006:198). The process entails categorisation, coding, creating a database, checking for errors, generating new variables, weight data subclasses and then tabulation (Smith & Albaum, 2006:195). However, in this study the main emphasis was to ensure the correct grouping of the data in the relevant categories.

The questionnaire used included pre-coded and assigned categories so as to facilitate a streamlined data collection and tabulation process.

4.2.9.3 Data editing

Editing the data is required to optimise correctness and clarity of data (Smith & Albaum, 2006:197). Evaluation of the following should take place during the data-editing process: entry eligibility, completeness, consistency and accuracy. The data collected were reviewed after downloading the complete set of responses from the provider (Google Forms). The data evaluation process was aided by the fact that everything was managed electronically - that is, no written information on paper or obscurity in trying to figure out which box someone meant to tick, for example. No corrections needed to be made to the data.

One of the major advantages that online survey providers offer is that online questionnaires can be programmed so that all questions require an answer, before the completed questionnaire can be submitted for processing, as was done in this study. This helps to ensure there are no missing responses and avoids statistical imputation (which entails estimating what respondents would have selected in cases where they left out any responses) or considering it as missing data and leaving it out of the analysis.

After editing the data, they were processed and represented for analysis by cross-tabulation.

4.2.10 Step 10: Analyse the data

Data analysis involves describing and analysing the data collected (Biggam, 2011:158). Describing the data involves making forthright statements about what was found, while data analysis involves interpretation of the data. Interpreting the findings tends to be a cumulative process and cannot be done by looking at data elements in isolation only. The data analysis process can be seen as a synthesis of the literature review and empirical research of the study. That is, it encompasses bringing together a holistic view of the study findings. The data analysis process was completed with use of IBM SPSS (Version 23), which served as statistical data analysis tool.

The sections below explain more about the data analysis applied in this study.

4.2.10.1 Descriptive statistics

Descriptive statistics are employed in research studies to characterise variables being observed in a specified sample and to describe the data collected (Marczyk *et al.*, 2005:209). The most foundational method in describing sample data is by way of presenting frequency distributions, which are summarised in tabular or graphic form. Frequency distributions are used to describe and present responses obtained from categorical data, and help to depict the range of obtained responses per question or variable. The researcher then analyses the distributions in order to understand and describe variation in the responses obtained.

Descriptive statistics commonly refer to measures of central tendency when analysing the summarised data and their distribution. These include the mean (or average), median and standard deviation. In this study, descriptive statistics were used to assess and describe data that were measured on a continuous level.

4.2.10.2 Inferential statistics

In order to answer questions about a larger population, inferential statistics are used to extrapolate insights from the sample being studied (Marczyk *et al.*, 2005:219). The key attribute that inferential statistics offer is to help researchers go beyond the insights applicable to only the sample studied, and to draw further conclusions applicable on a larger scale.

In the process of data collection and review, it became apparent that there were differences in responses between the variable of firm size. Respondents describing themselves as small, medium or large offered somewhat different responses to the various areas reviewed and it seemed that not only could the general perceptions and attitudes be described but there could also be an insightful contrast and comparison between the firm sizes. However, with regard to the nature of the data (ordinal or categorical), the limited sample size ($n=27$), and the distribution of the data, which could not be assumed to be normal due to the limited observations, meant that non-parametric testing was carried out. As Field (2009:540) points out, research data do not always turn out to be normally distributed, presenting cases for more special consideration. Non-parametric tests are also suitable for ordinal data, as well as where the normal distribution of the data is not apparent. These statistical tests rely less on the assumptions that parametric tests do, which includes normally distributed data and that the data are numerical in nature (Saunders, 2009:449, and Pallant, 2011:204). The non-parametric tests used in the analysis included various types to test for statistical differences between firm sizes (grouped into small and medium-large) as well as correlation. Firstly, testing for differences used the Mann-Whitney U, Wilcoxon W, and Wald-Wolfowitz run tests. Secondly, testing for correlation included the Kendall's Tau and Spearman's Rho. Finally, Chi-square tests were carried out and included Pearson Chi-Square and Fisher's Exact test, as well as the Likelihood ratio test. These various tests are now expanded upon to give reasons for their use in this study.

The Mann-Whitney U test (Pallant, 2011:227) was used to test for differences between the small and medium-large sized firms (independent groups) on a continuous measure, such as the level of familiarity that managers have toward cloud accounting software. This test compares the medians rather than the means of the two groups and is useful as the data consisted of categorical and ranked scales. Wilcoxon's W works on the same principle, and can be seen as an equivalent of the Mann-Whitney U test (Field, 2009:540). These two tests assign ranks to each response, after rearranging responses in ascending order. Ranking scores enables a comparison between the summed ranks between groups and a test statistic can be calculated. The test statistic is then converted to a Z-score, which provides the significance test, given the confidence interval (95% used throughout) and probability ($p=0.05$).

As variant to the Mann-Whitney U test, the Wald-Wolfowitz runs test was used to further test for differences between small and medium-large firm responses. This test allows comparing for differences at the opposite ends on a continuous measure, such as familiarity with CAS by managers, between groups (firm size) by looking at "runs" of scores after ranking in the same way that is done when using Mann-Whitney (Field, 2009:548). For example, where comparing for familiarity with CAS, the majority of small firms felt moderately to extremely familiar, while the majority of medium-large firm respondents felt slightly or not at all familiar.

With testing for correlation, Kendal's Tau-b and Spearman's Rho were used which are both non-parametric tests. Kendal's Tau-b was used as it is applicable to this study's small sample with a large set of tied ranks (Field, 2009:181), and preferred to Spearman's Rho as it provides a better estimate of the corresponding population parameter (Howell, 2010:306). However, Spearman's Rho was still used for comparison purposes and for its relevance to addressing ordinal level ratings - for example, the Likert scale responses used in this study (Field, 2009:125).

Lastly, Chi-square tests were carried out to help understand the categorical data presented in the data. The Pearson's chi-square and Fisher's exact tests measure relationships between

categorical data (Field, 2009:687), which is defined as when a variable can only fall into one category (e.g. a person can be male or female). In this study, examples for categorical data include firm size (small, medium, large), position of the respondent at the firm (manager, owner, accountant), the familiarity of the respondent toward CAS (between extremely familiar and somewhat familiar), or the respondent's indication of the level of perceived threat or opportunity that CAS presents. Responses were summarised in terms of frequencies and were then analysed using these tests. Pearson's chi-square compares observed frequencies with frequencies that could have been expected to occur by chance (Field, 2009:688). Fisher's exact test provides a method for calculating the exact probability of the chi-square test statistic specifically for when sample sizes are small, supporting a case for the use of it in this study.

The resulting test statistics are reported in Chapter 5.

4.2.10.3 Reliability and validity

The reliability of a piece of research is based around the idea of trust (Biggam, 2011:144). It entails employing the appropriate research strategy and applying a suitable means of data collection and analysis. Essentially, reliability is about conducting research that can be repeated, so in a sense, "as if someone is looking over your shoulder." Reliability is also very much about the repeatability of the research conducted (Drucker-Godard *et al.*, 2001:196). Reliable research should be repeatable by another researcher or at another time with the same results occurring. Reliability can be said to have two angles: one is the reliability of the measuring instrument and the second is the overall reliability. The pilot study carried out helped to contribute to reliability in that it ascertained problems and potential problems with the instrument (questionnaire) before it was distributed to the targeted sample. Overall reliability was addressed by presenting the research design in as much detail so that it could be replicated.

Validity refers to the research being acceptable to the research community (Biggam, 2011:143), which entails research being based on tried and tested research methods and

analysis. It is about using research techniques and approaches that are suited to implementing them in the study. There are sub-elements that make up the overall validity of a research piece. Broadly, two areas are important for research to be deemed valid (Drucker-Godard *et al.*, 2001:196): the first is the relevance and precision of the research results (construct and face validity), and the second is the extent to which the results can be used to generalise insights onto the larger population (internal validity). Construct validity refers to social science research and the need to ensure that research is conceptually thorough and valid in terms of what it is trying to achieve. To help reach this in management research like this study, concepts are “operationalised” into variables that can be measured (e.g. attitudes and perceptions). Additionally, construct validity is achieved in this study (entailing quantitative research) by ensuring that the variables employed in measuring the phenomenon of the study are a good representation of it (Drucker-Godard *et al.*, 2001:198). Construct validity is important with questionnaire research, as the main emphasis is to ensure that the questions posed to participants actually ask what needs to be asked in order to achieve the study objectives. The literature review informed the researcher in respect of the main focus areas, while the pilot study supported construct validity.

4.2.11 Step 11: Report the research findings

This is the final step in the research process, and involves representing the findings in a clear and comprehensible manner. Care must be taken in order not to misrepresent the data. A detailed analysis of the findings is given in the following chapter.

4.3 Limitations of the study

As referred to in Section 1.8, there are certain limitations and problems that this study can be expected to encounter.

The first limitation relates to the possibility of bias, due to the fact that the researcher works in an accounting firm in Cape Town (with a client base in the United Kingdom) and who has

used certain cloud accounting software systems. Although the researcher recognises this and was mindful to mitigate any potential bias being introduced in the study results, the researcher followed a positivistic philosophy and therefore a highly structured research approach was charted. It has also been argued that the study is replicable in the section above dealing with reliability. Therefore, subjectivity should be of minimal consequence as another competent researcher should be able to carry out this study following the same design.

Secondly, it was anticipated that there is the potential problem of a limited number of responses from participants in consideration of the initial aim of around 100 responses. The study may not be able to provide a fully representative study, as a result of this issue. The phases mentioned in Section 4.2.8 which discusses the data collection process were devised in order to counter this potential problem.

Thirdly and lastly, the data collected in this study are limited in the extent to which results can be generalised towards a larger population of accounting firms, both in Cape Town, the Western Cape and South Africa at large.

4.4 Conclusion

The research methodology as described in this chapter helps outline the specific steps taken to conduct the survey research which addresses the primary and secondary objectives identified at the start of this project.

A questionnaire was deemed to be the most appropriate strategy in order to collect the data for the purposes of assessing accountants and managers' perceptions and attitudes toward cloud accounting software at accounting firms. A convenience sampling method was used, as it was considered the most practical and efficient way of identifying a target sample for the study, given the challenge of obtaining a good response rate. Publicly available lists exist online, out of which email addresses are obtainable to invite participants to complete the

questionnaire. However, the POPI Act is an obstacle in reaching professionals listed on professional institutions' directories (e.g. SAICA) which are in fact the ideal sources for this kind of study.

The data analysis took place via descriptive and inferential analysis. These and the research findings are elaborated upon in the next chapter.

5 CHAPTER 5: RESEARCH FINDINGS

5.1 Introduction

This study aimed to investigate the perceptions and levels of awareness by senior level personnel, including accountants, managers and owners of cloud accounting software at accounting firms in Cape Town. In order to achieve this main purpose, a number of specific secondary objectives were devised, as can be found in Section 1.4.

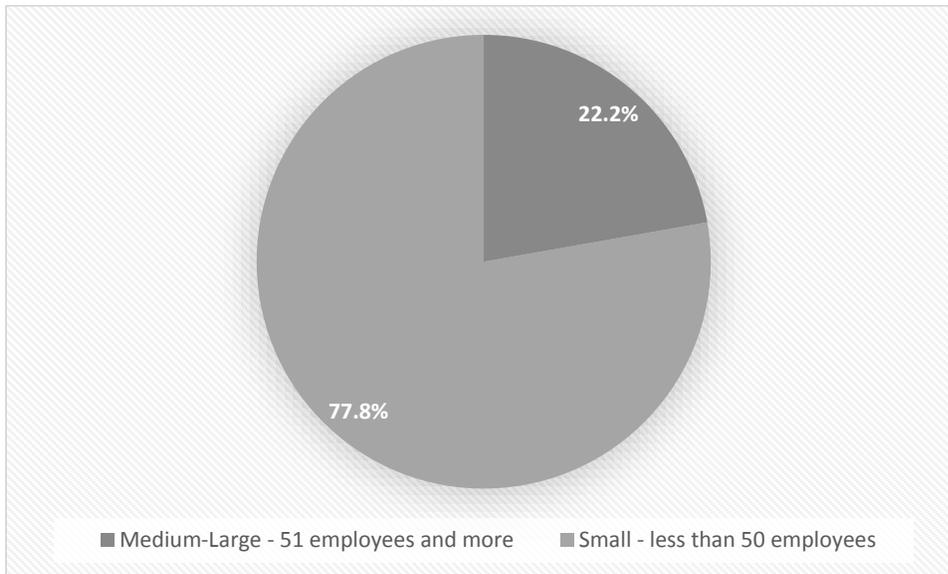
This chapter reports the results that were obtained following the data gathering and analysis of responses. Following this introduction, a section is presented which depicts the sample characteristics of the study participants. The final section reports the results pertaining to the research objectives and how these relate to the literature reviewed in Chapters 2 and 3. Frequency tables are available in Appendix C for reference purposes.

5.2 Sample characteristics

5.2.1 Firm size

There were two distinguishing characteristics in the sample, the first being firm size. Figure 5.1 presents the percentage distribution of the sample between small (n=21), medium (n=4) and large (n=2). The firm size classes were established as follows: small - less than 50 employees; medium - more than 50 but less than 199 employees; and large - more than 200 employees.

Figure 5.1 - Percentage of responses for “Firm size” (n=27)

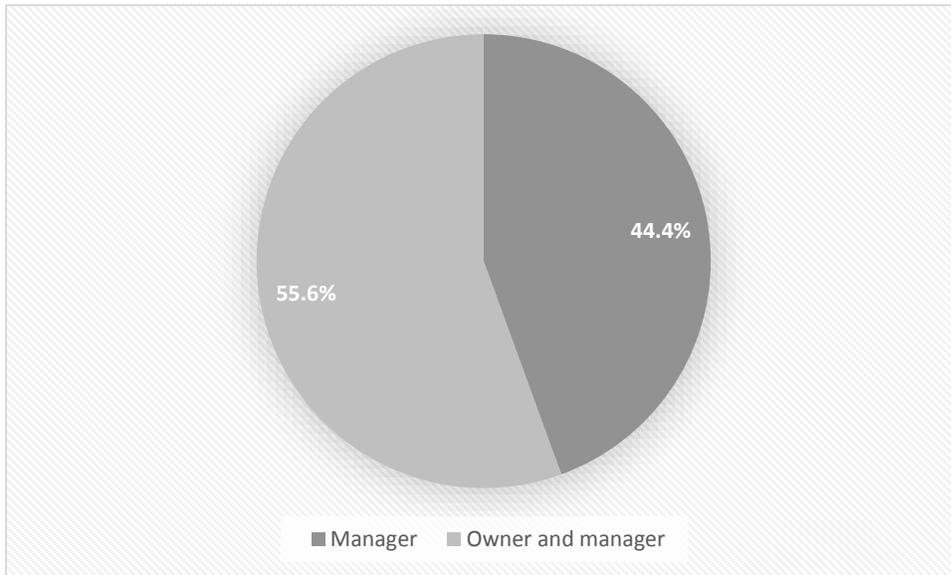


Exploring differences in responses between different size firms was stipulated as one of the secondary objectives. However, due to the relatively small samples realised in the two upper categories of medium and large firms, the decision was made to add these two groups together. The ordinal nature of the categories also provided a rationale for the decision to collapse these two upper groups. The notion of collapsing response categories to allow for conducting comparative analyses between groups is also supported by Babbie (2008:456-457). Therefore, small firms made up 21 and medium-large firms six of the total number in the total sample of 27.

5.2.2 Position of the respondent at the accounting firm

The second criterion involved establishing the position of the respondent - that is, what their role is at the firm, being either Manager, Owner and Manager or Accountant. Figure 5.2 represents these data. There were no individuals self-reported to be an “Accountant”.

Figure 5.2 - Percentage of responses for “Position at your firm” (n=27)



The individuals reflected here form part of the decision-making unit (DMU) which was introduced in Chapter 3. Managers and owners could be performing any or all of the five roles in the DMU, being initiators, gatekeepers, buyers, deciders or users (see Section 3.4.2).

5.3 Results pertaining to the research objectives

The following sections report and discuss the results pertaining to the various secondary research objectives. Various questions were included in the survey that related to a specific objective. Each objective is therefore divided into the questions relating to it in the survey, and these are each presented in the following order: an overall result amongst respondents is reported first, then compared and contrasted for the differences between small and medium-large firms. Where relevant, test statistics are reported where association or differences were deemed to be statistically significant. These tests are introduced and described in Section 4.2.10.2.

Under each objective there is a summary section linking the findings to the theoretical aspects, as discussed in Chapters 2 and 3. These start to uncover some of the insights which are dealt with in more detail in Chapter 6. It is pointed out that objective 8 is not handled separately but integrated within the discussion of objectives 1 through to 7.

5.3.1 Research objective 1: The attitude and perception toward cloud accounting software of managers of accounting firms

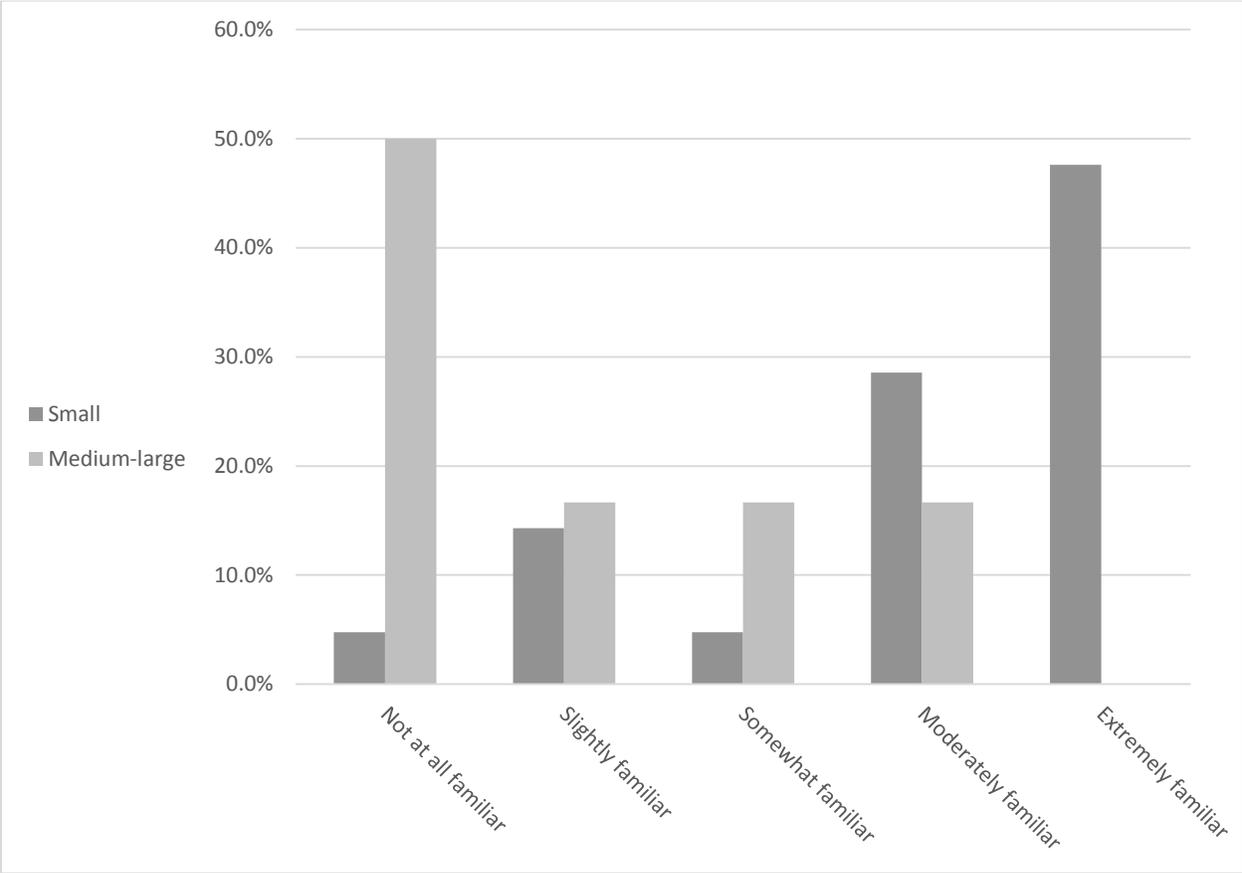
The questions in the survey linked with this objective were coded as follows: 1a, 2a, 3a and 4a and each is expanded upon in the following paragraphs.

5.3.1.1 Question 1a – How familiar are you with the term ‘cloud accounting software’? (n=27)

Question 1a aimed to determine the extent to which respondents felt they were familiar with the term ‘cloud accounting software’. As per Table C1 (Appendix C) the overall results show that the majority of respondents (63.0%) felt moderately to extremely familiar (ratings of 4 and 5 respectively), 7.4% felt somewhat familiar (rating of 3) and the remaining 29.6% felt slightly or not at all familiar (ratings of 2 and 1 respectively).

Contrasting the firm sizes, it is apparent that respondents from medium-large sized firms felt less familiar than those from smaller-sized firms (refer to Figure 5.3 for a graphical comparison). In total, 66.7% of medium-large firm respondents indicated either “Not at all familiar” or “Slightly familiar”, while in total 76.2% of small firm respondents felt “Moderately” to “Extremely” familiar (Table C1, Appendix C). The results from the Mann-Whitney U test also indicated a significant difference in the levels of familiarity between respondents from small (median = 4.00) and medium-large firms (median = 1.50), $U = 16.50$, $Z = -2.818$, exact $p < 0.05$. This result supports the notion that small firms had a significantly higher familiarity than did medium-large firms.

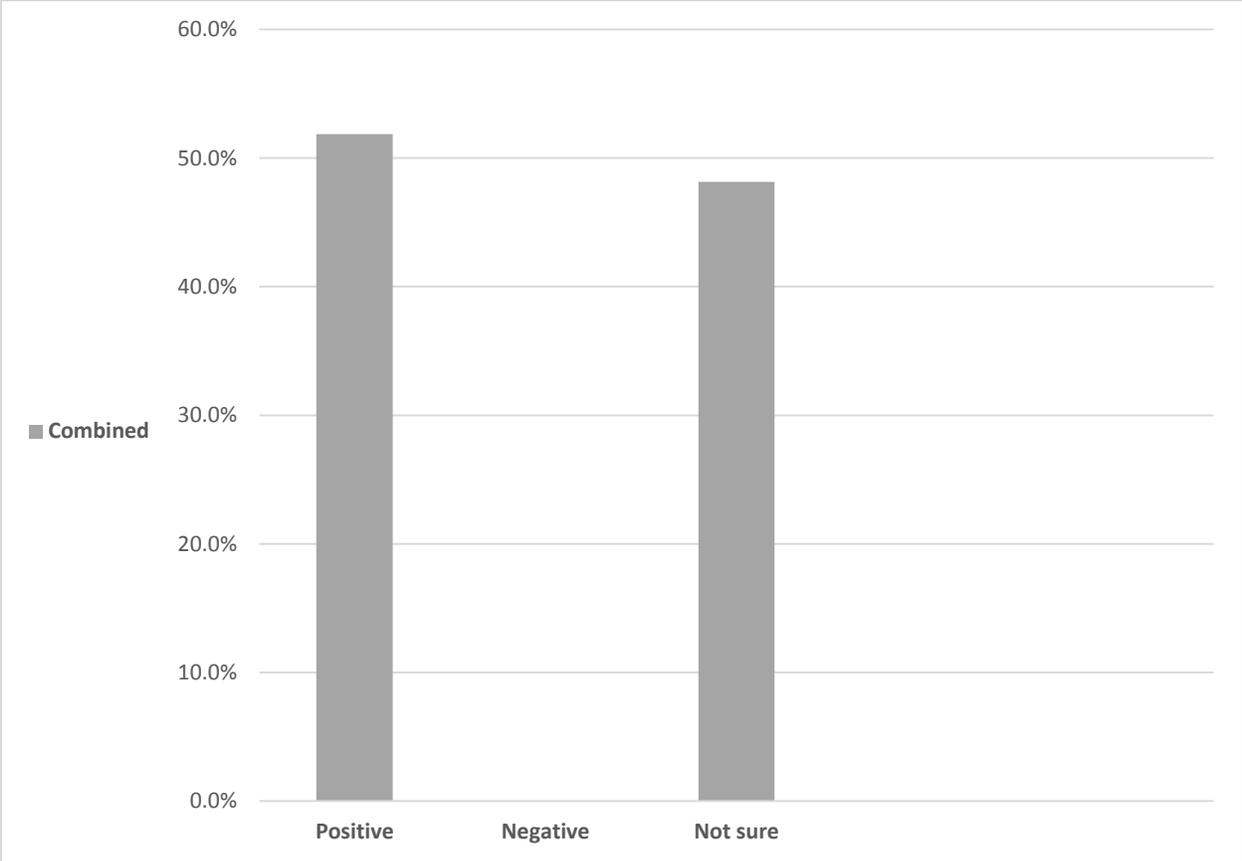
Figure 5.3 - Familiarity with the term 'cloud accounting software' (n=27)



5.3.1.2 Question 2a - What impact would you say cloud accounting software has had, or might have on your firm? (n=27)

Combined response rates revealed the following: 51.9% of respondents felt positive toward the impact of cloud accounting software on their firm, but 44.4% felt unsure. There were no “negative” responses. Figure 5.4 summarises these data.

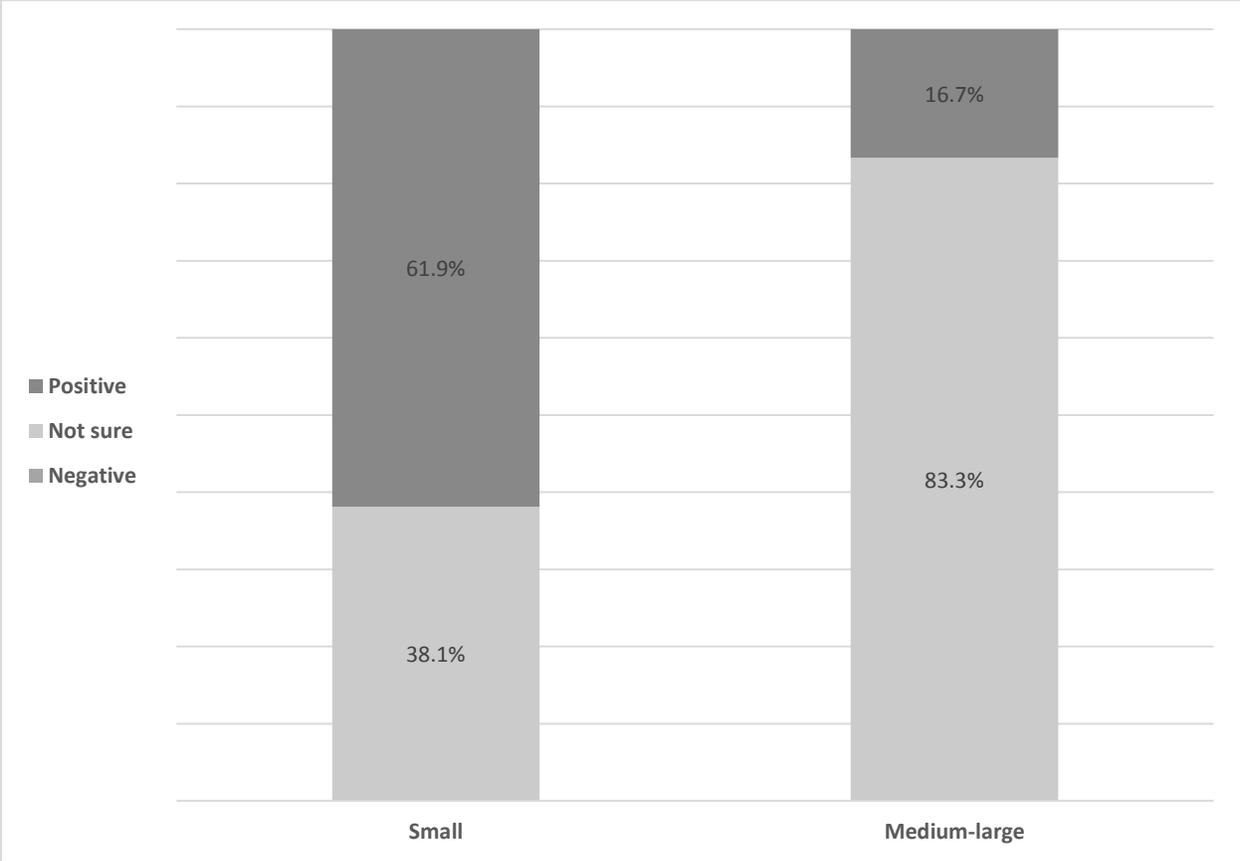
Figure 5.4 - Combined responses toward the impact that CAS might have had on the firm (n=27)



Contrasting the two firm groupings, the majority of small firms (61.9%) felt that cloud accounting software has had or might have a positive impact (selected a rating of “Positive”) on their firm, while only 16.7% of medium-large firms indicated the same. Of small firms, 38.1% selected “Not sure” compared to 83.3% of those in the medium-large group (Figure 5.5 refers). Testing was carried out using Pearson’s chi-square and found a significant association between small and medium-large firms, $\chi^2 (2) = 3.825, p < 0.01$. The result would seem to indicate that some bias exists in terms of firm size and their choice of response, such

that firms would tend to choose a similar response if their firm size is similar. There are, therefore, differences between the two groups of firms.

