

**THE ABILITY TO ACCOUNT FOR INTERNET-BASED SALES TRANSACTIONS
ACCORDING TO GAAP**

B. STEYN Hons. B. Compt.

**Dissertation submitted for the degree of Magister Commercii in Accountancy
at the North-West University**

Supervisor: Prof A. du Toit

2007

Potchefstroom

Acknowledgements

Prof Anton du Toit: Thank you for your enthusiastic support during this study. I am especially indebted to you for your ability to uncannily identify the little aspects I missed. It was a pleasure to have had the opportunity to study under the supervision of a person who understood not only the complexities of the topic but also the importance of proper presentation.

Jeannette Groenewald: Thank you for the part you played in the beginning of this study. In your workshop on Writing for Research Publications you not only taught me how to improve the structure of my arguments in order to present a better research proposal but you also restored my belief in my own ability to do research. In addition, through your exceptional example you showed me how to be a better critical reader.

Anita Venter: Thank you for going through my whole dissertation as a critical reader as well as for your continued support.

My thanks are due to my **colleagues** at **Unisa**, who continuously motivated and supported me.

I should like to express my gratitude to my husband **Joseph** for his unwavering support. Without his support the whole research project would have been impossible.

Lastly my thanks go to my children **Joseph** and **Jacques** for accepting the change this dissertation brought about in our family although they are too young to understand what a dissertation is!

Abstract

The ability to account for Internet-based sales transactions according to GAAP

The incorporation of a new technology, such as the Internet, into business processes can have an unexpected influence on those business processes. The study focused on the hypothesis that four entities (case studies) can account for their South African Internet-based sales transactions in a manner that complies with the requirements of GAAP. To address the hypotheses, the study was divided into the following research questions:

- How do the four entities capture and record their South African Internet-based sales transactions?
- Are these sales transactions accounted for in a manner that complies with the requirements of GAAP?

To answer the first research question, data were collected from four entities. To answer the last research question, the data collected were compared with the requirements of GAAP to enable the study to conclude positively on the hypothesis.

Key terms

The following key terms apply to the study:

Internet, B2C, e-commerce, Generally Accepted Accounting Practice (GAAP), and sales transactions.

Uittreksel

Die vermoë om Internet-gebaseerde verkooptransaksies rekeningkundig volgens AARP te verantwoord

Die inkorporasie van 'n nuwe tegnologie, soos die Internet, in besigheidsprosesse kan 'n onverwagte invloed op daardie besigheidsprosesse uitoefen. Hierdie studie fokus op die hipotese dat vier entiteite (gevallestudies) hulle Suid-Afrikaanse Internet-gebaseerde verkope rekeningkundig kan verantwoord op 'n manier wat aan die vereistes van AARP voldoen. Om die hipotese aan te spreek is die studie verdeel in die volgende navorsingsvrae:

- Hoe voer die vier entiteite hulle Suid-Afrikaanse Internet-gebaseerde verkooptransaksies in en verantwoord dit rekeningkundig?
- Word hierdie verkooptransaksies rekeningkundig, op 'n manier wat voldoen aan die vereistes van AARP verantwoord?

Om die eerste navorsingsvraag te beantwoord is inligting van vier entiteite versamel. Om die laaste navorsingsvraag te beantwoord is die versamelde inligting met die vereistes van AARP vergelyk, om die studie in staat te stel om tot 'n positiewe gevolgtrekking van die hipotese te kom.

Sleutel terme

Die volgende sleutel terme is toepaslik in die studie:

Internet, B2C, e-handel, Algemeen Aanvaarde Rekeningkundige Praktyk (AARP), en verkooptransaksies.

Abbreviated table of contents

Chapter		Page
1	The problem, significance and structure of the study	1
2	The accounting principles and risks inherent in the Internet that could influence the accounting of transactions	28
3	Research approach, design and method	65
4	Data analysis	84
5	Comparison of data analysis with the requirements of GAAP	133
6	Conclusion and identification of future research areas	143

Contents

Section		Page
1	The problem, significance and structure of the study	1
1.1	Introduction	1
1.1.1	Definition of terms	2
1.1.2	Scope, limitations and exclusions	3
1.1.2.1	Scope and limitations	3
1.1.2.2	Exclusions	6
1.1.3	Trading through the Internet	7
1.2	The problem and its setting	9
1.3	Significance of the study	19
1.4	Objectives, hypothesis and methods of study	20
1.5	Research outline	23
1.6	Conclusion	26
2	The accounting principles and risks inherent in the Internet that could influence the accounting of transactions	28
2.1	Introduction	30
2.2	The general requirements of GAAP	31
2.2.1	The Framework for the Preparation and Presentation of Financial Statements	33
2.2.1.1	Underlying assumptions	33
2.2.1.2	Qualitative characteristics	34
2.2.1.3	Constraints that impact on the qualitative characteristics	38
2.2.2	The requirements of the Revenue Standard	39
2.2.2.1	Definition of accounting terms	39
2.2.2.2	Measurement and recognition of revenue	40

Contents (continued)