Figure 5.5 - Comparing responses toward the impact that CAS might have had on the firm (n=27)



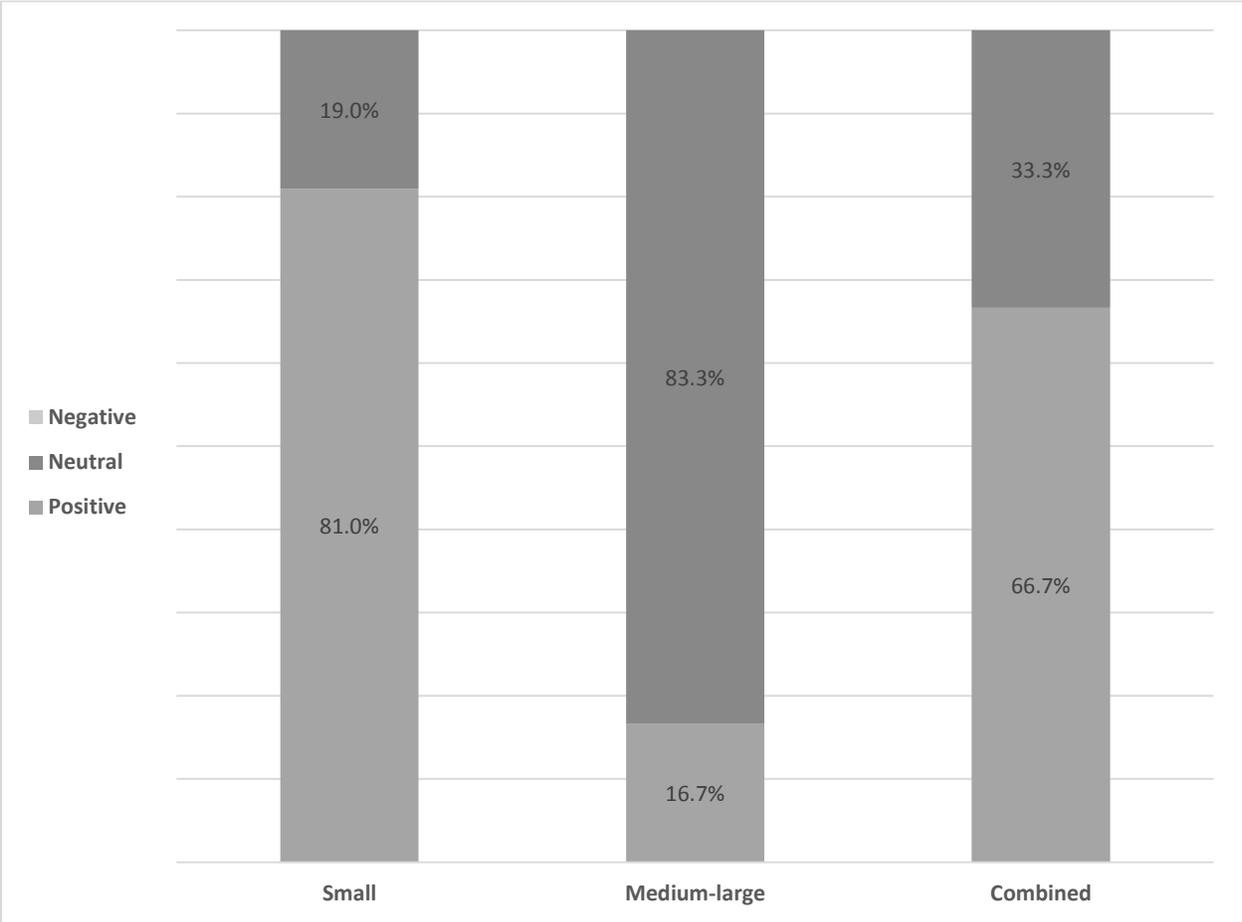
5.3.1.3 Question 3a - Which choice accurately describes how you feel about cloud accounting software's potential contribution to the accounting industry?

The question aimed to assess respondents' thoughts about cloud accounting software's potential contribution toward the accounting industry at large, so taking it further than the impact on their immediate firm (as with the previous question) and considering their perceived industry-wide impact. 66.7% of total respondents felt "Positive", while 33.3% felt "Neutral".

There were no responses indicating a negative perception from either small or medium-large firms.

In terms of the firm size contrast, the majority of medium-large firms (83.3%) felt “Neutral”, while 81.0% of small firms felt “Positive”. Figure 5.6 illustrates the comparison.

Figure 5.6 – Firms’ responses toward CAS’s potential contribution to the accounting industry (n=27).



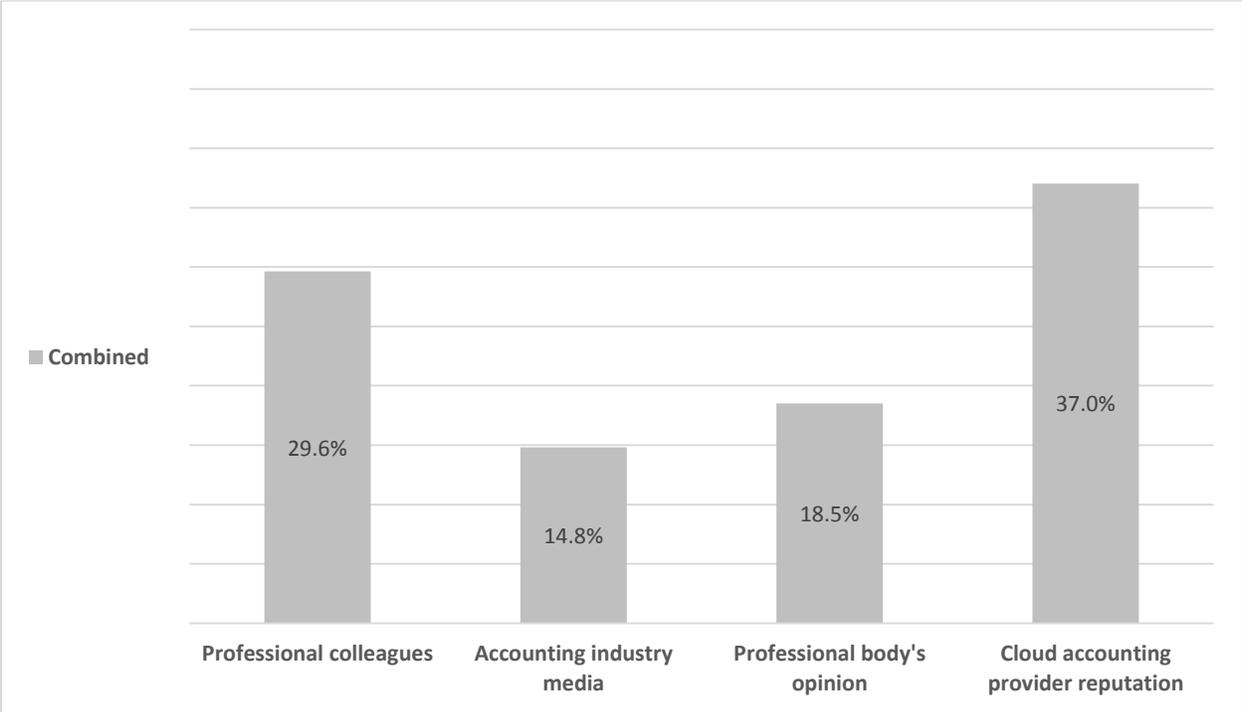
On the surface, an inverted relationship tendency becomes apparent with small firms opting for a positive response, while medium-large firms opted for a neutral stance. Correlation testing using Kendall’s Tau B shows that a significant relationship does exist between firm

size and their response to this question, $\tau = -.567$, p (two-tailed) $< .01$. The frequency of responses, as reflected by firm size, is more than could be expected than by chance alone. That is, small firms opted for a positive response, while medium-large firms opted for neutral – consensus among firm sizes is not apparent.

5.3.1.4 Question 4a - What would you say is the strongest influence on your attitude and perception toward cloud accounting software?

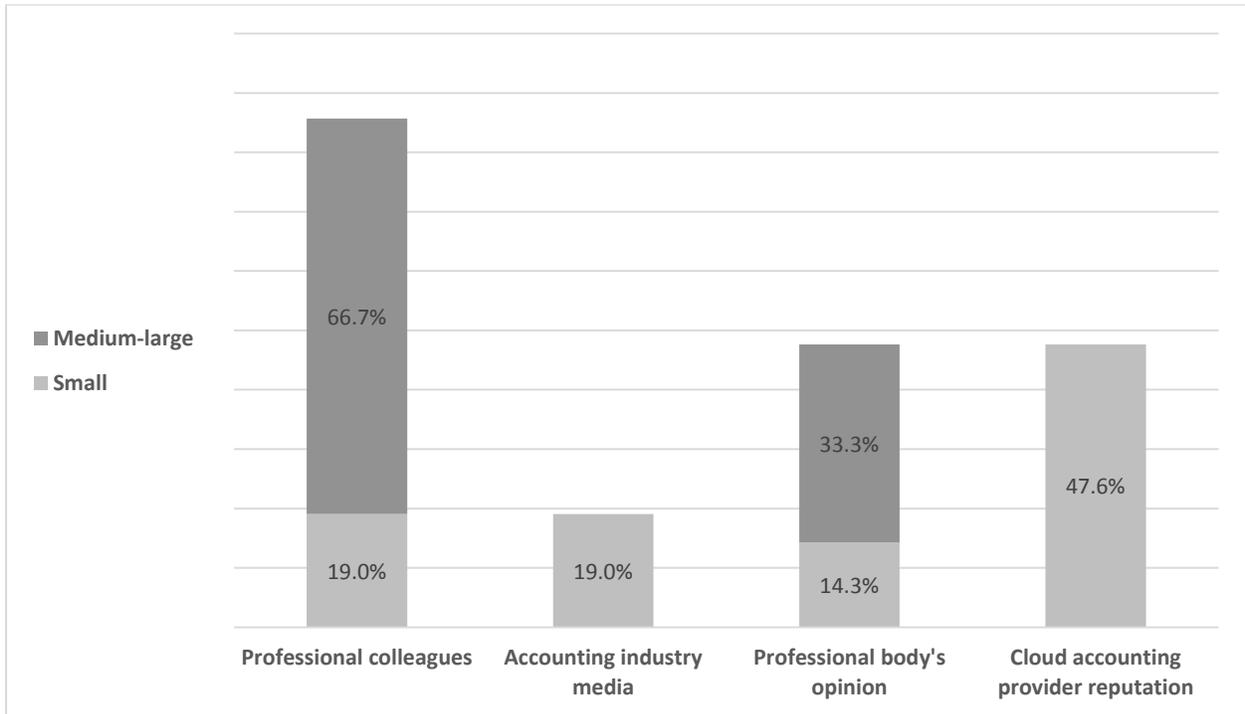
The final question, pertaining to the first objective, revolved around what would strongly influence the respondent when it comes to their perception of cloud accounting software. Overall, the two highest scoring options were “The cloud accounting provider’s reputation in the market” (37.0%) and “Professional colleagues” (29.6%), followed by the opinion of their professional body (18.5%) and, lastly, accounting industry media (14.8%). These data are represented in Figure 5.7.

Figure 5.7 - Combined view of strongest influence on respondents' attitudes and perceptions towards CAS (n=27).



Relating between firm sizes, four (66.7%) medium-large firm respondents indicated that they would be most strongly influenced by professional colleagues, followed by the opinion of their professional body (33.3%). Small firm respondents' scores were distributed amongst all available options, with 47.6% choosing the cloud accounting provider's reputation, while professional colleagues' views and accounting-industry media were both chosen by 19% of the respondents. Only 14.3% selected the opinion of their professional body as an influence. Figure 5.8 illustrates these results.

Figure 5.8 - Comparative view of strongest influence on respondents' attitudes and perceptions towards CAS (n=27).



A significant association was found between firm size and their choice of response using Pearson's chi-square, $\chi^2(3) = 8.486$, $p < 0.01$. This is an indication that consensus amongst firms could be established, based on their choice of response.

5.3.1.5 Summary of main results relating to Objective 1

Objective 1 set out to ascertain managers' perceptions and attitudes toward cloud accounting software. This objective speaks directly to the primary objective of the study which is to ascertain the perceptions and awareness by accounting managers of CAS (see Section 1.4).

The results show that, firstly, managers felt relatively familiar with CAS, although small firms tended to exhibit more familiarity. Rader (2012) suggests that smaller firms are offered a "quick way in" as a result of the cloud's advantages (see section 1.5.1). Taking this point into

account, it can be argued that smaller firms' familiarity levels would be higher than those of medium-large firms, as smaller firms could derive more benefit from CAS and therefore would show more familiarity with CAS than larger firms who would tend to rely on their bigger pools of resources and therefore keep their traditional software and systems.

Secondly, just over half of the firm managers felt that CAS had a positive impact on their firm, whilst a substantial 44.4% still felt unsure. Interestingly, none indicated a negative response. A higher number of small firms felt that a positive impact was being made by CAS, compared with what medium-large firms indicated. The inverse was true for "not sure" about the impact of CAS, with a vast majority of medium-large firms choosing this response.

Thirdly, CAS's perceived potential contribution to the accounting industry was seen to be mostly positive overall. Between firm sizes, medium-large firms were mostly neutral while small firms felt it would be mostly positive. Small firms appear to be hopeful or optimistic about the potential that CAS brings with it, with further positive impact proving advantageous to them.

Lastly, the strongest influence on managers' perceptions toward CAS was split between four categories, in the order of: CAS provider's reputation in the market (37.7%), professional colleagues (29.6%), professional accounting body's opinion (18.5%) and, lastly, accounting industry media (14.8%). It is interesting to note that a CAS provider's reputation seems to carry the most weight with small firms, while medium-large firms would rather trust a colleague's opinion. This links to the discussion in Sections 3.4, where it was pointed out that decision-makers within the decision-making unit (DMU) would be more risk-averse, and would be sensitive to reputational damage. It also supports the discussion about the decision-making process by accounting firms in Section 3.5, specifically the joint decision-making that is more likely where the organisation's size is large. A further aspect which may deserve attention is the marketing (tactical) channels that these four areas represent – that is, what can the CAS provider do to influence buyers' views in terms of their own reputation (the 7Ps apply here), how can professionals in the industry be influenced, how can professional bodies

(e.g. SAICA) be influenced, and how can the industry media be exploited. These can then be analysed further in terms of the dimension of firm size.

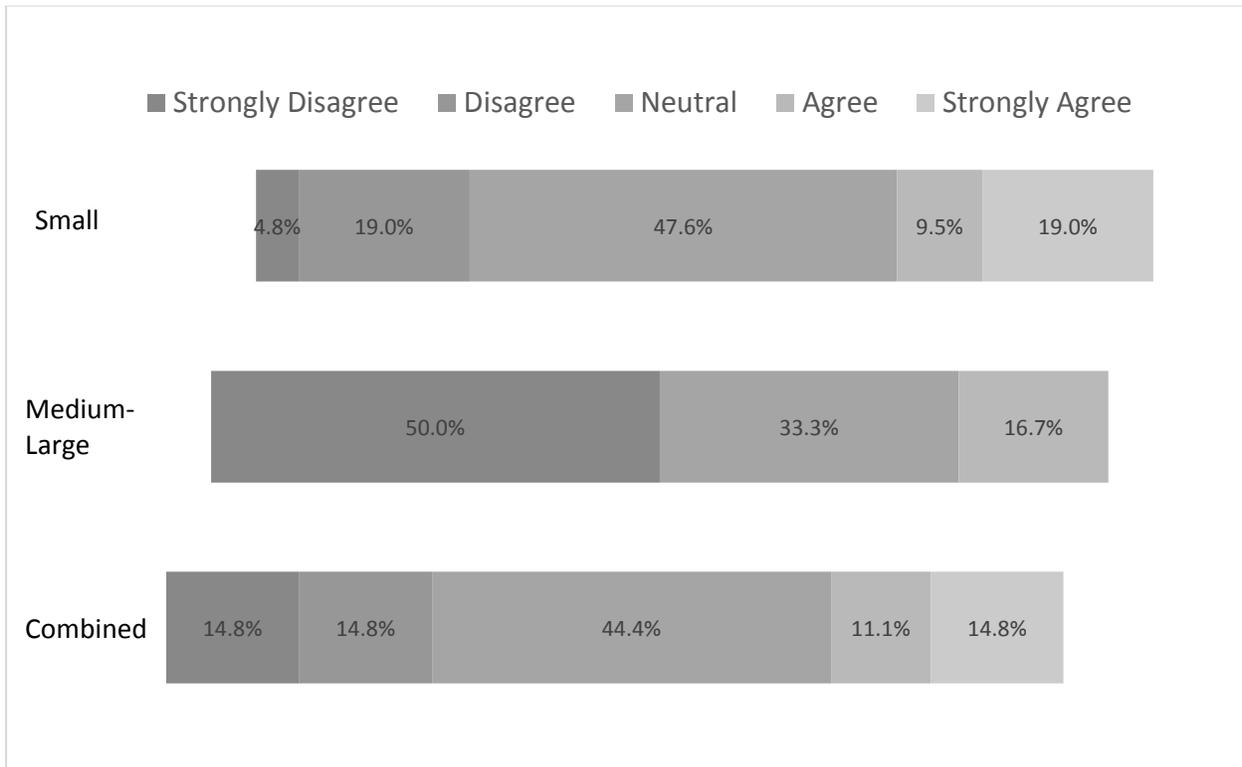
5.3.2 Research objective 2: The acceptance and use of cloud accounting software by accounting firms

This objective aims to highlight the acceptance and use of CAS by firms. Generally, it is meant to indicate respondents' attitudes toward considering CAS as a possible solution in terms of accounting software implementation and use. There were three questions (1b, 2b, 3b) within this section.

5.3.2.1 Question 1b - On a scale of 1 to 5, please indicate whether you agree/disagree that cloud accounting software has become generally accepted in accounting firms?

This question sets out to ascertain the extent to which respondents felt they could either agree or disagree (1 being strongly agree and 5 strongly disagree) with the notion that cloud accounting software has become accepted in accounting firms, in a general sense. Figure 5.9 illustrates these responses.

Figure 5.9 - Acceptance of cloud accounting software (n=27).



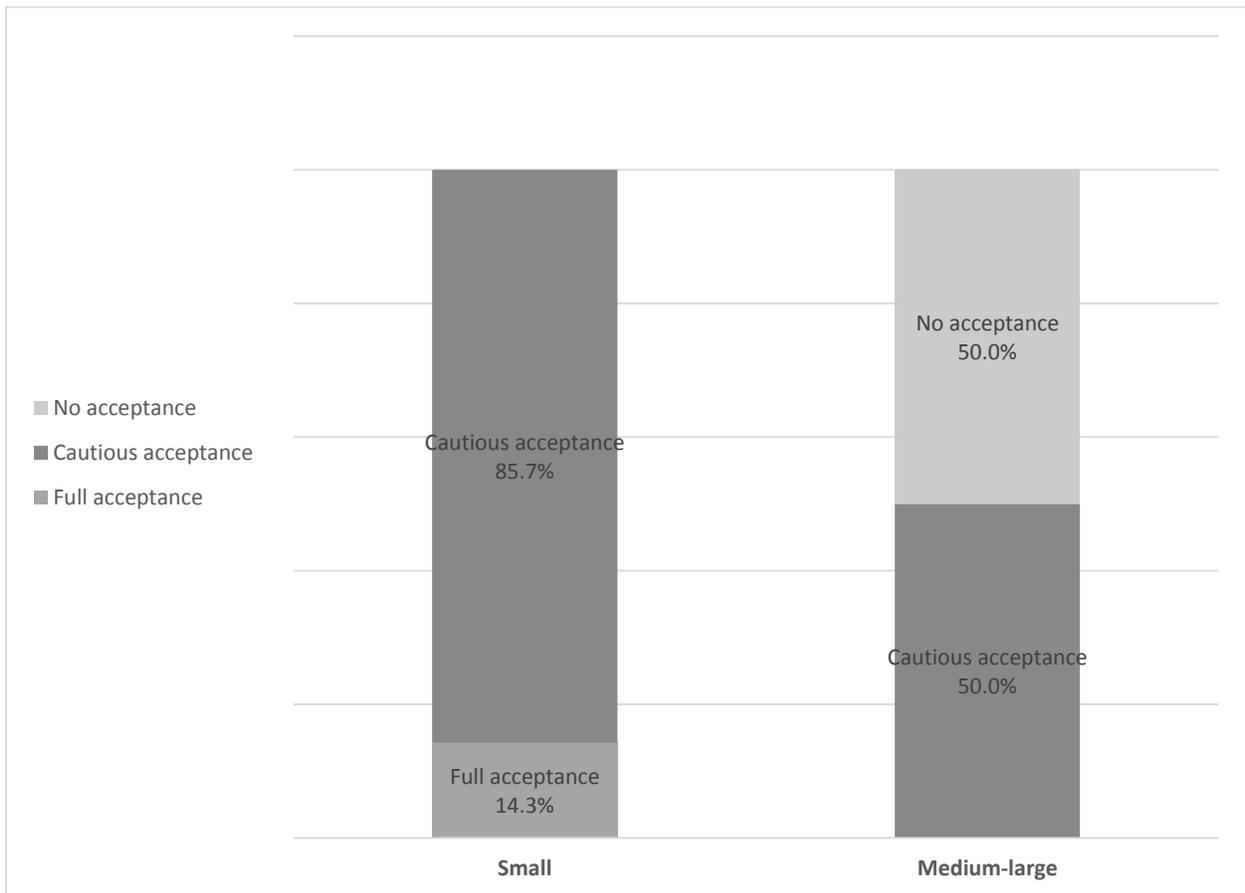
Small firms' (n=21) responded with strongly disagree (4.8%), disagree (19.0%), neutral (47.6%), agree (9.5%), and strongly agree (19.0%). In comparison, medium-large firms (n=6) had strongly disagree (50.0%), neutral (33.3%), agree (16.7%). There were no disagree or strongly agree segments with medium-large respondents. Medium-large firms tended to show more disagreement than agreement, when considering the proportions, while small firms were more widely spread.

The results from the Mann-Whitney U test also indicated a significant difference in the levels of agreement and disagreement between respondents from small (median = 3.19) and medium-large firms (median = 2.17), $U = 37.5$, $Z = -1.566$, exact $p < 0.05$. As such, there is a significant difference between the small group and the medium/large group, showing that not much consensus exists between the groups regarding the acceptance of cloud software.

5.3.2.2 Question 2b - Please indicate which term best encapsulates the acceptance of cloud accounting software by firms in Cape Town?

Respondents could choose between “full”, “cautious” or “no acceptance” with this question. Cautious acceptance was the predominant theme in these responses, with a total count of 21 out of the 27 (that is 77.8%) responses collected. Figure 5.10 represents the response data.

Figure 5.10 - Comparison between small and medium-large firms for acceptance (n=27)



Medium-large firms had their total responses split equally between “cautious acceptance and “no acceptance”. Small firms, on the other hand, had 85.7% “cautious acceptance” and 14.3% “full acceptance”.

A significant association was found between firm size and their choice of response using Pearson's chi-square, $\chi^2(2) = 12.122$, $p < 0.01$. This implies a shared view and consensus regarding the use of cloud software by the two groups.

5.3.2.3 Question 3b - What would you say is the main reason for accepting cloud accounting software in accounting firms?

This question offered a choice of five statements of which a respondent could choose one only. These are stipulated below:

1. It seems it is becoming generally accepted in other well-known firms too
2. I agree with my professional colleagues who have accepted it
3. I will only accept it, once I am convinced in full
4. I have completed my own research on it, and accept it on that basis
5. I have completed my own research on it, and reject it on that basis

The first option involves making a reference to other firms (including competitors) in terms of accepting CAS. 19.0% of small and 16.7% medium-large firms selected this as their reason.

Secondly, of all the choices available, 4.8% of small firms and 16.7% of medium-large firms chose to rely on professional colleagues who have accepted cloud accounting software, as the overriding factor in whether to implement cloud accounting software in their firms. It is worth noting how this result contrasts with that of section 5.3.1.4, where "Professional colleagues" seemed to have a high level of influence in firms' perception and attitude toward CAS.

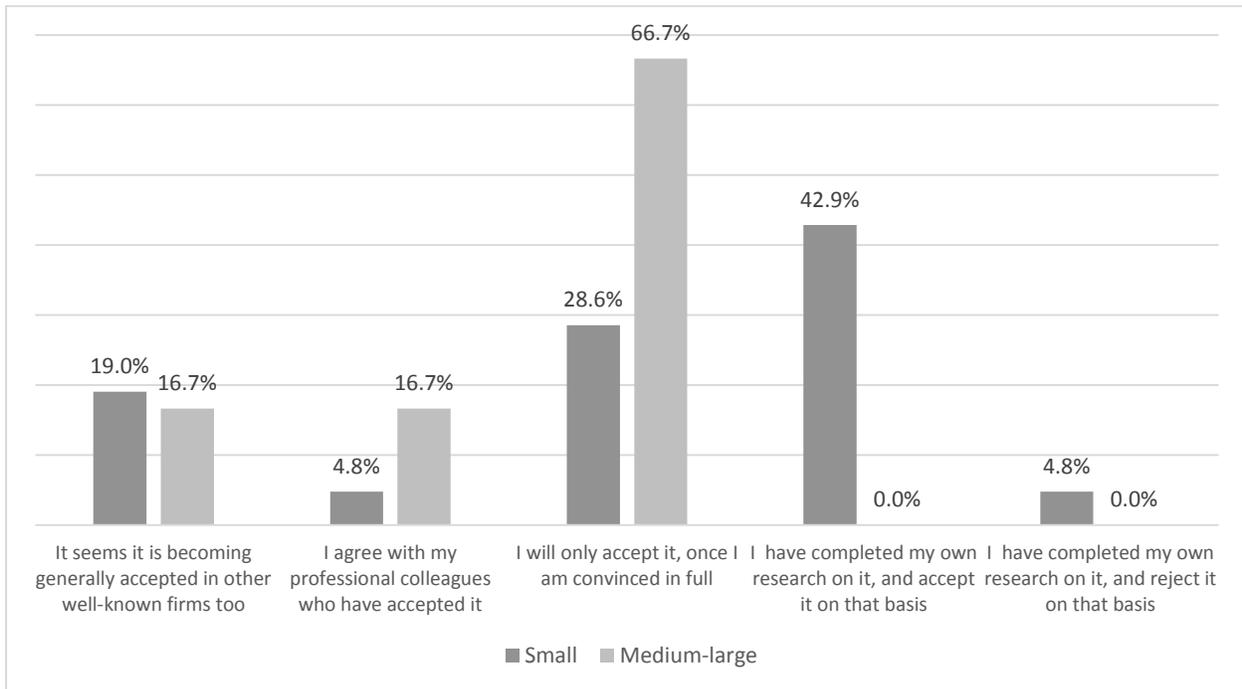
The third option had the highest score count from medium-large firms (66.7%), while it was the second highest selected option by small firms (28.6%).

The highest scoring option by small firms was the fourth option with 42.9%, being related to managers completing their own research on cloud accounting software as the basis for accepting cloud accounting software. No medium-large firms selected this option.

Finally, the fifth option offered a rejection statement, and received one response by a small firm (4.8%). Figure 5.11 presents the above data in graphical form.

Testing for association between firm size and the chosen responses using Pearson’s chi-square found a significant relationship, $\chi^2(3) = 5.593, p < 0.01$. There seems to be consensus between the two groups regarding the acceptance of CAS.

Figure 5.11 - Choice of accepting or rejecting cloud accounting software (n=27)



5.3.2.4 Summary of main results relating to Objective 2

This objective attempted to describe managers’ sense of acceptance towards CAS. Medium-

large firms indicated a sense of disagreement with the notion that CAS was generally accepted, while small firms tended to be more neutral, or agreeable.

Secondly, the type of acceptance of CAS as indicated by managers was mostly one of a “cautious” nature, while some small firm managers felt they could choose the response of “full acceptance”.

Lastly, managers had a fairly wide distribution of responses (given 5 options) amongst the possible reasons for accepting CAS in their firms. Most managers, however, tended to rely on their own investigation and research in order to accept CAS, although small firms had a wider distribution of responses. The majority of medium-large firms’ responses suggested that they have not yet made up their mind (selecting “I will only accept it, once I am convinced in full”).

In Section 2.7.2, it was stated that O’Bannon (2012) referred to a phase of “mass adoption” of cloud technology in accounting firms in the United States, as a result of two drivers for it. The first is the general acceptance of cloud as most people have now experienced using cloud technologies such as online banking and email, and many accountants have now been exposed to CAS. Secondly market demand is taking shape, that is, a younger generation of “tech-savvy” professionals are expecting real-time access to data and are moving away from the traditional accounting practices to using cloud tools as replacements. This study did not measure these factors directly, but from the results it could perhaps be inferred that such a “mass adoption” is not apparent. At least not within Cape Town.

5.3.3 Research objective 3: The intention of accounting firms to use cloud accounting software

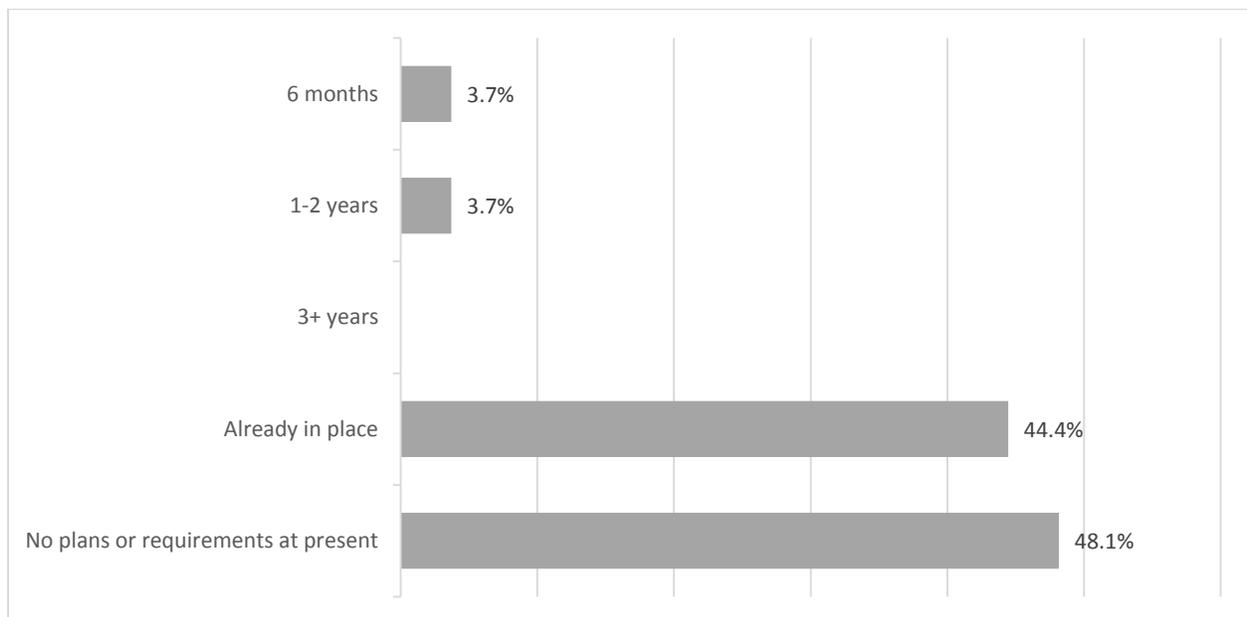
This section has three questions aimed at illuminating the intention by accounting firms to implement cloud accounting software at some point in the future, the likelihood (or not) of implementation, and what the reasons for so doing or not are, from a selection of choices.

5.3.3.1 Question 1c - Is your firm looking to implement cloud accounting software in the next:

- 6 months
- 1-2 years
- 3+ years
- Already in place
- No plans or requirements at present

This question was asked to ascertain a timeline in terms of adopting CAS, in the minds of managers. It was assumed that some firms may have already started using it, and that some firms may have no actual intention of using it in the foreseeable future. Figure 5.12 illustrates a summary of these data.

Figure 5.12 - The intention of using cloud accounting software in the future (n=27)



A large percentage of respondents (48.1%) indicated that they have no requirements or plans at present, with an opposing 44.4% stating that they already have it in place. Small percentages of respondents (3.7% each) indicated that they have plans with a timeline of

either the next 6 months, or 1-2 years. There were no respondents indicating plans for 3 years or more.

When comparing small and medium-large firms, Table 5.1 illustrates that the majority of small firms already have some type of cloud accounting software in place (57.1%), while the majority of medium-large firms have no plans to implement it (83.3%). In the short term future (next 6 months), only some small firms have ideas for implementing CAS (4.8%), with no small firm respondents indicating any intentions between 1-2 years, or 3 years and more. Some medium-large firms (16.7%) hinted at having plans over the medium term, or within 1-2 years. Correlation testing using Kendall’s Tau B shows that a significant relationship does exist between firm size and their selected response to this question, $\tau = .013$, p (two-tailed) $< .05$. As such, there is a significant difference between the small group and the medium/large group, showing that not much consensus exists between the groups regarding the use of cloud software in the future.

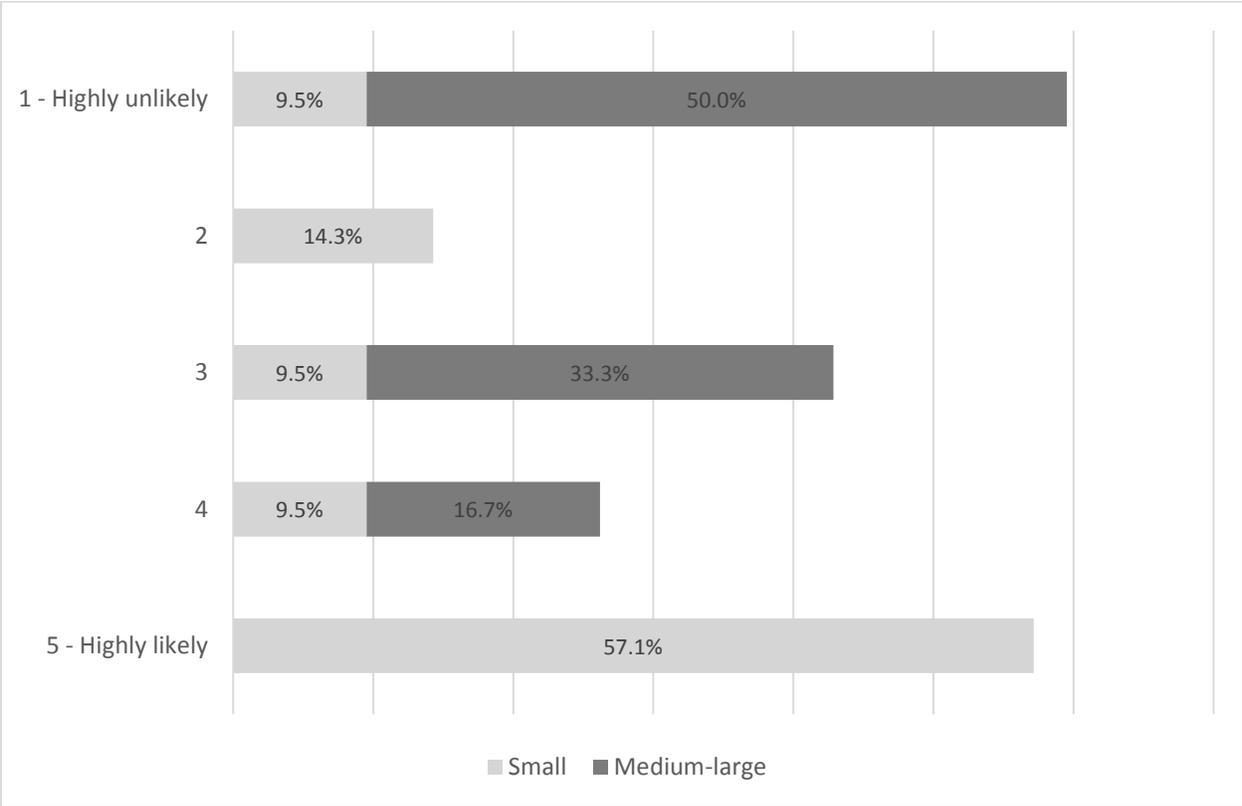
Table 5.1 - The intention to use cloud accounting software in future (n=27)

| Option | Small | Medium-large |
|-------------------------------------|-------|--------------|
| 6 months | 4.8% | 0.0% |
| 1-2 years | 0.0% | 16.7% |
| 3+ years | 0.0% | 0.0% |
| Already in place | 57.1% | 0.0% |
| No plans or requirements at present | 38.1% | 83.3% |

5.3.3.2 Question 2c - On a scale of 1 to 5, how likely is your firm to use cloud accounting software?

Question 2 in this section on implementation presented respondents with a Likert scale, assessing the likelihood of managers considering using CAS. The scale consisted of 5 points, from “highly unlikely” to “highly likely”. Figure 5.13 demonstrates the results, comparing between firm sizes per rating.

Figure 5.13 - Likelihood of using CAS (n=27)

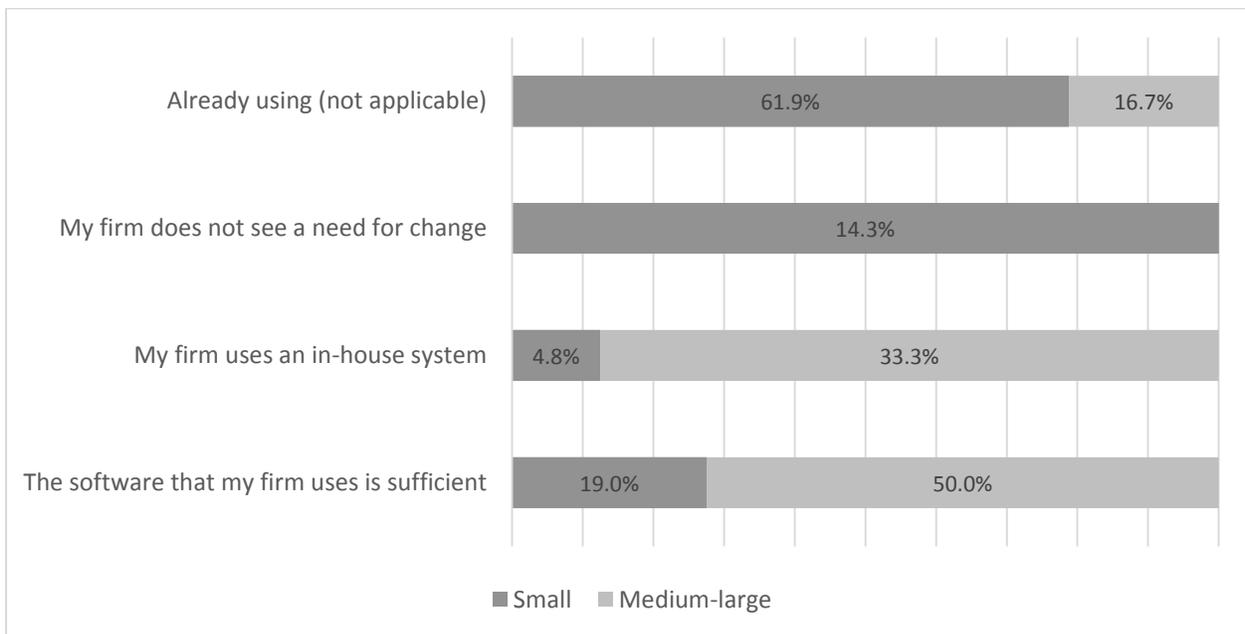


The majority of small firm managers (57.1%) indicated that they were highly likely to utilise CAS. In the previous section, 57.1% of small firms also indicated they already have CAS in place and so it would seem that the same respondents selected the scale option number 5 in this question, which could be read as already having CAS in place. Almost the converse was true for medium-large firm managers, where 50% indicated a slim likelihood of using CAS. Overall, 44.4% of firms in the sample seem highly likely to use CAS. As shown by the results from the Mann-Whitney U test, a significant difference exists between respondents from small (median = 5) and medium-large firms (median = 2) when it came to the likelihood of using CAS, $U= 23.0$, $Z= -2.458$, exact $p < 0.05$. Therefore, the test statistic supports the argument that small firms would be more likely to adopt CAS than medium-large firms would and consensus is not apparent.

5.3.3.3 Question 3c - If you are not intending to use cloud accounting software, which of the following choices captures the reason for this the most accurately?

The final question pertaining to the intention of firms to use CAS was designed to obtain some idea of why firms are not intending to use the technology. As indicated in the sections above, the assumption was that there would be firms using CAS, so this question included the option for managers to indicate that they are already using CAS. Figure 5.14 shows that 61.9% of small, and 16.7% of medium-large firms already use CAS. It is noted that this result contrasts with that found in section 5.3.3.1.

Figure 5.14 - Comparing options between firm sizes for not intending to use CAS (n=27)



Of those firms that have not subscribed to CAS yet, the options provided to indicate why not were as follows. Firstly, 19.0% of small firms, and 50.0% medium-large firms selected “The software that my firm uses is sufficient”. Secondly, 4.8% of small firms, and 33.3% of medium-large firms chose “My firm uses an in-house system” as the reason why they have not opted

to use CAS. Lastly, only small firms (14.3%) chose “My firm does not see a need for change”, while there were no medium-large firms that made this selection.

Pearson’s chi-square suggested an association between firm size and their choice for not intending to use CAS, $\chi^2 (3) = 7.852, p < 0.01$. The test statistic shows that the two firm groups can be said to have a shared view regarding their reasons for not opting for CAS.

5.3.3.4 Summary of main results relating to Objective 3

This objective addresses the issue of intention by managers to use or implement CAS, if they are not already doing so.

Firstly, in terms of a timeline around intending to use CAS, a large proportion of small firms already have it in place, while most medium-large firms had no plans or requirements to do so. Secondly, in terms of likelihood of using CAS, smaller firms indicated a high likelihood, while medium-large firms almost had the opposite results. Lastly, options were provided to select a reason for not intending to use CAS (with a provision made for firms to indicate that they already use CAS). Most small firms did in fact have CAS in use already, but for those who did not, the main reasons revolved around existing software being sufficient, or not seeing a need for change. Medium-large firms mostly selected that they use an in-house system or that existing software is sufficient – a small number indicated that they are already using CAS.

Although the data under this objective do not directly relate to it, it could be argued that the intention to use CAS by managers will be influenced by factors that may either be explicit or implicit (refer to Section 3.5.3). Explicit factors such as the price of the CAS subscription or an implicit factor such as the CAS provider’s reputation is arguably at play within the minds of managers. Furthermore, the role of the DMU could be relevant too as well as the varying levels of autonomous (small firms) versus joint (medium-large firms) decision making processes that may be applicable within firms. Lastly, where an individual or group of

individuals (DMU) lie on the technology adoption curve (Section 3.5.2) would also have an effect.

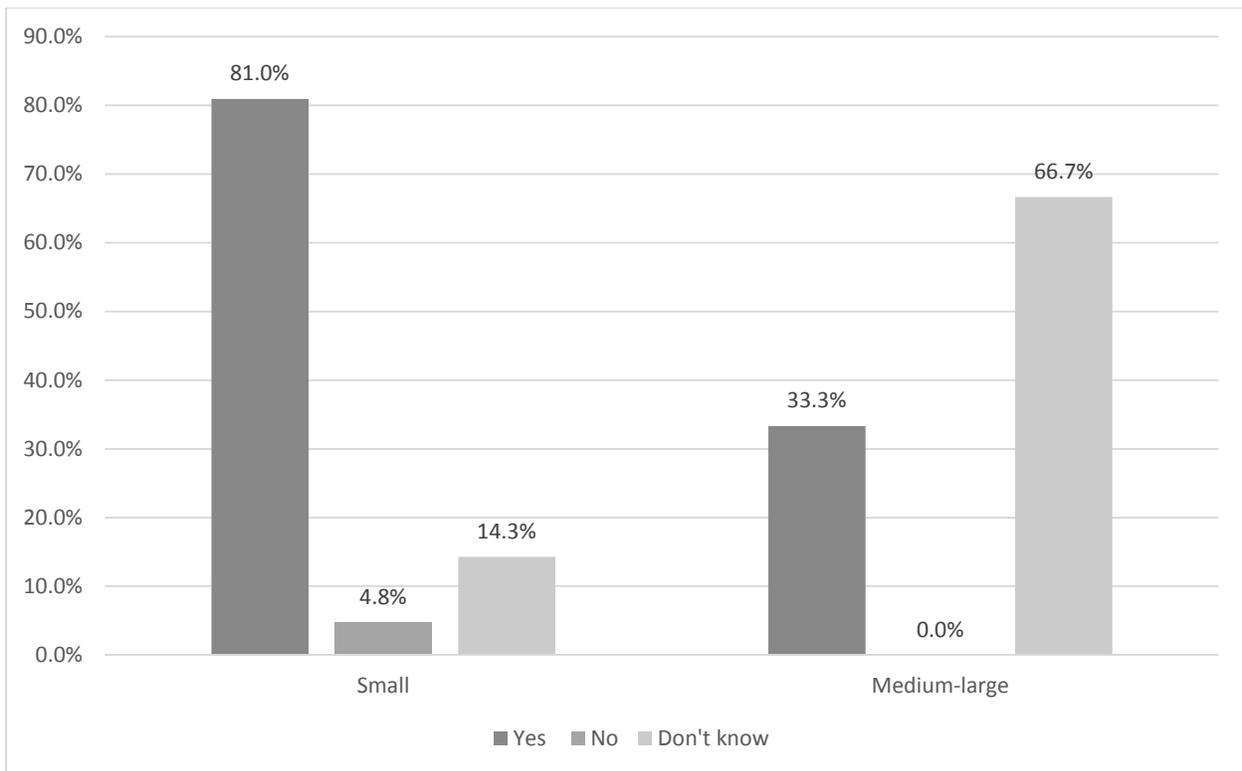
5.3.4 Research objective 4: How accounting firms foresee the growth of cloud accounting software in SA

This objective was designed to help ascertain how managers view and feel about the potential growth of CAS in their firms. The three questions posed to respondents included: firstly, whether any sort of growth can be expected (with simple “yes”, “no”, or “I don’t know” answer options); secondly, choosing on a Likert scale whether they agree or disagree with the adoption rate of CAS (whether it is speeding up or not); and, lastly, whether CAS growth (should it continue) would replace traditional server-based applications (“yes”, “no”, and “maybe” answer options were provided).

5.3.4.1 Question 1d - Do you foresee further growth for cloud accounting software in South African accounting firms?

Figure 5.15 illustrates the comparison of responses between small and medium-large firms. Respondents could choose between “Yes”, “No”, and “Don’t know”.

Figure 5.15 - Foreseeable growth of CAS in future (n=27)



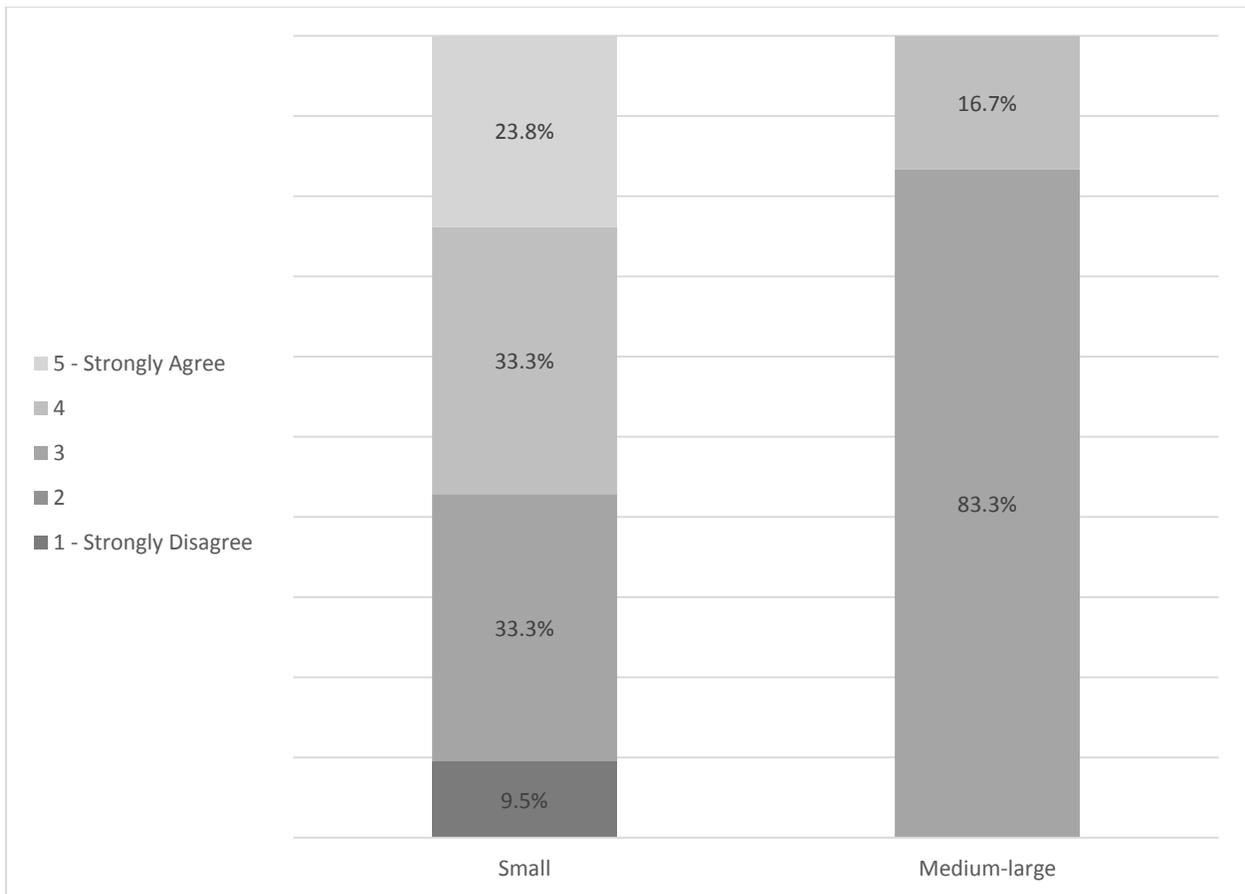
As can be seen from the results in Figure 5.15, most small firms (81.0%) opted for “Yes”, while a minority (4.8%) chose “No” and the rest (14.3%) selected “Don’t know”. In contrast, the majority (66.7%) of medium-large firms chose to indicate that they do not know whether further growth of CAS can be expected. No medium-large firms selected “No” in answer to the question, while a third (33.3%) did select “Yes”.

Pearson’s chi-square suggested a significant association between firm size and their choice of answer, $\chi^2 (2) = 6.728, p < 0.01$. The result would seem to support consensus between the two groups regarding their expectations of further growth for cloud accounting software in South African accounting firms.

5.3.4.2 Question 2d - Do you agree or disagree that cloud accounting software adoption in firms is accelerating in South Africa?

The second question in this section offered a Likert-type scale from which respondents could give their view of how strongly they disagreed or agreed, with the notion that CAS adoption might be accelerating in firms. Responses are illustrated in Figure 5.16.

Figure 5.16 - Acceleration of CAS growth (n=27)



The only strong agreement to this notion was indicated by some small firm managers (23.8%), while the majority of medium-large firms (83.3%) showed a neutral position toward it. When it came to strong disagreement, 9.5% of small firms chose this option. No medium-large firm managers opted for either “Strongly disagree” or “Strongly agree” answers. 57.1% of small

firms tended to agree or strongly agree with the idea of CAS adoption accelerating.

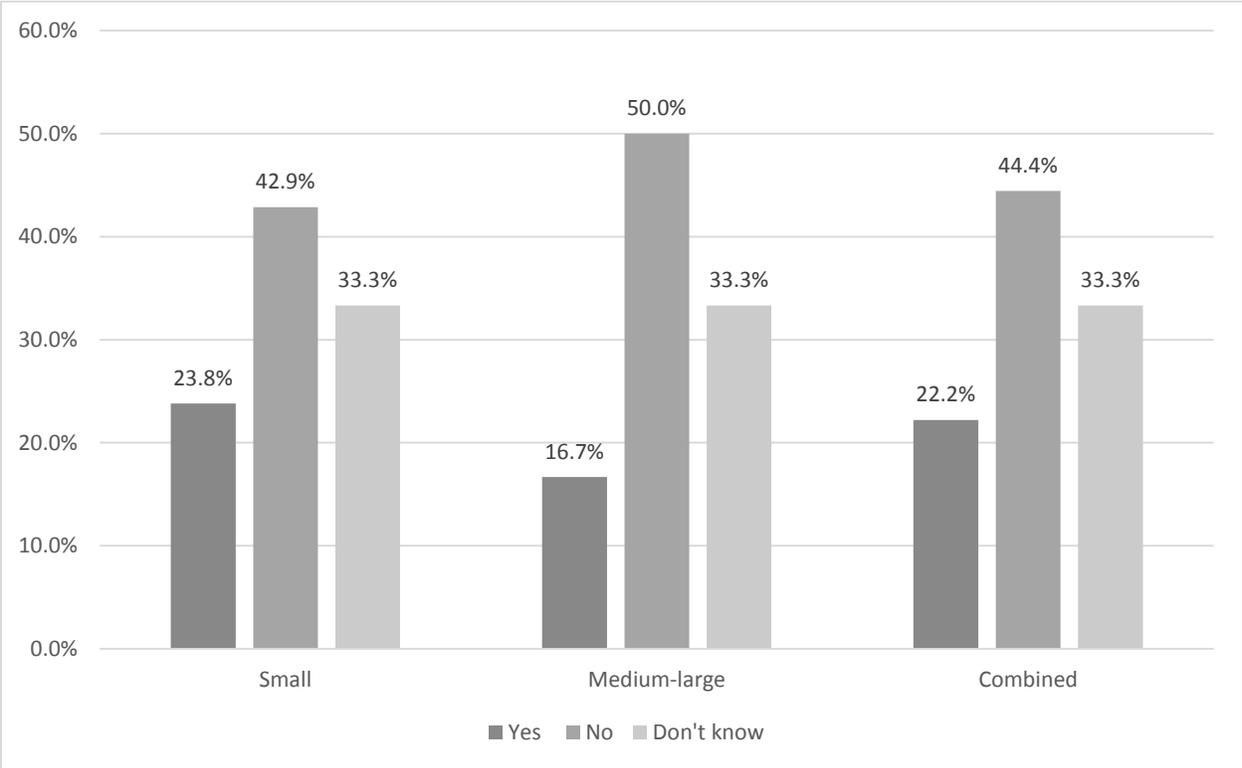
Results from the Mann-Whitney U test indicated a significant difference between respondents from small (median = 4.00) and medium-large firms (median = 3.00), $U = 40.0$, $Z = -1.429$, exact $p < 0.05$. This statistic supports the notion that small firms are significantly different in their responses from those of medium-large firms, and therefore consensus is not apparent between the two groups on the subject of the accelerating growth of CAS.