Section		Page
2.3	Recording sales transactions in the accounting records	44
2.4	Securing accounting information systems	49
2.5	Risks inherent in the Internet that could influence the accounting of Internet-based transactions	51
2.5.1	Inherent risks highlighted during the development of the Internet	53
2.5.1.1	Open architecture networking	53
2.5.1.2	Communication protocols for the Internet	54
2.5.1.3	Nature of people	55
2.5.1.4	Open Internet society	56
2.5.1.5	Size and growth of the Internet	59
2.5.2	Compensating for the inherent risk in the underlying technology	61
2.6	Summation	63
3	Research approach, design and method	65
3.1	Introduction	66
3.2	Research approach	69
3.3	Research design	71
3.4	Research methods	76
3.4.1	Instrument development	79
3.4.2	Evaluating and administering the instrument	82
3.5	Summation	82

Contents (continued)

Section		Page
4	Data analysis	84
4.1	Introduction	86
4.2	Characteristics of the entities	88
4.3	Structured interviews	89
4.3.1	Description of the structured interview layout	90
4.3.2	Interview results	93
4.3.3	Detailed analysis of interview results	94
4.4	Follow-up interviews	105
4.5	Detailed analysis of audit trail data collected	106
4.5.1	Comparison between data collected from structured interviews and audit trail data	111
4.6	Website information review and analysis	117
4.6.1	Repudiation of transactions	119
4.7	Accounting for South African Internet-based sales transactions case-by-case	128
4.8	Summation	131
5	Comparison of data analysis with the requirements of GAAP	133
5.1	Introduction	134
5.2	Detailed comparison with GAAP	135
5.3	Assessment of the quality of the multiple-case study results	140
5.3.1	Quality tests	140
5.4	Summation	142

Contents (continued)

Section		Page
6	Conclusion and identification of future research areas	143
6.1	Introduction	144
6.2	Study overview	145
6.3	Scope, limitations and exclusions	148
6.3.1	Scope and limitations	149
6.3.2	Exclusions	151
6.4	Identification of future research areas	152
6.5	Conclusion	154
Addendum 1	Structured questions for the interviews	155
Addendum 2	Additional information for the interviews	160
Addendum 3	Summary of interview results	161
Addendum 4	Security warning sent out by Standard Bank to its customers	166
Addendum 5	Certificate authenticating the website	167
List of sources		168
List of figures		Page
Figure 1.1	Typical configuration of an Internet-based sales system	15
Figure 1.2	Dissertation map, chapter 1	26
Figure 2.1	Dissertation map, chapter 2	29
Figure 2.2	Online real-time processing of sales transactions	48
Figure 2.3	Invention model	62
Figure 3.1	Dissertation map, chapter 3	66
Figure 4.1	Dissertation map, chapter 4	86

Contents (continued)

List of figures		Page
Figure 5.1	Dissertation map, chapter 5	134
Figure 6.1	Dissertation map, chapter 6	144
List of charts		Page
Chart 4.1	Perspective on transaction timing	94
Chart 4.2	Correlation between management's expertise and their perceptions of threats	97
Chart 4.3	Transaction date	99
List of tables		Page
Table 2.1	Sales transaction audit trail	45
Table 2.2	Accounting equation	46
Table 3.1	Research design types	71
Table 4.1	Users of financial statements	99
Table 4.2	Summary of follow-up interview results	105
Table 4.3	Analysis of audit trail data collected	107
Table 4.4	Comparison between the initial document of the audit trail data and the document described in the interviews	112
Table 4.5	Comparison of transaction date of the audit trail data with data obtained in the interviews	114
Table 4.6	Comparison of IT security information disclosed on the websites, gathered during the audit trail and the information gathered during the structured interviews	117
Table 4.7	Comparison of information required by the Electronic Communication and Transaction Act and information provided on the company's websites	121

Contents (continued)

Table 4.8	Comparison of information disclosed on the website on the return of goods and customer refunds	124
Table 4.9	Legal timing of transactions and the right of the company to cancel	125
Table 4.10	Tracking of Internet-based sales transactions	128
Table 4.11	Accounting of Internet-based sales transactions	129

CHAPTER 1
THE PROBLEM, SIGNIFICANCE AND STRUCTURE OF THE STUDY

Contents

Section		Page
1.1	Introduction	1
1.1.1	Definition of terms	2
1.1.2	Scope, limitations and exclusions	3
1.1.2.1	Scope and limitations	3
1.1.2.2	Exclusions	6
1.1.3	Trading through the Internet	7
1.2	The problem and its setting	9
1.3	Significance of the study	19
1.4	Objectives, hypothesis and methods of study	20
1.5	Research outline	23
1.6	Conclusion	26

List of figures

Figure 1.1	Typical configuration of an Internet-based sales system	15
Figure 1.2	Dissertation map, chapter 1	26

1.1 INTRODUCTION

“Just when I think I have learned the way to live, life changes.”

(Hugh Prather in Cook, 1993:298.)

When the Internet began to be used as a medium for communicating and recording transactions, it was the beginning of a new era. It has been an era in which the accounting world has had to take cognizance of all the advantages and disadvantages of the Internet in recording transactions. Marcella (1998) sounds the following warning:

Electronic commerce technologies are rapidly changing the business world, as well as the rules and conditions under which business is transacted. Accordingly, auditors and accountants must be aware of how technology impacts their business, their industry and related industries, the legal and regulatory environment, and their profession.