5.3.4.3 Question 3d - Should cloud accounting software adoption grow, would you say that it will happen to such an extent that desktop- and server-based software will be made redundant?

Finally, the last question in terms of growth of CAS veered toward the idea, as has been touched on in the literature, of CAS replacing more traditional on-premise systems (see Section 2.7.1). The question assumed possible growth and offered “Yes”, “No”, or “Maybe” as answer options. The central tendency by respondents was toward “No”. This was true for small (42.9%) and medium-large (50.5%) firms, as well as illustrated by the combined total (44.4%). A third of firms felt unsure, though (33.3%), and selected “Don’t know”. Figure 5.17 presents these findings.

Pearson’s chi-square suggested a weak association between firm size and their choice of response to this question, $\chi^2 (2) = 0.161$, $p < 0.01$. Thus, some consensus can be said to exist and that is that both small and medium-large firms do not see desktop- and server-based software installations becoming redundant.

Figure 5.17 - Extent to which CAS will make desktop/server-based software redundant (n=27)



5.3.4.4 Summary of main results relating to Objective 4

The potential of the growth of CAS was the main theme in this objective.

In order to summarise this objective, when it comes to the perception by managers of the

growth of CAS in the industry, the overall view is slanted towards the expectancy that it will continue to grow, particularly by small firms. Whether CAS adoption will accelerate seems to bring forth somewhat mixed feelings amongst managers. Overall, only 22.2% of (combined) respondents felt that they could say “Yes” to the idea that on-premise systems would be replaced by CAS in the future, with 44.4% saying “No” to the idea (a third 33.3% were undecided).

An expectancy that CAS will continue to grow (as shown especially by smaller firms) should influence the CAS acquisition process by firms (see Section 3.5.1) and also seems to speak to the risk perception by firms about adopting CAS. It would also be reasonable to conclude that firms would tend to start feeling left behind if the majority of firms adopt CAS, and it is shown to have a positive effect.

The final question in this section links back to Section 1.5.1, where a prediction was made by DeFelice and Leon (2010) around the idea that on-premise systems would become redundant and that cloud-based systems would replace these on-premise systems. The results in this study would suggest that, at least in Cape Town, firm managers do not generally agree with the notion that on-premise software will be replaced by CAS.

5.3.5 Research objective 5: Whether cloud accounting software will add to the customer base of accounting firms

Objective 5 looked at a number of aspects related to what, if any, indicators there are in terms of growing a firm's base of clients as a result, or with the help of, CAS.

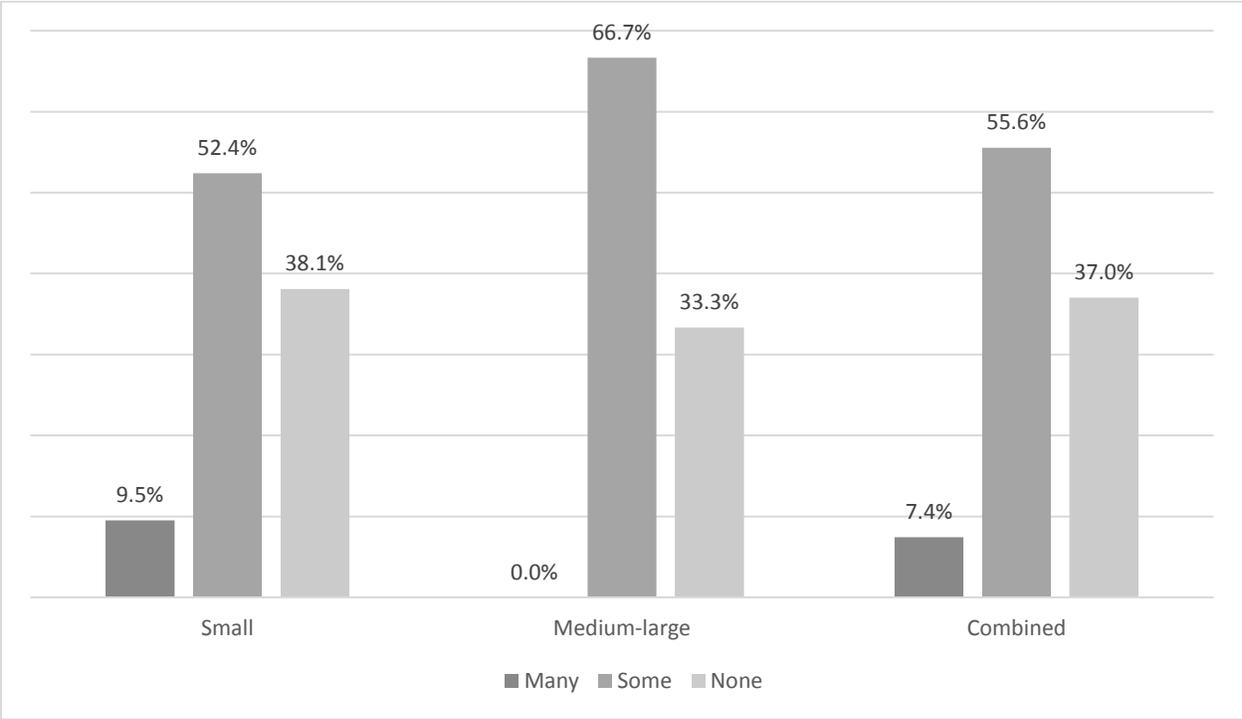
The first aspect looked at whether there is client demand for CAS. As indicated in Section 2.7.2, literature suggests that real-time collaboration in the cloud is one of the distinct advantages that CAS offers, when comparing it to traditional methods of communicating with clients. Could this mean that clients would prefer CAS over other means, in terms of receiving advisory services from their accountants? A second question determined whether managers feel that CAS could attract more clients to their businesses? Thirdly, managers were asked

to rate their opinion on a scale, indicating whether they agree or disagree that having CAS as an offering would increase client numbers for their firm. The following sub-sections deal with each question that was asked pertaining to this objective and were coded 1e, 2e and 3e.

5.3.5.1 Question 1e - Are you aware of clients who have demanded access to cloud accounting software?

Client demand, as perceived by firms in the study, is shown in Figure 5.18.

Figure 5.18 - Demand for CAS by clients as experienced by firms (n=27)



Out of the small firms’ managers, 9.5% indicated that they have had many clients demanding CAS. However, the majority (52.4%) of small firms have only had some clients demanding access, whereas 38.1% had none. By contrast, out of the medium-large firm managers, 0.0% specified “Many”, 66.7% indicated “Some”, and 33.3% “None”.

Correlation testing using Kendall's Tau B shows that a significant relationship does exist between firm size and clients demanding access to CAS, $\tau = .013$, p (two-tailed) $< .05$. Therefore, the two firm groups differ in their experience in terms of clients demanding access to CAS.

5.3.5.2 Question 2e - Do you think that cloud accounting software can help a firm obtain more clients?

The answer options to this question were "Yes", "No", or "Unsure". Table 5.2 summarises these data.

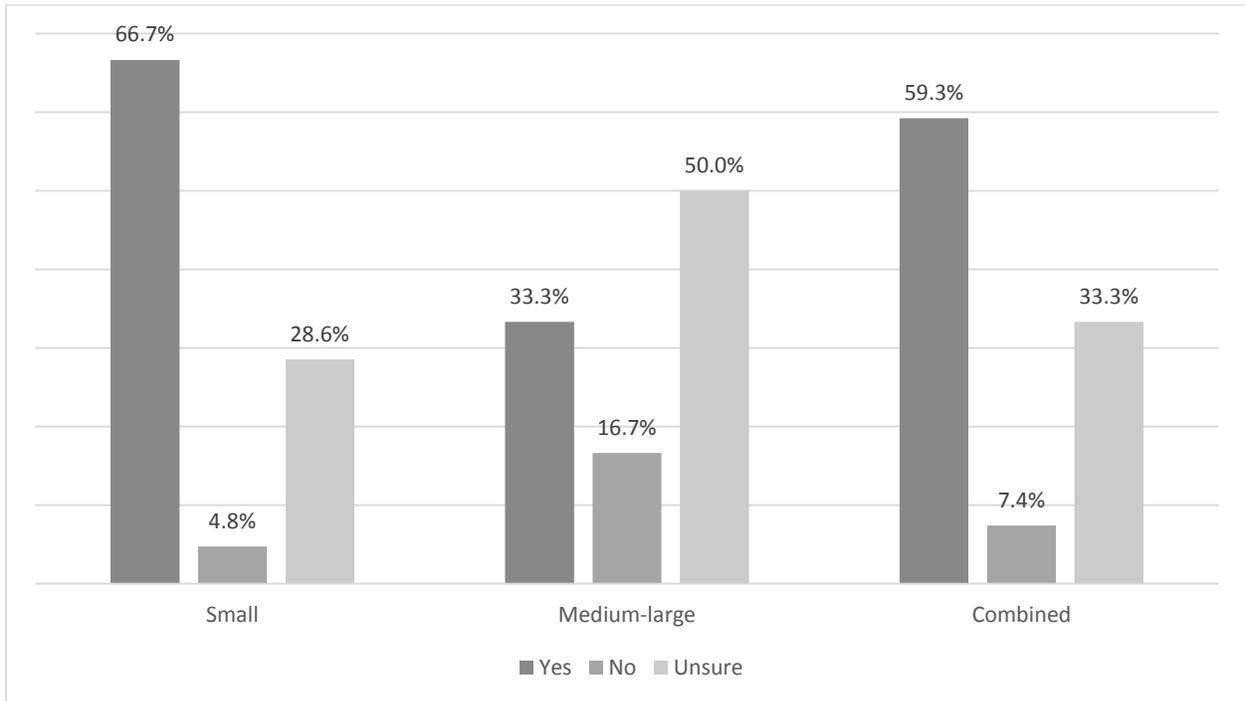
Table 5.2 - Can cloud accounting software help a firm obtain more clients? (n=27)

| Option | Small | Medium-large | Combined |
|--------|-------|--------------|----------|
| Yes | 66.7% | 33.3% | 59.3% |
| No | 4.8% | 16.7% | 7.4% |
| Unsure | 28.6% | 50.0% | 33.3% |
| | 100% | 100% | 100% |

Selections of "Yes" came from 66.7% of small and 33.3% of medium-large firms. When combined, 59.3% of firms responded positively. The second-most frequently scored category (33.3% of overall) was "Unsure", with 28.6% of small, and 50.0% of medium-large firms selecting this option. A small percentage of firms (7.4% overall) signalled that they do not think having CAS can help their firm obtain more clients. Figure 5.19 represents the data in graphical form.

Pearson's chi-square suggested a significant association between firm size and their choice of response to this question, $\chi^2 (2) = 0.300$, $p < 0.01$. Thus, small and medium-large firms were in agreement that CAS could help their firms obtain more clients, to a certain extent.

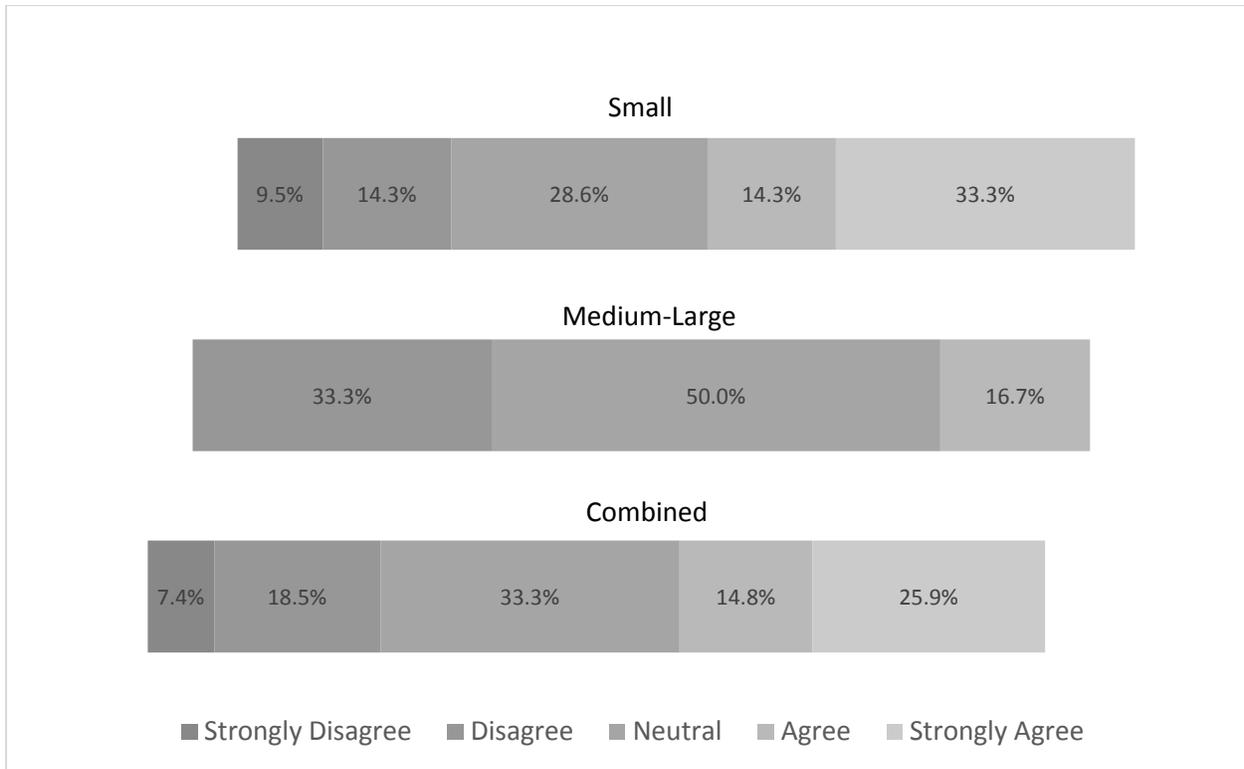
Figure 5.19 - Comparison of whether firms think that CAS can help obtain more clients (n=27)



5.3.5.3 Question 3e - Does having cloud accounting software enable a firm to sell its services better?

The last question for objective 5 was based on a ranking (Likert-type) scale, asking respondents to stipulate, with a score between 1 to 5 (1= Strongly disagree, 5 = Strongly agree), their feeling toward the question of whether CAS can help a firm sell its services better. Figure 5.20 presents the responses.

Figure 5.20 - “Does having cloud accounting software enable a firm to sell its services better?” (n=27)



With small firms, the distribution of responses occurred between all rankings, with the most (33.3%) within the “Strongly Agree” category. The second most frequent score with small firms was “Neutral” (28.6%), and then an equal split of 14.3% each between “Disagree” and “Agree”. Lastly, 9.5% of small firm managers specified that they “Strongly disagree”.

Medium-large firms had a highest scoring category of neutral with 50.0%, followed by disagreement (33.3%), and lastly 16.7% in agreement. There was no strong disagreement or strong agreement recorded.

Results from the Mann-Whitney U test indicated a significant difference between respondents from small (median = 3.00) and medium-large firms (median = 3.00), $U = 43.5$, $Z = -1.175$,

exact $p < 0.05$. This result suggests opposing views between the firm sizes. Small firms look differently at the ability of CAS to help them sell their services, compared to medium-large firms.

Combining overall scores, and ignoring “neutral” selections, the opposing forces of the scale can be shown as general disagreement of 25.9% (7.4% strong disagreement plus 18.5% disagreement) versus 40.7% general agreement (14.8% agreement plus 25.9% strong agreement). In other words, there appears to be more positivity than negativity toward the idea of having CAS as facilitating client acquisition in firms.

5.3.5.4 Summary of main results relating to Objective 5

To summarise this objective: firstly, the majority of managers have experienced a demand of some sort by clients for CAS. This result speaks to the issue of client demand, as discussed in Section 1.2, and could be a key factor in the CAS acquisition process in that it could generate the recognition of a problem (see Table 3.2).

Secondly, most firms (although small more than medium-large) felt that CAS could help them obtain more clients. This is linked to the first question and builds upon the notion of problem recognition, as mentioned above. Firm managers would realise that the problem of not having CAS in place could be holding them back from growing their client base. Another related issue is the marketing aspects, namely the 7Ps. In Section 3.3.3 the 7Ps model is discussed and CAS providers could use the insights provided to adapt their marketing strategies. If managers think that CAS can help their businesses grow, as the results here suggest, opportunities may well exist for improved marketing tactics and strategy. Additionally, these tactics may best be designed to suit the needs of small and medium-large firm sizes, as it would appear that medium-large firms have more of a lack of knowledge in this regard. If CAS providers can show how firms can obtain more clients by using their product, firms might engage more in buying their services. The client’s needs would thus be better satisfied.

Lastly, when posing the question of whether CAS will help a firm sell its services better, a third of firm managers opted for neutrality, while almost half of small firms tended to agree or strongly agree. By contrast, a third of medium-large firms disagreed. Similar to the suggestion in the previous paragraph, the development and use of an effective 7Ps marketing mix could be of benefit to CAS providers. For example, even though the product might be really good, there could be room for improvement in an area such as pricing, where the CAS provider can illustrate, by way of case studies, how a firm might employ the various pricing strategies. A second idea is for firms to adjust their promotional channels to cater for the differences between firm sizes – for example, it might be feasible to imagine that different types of messaging would be applicable to the different types of “buyers” i.e. small firm managers vs medium or large ones.

5.3.6 Research objective 6: How accounting firms will sell cloud accounting software to their customers

This objective moves to the marketing aspects of cloud accounting software, and in particular aimed to uncover firm managers’ perceptions and attitudes toward implementing CAS from a marketing perspective.

The first question probed managers’ responses to the idea of how firms would consider implementing CAS in terms of a pricing strategy. Section 3.3.3 discussed the marketing mix for services and how it relates to CAS and highlighted that vendors (the B2B sellers of CAS) charge a subscription price to the accounting firm, who can then decide to absorb the cost, re-charge it to the customer (at the same price), or put a margin on the cost and thereby generate additional revenue by it (monetise).

The second question addressed whether firms would opt to implement more than one vendor’s product in their firm. This simply means that there is flexibility by the firm in adopting more than one cloud solution in their firm - this could be because of unique features being

missing in one product compared to another or, according to popularity, driven by client demand. The last question related to the branding of the product. Some vendors allow a white label option (the accounting firm can use its own branding, making it appear as if it is its own product (see Section 3.3.3), which could be advantageous from a marketing perspective. The respondents' data are presented in the following paragraphs.

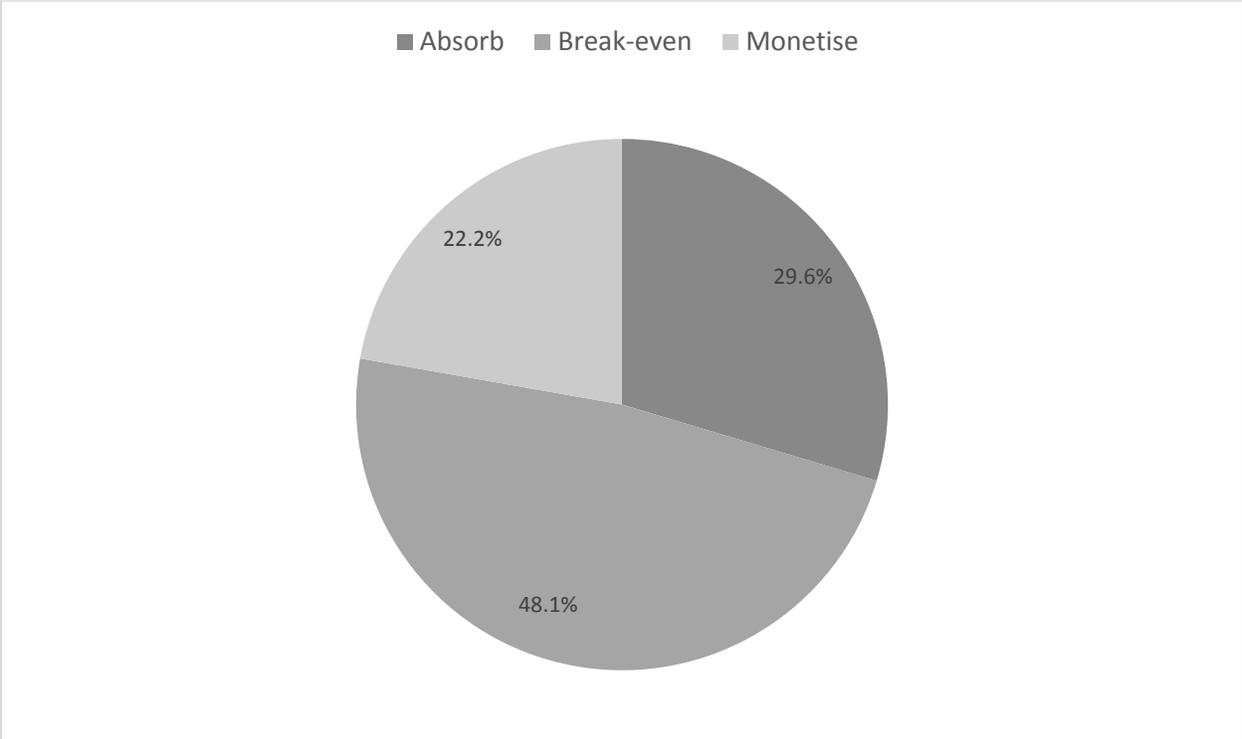
5.3.6.1 Question 1f - In using cloud accounting software provided by a vendor (3rd party), please indicate what you think the best strategy is, to implement it in your firm:

The full options offered in this question were:

- “Absorb the cost and provide additional value to the customer.”
- “Break-even. Recharge the customer the cost price of the software subscription only.”
- “Monetise it. That is, add a margin onto the software cost and make a profit by charging the customer above that cost.”

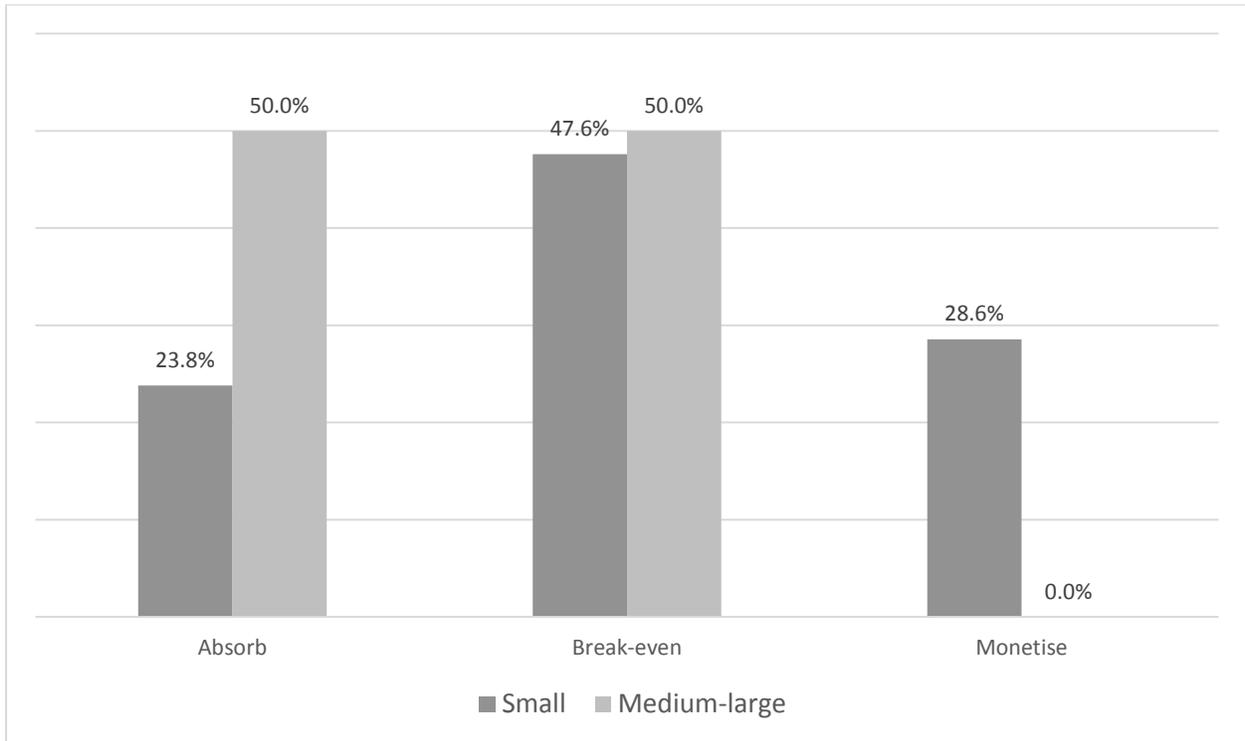
Combining the scores for all firm sizes shows that the majority of managers (48.1%) felt that a break-even approach would be best for their firm (refer to Figure 5.21). That is, should the cloud vendor charge them R400 subscription per client, then that is the amount they will recharge their client. The client ultimately will carry the cost. This was followed by “Absorb the cost and provide additional value to the customer” (29.6%), and lastly 22.2% of respondents selected “Monetise it.”

Figure 5.21 - Combined percentage of responses - the best strategy to use to implement CAS (n=27)



The comparative results between small and medium-large firms are presented in Figure 5.22.

Figure 5.22 - Percentage comparison between small and medium-large firms with respect to pricing strategy (n=27)



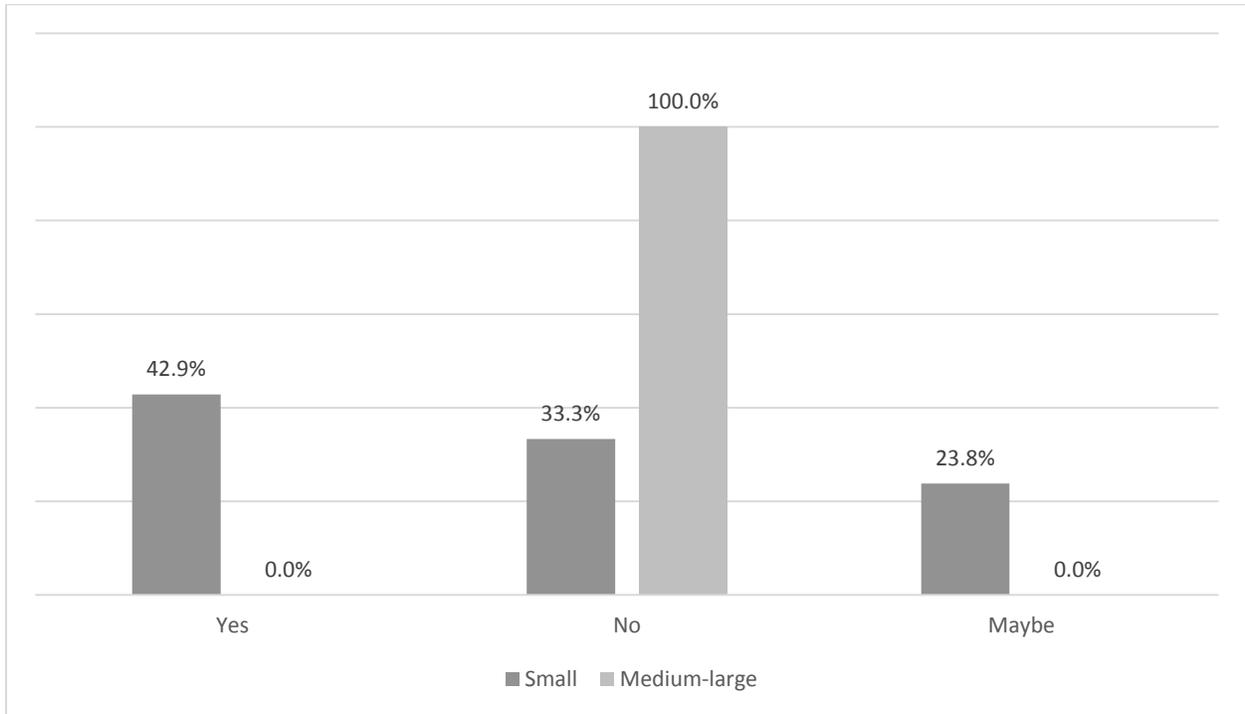
Reviewing the data per pricing strategy, it is clear that monetising CAS was the lowest scoring option amongst both small (28.6%) and medium-large firms (0.0%). Break-even and absorbing the cost received an equal frequency of scores from medium-large firms (50.0% each). Smaller firms opted to break-even (47.6%) more than to absorb the cost (23.8%).

Pearson's chi-square indicated a significant association between firm size and pricing strategy, $\chi^2(2) = 2.800, p < 0.01$. Firms in the two different size categories tended to be in accord with each other's views on the pricing strategy for CAS implementation.

5.3.6.2 Question 2f - Would you consider offering more than one cloud accounting software product as an offering to clients?

Figure 5.23 illustrates the responses received between “Yes”, “No”, and “Maybe”.

Figure 5.23 - Responses to whether firms would offer more than one cloud provider’s product (n=27)



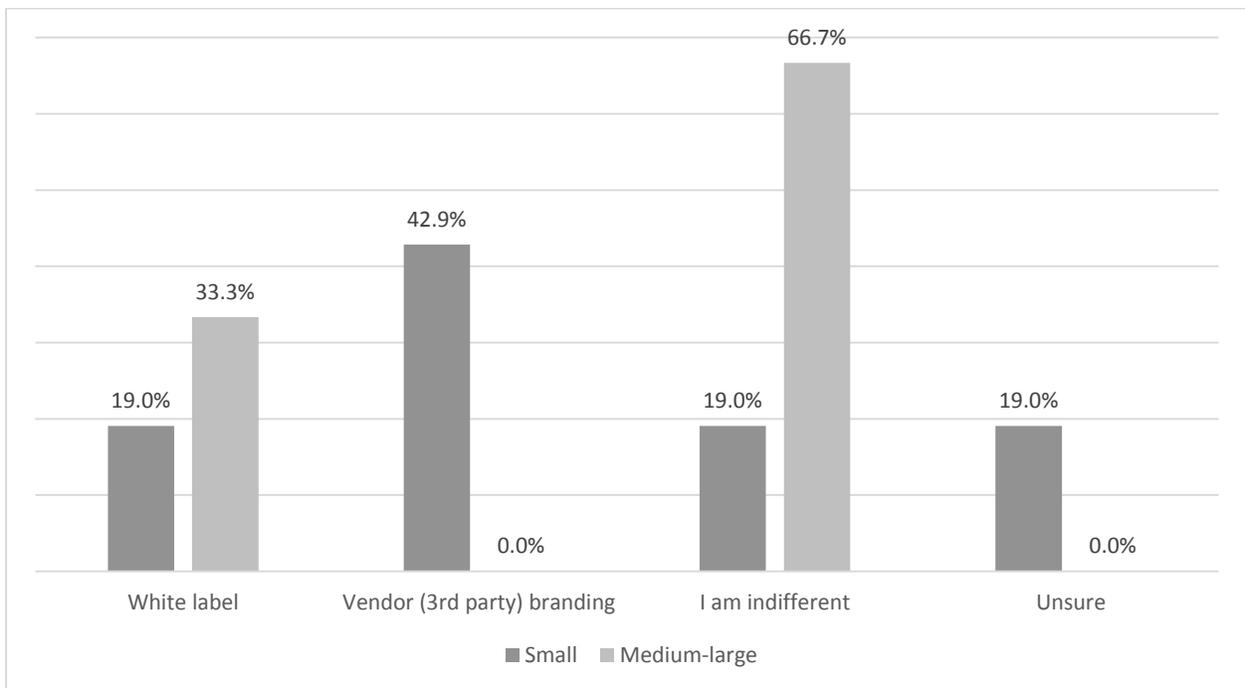
Medium-large firms selected a resounding “No” (100.0%), while small firms had a wider distribution of scores - 42.9% would offer more than one product, 33.3% would not, and 23.8% chose “Maybe”.

Pearson’s chi-square suggested a significant association among firm sizes and whether they would consider offering more than one CAS provider’s product, $\chi^2 (2) = 8.308, p < 0.01$. A measure of consensus was detectable in considering both groups’ views.

5.3.6.3 Question 3f - In providing cloud accounting software via a vendor (3rd party) to your clients, which option would you prefer if it were available?

The final question dealt more directly with the aspect of branding as part of the overall strategy in implementing CAS, or more specifically with the preferences of managers. With some cloud vendor's products, firms do have the option of placing their own brand on the software which means creating the impression to clients that it is the firm's own software. In the mind of the client this may lead to a higher value of the product offering and, by association, to the firm. Therefore, this question aimed to gather information on whether managers preferred the white label, a third party (i.e. vendor logo/branding), or whether they are indifferent or simply unsure. The data gathered are illustrated in graph form in Figure 5.24 below.

Figure 5.24 - Preference by firms regarding branding aspects of cloud accounting software (n=27)



Starting with the “White label” option, 19.0% of small firms and 33.3% of medium-large firms indicated this as their preference. No medium-large firms selected “Vendor” branding, but 42.9% of small firms thought the product should be left under the cloud provider’s branding.

Some firms felt indifferent, as reflected by the 19.0% of small and 66.7% of medium-large firms. Only small firm managers felt unsure about their preference (19.0%).

Pearson's chi-square suggested a significant association between firm size and their preference in terms of CAS branding in their firm, $\chi^2(3) = 7.714$, $p < 0.01$. The two firm groupings tended to exhibit consensus in terms of their choice toward the branding options.

5.3.6.4 Summary of main results relating to Objective 6

This objective set out to find more information about how managers would look at a few elements in terms of marketing aspects of CAS.

It was firstly observed that about half of all managers would prefer to simply re-charge the price of CAS to their clients (see Section 3.3.3.2. for pricing as part of the 7Ps discussion, and Section 3.5.1 on the industrial decision-making process). When comparing small with medium-large firms for this property, medium-large firms opted between the absorption or break-even strategies, while small firms had a wider distribution of responses, including 28.6% choosing to monetise.

Secondly, large firms indicated that they would only employ the use of one CAS solution, as opposed to small firms which had a wider distribution. The majority of managers selected "Yes" they would, a third selected "No" and the rest would consider this option. Although it is not clear from the results what drives this tendency, in Section 2.7.1 Stokdyk (2013) did find that larger firms would be less likely to replace their systems in the near future, than smaller firms. Therefore, it could be posited that smaller firms would be more likely to indicate that not only do they have, or will implement CAS, but they could offer more than just one solution. Offering more than one solution could be based on whether there is client demand in this respect.

The last feature in terms of the marketing aspects dealt with branding, and the main consideration was given to whether firms would opt for a white label, or Vendor branding approach (see Section 3.3.3 for a discussion of this under product, as part of the 7Ps). When it came to medium-large firms, there was a large feeling of indifference (66.7%), while small firms opted by a majority for Vendor branding (42.9%).

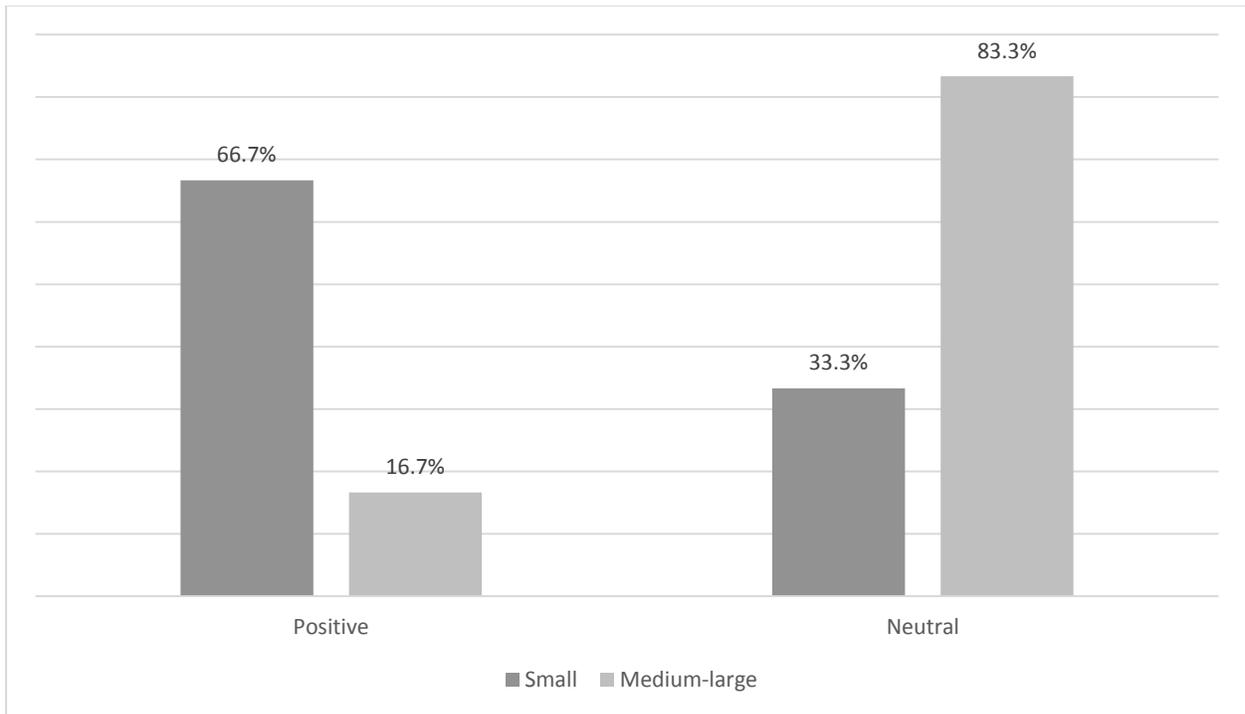
5.3.7 Research objective 7: Opportunities and threats faced by accounting firms in SA, in the light of innovative changes

This objective aimed to ascertain respondents' views pertaining to the areas of opportunities and threats presented by cloud accounting software. The data collected are described in the following paragraphs.

5.3.7.1 Question 1g - Which of these terms would you say describes your feelings best about cloud accounting software?

Firstly, an overall view was sought of respondents' feelings about CAS. Respondents were asked to indicate a term which best represented the way they feel toward CAS, and the answer options were positive, neutral or negative. These data are presented in Figure 5.25.

Figure 5.25 - Respondents' feelings about CAS (n=27)



The first and most positive result is that no respondents indicated a negative feeling. Of those respondents responding positively, 66.7% were small firms, and 16.7% were medium-large. Then moving to the next category, a feeling of neutrality was mostly observed with medium-large firms with 83.3% versus a third (33.3%) of small firms opting for the same. Combining the total scores, 55.6% of respondents felt “Positive” compared to 44.4% with “Neutral”.

Pearson’s chi-square found a significant association between firm size and the firms’ feelings towards CAS, $\chi^2 (1) = 4.752$, $p < 0.01$. Some level of consensus could thus be established between the two groups of firms.

5.3.7.2 Question 2g – Multigrid (scaled) responses in three areas

The second question in this section was constructed as a multiple-choice grid with three statements made and respondents were asked to indicate on a scale what they felt was most

appropriate as a response to the statement made (1 - Strongly disagree to 5 - Strongly Agree). The three central elements in this question can be stated essentially as: whether firms can benefit from employing CAS, whether it is a threat or, lastly, whether it offers opportunities. These statements are summarised in Table 5.3.

Table 5.3 - Statements made in the multiple-choice grid (Question 2g) (n=27)

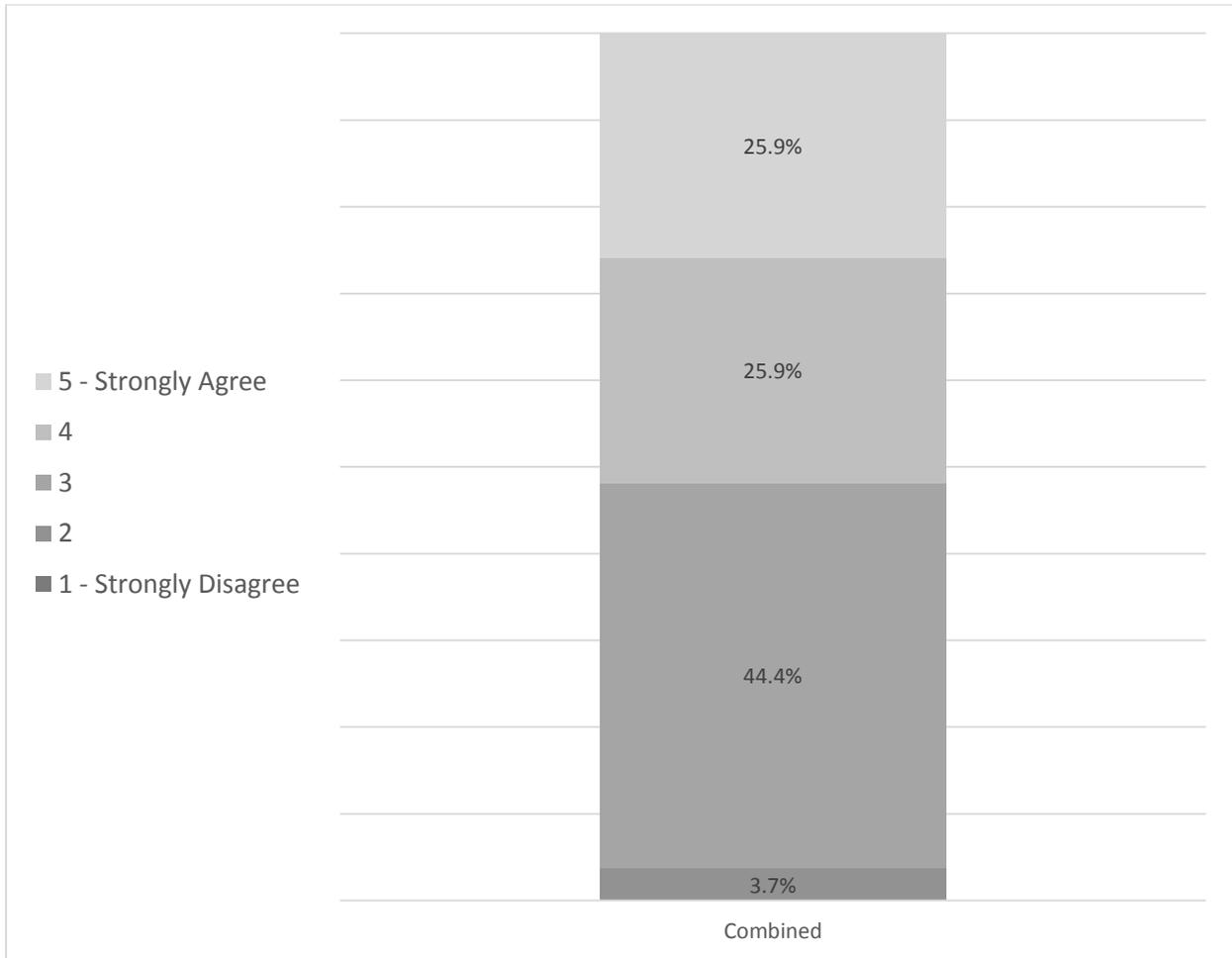
| Statement | Answer options |
|---|--|
| 1. Adopting cloud technology in accounting is beneficial for the accounting firm 2. Cloud technology is a threat to the accounting industry 3. Cloud technology presents new opportunities to the accounting industry | 1 - Strongly disagree 2 3 4 5 - Strongly agree |

These three statements are expanded upon in the following subsections.

5.3.7.2.1 Question 2g: Statement # 1 - Please indicate your opinion regarding cloud accounting software. [Adopting cloud technology in accounting is beneficial for the accounting firm]

The question was predominantly responded to positively, scoring a total of 51.9% when taking into account scale points 4 and 5, for all combined responses. Figure 5.26 depicts these results.

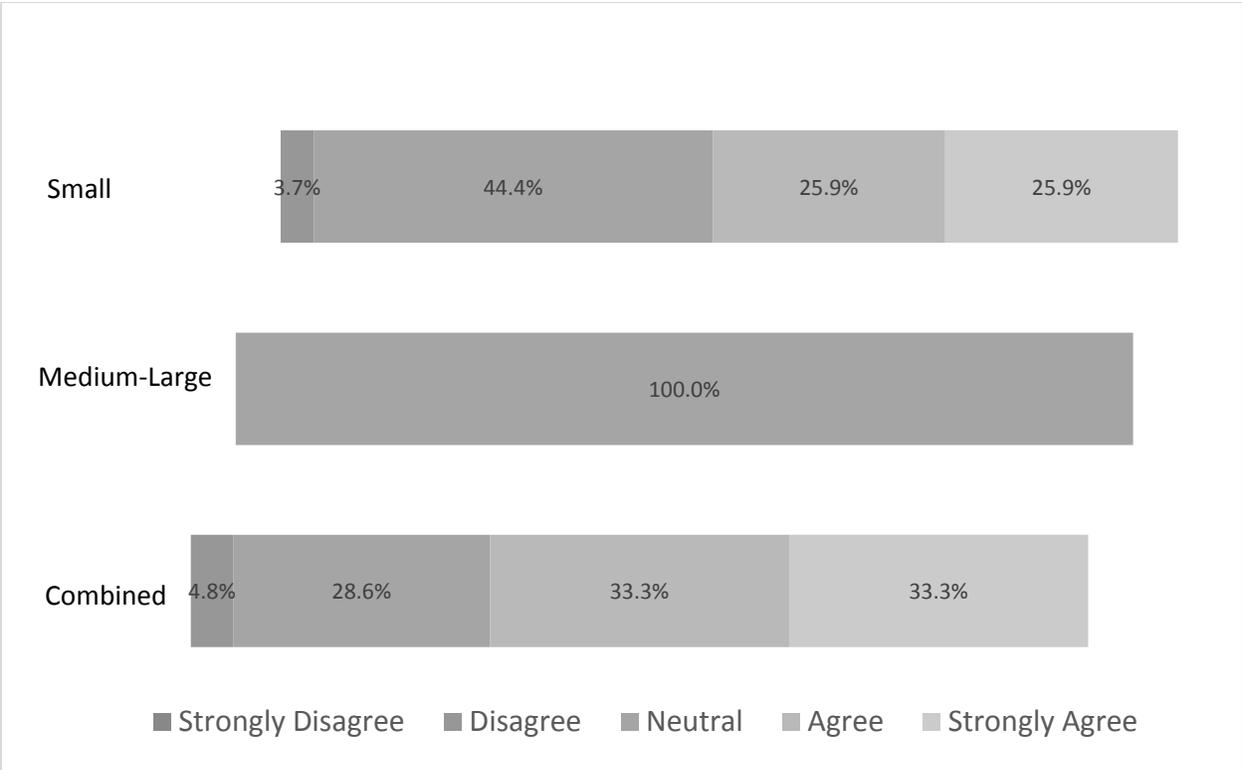
Figure 5.26 - Combined responses for whether cloud technology in accounting is beneficial for the accounting firm (n=27)



Comparing and contrasting the differences between firm sizes (refer to Figure 5.27) show that medium-large firms were totally neutral, while small firms had more variation but showed largely positive responses - a combined total of 66.7% between scale points 4 and 5.

Results from the Mann-Whitney U test indicated a significant difference between respondents from small (median = 4.00) and medium-large firms (median = 3.00), $U = 24.0$, $Z = -2.427$, exact $p < 0.05$. The test statistics reveal a difference between small and medium-large firms, showing that not much consensus exists between the groups regarding the issue of the benefits derived from the use of CAS.

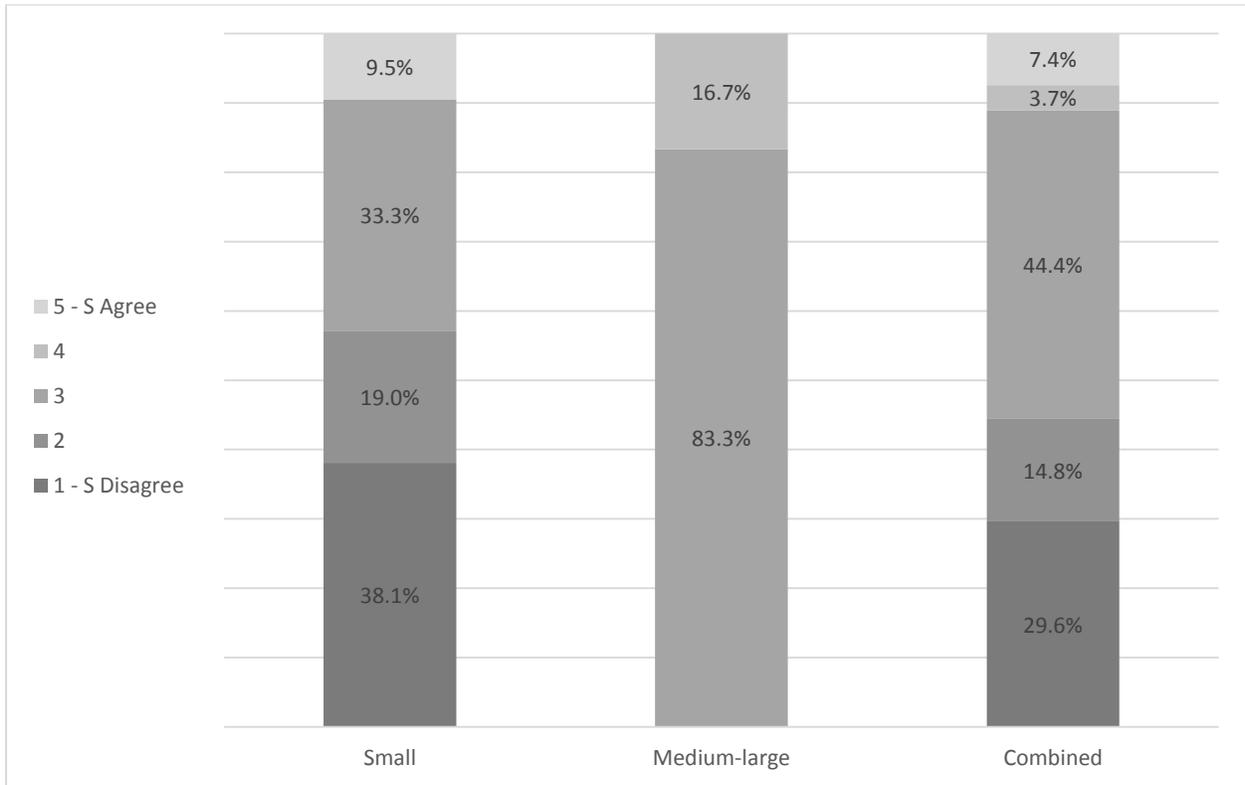
Figure 5.27 - Comparison between firm sizes for whether cloud technology in accounting is beneficial for the accounting firm (n=27)



5.3.7.2.2 Question 2g: Statement # 2 - Please indicate your opinion regarding cloud accounting software. [Cloud technology is a threat to the accounting industry]

When presented with the option of indicating whether firms felt threatened by CAS, the results show, again, a largely positive reaction by firms overall. That is, 24 of the 27 respondents (88.9%) were either neutral, disagreed or strongly disagreed with the statement that CAS is a threat to the industry. Figure 5.28 summarises these results.

Figure 5.28 - Firm size comparison as well as combined responses as to whether cloud technology is a perceived threat to the accounting industry (n=27)



As with the first part of this question, there is more variation in small firms (which can be attributed to the limited sample size, that is, the medium-large sample is even smaller than that of the small sample size which reduces the potential for variation in responses), but nevertheless in combination the majority of small firms took a stance of neutral (33.3%), agreed (19.0%) or strongly agree (38.1%). There were, however, small firm respondents who did feel CAS is a threat (2 respondents, or 9.5%). By comparison, one medium-large firm respondent (16.7%) indicated that cloud technology is a perceived threat, while the other 5 (or 83.5%) stood at neutral.

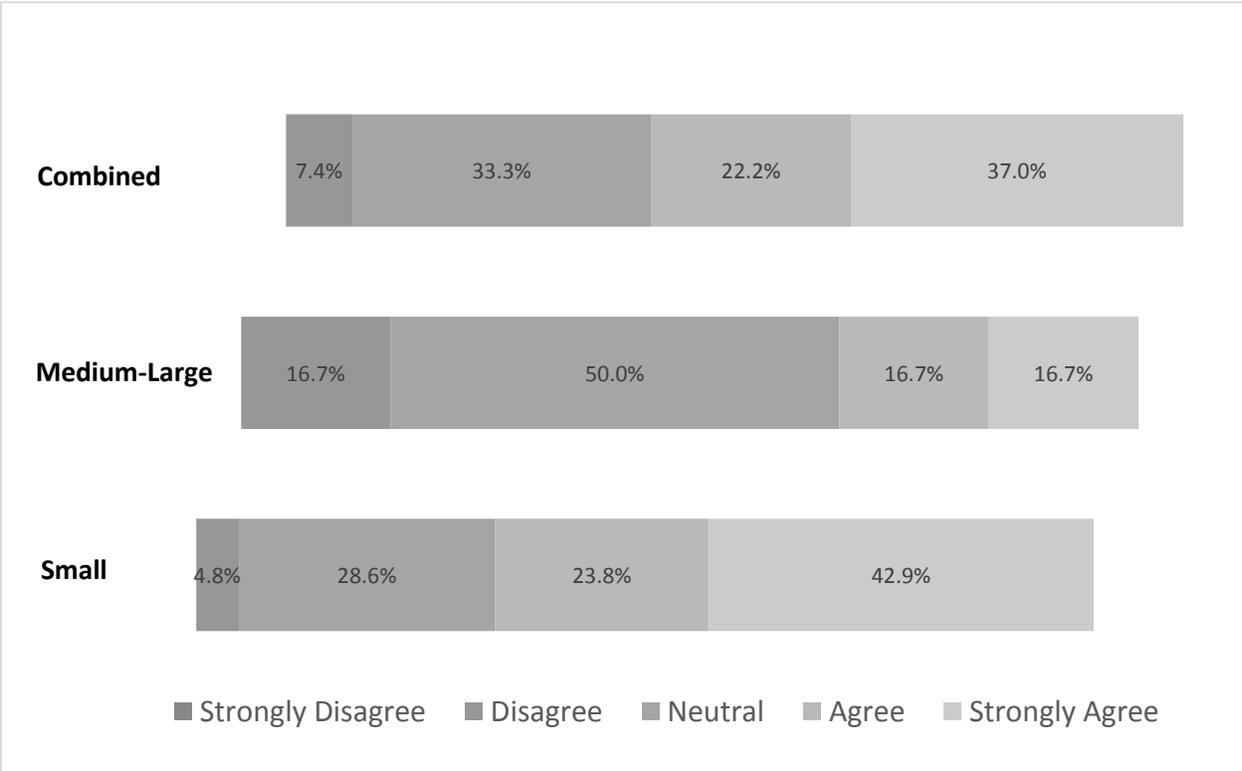
Results from the Mann-Whitney U test indicated a significant difference between respondents from small (median = 3.00) and medium-large firms (median = 2.00), $U = 29.5$, $Z = -2.078$, exact $p < 0.05$. The result suggests that consensus was lacking between the two groups -

that is, the different firm size groups had different views regarding the presentation of a threat by CAS.