The accounting and auditing profession did in fact take cognizance of the changing business world and responded by issuing the following standards to help regulate the profession:

- ISA 315 (2004) Understanding the entity and its environment and assessing the risk of material misstatement with specific reference to paragraphs 6, 8, 14 - 22 and Appendix 3.
- IAPS 1013 (2002) Electronic commerce – Effect on the audit of financial statements.

This new era introduced new technological terms into the world of accounting. In order to ensure clarity, the most important terms used in this study are defined in section 1.1.1.

1.1.1 Definition of terms

The following terms apply to this study:

Internet: “a system architecture that has revolutionized communications and methods of commerce by allowing various computer networks around the world to interconnect” (Encyclopaedia Britannica 2006, s.v. “Internet”).

B2C: “business-to-consumer electronic commerce involves interactions and transactions between a company and its consumers” (Korper & Ellis, 2000:10).

E-commerce: "maintaining business relationships and selling information, services, and commodities by means of computer telecommunications networks" (Encyclopaedia Britannica 2006, s.v. "e-commerce").

GAAP: "Statements of Generally Accepted Accounting Practice" or "Statements of GAAP consist of practices and principles that govern the recognition, measurement and reporting of the financial events of an entity. Statements of GAAP are International Financial Reporting Standards (IFRSs) that comprise newly issued IFRSs as well as the current International Accounting Standards (IASs)". (Dempsey & Pieters, 2005:4.)

Transactions: "events which can be measured in terms of money and have a bearing on the financial position of the entity" (Dempsey & Pieters, 2005:25).

The global influence of the Internet and the ability of entities to use the Internet as a communication medium during commercial transactions are indisputable. In order to ensure that this study remains within manageable limits, certain limitations were imposed on the scope of the study. Both the scope and the limitations thereon are described in section 1.1.2.

1.1.2 Scope, limitations and exclusions

To ensure that the boundaries and extent of the study are clear, the scope and limitations are described in the following section, 1.1.2.1, and the exclusions are listed in 1.1.2.2.

1.1.2.1 Scope and limitations

This study is of a qualitative and exploratory nature; it was designed to identify the actual methods used by four diverse entities, as multiple-case studies, to account for their Internet-based sales transactions. Once the methods had been identified, the methods these entities use to account for their Internet-based sales

transactions were compared with the requirements of GAAP in order to address all the elements of the title. The research approach, design and methods, as well as the identification of the four entities, are discussed in detail in chapter 3.

In order to accomplish the above, literature reviews were used to identify the methods used to account for sales transactions (from the historical manual recording of sales to sales processed in an online real-time computerised environment), as well as the requirements of GAAP that apply to the recording and disclosure of sales transactions.

Because the information required to account for Internet-based sales transactions is reliant on the entity's information systems, this study considered how the data relating to the sales transactions were entered into the information system. In the process of identifying the methods used to account for Internet-based sales transactions this study used the historical development of the Internet as described in the literature to identify the risks specifically associated with the Internet that could influence the initial recording of the accounting information of Internet-based sales transactions.

A literature review was also used to identify the most suitable research methodology for answering the research questions applicable to the study and enable a conclusion on the hypothesis. The information gathered during the literature reviews was used as the theoretical basis for the further qualitative research that collected primary data to identify the methods used by the entities to account for their Internet-based sales transactions. Since this study is essentially a case study it was important to ensure that sufficient data were collected. Three different data collection methods were therefore used to identify the actual methods used to account for Internet-based sales transactions. The data were triangulated to enable the study to answer the first research question. The results were compared with the requirements of GAAP and other relevant information identified in the literature to enable the study to answer the remaining research question and arrive at a conclusion on the hypothesis. The research questions and hypothesis are described in detail in section 1.4.

To ensure that the scope of the study was manageable, the following limitations applied:

- The study focused on retail entities that sell goods over the Internet for delivery to customers.
- The study required both the entities and the customers to be in South Africa.
- The requirements of the Electronic Communications and Transactions Act 25 of 2002 (ECT Act) were taken into account in so far as this Act bestows legal status on the data message that transports the information on the Internet-based transaction, requires contact details to be disclosed, requires the payment process to be secured and allows for the repudiation or cancellation of specific transactions. These elements were taken into consideration because they have a direct impact on the accounting of an Internet-based sales transaction.
- The identification of the possible influence of the Internet on the accounting process and the inherent risks of the Internet relied heavily on Internet-based sources. These sources included newspaper or news articles, which were the only source that highlighted some Internet-related problems, and were also the main source of information on the growth of Internet-based sales during different periods. At times older sources were used as these sources highlighted principles that are still valid. In general older sources were also used because they provided the best explanation of the highlighted principles.
- No studies were found that described the impact or influence of allowing the customer to enter the transaction information into the information system, or studies that determined whether the mere fact that the Internet is used to record the initial transaction details will lead to different accounting methods being used by the different types of entities.

As the scope and limitations of the study are clear the remaining element required to define the boundaries of the study is the elements that are specifically excluded. These exclusions are listed below.