5.3.7.2.3 Question 2g: Statement # 3 - Please indicate your opinion regarding cloud accounting software. [Cloud technology presents new opportunities to the accounting industry]

The final part of the question reflected respondents' attitudes as they relate to new opportunities that CAS may offer firms. Figure 5.29 represents the responses in percentage format.

Figure 5.29 - Responses as to whether cloud technology presents new opportunities to the accounting industry (n=27)



From an overall perspective, there is no strong disagreement amongst firms in terms of recognising CAS as a potential opportunity - only a small portion (7.4%) disagreed. The indications are that the majority of firms chose between neutral to strongly agreeable positions

(totalling 92.6%).

Comparing medium-large and small firms, on the other hand, reveals that medium-large firms opted largely (50.0%) for neutrality, with a smaller proportion of respondents selecting either agree or strongly agree (16.7% each). Only 16.7% disagreed, but as stated above, none strongly disagreed.

Small firms agreeing or strongly agreeing (23.8% and 42.9%, respectively) formed a majority of 66.7%. Fewer than half of respondents were neutral, with 28.6% choosing this option. One respondent (4.8%) in a small firm disagreed.

Results from the Mann-Whitney U test indicated a significant difference between respondents from small (median = 4.00) and medium-large firms (median = 3.00), $U = 38.5$, $Z = -1.504$, exact $p < 0.05$. Once again, the test statistic supports the notion that firms in the different size groupings tended to view the posited statement differently – consensus is not apparent with regard to CAS presenting opportunities for firms.

5.3.7.3 Summary of main results relating to Objective 7

There was a relatively clear dichotomy between small and medium-large firms with regard to their general feelings about CAS. While small firms were as a majority mostly positive (66.7%), most medium-large firms were neutral (83.3%). No managers felt negative about CAS.

Most managers did not disagree that CAS is beneficial for the firm, with medium-large firms all remaining neutral and small firms having more varied responses, but the majority indicating agreement that CAS is beneficial for firms.

Do managers feel threatened by CAS? The results showed that, while most respondents did

not feel threatened, there was a small percentage of small and medium-large firm managers who thought it did present a threat. However, a large proportion of respondents exhibited neutrality which may present an opportunity for CAS providers to build upon their own marketing campaigns to educate and inform potential clients about their products – but these may have to be specifically designed around the needs of the various firm types and sizes.

Finally, respondents were probed in terms of their opinion regarding CAS presenting new opportunities. A majority of firms overall agreed that it did, with small firms being more agreeable than medium-large firms. Perhaps one of the main ongoing challenges facing CAS providers is on which market they ought to focus their marketing efforts - that is, do they develop their marketing strategy for the public (a larger economy of scale) or do they target specific firm sizes? There may be an opportunity to exploit larger firms more specifically where new business opportunities may exist.

5.4 Conclusion

This chapter presented the descriptive and inferential findings of the study.

Each study objective was addressed in terms of the test statistics which revealed a significant association between firm size and its choice of response. Essentially, small firms had somewhat different views from those of medium-large firms. These and other findings help inform and address some of the marketing aspects such as B2B, decision-making units and the industrial buying decision-making process (IBDMP).

Where applicable, the results were linked to the theoretical aspects of the study as introduced in Chapters 2 and 3. The next chapter concludes the study and brings together the study components into an overall thesis.

6 CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This is the final chapter in the study, which summarises the findings and provides recommendations in the light of the results. Chapters 1 to 5 included the main content, and will be referred to where relevant.

Chapter 1 introduced cloud computing and its impact on the accounting industry. A problem statement was formulated and the resulting aims of the study were outlined. The research methodology for this study was then set in place.

Chapter 2 delved into the background of the rise of cloud computing in general, and its relevance to the accounting software industry and its impact on firms. Concepts were defined, advantages and disadvantages were considered, as well as legal and security issues that relate to it. Case studies were highlighted to illustrate the potential power of cloud computing and the chapter concluded with its impact on, and relevancy to, accounting firms.

Chapter 3 looked at services marketing and the industrial buying decision-making process, as firm managers effectively become the purchasing decision-making unit(s) when it comes to acquiring software in their firms. Marketing, services marketing, business to business marketing, and the industrial buying decision-making process were defined and described in their relation to cloud accounting software and firms.

Chapter 4 detailed the research methods employed in the study and presented the scientific approach and research strategy. The process of the primary research was explained and set out in a step-by-step fashion, using a marketing research process framework.

Chapter 5 presented the results and offered descriptive and inferential analyses, whilst linking

back to theory in previous chapters.

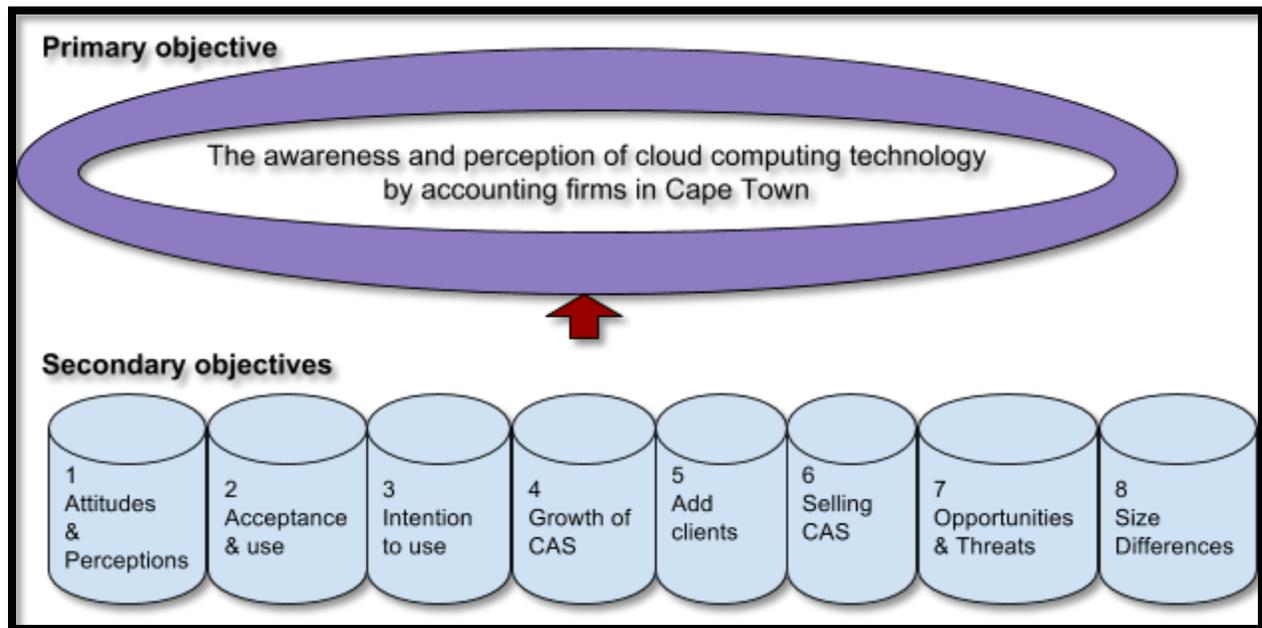
Chapter 6 is the final chapter of the study and considers what conclusions can be drawn from the research as well as putting forward recommendations in the light of the findings (a summary table can be found in Section 6.4). The following section discusses the main findings and conclusions as they relate to the study objectives.

6.2 Addressing the research objectives

The primary objective of this study was to determine the awareness and perception of cloud computing technology by accounting firms in Cape Town.

In order to achieve the overall objective of the study, a set of defined secondary objectives was investigated, which builds into and supports the primary objective. Figure 6.1 summarises the secondary objectives (also given in Chapters 1 and 4) which contributed to achieving the primary objective.

Figure 6.1 - The Secondary and Primary objectives of this study



The following sub-sections will offer conclusions and recommendations that address each of the research objectives.

6.3 Conclusions and recommendations

6.3.1 Attitudes and perceptions toward CAS

This study found that small firm managers had more familiarity with CAS than medium or large firm managers.

It could well be that the view by small firms is to be more inquisitive around which systems are offering them (and their clients) advantages, compared with medium-large firms who compete in a different way (e.g. carry out auditing or consulting work), and for different client types too. This finding relates to the theory by Rader (2012) (see Section 1.5.1) which

suggests that smaller businesses can use cloud as a good way to compete more effectively against larger competitors. This could be because smaller firms tend to have only one owner-manager or at least a leaner decision-making unit (DMU), which would logically translate into a quicker decision and implementation of CAS. On the other hand, a larger firm with more individuals in the decision-making process would tend to take more time. The higher the number of people involved in the process, the more room for various views and considerations that would have to be taken into account.

The study results suggest that no firms had a negative perception or attitude towards the impact being made by CAS, which may mean that CAS providers have good market conditions from which they can capitalise, especially with regard to small firms and their clients.

Lastly, the influences on decision-makers' views toward CAS showed that medium-large firms tended to rely on their professional colleagues (hence, the word-of-mouth aspect of marketing) while smaller firms, in some cases probably run by single owner-managers, would rely on the reputation of the CAS provider. In general, firms would not refer to industry media much, either. These insights seem to also relate to the perception of risk by each firm size category. Presumably, small firms can implement CAS with lower risk, as they have fewer and smaller clients, while larger firms ought to give more consideration to this aspect.

The main findings to highlight are:

- **Small firm managers had more familiarity with CAS than medium or large firm managers.**
- **Small firm managers' attitudes and perceptions seem to be influenced most by the CAS provider's reputation, whereas at medium-large firms it is professional colleagues' influence that is more highly regarded when it comes to CAS.**

Recommendations as a result of the findings:

- *CAS providers may be able to benefit more by focusing their services toward*

- smaller firms instead of large firms.*
- *As there are some differences regarding the information sources being consulted by the various firm sizes, marketers at CAS providers ought to take these differences into account.*

6.3.2 Acceptance and use of CAS

Medium-large firms indicated that they would be more hesitant to accept the use of CAS. Firms in the medium-large category thought that CAS is not generally being accepted (presumably in relation to other medium-large firms, rather than small firms). Both small and large firms, however, would accept CAS with caution, so a shared view applies among all firm sizes in this regard. This consensus seems to concur with what is happening in other areas of the world, as in the United States (see Section 1.5.1).

The main findings for this objective were:

- **Most firms agreed with the notion that CAS is being accepted in the industry, but with a measure of caution across the board (between firm sizes).**
- **Smaller firms tend to show a stronger relation to autonomous decision-making while medium-large firms would be subject to joint decision-making processes. This relates to the first main finding in the previous section referring to the derived benefit for small firms being better than that for medium-large firms.**

Recommendations as a result of the findings:

- *CAS providers should continue to practise marketing efforts that are educational in nature, so as to inform accounting managers of their product potential. Demonstrations and case-studies could be considered as ways of illustrating the product's applicability and ability to solve some of the problems that accountants face with their existing accounting software.*

6.3.3 Intention to use CAS

While most small firms reported that they already have a CAS solution in place currently,

medium-large firms did not, but 16.7% reported that there was an intention to do so within 1-2 years. The reasons for not opting for CAS include: firms having their own in-house systems, the existing software being sufficient or not seeing a reason for change.

The main findings in this objective were:

- **Most small firms in the study already use CAS.**
- **No medium-large firms indicated that they are using CAS.**

Recommendations as a result of the findings:

- *CAS marketers should recognise that there are differences between firm sizes, when it comes to the software acquisition decision-making process. This difference in firm sizes would seem to be associated with either the autonomous or joint decision-making processes, and these frameworks (see Section 3.5.4) should help guide marketers to help educate accounting firm managers, in the process of decision-making to purchase.*
- *Medium-large firms would have longer decision-making processes, but establishing presence within this space and developing relationships with CAS providers could offer opportunities in due course.*

6.3.4 Growth of CAS

Firms exhibited a positive perception toward the growth of CAS. This positivity should facilitate adoption, especially amongst smaller firms. As a result of this sense of positivity toward CAS's growth potential for the foreseeable future, it could be argued that a low level of risk is associated with CAS. As alluded to in Section 3.5.4, the lower the risk, the more easily an autonomous decision-making process can be followed. This results in a faster process of adoption, particularly in small firms.

The extent to which CAS will grow has limitations as far as the expectations of firm managers in Cape Town are concerned. The results show that premise-based systems are not thought of as being entirely replaceable at this point in time. Therefore, it is quite likely that managers view CAS as a new part of life in accounting, but not a total revolution as some might claim.

The main findings were:

- **Growth is perceived as occurring.**
- **Small firms perceive a measure of acceleration of CAS growth.**
- **On-premise systems are not seen as being replaced by CAS.**

Recommendations as a result of the findings:

- *As there is a perceived notion of growth with an accelerated element to it, small firms should certainly explore CAS and its attributes so as to understand those better. In this way, small firms can make informed decisions about how they respond to the growth of CAS and where it can benefit them or cause them harm.*
- *Larger firms cannot ignore the growth of CAS, and should be sensitive to the impact that it could have on them, or opportunities that it may present to them.*

6.3.5 CAS's ability to help firms grow their client base

Juxtaposed to the previous objective, this objective considered the view by firm managers of the ability by CAS to help their firms grow their client base. The better firms are able to grow because of the value that CAS offers, the more attractive CAS solutions would be to them.

Demand is reflected in the results of this study - that is, clients have enquired at firms about the availability of CAS and are thereby prompting a response from the firm. Over half of all firms in the study experienced "some" demand. The key finding is that client demand is a driver in the adoption of CAS. It would seem likely to provoke a response even from the slow adopters (see Section 3.5.2) among firms. It would seem that the gradual wave of adoption will have an impact at some point, and it is likely that very few firms, if any, will be unaffected in the course of the next few years. Refer to Sections 1.5.1 and 2.2.3 where cloud computing's exponential growth is discussed, along with future expectations of continued growth.

Small firms, more than medium-large ones, felt that CAS could help them gain more clients. This links up with the theory (see Section 1.5.1) on smaller businesses benefiting from the advantages that cloud presents, and aids them to compete more effectively with larger firms

(Rader, 2012). Using this agility to their advantage, small firms can more quickly utilise CAS as a tool to grow their client base. It is reasonable to imagine that medium-large firms lack the agility of their smaller counterparts. For one thing, as has been mentioned, the DMU in a larger firm would be more likely to be joint and therefore more consideration and time would be taken in order to make decisions.

It is also possible that a different level of knowledge and perception of the growth-enabling qualities of CAS could exist between smaller versus larger firms. For example, the process of assessing the desired attributes and features between CAS alternatives (the consideration set, see Section 3.5.1) would most likely differ between small and medium-large firms.

The counter-argument could simply be that medium-large firms do not compete in the same market segment that small firms do, and therefore do not (and will not) view CAS from the same perspective, so comparison is not so straightforward. The profitability model between small and medium-large firms should also be taken into account, and can cause differences between the firm sizes. Larger and more well-known firms, who typically charge higher fees, have a different client base from small firms, and audit firms even more so - working with government departments and large corporate businesses versus the small businesses that small firms tend to serve. It is likely that marketers at CAS recognise this, and therefore focus more on the smaller firms in terms of their offering. Xero is one such offering, designed and targeted at the small to medium-sized market.

In selling CAS to their clients, small firms ought to be the first movers with the aim of benefiting from utilising CAS for this purpose. Their efforts are aided by the theory that autonomous decision-making is prevalent and therefore can enable quicker implementation than can be done at medium-large firms. This advantage can be summarised by saying that small firms are more adaptable and therefore able to respond accordingly, meeting demand from clients more quickly and more effectively than larger firms can.

In summary, the main findings were:

- **Client demand is being experienced by small and larger firms alike.**
- **Small firms, with the aid of autonomous decision-making, are able to meet demand more effectively.**

Recommendations as a result of the findings:

- *For CAS providers, the room for improvement in their marketing tactics and strategy would most probably lie in the development and acceleration of their product and the 7Ps marketing mix.*
- *For example, as part of the 7P marketing mix, price strategy could involve offering a discount for large quantity implementation of CAS. This strategy could make a more attractive offering to larger firms, offering economies of scale.*

6.3.6 Selling CAS to clients

Practical implementation of CAS by firms involves decisions around three areas: pricing, whether there is the need for more than one CAS product in their firm, and branding. See Section 3.3.3 where there is a discussion of the services marketing mix which includes the pricing and product (which includes branding) element.

Price entails decisions in terms of re-selling the product to clients. The strategy of monetising is a good way for CAS providers to make their product more attractive as it presents itself as a new revenue stream for firms. With smaller firms generating smaller revenues than medium-large ones, it would appear that the option to monetise would be attractive. The results in this study did in fact find that about a third of small firm respondents opted for this choice, while no medium-large firms did. Larger firms, with larger resources than small firms, would not be as reliant or perhaps even interested in what would be a relatively small additional revenue stream for them and therefore opted for break-even or absorption (see the pricing discussion in Section 3.3.3). Table 6.1 summarises the pricing options with illustrative amounts.

Table 6.1 - Pricing options for CAS

| | Retail price p/m | Client cost p/m | Profit/ (Loss) p/m | Opted for by |
|-------------|------------------|-----------------|--------------------|------------------------|
| Absorb cost | R500 | Zero | (R500) | Larger firms |
| Re-charge | R500 | R500 | R0 | Mixture of S/M/L firms |
| Monetise | R500 | R1000 | R500 | Smaller firms |

Firms would be more likely to benefit from strategic partnerships with CAS providers. These key relationships offer an increased opportunity to exploit revenue models and to enhance a firm's ability to implement CAS solutions.

Key findings:

- **Small firms opted for the monetise option.**
- **Medium-large firms opted for break-even or absorption of the cost.**

Recommendations:

- *CAS providers should work with accounting firms to establish the right pricing model to suit the various firm sizes - for example, small firms would typically be more likely to monetise their product, while larger firms would be more likely to absorb the cost.*
- *Accounting firms need to be educated with working examples of how they can apply a pricing strategy in their firms.*
- *Firms should consider developing strategic partnerships with CAS providers, in particular smaller firms.*

Smaller firms indicated that they would opt for employing the use and distribution of more than one CAS provider's product. As different CAS providers might target somewhat different types of businesses (although at this point it would be largely small- to medium-sized businesses), there may be a demand by certain types of businesses for certain types of CAS products. One example is VAT registered versus non-VAT registered businesses. Some small entities are not VAT registered owing to a lower turnover, as in South Africa the VAT registration threshold is R1 million in turnover. Accounting for VAT, quarterly submissions and

reconciliations therefore require somewhat more advanced software than a non-VAT registered business. Another example of specific software requirements is one of a medium-sized business with inventories or various branches in different cities. In this case, there is more data and complexity involved in this type of business and it would require more than “basic” bookkeeping. Thus, various firms may have clients with businesses with various requirements when it comes to accounting software capability. A small accounting firm may have VAT registered and non-VAT registered clients, as well as medium-sized businesses, with the requirement of tracking inventories or with branches. The sophistication becomes more complicated and therefore having more CAS solutions as options becomes more valuable. A firm could then subscribe to one CAS product capable of dealing with VAT and non-VAT registered business, but then a second product suitable for handling inventory tracking and branch-level financial reporting. No two cloud products have exactly the same features and therefore some are more adequate, depending on requirements. The main point here is that small firms can more quickly decide (a single owner-manager, for example) to employ the use of two different CAS products than it would be in the case of large firms with multiple individuals in a decision-making unit (DMU).

Key findings:

- **Small firms would consider utilising more than one CAS solution.**
- **Small firms can more quickly decide to implement more than one CAS solution.**

Recommendations:

- *With a few options already in the market (see Section 2.7) and some more vendors offering their products in due course, accounting firms will have more choice, but it is important to understand CAS product capability and achieve the right “fit” for their clients’ requirements.*

From an accounting firm perspective, the main consideration around branding could be linked to the weight its own brand carries. Larger firms tend to carry more well-known brands and would more likely be attracted to a white label option to keep their brand messaging consistent, while smaller firms (being more adaptable) would not consider the product brand

as an issue. Small firms may also opt to associate themselves with a strong CAS brand.

With medium-large firms, the opportunity for CAS providers may lie in presenting a revenue model that encompasses economies of scale, which would certainly be more attractive to larger firms than smaller batches of clients using CAS. Large firms would be unlikely to place their focus on dribs and drabs of revenue, as opposed to the lucrativeness of an economy of scale. For example, signing up thousands of clients to a CAS service under a monetising business model would help generate more perpetual revenue and, over time, could accrue substantial revenue.

Key findings:

- **Larger firms with more resources and established brands do not tend to view CAS as a way of increasing their revenue yet.**
- **Smaller firms opted for vendor branding, while medium-large firms prefer a white label option.**

Recommendations:

- *Large firms would be more attracted to economies of scale, therefore the more CAS providers can offer a solution or business model in line with this, the more likely the larger firms would be to consider subscribing to it.*
- *CAS providers may have to offer bespoke deals with larger firms, in order to gain their business.*

6.3.7 Opportunities and threats presented by CAS

Although no firms indicated a negative perception toward CAS at the time of the survey, it cannot be certain that firms see it as an opportunity. As opposed to larger firms, smaller firms seem more positive, and therefore keener to adopt CAS. This is most likely facilitated by more autonomous decision-making processes.

Compared to the study by Attolini and Thompson (2014), mentioned in Section 1.5.1, Cape

Town accounting firm managers show a somewhat less opportunistic view of the impact of CAS, being a new and rapidly-advancing technology.

In terms of the psychological world of the DMU (see Section 3.5.3), accounting firms could be expected to have individuals of a similar background. That is, many would be chartered accountants, and most would certainly have studied accounting and/or taxation at degree level. So some similarity in the background of the individuals involved can be established by way of deductive reasoning. This point then serves as a basis to support the idea of an accelerated adoption among small firms. This is as a result of their autonomous attributes and a faster satisfaction of the implicit and explicit expectations (see Section 3.5.3). The point is that, because of a similar background of the individuals in firms (being accountants), making decisions about acquiring CAS is streamlined, as the language used to describe functionality and requirements is generally understood by everyone involved. However, smaller firms, with perhaps only one decision-maker in the DMU, can quickly evaluate and move through to a final decision. However, because of the different strategic goals and target markets that small and medium-large firms operate with and in, firm managers would be influenced accordingly. That is, small firms consider adopting and implementing CAS as a growth strategy, with medium-large firms considering other strategic movements as their priority, such as emerging market opportunities in other African countries. It would make sense that the focus from a strategic level would be different.

The main findings were as follows:

- **Firms do not view CAS as an outright opportunity yet (a lot of "neutrality").**
- **Few firms see CAS as a threat.**

Recommendations:

- *Small firm managers who see CAS as a threat (a small percentage in this study) would do well to speak to other small firm managers to investigate the opportunities that CAS may be offering, rather than remain cautious and possibly be adversely affected by the changes it might bring into the accounting industry.*
- *Although most do already, CAS providers should develop partner programs with*

accounting firms, and cater specifically for the various firm sizes. Partner programs offer technical support, training and marketing assistance in some instances.

6.3.8 Differences between firm sizes

In the analysis process, statistical testing was carried out to test for differences between the two firm groupings (small versus medium-large). In certain instances significant differences were detected, according to the Mann Whitney U test (see Section 4.2.10.2 for a description). In essence, disagreement was apparent in some of the findings. These differences are summarised in the following paragraphs.

Firstly, smaller firms had a higher level of familiarity with CAS than medium-large firms did (76.2% of small firm respondents felt “Moderately” to “Extremely” familiar). In line with the findings described above, smaller firms seem to have more to gain and can make decisions more quickly around new technologies – these factors would seem to support a higher level of familiarity for small firms. See Section 5.3.1.1.

Secondly, small firms tended to be neutral or agreed that CAS is being generally accepted in the industry, while large firms tended to disagree. See Section 5.3.2.1. “Generally accepted” is a fairly broad term, and should be considered when interpreting the results. Larger firms who compete with other large firms, and who would typically deal with larger clients (larger organisations such as governments or multinationals), have a different view and exposure to CAS, hence their view of what is “general acceptance” is probably different from that of smaller firms.

Thirdly, small firms displayed a higher likelihood of using CAS (intention) than medium-large firms. See Section 5.3.3.2. This point seems related to the previous one in that larger firms who operate in a somewhat different sphere from smaller firms would tend to show less likelihood of exhibiting an intention to use CAS in their firms. Alongside this, joint decision-making would more than likely extend the process of deciding on using CAS. Smaller firms,

which would seem to be more likely to have an autonomous decision-making process, would tend to be more acquiescent in their intention to use CAS.

Fourthly, with regard to the view on the acceleration of the growth of CAS, medium-large firms were mostly neutral (83.3%) while small firms tended to be more agreeable that it is happening. See Section 5.3.4.2.

Fifthly, in terms of the enabling factor of CAS to help firms sell their services better, small firms were in agreement (33.5% strong agreement) while medium-large firms tended to disagree (33.3% disagree). See Section 5.3.5.3.

Lastly, firms also differed in terms of their views on the following areas (see Section 5.3.7.2):

1. Adopting cloud technology in accounting is beneficial for the accounting firm.
2. Cloud technology is a threat to the accounting industry.
3. Cloud technology presents new opportunities to the accounting industry.

These points are elaborated on below.

Addressing point 1, small firms held a stronger view that CAS adoption is beneficial for firms than medium-large firms. Point 2 saw small firms with a wider distribution of views than medium-large firms that in the majority indicated neutrality with the notion of CAS presenting a threat to the industry. Larger firms, again perhaps as a result of the different sphere they operate in, do not perceive either threat or opportunity in CAS. Point 3 suggested opposing views as well, with medium-large firms opting for neutrality while small firms showed an agreeable stance.

In summary, the differences between small and medium-large firms were as follows:

- 1. Small firms had a higher familiarity with CAS than medium-large firms (Question 1a).**
- 2. Small firms indicated a general acceptance of CAS, while medium-large firms did not agree (Question 1b).**

3. **Small firms were likely to use CAS, while medium-large firms were not (Question 2c).**
4. **Small firms exhibited a sense of agreement towards the notion of CAS adoption accelerating, while medium-large firms did not (Question 2d).**
5. **Small firms displayed positivity toward CAS being an enabling factor in selling their services better, while medium-large firms did not (Questions 3e).**
6. **Small firms agreed that CAS adoption is beneficial for firms, while medium-large firms did not (Question 2g).**
7. **Small firms did not see CAS as a threat, while medium-large firms were indifferent (Question 2g).**
8. **Small firms agreed that CAS presents new opportunities, while medium-large firms felt neutral (Question 2g).**

Recommendations:

- *Suffice it to say that CAS providers ought to recognise firm size differences as a starting point when considering their marketing strategy and tactics.*
- *It is, however, not enough just to recognise the preferences of small versus medium-large firms, but important to understand the various factors involved and how those may differ amongst different firm sizes too.*

6.3.9 The awareness and perception of cloud computing technology by accounting firms in Cape Town

The secondary objectives, as per Sections 6.3.1 through to 6.3.8, speak to the primary objective in a number of ways and are discussed in the following paragraphs.

Firstly, CAS is generally being accepted in firms while client demand has been experienced too, which adds pressure to firms to find new ways of serving their clients. Firms show an awareness of CAS's impact from a client-demand perspective.

Secondly, CAS's growth is perceived as significant and, whilst it is not yet fully seen as a wholesale replacement of existing desktop and server-based software, it is being recognised as a potential value-adding tool for firms and their clients. Firm marketers have to consider their marketing mix 7Ps in the light of the influence of CAS.

Thirdly, CAS can help firms add more clients, which means growth in revenue – the purpose of most businesses and certainly for accounting firms too. This is probably the strongest value proposition of CAS.

In summary, as shown in this study, cloud technology affects the accounting industry. Cloud technology is driving significant change and more is to be expected of it over the coming years. It is anticipated that the accounting industry has much more to look forward to, including the potential for greater disruption.