1.1.2.2 Exclusions

The following are excluded from the study:

- Value Added Tax (VAT). The VAT value attributable to a transaction is not recorded as revenue by the entity involved in the transaction.
- The study focused on the accounting of basic South African Internet-based sales transactions and therefore any subsequent manipulation of income to achieve income smoothing or provisions falls outside the scope of this study.
- Fraud, fictitious transactions or white collar crime are excluded from the study as they fall within the ambit of criminal law.
- The strategic and operational reasons why an entity engages in Internet-based transactions can influence the manner in which it accounts for its Internet-based transactions. However, determining whether the selected strategy or operational business solution is suitable for the specific entity is a business decision and falls outside the scope of this study.
- Integrated information systems are used by entities today, especially with the deployment of enterprise resource planning (ERP) or enterprise resource management systems (ERM), where the information system closely integrates accounting information with management information. This study focuses only on how the system records its Internet-based sales transactions for accounting purposes. Aspects relating to the control of the business process that supports Internet-based sales transactions as well as any other management information generated by this process that does not directly influence the accounting transaction fall outside the scope of this study.
- Behavioural elements could affect the perceptions surrounding the methods used to account for sales transactions. Behavioural accounting research falls within the ambit of industrial psychology and is therefore excluded.
- Multi-channel income represents income generated through the traditional “brick and mortar” business as well as through Internet-based sales. This study focused only on the Internet-based sales channel within multi-channel income, as the title indicates.

- As this study focused on Internet-based sales transactions where the goods are sold from an entity in South Africa to a customer in South Africa, there was no cross-border or foreign exchange impact.

These exclusions enabled the study to focus on the accounting of a basic retail sales transaction, entered into in South Africa through the communication medium of the Internet. In essence the study aimed to identify how an entity records its South African Internet-based sales transactions where the accounting of a normal cash sales transaction is described by Dempsey and Pieters (2005:98) as follows:

Dr Bank	R xx
Cr Sales	R xx
Merchandise sold for cash	

A more comprehensive description of the complexities of trading through the Internet is given in section 1.1.3 and 1.2 below.

1.1.3 Trading through the Internet

In order to identify the change brought about by merging accounting with the Internet, it is important to understand what the Internet represents and how the accounting of transactions can be influenced.

The Encyclopaedia Britannica describes the Internet more simply as “a system architecture that has revolutionized communications and methods of commerce by allowing various computer networks around the world to interconnect” (Encyclopaedia Britannica 2006, s.v. “Internet”). In essence the Internet is merely a very large, publicly accessible global computer network, also referred to as cyberspace. The term “cyberspace”, coined by William Gibson in his novel *Neuromancer*, is now used to describe the whole range of information resources available on computer networks (Buys, 2000:461).

The general definition of a transaction is “a business deal” (Longman, 1995). However, Dempsey and Pieters (2005:25) go further in describing transactions in

accounting terms as “events which can be measured in terms of money and have a bearing on the financial position of the entity” and add that only “transactions of financial events have an influence on one or more of the elements of the accounting equation”. For the purposes of this study an Internet transaction is described as a business event (in which the Internet is used to agree and record the details of the specific business deal) that has a bearing on the financial position of the entity.

Although the Internet has existed for more than three decades (Leiner, Cerf, Clark, Kahn, Kleinrock, Lynch, Postel, Roberts & Wolff, 2007; Gromov, 2007), using the communication medium of the Internet to transmit relevant data for commercial transactions is a fairly new adaptation. It is only since the 1990s that the Internet has become an increasingly popular medium for the execution of commercial transactions. These transactions between consumers or customers and entities generate information that specifically relates to and describes the details of the transaction or business deal. The initial information thus generated becomes the source document generated at the time of the transaction, and is used to account for the specific transaction. It is critical from an accounting perspective that the financial results of all transactions should be recorded in the accounting records. To ensure that all transactions are recorded, the results of all transactions must be tracked through the information system by using an audit trail. Such an audit trail tracks the transaction information from the initiation of the transaction, as recorded in the source document, until the summation thereof in the annual financial statements. This tracking of the transactions’ details must be done in a manner that complies with Generally Accepted Accounting Practice, irrespective of whether or not the transactions originated through the communication medium of the Internet or through more conventional means. This might prove to be a greater challenge for Internet-based transactions. Martin (2000) mentions that in “an e-commerce environment the actual paper trail is greatly diminished compared to the current paper based environment” and emphasises the electronic nature of the audit trail as a risk that has an impact on Internet-based transactions.

Using the Internet as a medium to enhance commercial objectives is often referred to as e-commerce. However, e-commerce is not a concept that is unique to the

Internet. It refers to the achievement of commercial objectives through the use of any electronic means. Electronic business transactions are conducted by means of credit cards, debit cards, fax machines, automated banking, electronic telephonic banking or even electronic data interchange (EDI) (Canadian Bankers Association, 2001; Martin, 2000). To avoid confusion, this study refers to Internet-based transactions and not e-commerce.

1.2 THE PROBLEM AND ITS SETTING

Internet-based sales transactions differ from more traditional sales transactions in that a customer, who could be anybody, anywhere, can perform the initial capturing of the transaction information or data. The use of the initially captured transaction information is described by Plonim (1998:82) as an advantage, as “no re-entry [is] necessary for customer or sales information”. This is supported by Read, Ross, Dunleavy, Schulman and Bramante (2001:330) in the statement “*Ultimately, we will be able to eliminate the need for transaction processing activity [in the finance function] completely, replacing it with Web-based systems maintenance and audit*”.

Allowing the customer to enter the data relating to the transaction into the information system is not without risk. The risk of making the customers and their information systems part of the accounting process was highlighted in the middle of 2003 when approximately R530 000 was stolen out of the bank accounts of three clients of ABSA Bank in South Africa. They were the victims of “spyware” or keystroke logging software. Spyware is a class of computer program that keeps a record of all the keys pressed on the keyboard of a victim's computer, and then sends that record via e-mail to the hacker that initiated the spyware program. This attack was successful because it targeted the computers used by the bank's clients. The criminal was able to obtain the account information and passwords from the “victim's” own computer. (Anon., 2003.) The report made it clear that the bank's own security systems were not compromised during this attack. This attack confirmed the saying that a chain is only as strong as its weakest link.

Internet-based transactions enable the trading entity to allow its customers to capture the details or data relating to a transaction they initiated. Internet-based

transactions can thus initially be captured by the customers who are in all probability untrained in accounting and unconnected to the entity. The data that reflect the transaction details as captured by the customer are then used to account for the specific transaction and are annually summarised in the financial statements. In contrast, trained employees of the trading entity usually perform the initial recording of traditional sales transactions. More detail on how traditional as well as computerised sales transactions can be recorded in the accounting records is given in the latter half of this section as well as in chapter 2. The changes that the Internet can bring to accounting and the finance function are described as follows:

All finance's current work around purchasing and payables, sales and receivables, will be seamlessly conducted via the Internet. Finance's once critical role in the arena will be minimal, focusing on oversight and maintenance (Read *et al.*, 2001:v.)

It is thus clear that Internet-based transactions can change the role traditionally played by the accountant. Especially in situations where the transactions are recorded by the information system in a seamless manner, it is possible that in practice Internet-based sales transactions may be accounted for in a unique manner in order to allow for the impact of the Internet on the transaction.

The problem investigated by this study was to identify the actual methods used to account for South African Internet-based retail sales transactions. The study was therefore of an exploratory nature. Once the actual methods used to account for South African Internet-based retail sales transactions had been identified the study evaluated the extent to which actual practice complies with the requirements of Generally Accepted Accounting Practice (GAAP).

Sales and payments are the two types of transactions that can be initiated over the Internet by customers. Where the goods are available in electronic format, as in the case of electronic books, music or computer programmes, the customer will also be able to initiate the downloading of the purchased goods. In business-to-business e-commerce (B2B) situations it would be possible to initiate any agreed

upon type of transaction between the trading parties as the relationship between the trading parties is governed by contractual agreements. This study will, however, focus on basic South African Internet-based retail sales transactions initiated by a customer that require the ordered goods to be subsequently delivered to the customer also in South Africa. This is also referred to as B2C business-to-consumer e-commerce. The subsequent delivery of goods to the customer was critical in this study as the delivery date was used to determine when the transaction should be recorded for accounting purposes. The International Accounting Standard (IAS) 18 on Revenue requires in paragraph 14 that:

Revenue from the sale of goods shall be recognised when all the following conditions have been satisfied:

- (a) the entity has transferred to the buyer the significant risks and rewards of ownership of the goods; ... (IASCF, 2006:1063).**

Lubbe and Milligan (2006) state that the “main issues relating to the recognition of revenue are WHEN and AT WHAT VALUE”. Thus both the value of the transaction and the timing of its recognition are important in this study.

Currently the accounting requirements for Internet-based transactions are exactly the same as for any other transaction. All transactions must comply with the requirements of GAAP. Entities are required to account for the results of their business activities or transactions on an annual basis through the presentation of a set of financial statements. Generally accepted accounting practices are prescribed in the Standards of Generally Accepted Accounting Practice, normally referred to as GAAP. These Standards are developed by the International Accounting Standards Board (IASB) through a consultation process and are issued by the International Accounting Standards Committee Foundation (IASCF). Despite the fact that they are generally referred to as GAAP, they are called the International Financial Reporting Standards (IFRSsTM) and include the International Accounting Standards (IASsTM) (IASCF, 2004:xiii.)

Paragraph 13 of the International Accounting Standard, IAS 1, on the Presentation of Financial Statements describes the accounting requirements as follows:

Financial statements shall present fairly the financial position, financial performance and cash flows of an entity. Fair presentation requires the faithful representation of the effects of transactions, other events and conditions in accordance with the definitions and recognition criteria for assets, liabilities, income and expenses set out in the *Framework*. The application of IFRSs, with additional disclosure when necessary, is presumed to result in financial statements that achieve a fair presentation (IASCF, 2006:788).

This shows that all transactions, as well as the combined effect of all transactions for any entity, must be recorded in the financial statements of the entity in a manner that complies with the requirements of GAAP and results in fair presentation. The specific GAAP requirements relevant to Internet-based sales transactions can be found in the statement that deals with revenue, IAS 18, where the following appears:

Income is defined in the *Framework for the Preparation and Presentation of Financial Statements* as increases in economic benefits during the accounting period in the form of inflows or enhancements of assets or decreases of liabilities that result in increases in equity, other than those relating to contributions from equity participants. Income encompasses both revenue and gains. Revenue is income that arises in the course of ordinary activities of an entity and is referred to by a variety of different names including sales... (IASCF, 2006:1062).