The following section considers the research objectives and findings in summary form.

6.4 Synchronisation of research objectives with study findings

In Table 6.2 below, all the research objectives of this study as stated in Chapter 1 are shown in the first column and the related main findings are shown in the second column, with recommendations in the third column.

Table 6.2 - Summary of findings and conclusions

| <u>Objectives</u> | <u>Main Findings</u> | <u>Recommendations</u> |
|--|--|---|
| <p>1. To determine the attitude and perception toward cloud accounting software of managers of accounting firms.</p> | <ul style="list-style-type: none"> • Small firm managers had more familiarity with CAS than medium or large firm managers. • Small firm managers' attitudes and perceptions seem to be influenced most by the CAS provider's reputation, whereas at medium-large firms it is professional colleagues' influence that is more highly regarded when it comes to CAS. | <ul style="list-style-type: none"> • <i>CAS providers may be able to benefit more from focusing their services on smaller firms rather than large firms.</i> • <i>As there are some differences regarding the information sources being consulted by the various firm sizes, marketers at CAS providers ought to take these differences into account.</i> |
| <p>2. To determine the acceptance and use of cloud accounting software by accounting firms.</p> | <ul style="list-style-type: none"> • Most firms agreed with the notion that CAS is being accepted in the industry, but with a measure of caution across the board (between firm sizes). • Smaller firms tend to show a stronger relation to autonomous decision-making, while medium-large firms would be subject to joint decision-making processes. | <ul style="list-style-type: none"> • <i>CAS providers should continue to practise marketing efforts that are educational in nature, so as to inform accounting managers of their product potential. Demonstrations and case-studies could be considered as ways of illustrating the product's applicability and ability to solve some of the problems that accountants face with their existing accounting software.</i> |

| | | |
|--|--|---|
| <p>3. To determine the intention of accounting firms to use cloud accounting software.</p> | <ul style="list-style-type: none"> • Most small firms in the study already use CAS. • No medium-large firms indicated that they are using CAS. | <ul style="list-style-type: none"> • <i>CAS marketers should recognise that there are differences between firm sizes, when it comes to the software acquisition decision-making process. This difference in firm sizes would seem to be associated with either the autonomous or joint decision-making processes, and these frameworks (see Section 3.5.4) should help guide marketers to educate accounting firm managers in the process of decision-making to purchase.</i> • <i>Medium-large firms would have longer decision-making processes, but establishing presence within this space and developing relationships with CAS providers could offer opportunities in due course.</i> |
| <p>4. How accounting firms foresee the growth of cloud accounting software in SA.</p> | <ul style="list-style-type: none"> • Growth is perceived as happening. • Small firms perceive a measure of acceleration in CAS growth. • On-premise systems are not seen as being replaced by CAS. | <ul style="list-style-type: none"> • <i>As there is a perceived notion of growth with an accelerated element to it, small firms should certainly explore CAS and its attributes so as to understand those better. In this way, small firms can make informed decisions about how they respond to the growth of CAS and where it can benefit or hurt them.</i> • <i>Larger firms cannot ignore the growth of CAS, and should be sensitive to the impact that it could have on them, or opportunities that it may present them.</i> |

| | | |
|--|---|--|
| <p>5. Whether cloud accounting software will add to the customer base of accounting firms.</p> | <ul style="list-style-type: none"> • Client demand is being experienced by small and larger firms alike. • Small firms, with the aid of autonomous decision-making, are able to meet demand more effectively. | <ul style="list-style-type: none"> • <i>For CAS providers, the room for improvement in their marketing tactics and strategy would most probably lie in the development and acceleration of their product and the 7Ps marketing mix.</i> • <i>For example, as part of the 7Ps marketing mix, price strategy could involve offering a discount for large quantity implementation of CAS. This strategy could make a more attractive offering to larger firms, offering economies of scale.</i> |
| <p>6. How accounting firms will sell cloud accounting software to their customers.</p> | <ul style="list-style-type: none"> • Small firms opted for the monetise option. • Medium-large firms opted for break-even or absorption of the cost. • Small firms would consider utilising more than one CAS solution. | <ul style="list-style-type: none"> • <i>CAS providers should work with accounting firms to establish the right pricing model to suit the various firm sizes. For example, small firms would typically be more likely to monetise their product, while larger firms would be more likely to absorb the cost.</i> • <i>Accounting firms need to be educated with working examples of how they can apply a pricing strategy in their firms.</i> • <i>Firms should consider developing strategic partnerships with CAS providers, in particular smaller firms.</i> • <i>With a few options already on the market (see Section 2.7) and some more vendors</i> |

| | | |
|--|--|--|
| | <ul style="list-style-type: none"> • Small firms can more quickly decide to implement more than one CAS solution. • Larger firms with more resources and established brands do not tend to view CAS as a way of increasing their revenue. • Smaller firms opted for vendor branding, while medium-large firms prefer a white label option. | <p><i>offering their products in due course, accounting firms will have more choice. However, it is important to understand CAS product capability and achieve the right “fit” for their clients’ requirements.</i></p> <ul style="list-style-type: none"> • <i>Large firms would be more attracted to economies of scale, therefore the more CAS providers can offer a solution or business model in line with this, then the more likely the larger firms would be to consider subscribing to it.</i> • <i>CAS providers might have to offer bespoke deals with larger firms, in order to gain their business.</i> |
| <p>7. Opportunities and threats faced by accounting firms in SA, in the light of innovative changes.</p> | <ul style="list-style-type: none"> • Firms do not view CAS as an outright opportunity yet (a lot of "neutrality"). • Few firms see CAS as a threat. | <ul style="list-style-type: none"> • <i>Small firm managers who see CAS as a threat (a small percentage in this study) would do well to speak to other small firm managers to investigate the opportunities that CAS may be offering, rather than remain cautious and possibly be adversely affected by the changes it might bring into the accounting industry.</i> • <i>Although most do already, CAS providers should develop partner programs with accounting firms, and cater specifically for the various firm sizes. Partner programs</i> |

| | | |
|--|--|--|
| <p>8. What, if any, differences are there between different firm sizes, when it comes to attitudes and perceptions toward cloud accounting software.</p> | <ol style="list-style-type: none"> 1. Small firms held a higher familiarity of CAS than medium-large firms (Question 1a). 2. Small firms indicated a general acceptance of CAS, while medium-large firms did not agree (Question 1b). 3. Small firms were likely to use CAS, while medium-large firms were not (Question 2c). 4. Small firms exhibited a sense of agreement towards the notion of CAS adoption accelerating, while medium-large firms did not (Question 2d). 5. Small firms displayed positivity toward CAS being an enabling factor in selling their services better, while medium-large firms did not (Questions 3e). 6. Small firms agreed that CAS adoption is beneficial for firms, while medium-large firms did not (Question 2g). | <p><i>offer technical support, training and marketing assistance in some instances.</i></p> <ul style="list-style-type: none"> • <i>Suffice it to say that CAS providers ought to recognise firm size differences, as a starting point when considering their marketing strategy and tactics.</i> • <i>It is, however, not enough just to recognise the preferences of small versus medium-large firms, but important to understand the various factors involved and then how those may differ amongst different firm sizes too.</i> |
|--|--|--|

| | | |
|--|--|--|
| | <p>7. Small firms did not see CAS as a threat, while medium-large firms were indifferent (Question 2g).</p> <p>8. Small firms agreed that CAS presents new opportunities, while medium-large firms felt neutral (Question 2g).</p> | |
|--|--|--|

In the following section the limitations of the study are explained.

6.5 Limitations of the study

This section addresses important limitations that need to be considered in reviewing this thesis. These are listed as follows:

1. The study sample was limited to 27 participants. In the process of initiating the primary research phase, the POPI Act prohibited the researcher from accessing a key list of potential participants. Permission was sought from the SAICA institution, but declined under the POPI Act. The sampling population was therefore greatly reduced (see Section 1.6.3).
2. Following on from the above point, there are limits to which inferences can be made from the findings in the study, to the larger population of accounting firms. This has been recognised and mentioned previously. At the same time, the researcher's view is that this study offers a good starting-point for further research into CAS and accounting firms, and offers valuable frameworks which can be built upon and/or expanded and refined.
3. Only firms in the Cape Town metropolitan area were participants in the study, so a limited geographical representation is presented and the findings cannot thus be generalised and applied to all accounting firms in South Africa.
4. Cloud technology is a rapidly-evolving area and over time some aspects of the study could potentially fall short of reflecting the up-to-date perspectives and views in existence in the industry, and also in accounting firms (by owners, partners and managers).

6.6 Recommendations for future research

This study has contributed towards a better understanding of the awareness and perceptions of managers in Cape Town toward CAS. Whilst these have been established, further opportunities are deemed to be available for future research. There are aspects of the research carried out in this study which can be built or expanded upon, and/or further delved into. Further suggested opportunities and research ideas are elaborated upon below.

- *A question that arose in the course of the analysis of the study was the influence of the age of the respondent. Would an older, more technologically-impaired person be more likely to view CAS as a threat? This concept was not explored in this study, but it is viewed as an opportunity for further research.*
- *Another recommendation is to explore the distribution of accounting managers in Cape Town and to determine the attitudes and perceptions of firms in the different areas.*
- *This study could also be duplicated in other metropolitan areas of South Africa, in order to attempt a comparison of the attitudes and perceptions of accounting firms across cities.*
- *Another recommendation would be to explore the barriers to adoption in accounting firms or other industries in South Africa.*
- *A related area of research is that of the commoditisation of compliance – this refers to the lower-level tasks that are traditionally performed by human employees being replaced by automation. With the aid of increasingly powerful artificial intelligence and the evolving capabilities of cloud computing, many tasks performed by humans could be made redundant. Therefore, what possibility is there of CAS influencing the retrenchment of humans?*

6.7 Conclusion

The primary objective of the research was to better understand the awareness and perceptions held by accounting firms in Cape Town, regarding cloud accounting software. It can be concluded that the research successfully achieved this objective, by analysing the elements making up the awareness and perceptions of accounting firms in Cape Town toward CAS.

As many firms have been shown to have an awareness, acceptance and also implementation of CAS, it would be of benefit to all firm managers and/or owners to keep abreast of changes in this respect, and to attend conferences, webinars or simply read articles online. Ignorance about cloud accounting software and its developing story could damage firms that do not exhibit awareness and proactivity toward it. There could well be an element of generational ignorance within firms, alongside the difference in disposition, as illustrated by the technology adoption curve in Section 3.5.2. A younger generation of accounting managers and firm owners could feasibly be inclined to be more technologically-“savvy” than their older counterparts. In these cases, the older generation of firm managers ought to consider tasking younger managers with the goals of exploring new technologies and making recommendations to them, regarding CAS and its value proposition. At the same time, CAS vendors could well realise through individual interaction (with DMUs) or through survey research what the receptiveness is in the market and develop their services marketing plans accordingly.

In closing, accounting firm managers in Cape Town would appear to have a relatively positive disposition toward the value proposition that cloud accounting software presents and the results suggest that more is expected of CAS vendors and their products which can add further value, in particular to small firms but not to the exclusion of larger firms. Should CAS vendors lock into higher numbers of clients via larger firms through a model that supports

economies of scale, smaller firms could be at risk of losing clients to larger, more resource-rich competitors.

7 LIST OF REFERENCES

Abbott, M.L. 2013. *Understanding and Applying Research Design*. Somerset, NJ, USA: John Wiley & Sons. Available from: ProQuest ebrary. [11 September 2015].

Accounting Information Systems, 2013. *Accounting Information Systems Explained* [online]. Available from: <http://www.accountinginformatiosystems.org/> [Accessed: 13 February 2017].

Alali, F.A. and Yeh, C. 2012. 'Cloud Computing: Overview and Risk Analysis', *Journal of Information Systems*, 26(2):13-33.

Allen, J.M. 2011. 'Cloud Computing Heavenly Solution or Pie in the Sky?' *Pennsylvania CPA Journal*, 82(1):24-27.

Armbrust, M., Fox, A., Griffith, R., Joseph, A.D., Katz, R., Konwinski, A., Lee, G., Patterson, D., Rabkin, A., Stoica, I. and Zaharia, M. 2010. 'A View of Cloud Computing', *Association for Computing Machinery. Communications of the ACM*, 53(4):50-58.

Attolini, G. and Thompson, P. 2014. *The Evolution of an Accounting Practice: The Impact of Technology* [online]. Available from: <https://www.ifac.org/global-knowledge-gateway/practice-management/discussion/evolution-accounting-practice-impact> [Accessed 28 August 2016].

Babcock, C. 2010. *Management Strategies for the Cloud Revolution: How Cloud Computing Is Transforming Business and Why You Can't Afford to Be Left Behind*. McGrawHill. Available from: MyiLibrary [14 May 2015].

Babbie, C. 2008. *The basics of social research*. 4th ed. Thomson.

Bendovschi, A.C., 2015. 'The evolution of accounting information systems.' *SEA - Practical Application of Science*, 3(1):91-96.

Biggam, J. 2011. *Succeeding With Your Master's Dissertation: A Step-by-Step Handbook*. Berkshire, GBR: McGraw-Hill Education. Available from: ProQuest ebrary [14 January 2016].

Bajpai, N. 2011. *Business Research Methods*. Pearson, India. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/business/9789332510449> [Accessed 10 December 2015].

Brace, I. 2013. *Questionnaire Design*. 3rd ed. Kogan Page. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/sales-and-marketing/9780749467791> [Accessed 15 November 2015].

Brennan, R., Canning, L. and Mcdowell, R. 2011. *Business-to-Business Marketing*. SAGE Publications Ltd. Available from: <http://0-dx.doi.org.oasis.unisa.ac.za/10.4135/9781446276518> [Accessed 17 September 2016].

Burda News Group. 2013. *Industrial Buying Decision* [online]. Available from: <http://www.medialine.de/english/know-how/dictionary-of-marketing.php?snr=3358> [Accessed: 8 March 2013].

Buyya, R., Yeo, C.S., Venugopal, S., Broberg, J. and Brandic, I. 2009. 'Cloud computing and emerging IT platforms: Vision, hype and reality for delivering computing as the 5th utility', *Future Generation Computer Systems*, 25(6):599-616.

Byrne, N. 2010. 'Cloud Computing: Is there a silver lining for accountants?' *Accountancy Ireland*, 42(3):48-51.

Cant, M. 2011. *Marketing: An Introduction*. Juta and Company Ltd.

Caroll, M. and Ramsingh, K. 2012. *Cloud Computing 2012 Survey Results*. Deloitte.

Carstensen, J., Morgenthal, J.P. and Golden, B. 2012. *Cloud Computing: Assessing the Risks*. IT Governance Ltd. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/operating-systems-and-server-administration/virtualization/9781849283618> [Accessed 21 August 2015].

Columbus, L. 2016. *Roundup Of Cloud Computing Forecasts And Market Estimates, 2016* [online]. Available from: <http://www.forbes.com/sites/louiscolombus/2016/03/13/roundup-of-cloud-computing-forecasts-and-market-estimates-2016/#43c2b2de74b0> [Accessed 7 September 2016].

Cook, L. 2013. "Putting 'service' back into software as a service", *Mortgage Banking*, 73(8):72-73.

Cooper, D.R. and Schindler, P.S. 2008. *Business Research Methods*. 10th ed. McGraw-Hill.

Day, E. and Barksdale, H.C. JR. 1994. 'Organizational purchasing of professional services: The process of selecting providers', *The Journal of Business & Industrial Marketing*, 9(3):44.

DeFelice, A. and Leon, J.F. 2010. Cloud Computing. *Journal of Accountancy*, 210(4):50-55.

Drucker-Godard, C., Ehlinger, S. and Grenier, C. 2001. 'Chapter: Validity and Reliability.' In Thiétart, R., Wauchope, S. ed. *Doing Management Research*. (pp. 196-221). London, England: SAGE Publications Ltd. DOI: <http://dx.doi.org/10.4135/9781849208970.n10>.

Ehrlich, E. and Fanelli, D. 2012. *The Financial Services Marketing Handbook: Tactics and Techniques That Produce Results*. 2nd ed. Bloomberg Press. Available from: <http://0->

[proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/sales-and-marketing/9781118236369](http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/sales-and-marketing/9781118236369) [Accessed 13 August 2015].

Erl, T., Puttini, R. and Mahmood, Z. eds. 2013. *Cloud Computing: Concepts, Technology & Architecture*. Prentice Hall. Available: http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/operating-systems-and-server-administration/virtualization/9780133387568/chapter-3dot-understanding-cloud-computing/ch03lev1sec1_html [Accessed 1 October 2015].

Eves, H. 1990. *Introduction to the History of Mathematics*. 6th ed. Philadelphia: Saunders College.

Fershtman, C. and Gandal, N. 2012. 'Migration to the Cloud Ecosystem: Ushering in a New Generation of Platform Competition', *Communications & Strategies*, 85(1):109-123.

Field, A. 2009. *Discovering Statistics using SPSS*. 3rd ed. Sage.

Gartner. 2016. *Forecast: Public Cloud Services, Worldwide, 2014-2020, 1Q16 Update* [online]. Available from: <https://www.gartner.com/doc/3273418/forecast-public-cloud-services-worldwide> [Accessed: 12 June 2016].

Gill, R. 2011. 'Why Cloud Computing Matters to Finance', *Strategic Finance*, 92(7):43-47.

Goel, A. 2010. *Computer Fundamentals*. Pearson Education India. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/information-technology-and-software-development/9788131733097> [Accessed 14 June 2014].

Gray, P. 2013. *Legal issues to consider with cloud computing*. [Online] Available from: <http://www.techrepublic.com/blog/tech-manager/legal-issues-to-consider-with-cloud-computing/8161> [Accessed on 26 May 2013].

Greener, S. 2008. *Business Research Methods* [online]. Available from: <http://bookboon.com/en/textbooks/management-organisation/introduction-to-research-methods> [Accessed on 11 August 2012].

Gupta, D.K. 2006. *Marketing Library and Information Services: International Perspectives*. Walter De Gruyter.

Hamper, R. 2013. *The Ultimate Guide to Strategic Marketing: Real World Methods for Developing Successful, Long-term Marketing Plans*. McGraw-Hill.

Harrison, M., Hague, P. and Hague, N. 2013. *B2B Marketing: What Makes It Special?* [online]. Available from: <http://www.b2binternational.com/publications/white-papers/b2b-marketing/> [Accessed on 20 January 2013].

Hatcher, A. 2013. *Cambridge Marketing Handbook: Services*. Kogan Page. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/sales-and-marketing/9780749470777> [Accessed 14 August 2015]

Havaldar, K.K. 2005. *Industrial Marketing: Text and Cases*. 2nd ed. Tata McGraw-Hill Education. Available from: <https://books.google.co.za/books?id=l7AlqIP8VnsC&pg=PA11&pg=PA36#v=onepage&q&f=false> [Accessed 17 September 2016].

Herbert, T. 2015. *Crunching the Numbers: Selling IT Solutions to Accounting Firms* [online]. Available from: <https://www.comptia.org/about-us/newsroom/blog/comptia-blog/2015/12/10/crunching-the-numbers-selling-it-solutions-to-accounting-firms> [Accessed 28 August 2016].

Hui, D. and Yu, C. 2010. 'Cloud Computing, Accounting, Auditing, and Beyond', *The CPA*

Journal, 80(10):66-70.

Jiang, J. and Yang, G. 2010. 'Examining Cloud Computing from the Perspective of Grid and Computer-Supported Cooperative Work.' In: Yang, N. and Gillam, L. eds. *Cloud computing*. Springer. Available from: Springer Link [6 October 2016].

Jones, S. 2003. *Encyclopedia of New Media: An Essential Reference to Communication and Technology*. Sage.

Katzan, H. and Dowling, W.A. 2010. 'Software-As-A-Service Economics', *The Review of Business Information Systems*, 14(1):27-37.

Kotler, P. and Armstrong, G. 2012. *Principles of marketing*. 14th ed. Pearson Education.

Lamb, C.W., Hair, J.F. and McDaniel, C. 2011. *Marketing*. 11th ed. Cengage Learning.

Lamb, J. 2013. 'The 5 categories of buyers.' *Employee Benefit Adviser*, 11(6):23-23.

Learn Marketing.Net. No date. *Service Marketing* [online]. Available from: <http://www.learnmarketing.net/servicemarketing.htm> [Accessed on 22 April 2015].

Marinescu, D.C. 2013. *Cloud Computing*. Morgan Kaufmann. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/operating-systems-and-server-administration/virtualization/9780124046276> [Accessed 20 August 2015].

Marczyk, G.R., DeMatteo, D. and Festinger, D. 2005. *Essentials of Research Design and Methodology*. Wiley.

McConnachie, K. 2012. *The top SA cloud adopters* [online]. Available from: <http://www.moneyweb.co.za/moneyweb-technology-news/the-top-sa-cloud->

[adopters?sn=2009+Detail](#) [Accessed on 17 February 2013].

McDonald, M., Frow, P. and Payne, A. 2011. *Marketing Plans for Services: A Complete Guide, Third Edition*. 3rd ed. John Wiley & Sons. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/sales-and-marketing/9780470979419> [Accessed 17 August 2015].

Media Club South Africa. No date. *South Africa's economy: key sectors* [online]. Available from: <http://www.mediaclubsouthafrica.com/component/content/article?id=111:sa-economy-key-sectors> [Accessed on 1 March 2015].

Mell, P. and Grance, T. 2011. *The NIST Definition of Cloud Computing*. [Online] Available from: <http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf> [Accessed on 20 May 2015].

Morris, M.H., Pitt, L.F. and Honeycutt, E.D.J. eds. 2001. *Business-to-Business Marketing: A Strategic Approach*. 3rd ed. Sage.

Muller, R. 2010. *What is broadband?* [online]. Available from: <http://mybroadband.co.za/news/broadband/14016-what-is-broadband.html> [Accessed on 17 February 2013].

MyBroadband. 2014. *The History of Internet access in South Africa* [online]. Available from: <http://mybroadband.co.za/news/internet/114645-the-history-of-internet-access-in-south-africa.html> [Accessed 4 August 2015].

O'Bannon, I.M. 2012. 'More Cloud is Good for Your Firm & Your Clients' Businesses', *CPA Practice Advisor*, 22(7):8.

Pallant, J. 2011. *SPSS Survival Manual*. 4th ed. Allen & Unwin.

Rader, D. 2012. 'How cloud computing maximizes growth opportunities for a firm challenging established rivals', *Strategy & leadership*, 40(3):36-43.

Rao, K.M. 2011. *Services Marketing, 2nd Edition*. 2nd ed. Pearson India. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/sales-and-marketing/9789332512009> [Accessed 2 September 2015].

Rea, L.M. and Parker, R.A. 2014. *Designing and Conducting Survey Research: A Comprehensive Guide*. 4th ed. Jossey-Bass. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/social-sciences/9781118767023> [Accessed 5 November 2015].

Reynolds, P. and Lancaster, G. 2013. *Marketing Made Simple*. Routledge. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/sales-and-marketing/9780750647717> [Accessed 17 September 2015].

Richardson, N. and Gosnay, R.M. 2010. *Develop Your Marketing Skills*. Kogan Page.

Rountree, D. and Castrillo, I. 2013. *The Basics of Cloud Computing*. Syngress. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/information-technology-and-software-development/9780124059320> [Accessed 21 August 2015].

Ryan, E. 2012. *The evolution of accounting software: past, present and future* [online]. Available from: <http://www.gaaaccounting.com/the-evolution-of-accounting-software-past-present-and-future/> [Accessed on 19 March 2015].

SAICA. 2012. *Members* [online]. Available from: <https://www.saica.co.za/Default.aspx?TabId=2070&language=en-ZA> [Accessed on 14 October 2012].

Saunders, M., Lewis, P. and Thornhill, A. 2009. *Research Methods for Business Students*. 5th ed. Pearson Education Limited.

Schouten, E. 2012. *Rapid elasticity and the cloud* [online]. Available from: <http://thoughtsoncloud.com/index.php/2012/09/rapid-elasticity-and-the-cloud/> [Accessed on 7 September 2013].

Sheth, J.N. 2001. 'A Model of Industrial Buyer Behaviour', In: Baker, M.J. ed. *Marketing: Critical Perspectives on Business and Management, Volume 3*. Taylor & Francis.

Smart Idea Store. 2014. *Technology Adoption Curve* [online]. Available from: <http://smartideastore.com/technology-adoption-curve/> [Accessed 10 August 2016].

Smith, S.M., Albaum, G.S. 2006. 'Chapter 11: Basic Data Analysis'. In: Grover, R., Vriens, M. 2006. *The Handbook of Marketing Research: Uses, Misuses, and Future Advances*. SAGE Publications, Inc. DOI: <http://0-dx.doi.org.oasis.unisa.ac.za/10.4135/9781412973380.n11>

Statistica. Not dated. *Facts and statistics about Cloud Computing* [online]. Available from: <https://www.statista.com/topics/1695/cloud-computing/> [Accessed 7 September 2016].

Statistics South Africa. 2015. *Economic growth slows in 2014* [online]. Available from: <http://beta2.statssa.gov.za/?p=4184> [Accessed 1 March 2015].

Stokdyk, J. 2013. *Cloud accounting pitches for the mid-market* [online]. Available from: <http://www.accountingweb.co.uk/article/cloud-accounting-pitches-mid-market/541561> [Accessed 11 May 2013].

Thomas, M. 2003. *Blending Qualitative and Quantitative Research Methods in Theses and*

Dissertations. Corwin Press.

Velte, T., Velte, A. and Elsenpeter, R. 2010. *Cloud Computing, A Practical Approach*. McGraw-Hill Osborne Media. Available from: EBSCOHost eBook Collection [Accessed 2 October 2016].

Verma, H.V. 2011. *Services Marketing: Text and Cases , Second Edition*. 2nd ed. Pearson Education India. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/sales-and-marketing/9788131754474> [Accessed 13 July 2015].

Weathington, B.L., Cunningham, C.J.L. and Pittenger, D.J. 2012. *Understanding Business Research*. John Wiley & Sons. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/business/9781118342961> [Accessed 14 June 2015].

Weiss, A.E. 2012. *Key Business Solutions*. Financial Times/Prentice Hall. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/management/9780273750291/9-critical-business-tools-and-frameworks/chapter-009-h3001> [Accessed 17 September 2016].

Wilson, D. No date. "Pricing" *The Blackwell Encyclopedia of Management* [online]. Blackwell Publishing. Available from: http://0-www.blackwellreference.com.oasis.unisa.ac.za/subscriber/tocnode.html?id=g9780631233176_chunk_g978140510254419_ss1-28. [Accessed 7 May 2015].

Winkler, V. (R.) 2011. *Securing the Cloud: Cloud Computer Security Techniques and Tactics*. Elsevier.

Wirtz, J., Chew, P. and Lovelock, C. 2012. *Essentials of Services Marketing*. 2nd ed. FT Press. Available from: <http://0-proquestcombo.safaribooksonline.com.oasis.unisa.ac.za/book/sales-and-marketing/9780133359008> [Accessed 30 September 2015].

Xero, 2016. *The single ledger in Xero* [online]. Available from: <https://www.xero.com/za/tv/video/5208-the-single-ledger-in-xero/> [Accessed 25 September 2016].

Zimmerman, A., Blythe, J. and Raman, A. 2013. *Business to Business Marketing Management: A Global Perspective*. 2nd ed. Routledge, Florence, GB. Available from: ProQuest ebrary. [18 September 2016].

Zolkiewski, J. and Hopkinson, G.C. No date. "Organizational buying behavior." In: The Blackwell Encyclopedia of Management. Cooper, Cary L. Blackwell Publishing, Blackwell Reference Online. Available from: http://0-www.blackwellreference.com.oasis.unisa.ac.za/subscriber/tocnode.html?id=g9780631233176_chunk_g978140510254418_ss1-8 [Accessed 18 October 2016].