As stated at the beginning of section 1.2, one of the unique characteristics of Internet-based transactions is that a customer, who does not necessarily have any knowledge of the accounting requirements applicable to transactions, performs the initial recording of the details pertaining to a sales transaction. Elifoglu (2002:67) describes the unusual nature of Internet-based transactions as "Internet-based business models connect *unknown* buyers to *unknown* sellers ... [i]n this paperless and anonymous environment, transactions are initiated and completed among buyers and sellers who are known to each other only by their electronic addresses". It is therefore possible that the proper accounting of an Internet-based

transaction could be in jeopardy. In order to safeguard the entity, the information system that supports Internet-based sales should be designed in such a manner that the system itself will ensure that each transaction is captured in a way that ensures compliance with GAAP. However, it is possible that an information system that seamlessly incorporates the accounting of Internet-based sales transactions has not taken all the requirements of GAAP into account during the programming of the system, especially as it is a growing trend for entities to configure and implement enterprise resource management (ERM) systems that offer integrated information systems solutions (ISACA, 2006:147). Another possibility is that the current stringent GAAP requirements may not enable an entity to satisfy its own information needs on the sales process. In the latter case it is possible that the entity would prefer to account for its sales transactions in a manner that satisfies its own information needs. Slone described the problem with sales information from an information perspective in Gates and Hemingway (1999:8) as follows: "Accurate sales information continued to be hard to come by ... sales figures were inconsistent, out of date, and incomplete."

Despite the fact that the risks that could have a negative impact on the correct recording of Internet-based transactions as well as the various methods available to manage these risks are well documented, the author was unable to identify any study that described the impact or influence of allowing a customer to enter the transaction information into the information system, or a study that determined whether the mere fact that the Internet was used to record the initial transaction details would lead to different accounting methods being used by the different types of entities.

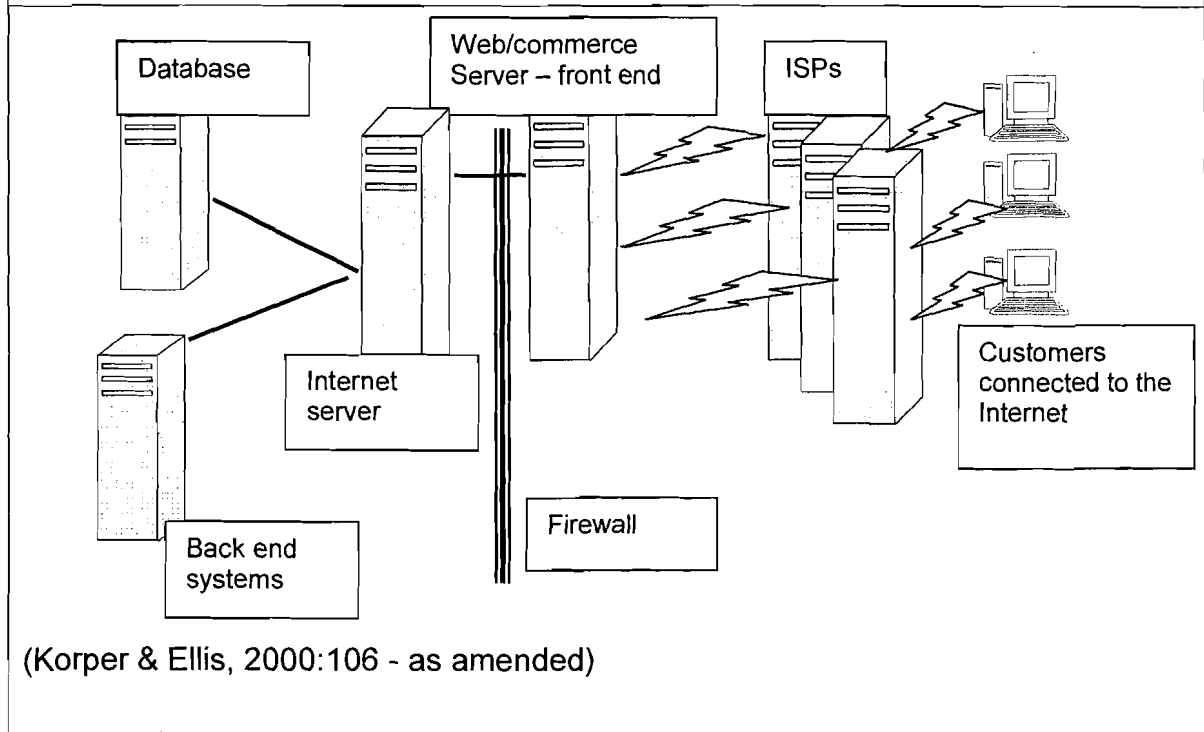
The Canadian Bankers Association (2001) describes trading through the Internet as being like a "24 hour a day global shopping mall, offering anything from groceries to airline tickets to out-of-print books" and states that "anyone with Internet access can buy in cyberspace". The borderlessness and openness of Internet-based transactions were emphasised by Elifoglu (2002:67) in the statement that the "computer system invites – and welcomes – the whole world". Internet-based sales transactions are therefore not limited by the physical constraints of time and place. Merryweather (2000) describes this "lack of physical

boundaries” as one of the biggest challenges of moving into a cyber world. This challenge is reflected in the statement by Potter (2001) that “E-business customers expect instant 24×7 availability and rapid response.”