8 APPENDICES

8.1 Appendix A – Email introduction to sample respondents



Dear Accounting Manager

You are invited to participate in a study by completing an on-line questionnaire, estimated to take about 10-15 minutes.

You have been identified as a potential participant due to your occupation as an accountant or manager at an accounting firm.

Your contact details were found by way of the public directory, www.findanaccountant.co.za, or you are within a network of contacts with other accountants who were asked to participate as well.

The aim of this study is to explore the awareness and perception of **cloud accounting software** by accountants and managers at accounting firms. This study is aiming to gather responses from around 100 participants.

Taking part in this study is entirely voluntary and you are in no way obliged to partake in it. You may opt out at any time, and do not have to give a reason for doing so.

You should know that there are no right or wrong answers and that your responses will be treated confidentially. Survey results will in no way be traceable to individual respondents.

By completing the questionnaire and submitting it, you are giving your consent as outlined above. Click [here](#) to begin.

This research meets the requirements of the Unisa Research Ethics Policy.

Thank you for partaking in this survey - your time is highly appreciated!

Regards

Kobus Van den Bergh

Should you have any queries or comments, please contact:

Researcher: Mr. Kobus Van den Bergh

c: 078 516 9516

e: 35621745@mylife.unisa.ac.za

Supervisor: Prof. Sharon Rudansky-Kloppers

t: 012 429 4689

e: rudans@unisa.ac.za

8.2 Appendix B – Data collection instrument – Questionnaire

Dear Accountant and/or accounting firm Manager

You are invited to participate in a study by completing an on-line questionnaire, estimated to take about 10-15 minutes.

You have been identified as a potential participant due to your occupation as an accountant or manager at an accounting firm.

Your contact details were found by way of the public directory, www.findanaccountant.co.za, or you are within a network of contacts with other accountants who were asked to participate as well.

The aim of this study is to explore the awareness and perception of cloud accounting software by accountants and managers at accounting firms. This study is aiming to gather responses from around 100 participants.

Taking part in this study is entirely voluntary and you are in no way obliged to partake in it. You may opt out at any time, and do not have to give a reason for doing so.

You should know that there are no right or wrong answers and that your responses will be treated confidentially. Survey results will in no way be traceable to individual respondents.

By completing the questionnaire below and submitting it, you are giving your consent as outlined above.

This research meets the requirements of the Unisa Research Ethics Policy.

Thank you for partaking in this survey - your time is highly appreciated!

Regards
Kobus Van den Bergh

Should you have any queries or comments, please contact:

Researcher: Mr. Kobus Van den Bergh
c: 078 516 9516
e: 35621745@mylife.unisa.ac.za

Supervisor: Prof. Sharon Rudansky-Kloppers
t: 012 429 4689
e: rudans@unisa.ac.za

A - Attitudes and perceptions

1. 1a - Please indicate how familiar you are with the term 'cloud accounting software'. *

Mark only one oval.

- Not at all familiar
- Slightly familiar
- Somewhat familiar
- Moderately familiar
- Extremely familiar

2. 2a - What impact would you say cloud accounting software has had, or might have on your firm. *

Mark only one oval.

- Positive
- Negative
- Not sure

3. 3a - Which choice accurately describes how you feel about cloud accounting software's potential contribution to the accounting industry?

Mark only one oval.

- Positive
- Neutral
- Negative

4. 4a - What would you say is the strongest influence on your attitude and perception toward cloud accounting software? *

Mark only one oval.

- Professional colleagues (e.g. firm partners and owners)
- Accounting industry media - articles and websites
- The opinion of my professional body (e.g. SAICA, SAIPA)
- The cloud accounting provider's reputation in the market

B - Acceptance

5. 1b - On a scale of 1 to 5, please indicate whether you agree/disagree that cloud accounting software has become generally accepted in accounting firms? *

Mark only one oval.

1 2 3 4 5

Strongly agree Strongly disagree

6. 2b - Please indicate which term best encapsulates the acceptance of cloud accounting software by firms in Cape Town? *

Mark only one oval.

- Full acceptance
 Cautious acceptance
 No acceptance

7. 3b - What would you say is the main reason for accepting cloud accounting software in accounting firms? *

Mark only one oval.

- It seems it is becoming generally accepted in other well-known firms too
 I agree with my professional colleagues who have accepted it
 I will only accept it, once I am convinced in full
 I have completed my own research on it, and accept it on that basis
 I have completed my own research on it, and reject it on that basis

C - Intention to use

8. 1c - Is your firm looking to implement cloud accounting software in the next? *

Mark only one oval.

- 6 months
 1-2 years
 3+ years
 Already in place
 No plans or requirements at present

9. 2c - On a scale of 1 to 5, how likely is your firm to use cloud accounting software? *

Mark only one oval.

1 2 3 4 5

Highly likely Unlikely

10. 3c - If you are not intending to use cloud accounting software, which of the following choices captures the reason for this the most accurately? *

Mark only one oval.

- Already using (not applicable)
 My firm does not see a need for change
 My firm uses an in-house system
 The software that my firm uses is sufficient

D - Growth

11. 1d - Do you foresee further growth for cloud accounting software in South African accounting firms? *

Mark only one oval.

- Yes
 No
 Don't know

12. 2d - Do you agree or disagree that cloud accounting software adoption in firms is accelerating in South Africa? *

Mark only one oval.

| | | | | | | |
|----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------|
| | 1 | 2 | 3 | 4 | 5 | |
| Strongly agree | <input type="radio"/> | Strongly disagree |

13. 3d - Should cloud accounting software adoption grow, would you say that it will happen to such an extent that desktop- and server-based software will be made redundant? *

In other words, will cloud replace desktop- and server-based systems completely?

Mark only one oval.

- Yes
 No
 Maybe

E - Clients

14. 1e - Are you aware of clients who have demanded access to cloud accounting software? *

Mark only one oval.

- Many
 Some
 None

15. 2e - Do you think that cloud accounting software can help a firm obtain more clients?

Mark only one oval.

- Yes
 No
 Unsure

16. 3e - Does having cloud accounting software enable a firm to sell its services better?

Mark only one oval.

| | | | | | | |
|----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------|
| | 1 | 2 | 3 | 4 | 5 | |
| Strongly agree | <input type="radio"/> | Strongly disagree |

F - Selling

17. 1f - In using cloud accounting software provided by a vendor (3rd party), please indicate what you think the best strategy is, to implement it in your firm: *

Mark only one oval.

- Absorb the cost and provide additional value to the customer.
- Monetise it. That is, add a margin onto the software cost and make a profit by charging the customer above that cost.
- Break-even. Recharge the customer the cost price of the software subscription only.

18. 2f - Would you consider offering more than one cloud accounting software product as an offering to clients? *

That is, would you subscribe to two or more cloud accounting software products (from different vendors) and use that in your firm?

Mark only one oval.

- Yes
- No
- Maybe

19. 3f - In providing cloud accounting software via a vendor (3rd party) to your clients, which option would you prefer if it was available? *

Some cloud accounting software vendors offer a white label solution, whereby a firm can use their own branding on the software. This means that when the client uses it, the impression can be given to them that the firm owns the software themselves when it does not.

Mark only one oval.

- White label
- Vendor (3rd party) branding
- I am indifferent
- Unsure

G - Opportunities and threats

20. 1g - Which of these terms would you say describes your feelings best about cloud accounting software? *

Mark only one oval.

- Positive (Opportunity)
- Neutral (I'm indifferent at this stage)
- Negative (Threat)

21. 2g - Please indicate your opinion regarding cloud accounting software. *

Mark only one oval per row.

| | 1 Strongly agree | 2 | 3 | 4 | 5 Strongly disagree |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Adopting cloud technology in accounting is beneficial for the accounting firm | <input type="radio"/> |
| Cloud technology is a threat to the accounting industry | <input type="radio"/> |
| Cloud technology presents new opportunities to the accounting industry | <input type="radio"/> |

X - Demographics

22. 1x - Please indicate your firm's size: *

Mark only one oval.

- Small - less than 50 employees
- Medium - between 51 and 199 employees
- Large - more than 200 employees

23. 2x - What is your position at your firm? *

Mark only one oval.

- Manager
- Owner and manager
- Accountant

Powered by
 Google Forms

8.3 Appendix C – Frequency Tables

Table C1

| | | | q22 Please indicate your firm's size: | | |
|--|---------------------|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q1 Please indicate how familiar you are with the term 'cloud accounting software'. | Not at all familiar | n | 1 | 3 | 4 |
| | | % | 4.8% | 50.0% | 14.8% |
| | Slightly familiar | n | 3 | 1 | 4 |
| | | % | 14.3% | 16.7% | 14.8% |
| | Somewhat familiar | n | 1 | 1 | 2 |
| | | % | 4.8% | 16.7% | 7.4% |
| | Moderately familiar | n | 6 | 1 | 7 |
| | | % | 28.6% | 16.7% | 25.9% |
| | Extremely familiar | n | 10 | | 10 |
| | | % | 47.6% | | 37.0% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C2

| | | | q22 Please indicate your firm's size: | | |
|--|----------|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q2 What impact would you say cloud accounting software have had, or might have on your firm. | Positive | n | 13 | 1 | 14 |
| | | % | 61.9% | 16.7% | 51.9% |
| | Not sure | n | 8 | 5 | 13 |
| | | % | 38.1% | 83.3% | 48.1% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C3

| | | | q22 Please indicate your firm's size: | | |
|--|----------|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q3 Which choice accurately describes how you feel about cloud accounting software's potential contribution to the accounting industry? | Positive | n | 17 | 1 | 18 |
| | | % | 81.0% | 16.7% | 66.7% |
| | Neutral | n | 4 | 5 | 9 |
| | | % | 19.0% | 83.3% | 33.3% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C4

| | | | q22 Please indicate your firm's size: | | |
|--|--|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q4 What would you say is the strongest influence on your attitude and perception toward cloud accounting software? | Professional colleagues (e.g. firm partners and owners) | n | 4 | 4 | 8 |
| | | % | 19.0% | 66.7% | 29.6% |
| | Accounting industry media articles and websites | n | 4 | | 4 |
| | | % | 19.0% | | 14.8% |
| | The opinion of my professional body (e.g. SAICA, SAIPA) | n | 3 | 2 | 5 |
| | | % | 14.3% | 33.3% | 18.5% |
| | The cloud accounting provider's reputation in the market | n | 10 | | 10 |
| | | % | 47.6% | | 37.0% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C5

| | | | q22 Please indicate your firm's size: | | |
|---|-------------------|--------|---------------------------------------|---------------|-------|
| | | | Small | Medium/ Large | Total |
| Q5 On a scale of 1 to 5, please indicate whether you agree/disagree that cloud accounting software has become generally accepted in accounting firms? | Strongly disagree | n | 1 | 3 | 4 |
| | | % | 4.8% | 50.0% | 14.8% |
| | 2 | n | 4 | | 4 |
| | | % | 19.0% | | 14.8% |
| | 3 | n | 10 | 2 | 12 |
| | | % | 47.6% | 33.3% | 44.4% |
| | 4 | n | 2 | 1 | 3 |
| | | % | 9.5% | 16.7% | 11.1% |
| | Strongly agree | n | 4 | | 4 |
| | | % | 19.0% | | 14.8% |
| Total | n | 21 | 6 | 27 | |
| | % | 100.0% | 100.0% | 100.0% | |

Table C6

| | | | q22 Please indicate your firm's size: | | |
|--|---------------------|--------|---------------------------------------|---------------|-------|
| | | | Small | Medium/ Large | Total |
| Q6 Please indicate which term best encapsulates the acceptance of cloud accounting software by firms in Cape Town? | Full acceptance | n | 3 | | 3 |
| | | % | 14.3% | | 11.1% |
| | Cautious acceptance | n | 18 | 3 | 21 |
| | | % | 85.7% | 50.0% | 77.8% |
| | No acceptance | n | | 3 | 3 |
| | | % | | 50.0% | 11.1% |
| Total | n | 21 | 6 | 27 | |
| | % | 100.0% | 100.0% | 100.0% | |

Table C7

| | | | q22 Please indicate your firm's size: | | |
|---|--|---|---------------------------------------|------------------|--------|
| | | | Small | Medium/ Large | Total |
| Q7 What would you say is the main reason for accepting cloud accounting software in accounting firms? | It seems it is becoming generally accepted in other well-known firms too | n | 4 | 1 | 5 |
| | | % | 19.0% | 16.7% | 18.5% |
| | I agree with my professional colleagues who have accepted it | n | 1 | 1 | 2 |
| | | % | 4.8% | 16.7% | 7.4% |
| | I will only accept it, once I am convinced in full | n | 6 | 4 | 10 |
| | | % | 28.6% | 66.7% | 37.0% |
| | I have completed my own research on it, and accept it on that basis | n | 9 | | 9 |
| | | % | 42.9% | | 33.3% |
| | I have completed my own research on it, and reject it on that basis | n | 1 | | 1 |
| | | % | 4.8% | | 3.7% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C8

| | | | q22 Please indicate your firm's size: | | |
|---|-------------------------------------|---|---------------------------------------|------------------|--------|
| | | | Small | Medium/ Large | Total |
| Q8 Is your firm looking to implement cloud accounting software in the next: | Already in place | n | 12 | | 12 |
| | | % | 57.1% | | 44.4% |
| | 6 months | n | 1 | | 1 |
| | | % | 4.8% | | 3.7% |
| | 1-2 years | n | | 1 | 1 |
| | | % | | 16.7% | 3.7% |
| | No plans or requirements at present | n | 8 | 5 | 13 |
| | | % | 38.1% | 83.3% | 48.1% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C9

| | | | q22 Please indicate your firm's size: | | |
|--|---------------|--------|---------------------------------------|---------------|-------|
| | | | Small | Medium/ Large | Total |
| Q9 On a scale of 1 to 5, how likely is your firm to use cloud accounting software? | Unlikely | n | 2 | 3 | 5 |
| | | % | 9.5% | 50.0% | 18.5% |
| | 2 | n | 3 | | 3 |
| | | % | 14.3% | | 11.1% |
| | 3 | n | 2 | 2 | 4 |
| | | % | 9.5% | 33.3% | 14.8% |
| | 4 | n | 2 | 1 | 3 |
| | | % | 9.5% | 16.7% | 11.1% |
| | Highly likely | n | 12 | | 12 |
| | | % | 57.1% | | 44.4% |
| Total | n | 21 | 6 | 27 | |
| | % | 100.0% | 100.0% | 100.0% | |

Table C10

| | | | q22 Please indicate your firm's size: | | |
|---|--|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q10 If you are not intending to use cloud accounting software, which of the following choices captures the reason for this the most accurately? | Already using (not applicable) | n | 13 | 1 | 14 |
| | | % | 61.9% | 16.7% | 51.9% |
| | My firm does not see a need for change | n | 3 | | 3 |
| | | % | 14.3% | | 11.1% |
| | My firm uses an inhouse system | n | 1 | 2 | 3 |
| | | % | 4.8% | 33.3% | 11.1% |
| | The software that my firm uses is sufficient | n | 4 | 3 | 7 |
| | | % | 19.0% | 50.0% | 25.9% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C11

| | | | q22 Please indicate your firm's size: | | |
|--|------------|--------|---------------------------------------|---------------|-------|
| | | | Small | Medium/ Large | Total |
| Q11 Do you foresee further growth for cloud accounting software in South African accounting firms? | Yes | n | 17 | 2 | 19 |
| | | % | 81.0% | 33.3% | 70.4% |
| | No | n | 1 | | 1 |
| | | % | 4.8% | | 3.7% |
| | Don't know | n | 3 | 4 | 7 |
| | | % | 14.3% | 66.7% | 25.9% |
| | Total | n | 21 | 6 | 27 |
| % | | 100.0% | 100.0% | 100.0% | |

Table C12

| | | | q22 Please indicate your firm's size: | | |
|--|-------------------|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q12 Do you agree or disagree that cloud accounting software adoption in firms is accelerating in South Africa? | Strongly disagree | n | 2 | | 2 |
| | | % | 9.5% | | 7.4% |
| | 3 | n | 7 | 5 | 12 |
| | | % | 33.3% | 83.3% | 44.4% |
| | 4 | n | 7 | 1 | 8 |
| | | % | 33.3% | 16.7% | 29.6% |
| | Strongly agree | n | 5 | | 5 |
| | | % | 23.8% | | 18.5% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C13

| | | | q22 Please indicate your firm's size: | | |
|---|-------|--------|---------------------------------------|---------------|-------|
| | | | Small | Medium/ Large | Total |
| Q13 Should cloud accounting software adoption grow, would you say that it will happen to such an extent that desktop- and server-based software will be made redundant? | Yes | n | 5 | 1 | 6 |
| | | % | 23.8% | 16.7% | 22.2% |
| | No | n | 9 | 3 | 12 |
| | | % | 42.9% | 50.0% | 44.4% |
| | Maybe | n | 7 | 2 | 9 |
| | | % | 33.3% | 33.3% | 33.3% |
| Total | n | 21 | 6 | 27 | |
| | % | 100.0% | 100.0% | 100.0% | |

Table C14

| | | | q22 Please indicate your firm's size: | | |
|---|------|--------|---------------------------------------|---------------|-------|
| | | | Small | Medium/ Large | Total |
| Q14 Are you aware of clients who have demanded access to cloud accounting software? | Many | n | 2 | | 2 |
| | | % | 9.5% | | 7.4% |
| | Some | n | 11 | 4 | 15 |
| | | % | 52.4% | 66.7% | 55.6% |
| | None | n | 8 | 2 | 10 |
| | | % | 38.1% | 33.3% | 37.0% |
| Total | n | 21 | 6 | 27 | |
| | % | 100.0% | 100.0% | 100.0% | |

Table C15

| | | | q22 Please indicate your firm's size: | | |
|--|--------|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q15 Do you think that cloud accounting software can help a firm obtain more clients? | Yes | n | 14 | 2 | 16 |
| | | % | 66.7% | 33.3% | 59.3% |
| | No | n | 1 | 1 | 2 |
| | | % | 4.8% | 16.7% | 7.4% |
| | Unsure | n | 6 | 3 | 9 |
| | | % | 28.6% | 50.0% | 33.3% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C16

| | | | q22 Please indicate your firm's size: | | |
|--|-------------------|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q16 Does having cloud accounting software enable a firm to sell its services better? | Strongly disagree | n | 2 | | 2 |
| | | % | 9.5% | | 7.4% |
| | 2 | n | 3 | 2 | 5 |
| | | % | 14.3% | 33.3% | 18.5% |
| | 3 | n | 6 | 3 | 9 |
| | | % | 28.6% | 50.0% | 33.3% |
| | 4 | n | 3 | 1 | 4 |
| | | % | 14.3% | 16.7% | 14.8% |
| | Strongly agree | n | 7 | | 7 |
| | | % | 33.3% | | 25.9% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C17

| | | | q22 Please indicate your firm's size: | | |
|---|--|---|---------------------------------------|------------------|--------|
| | | | Small | Medium/ Large | Total |
| Q17 In using cloud accounting software provided by a vendor (3rd party), please indicate what you think the best strategy is, to implement it in your firm: | Absorb the cost and provide additional value to the customer | n | 5 | 3 | 8 |
| | | % | 23.8% | 50.0% | 29.6% |
| | Monetise it | n | 6 | | 6 |
| | | % | 28.6% | | 22.2% |
| | Break-even | n | 10 | 3 | 13 |
| | | % | 47.6% | 50.0% | 48.1% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C18

| | | | q22 Please indicate your firm's size: | | |
|--|-------|---|---------------------------------------|------------------|--------|
| | | | Small | Medium/ Large | Total |
| Q18 Would you consider offering more than one cloud accounting software product as an offering to clients? | Yes | n | 9 | | 9 |
| | | % | 42.9% | | 33.3% |
| | No | n | 7 | 6 | 13 |
| | | % | 33.3% | 100.0% | 48.1% |
| | Maybe | n | 5 | | 5 |
| | | % | 23.8% | | 18.5% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C19

| | | | q22 Please indicate your firm's size: | | |
|---|-----------------------------|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q19 In providing cloud accounting software via a vendor (3rd party) to your clients, which option would you prefer if it was available? | White label | n | 4 | 2 | 6 |
| | | % | 19.0% | 33.3% | 22.2% |
| | Vendor (3rd party) branding | n | 9 | | 9 |
| | | % | 42.9% | | 33.3% |
| | I am indifferent | n | 4 | 4 | 8 |
| | | % | 19.0% | 66.7% | 29.6% |
| | Unsure | n | 4 | | 4 |
| | | % | 19.0% | | 14.8% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C20

| | | | q22 Please indicate your firm's size: | | |
|--|---|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q20 Which of these terms would you say describes your feelings best about cloud accounting software? | Positive (Opportunity) | n | 14 | 1 | 15 |
| | | % | 66.7% | 16.7% | 55.6% |
| | Neutral (I'm indifferent at this stage) | n | 7 | 5 | 12 |
| | | % | 33.3% | 83.3% | 44.4% |
| | Negative (Threat) | n | | | |
| | | % | | | |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

Table C21.1

| | | | q22 Please indicate your firm's size: | | |
|---|-------------------|--------|---------------------------------------|---------------|-------|
| | | | Small | Medium/ Large | Total |
| Q21.1 Please indicate your opinion regarding cloud accounting software. [Adopting cloud technology in accounting is beneficial for the accounting firm] | Strongly disagree | n | | | |
| | | % | | | |
| | 2 | n | 1 | | 1 |
| | | % | 4.8% | | 3.7% |
| | 3 | n | 6 | 6 | 12 |
| | | % | 28.6% | 100.0% | 44.4% |
| | 4 | n | 7 | | 7 |
| | | % | 33.3% | | 25.9% |
| | Strongly agree | n | 7 | | 7 |
| | | % | 33.3% | | 25.9% |
| Total | n | 21 | 6 | 27 | |
| | % | 100.0% | 100.0% | 100.0% | |

Table C21.2

| | | | q22 Please indicate your firm's size: | | |
|---|-------------------|--------|---------------------------------------|---------------|-------|
| | | | Small | Medium/ Large | Total |
| Q21.2 Please indicate your opinion regarding cloud accounting software. [Cloud technology is a threat to the accounting industry] | Strongly disagree | n | 8 | | 8 |
| | | % | 38.1% | | 29.6% |
| | 2 | n | 4 | | 4 |
| | | % | 19.0% | | 14.8% |
| | 3 | n | 7 | 5 | 12 |
| | | % | 33.3% | 83.3% | 44.4% |
| | 4 | n | | 1 | 1 |
| | | % | | 16.7% | 3.7% |
| | Strongly agree | n | 2 | | 2 |
| | | % | 9.5% | | 7.4% |
| Total | n | 21 | 6 | 27 | |
| | % | 100.0% | 100.0% | 100.0% | |

Table C21.3

| | | | q22 Please indicate your firm's size: | | |
|--|-------------------|--------|---------------------------------------|---------------|-------|
| | | | Small | Medium/ Large | Total |
| Q21.3 Please indicate your opinion regarding cloud accounting software. [Cloud technology presents new opportunities to the accounting industry] | Strongly disagree | n | | | |
| | | % | | | |
| | 2 | n | 1 | 1 | 2 |
| | | % | 4.8% | 16.7% | 7.4% |
| | 3 | n | 6 | 3 | 9 |
| | | % | 28.6% | 50.0% | 33.3% |
| | 4 | n | 5 | 1 | 6 |
| | | % | 23.8% | 16.7% | 22.2% |
| | Strongly agree | n | 9 | 1 | 10 |
| | | % | 42.9% | 16.7% | 37.0% |
| Total | n | 21 | 6 | 27 | |
| | % | 100.0% | 100.0% | 100.0% | |

Table C22

| | | | q22 Please indicate your firm's size: | | |
|---------------------------------------|---------------------------------------|--------|---------------------------------------|---------------|-------|
| | | | Small | Medium/ Large | Total |
| Q22 Please indicate your firm's size: | Small less than 50 employees | n | 21 | | 21 |
| | | % | 100.0% | | 77.8% |
| | Medium - between 51 and 199 employees | n | | 4 | 4 |
| | | % | | 66.7% | 14.8% |
| | Large more than 200 employees | n | | 2 | 2 |
| | | % | | 33.3% | 7.4% |
| | Total | n | 21 | 6 | 27 |
| | % | 100.0% | 100.0% | 100.0% | |

Table C23

| | | | q22 Please indicate your firm's size: | | |
|---|-------------------|---|---------------------------------------|---------------|--------|
| | | | Small | Medium/ Large | Total |
| Q23 What is your position at your firm? | Manager | n | 6 | 6 | 12 |
| | | % | 28.6% | 100.0% | 44.4% |
| | Owner and manager | n | 15 | | 15 |
| | | % | 71.4% | | 55.6% |
| | Total | n | 21 | 6 | 27 |
| | | % | 100.0% | 100.0% | 100.0% |

8.4 Appendix E – Mean Rank tables

Table E1

| Q22 Please indicate your firm's size: | | N | Mean Rank | Sum of Ranks |
|--|---------------|----|-----------|--------------|
| Q1 Please indicate how familiar you are with the term 'cloud accounting software'. | Small | 21 | 16.21 | 340.50 |
| | Medium/ Large | 6 | 6.25 | 37.50 |
| | Total | 27 | | |

Table E2

| Q22 Please indicate your firm's size: | | N | Mean Rank | Sum of Ranks |
|---|---------------|----|-----------|--------------|
| Q5 On a scale of 1 to 5, please indicate whether you agree/disagree that cloud accounting software has become generally accepted in accounting firms? | Small | 21 | 15.21 | 319.50 |
| | Medium/ Large | 6 | 9.75 | 58.50 |
| | Total | 27 | | |

Table E3

| Q22 Please indicate your firm's size: | | N | Mean Rank | Sum of Ranks |
|--|---------------|----|-----------|--------------|
| Q9 On a scale of 1 to 5, how likely is your firm to use cloud accounting software? | Small | 21 | 15.90 | 334.00 |
| | Medium/ Large | 6 | 7.33 | 44.00 |
| | Total | 27 | | |

Table E4

| Q22 Please indicate your firm's size: | | N | Mean Rank | Sum of Ranks |
|--|---------------|----|-----------|--------------|
| Q12 Do you agree or disagree that cloud accounting software adoption in firms is accelerating in South Africa? | Small | 21 | 15.10 | 317.00 |
| | Medium/ Large | 6 | 10.17 | 61.00 |
| | Total | 27 | | |

Table E5

| Q22 Please indicate your firm's size: | | N | Mean Rank | Sum of Ranks |
|--|---------------|----|-----------|--------------|
| Q16 Does having cloud accounting software enable a firm to sell its services better? | Small | 21 | 14.93 | 313.50 |
| | Medium/ Large | 6 | 10.75 | 64.50 |
| | Total | 27 | | |

Table E6.1

| Q22 Please indicate your firm's size: | | N | Mean Rank | Sum of Ranks |
|---|---------------|----|-----------|--------------|
| Q21.1 Please indicate your opinion regarding cloud accounting software. [Adopting cloud technology in accounting is beneficial for the accounting firm] | Small | 21 | 15.86 | 333.00 |
| | Medium/ Large | 6 | 7.50 | 45.00 |
| | Total | 27 | | |

Table E6.2

| Q22 Please indicate your firm's size: | | N | Mean Rank | Sum of Ranks |
|---|---------------|----|-----------|--------------|
| Q21.2 Please indicate your opinion regarding cloud accounting software. [Cloud technology is a threat to the accounting industry] | Small | 21 | 12.40 | 260.50 |
| | Medium/ Large | 6 | 19.58 | 117.50 |
| | Total | 27 | | |

Table E6.3

| Q22 Please indicate your firm's size: | | N | Mean Rank | Sum of Ranks |
|--|---------------|----|-----------|--------------|
| Q21.3 Please indicate your opinion regarding cloud accounting software. [Cloud technology presents new opportunities to the accounting industry] | Small | 21 | 15.17 | 318.50 |
| | Medium/ Large | 6 | 9.92 | 59.50 |
| | Total | 27 | | |