During an Internet-based sales transaction a customer accesses the offerings of an entity by using the Internet to access the entity's commercial or web servers on its website. The customer accesses the Internet through an Internet service provider (ISP) and uses browser software such as Microsoft's Internet Explorer to navigate through the Internet in order to access the correct or desired web addresses. This gives both the entity and the customer a worldwide base for transactions. Once the customer accesses the products offered for sale by the entity on its web/commerce servers, the customer can reflect on the different offerings available before selecting a product, and agreeing to the details of a specific transaction. After the details have been agreed upon, the web/commerce server (front-end) transfers the details of the transaction to the entity's information system (back-end) to allow a record of the transaction to be maintained and the product that has been ordered to be delivered. The accounting system then extracts the required information through the information system, to record the details of the transaction in the financial statements of the entity.

Figure 1.1 contains a graphical representation of Internet-based sales transactions. The above description explains how a customer can initiate an Internet-based sales transaction as shown in figure 1.1. Both the above description and figure 1.1, showing a typical configuration to support Internet-based sales transactions, are supported by Korper and Ellis (2000:106).

Figure 1.1 Typical configuration of an Internet-based sales system



In contrast, traditional sales transactions are limited by time and space. Every customer in South Africa frequently enters a retail entity to purchase goods. Access to retail entities is limited by the trading hours and the physical location of the specific entity. The customer can access the entity, select the required goods, pay for them at the till, receive a till slip and exit the entity satisfied with the goods and the evidence of the transaction, namely the till slip.

Traditionally the details of such sales transactions were entered in the sales journal of the entity periodically, on the basis of a sales summary printed daily from the till. This process of combining transaction data before processing them is also described by Gelinas, Sutton and Hunton (2005:73) in their statement that “accountants recognized that the cheapest and most efficient way to do data processing on large volumes of similar business event data was to aggregate (i.e. batch) several events together and then periodically complete the processing on all the event data at once”. According to Gelinas *et al.* (2005:73), with the initial computerisation of the accounting processes, computer systems were programmed to follow a pattern similar to the process used by manual systems. The automation of the manual system is described as follows:

At the point of occurrence of the business event, the information for the event will be recorded on a source document by the sales clerk. The clerk will write the description of the goods you wish to purchase in duplicate on a sales slip and total the sale. One copy will go with the customer and one copy will be put into the till. A batch of source documents will be taken out of the till and sent to a data operator who will enter the data in a computerised format. Once all the data has been entered the computerised data will be entered into the computer system and any necessary calculations and summaries will be performed and the accounting records will be updated. (Gelinas *et al.*, 2005:74-75.)

Since then the automation of computerised accounting systems has evolved to allow for online real-time processing methods that “gather business event data at the time of occurrence, update the master data essentially instantaneously, and provide the results arising from the business event within a very short amount of time – that is in real-time” (Gelinas *et al.*, 2005:77).

When the Internet is used for transactions, there is no physical contact between the trading parties and instant satisfaction (walking away with the product) is not always possible. Yet, the fact that the customer has to wait for goods does not in itself make Internet-based transactions exceptional. Buying goods from catalogues through the postal system also requires the customer to wait for delivery. An exceptional characteristic of Internet-based transactions is the loss of the usual boundaries of time and place (Merryweather, 2000). A customer can initiate an Internet transaction by accessing the relevant website at any time from any place, while entities can launch global Internet trading that is “24/7/365” (twenty four hours a day, seven days a week, throughout the year) (Beisiegel, 2002:24; Potter, 2001). By removing the boundaries of time and space the Internet has empowered the world’s economic population to become part of the business sphere of the entity and the entity to tap into the unlimited commercial power of the world. Referring to the advantages of the Internet as a commercial medium, Whysall (2000:487) states that the “potential for Internet retailing to reach across boundaries and into our homes is a driving force behind the current interest in, and expansion of, electronic retailing”.

Despite the advantages of borderless Internet-based transactions, some concerns remain. This open access comes with disadvantages because “less principled agents” also have open access (Whysall, 2000:487). This does place a responsibility on businesses who engage in Internet-based sales to offer services in a manner secure enough to address the customer’s concerns relating to trust (Elifoglu, 2002:67; Mahadevan, 2003; Holsapple & Sasidharan, 2005:378 and 395). According to Germain (1997), the lack of physical representation can also make it difficult for a customer who is dissatisfied and who ordered and paid for goods over the Internet to communicate such dissatisfaction. Holding both parties accountable for an Internet-based sales transaction can also prove difficult, as the product purchased by the customer must still be delivered and the customer does not necessarily have reliable evidence of the transaction. Thus the accounting information should initially be captured in a manner that will ensure that the information captured correctly reflects the transaction entered into.

The information communicated on the web/commerce servers, together with the accounting information gathered at the initiation of the transaction, should also enable the entity to comply with the requirements of the ECT Act. The ECT Act of 2002 acts as an additional safeguard to protect customers as it bestows legal status on data messages in section 11 and requires entities to provide specific contact information in section 43 (South Africa, 2002:ss 11 and 43). The latter will enable a dissatisfied customer to communicate his or her complaint to the specific entity. A framework that supports dispute handling for Internet-based sales transactions was developed by Tang, Fu and Veijalainen (2004:393-412). It is therefore possible for the information system to be programmed to deal with disputes optimally.

Sections 43 and 44 of the ECT Act of 2002 make provision for a customer to repudiate or cancel a transaction under certain conditions (South Africa, 2002:ss 43 and 44). The impact of repudiated or cancelled transactions is important in this study because it indirectly influences the accounting of Internet-based sales transactions by effectively reversing the original transaction and influencing the total balance of sales transactions or revenue as disclosed in the income

statement. **The cancellation or repudiation of transactions is dealt with in detail in section 4.6.1.**

On the entity's side, the web/commerce servers may be at risk because of their link to the Internet. In this regard Parker (2001:xvi) notes that the Internet puts Internet-based transactions at greater risk for the following reasons:

- Interconnectivity and openness make attacks and unauthorised access easier.
- Digitization adds special problems for digital information and transactions.
- Globalization and virtualization enlarge the scale and scope of risks.
- Computing power, connectivity, and speed can spread viruses, allow system break-ins, or compound errors in seconds, possibly affecting interconnected parties.
- Ever-changing environment changes risks, so solutions may lose effectiveness.
- Hacking techniques never stop evolving, so new tools mean new vulnerabilities.

This increased risk is also acknowledged in the International Auditing Practice Statement (IAPS) 1013 (2002) on Electronic commerce – Effect on the audit of financial statements in paragraph 03, which reads as follows: “However the increasing use of the Internet for business to consumer [as is the case in this study], business to business, business to government and business to employee e-commerce is introducing new elements of risk to be addressed by the entity and considered by the auditor when planning and performing the audit of financial statements.”

Another concern is the possible significant increase in the volume and value of Internet-based sales transactions. If only a few transactions, at low values, were incorrectly recorded in the financial statements, the financial statements themselves would still fairly reflect the operational results of that entity. If, however, the volume or value of the transactions that were incorrectly recorded were to increase dramatically, the result could be that those incorrectly recorded transactions could lead to a misrepresentation of the actual operational results in

the financial statements of the entity. This point is also made in IAPS 1013 (2002), paragraph 04, in the following statement: "Growth of Internet activity without due attention by the entity to those risks may affect the auditor's assessment of risk."

Since the risks associated with the Internet could negatively affect the entity's ability to record and maintain its transaction records in a manner that complies with GAAP, the information system that performs these tasks must be designed and maintained in such a manner that the system itself will enforce compliance with GAAP and maintain the reliability of the transaction information.

1.3 SIGNIFICANCE OF THE STUDY

This study focused solely on the accounting of Internet-based retail sales transactions in South Africa. The biggest advantage of this study is that it explored whether a change in technology such as the Internet affects the method used by an entity to account for its transactions.

The ongoing changes in technology and the increasing frequency with which new technologies are applied in commerce will continue to pose challenges for the managers embracing these new technologies. Possible problems associated with this embracing of new technologies are emphasised by Ernst & Young in their Global Information Security Survey (2005:12) in their statement that "some organizations do recognize the extent to which information security risks are inherent in emerging technologies ... many others do not". Therefore, in order to ensure that they are able to use and account for these new technologies in a suitable and sustainable manner, the people incorporating the new technologies into the commercial arena should take the inherent risks of the new technology into account.

The importance of developing transaction processing systems that work properly is emphasised by Gaulke (2002:37), who states that the "risks associated with electronic data processing represent the bulk of the modern entity's operational risk, but that these risks can be substantially reduced through effective risk

management". The important impact of fast changing technology is also highlighted by Ernst & Young in their Global Information Security Survey (2005:3):

Organizations are continually seeking more productive and competitive ways of working, which are driving the proliferation of rapidly developing technologies. These technologies bring with them serious threats that often are not being fully addressed in the right manner or timeframe.

While the importance of technological changes or the development of transaction processing systems is acknowledged, sales are another extremely important area. Sales are one of the main pillars that support the business of an entity in that sales transactions are the generators of revenue or income in an entity. Dempsey and Pieters (2005:95) state that the "primary objective of every business entity is to make a profit which is used to compensate the owner for the use of his capital and/or to reinvest in the entity" and describe profit from an accounting point of view as "excess *income* earned over the *expenses* incurred to produce that income".

While it is important to understand the position of the study in relation to the broader accounting environment, as described above, it is equally important to ensure that the objectives are clearly defined to enable the study when it is completed to reach a conclusion on the achievement of the objectives and the hypothesis. The objectives, hypothesis and methods of study are discussed in the following section.

1.4 OBJECTIVES, HYPOTHESIS AND METHODS OF STUDY

The objectives of this study are twofold. Firstly, to identify how South African Internet-based retail sales transactions are initially captured and recorded, and secondly to evaluate whether the actual methods used to account for Internet-based retail sales transactions in South Africa comply with the requirements of GAAP.

A qualitative research approach was necessary to address the first objective, which focuses on identifying how Internet-based retail sales transactions in South Africa

are captured and recorded for accounting purposes by the cases. Henning, Van Rensburg and Smit (2004) state that in qualitative research it is as important to identify “*how it happens*” as merely to determine “*what happens*”. To satisfy this objective and answer the hypothesis, a positivist framework was adopted. Myers (1997) states that “[p]ositivists generally assume that reality is objectively given and can be described by measurable properties which are independent of the observer”. In this study the measurable properties are the requirements of GAAP. To act as an independent observer is a well known concept in the accounting and auditing profession. The second objective can be satisfied by using a comparative analysis to compare the results of the qualitative research with the requirements of GAAP as identified in the literature. As no information was available to describe the methods used to account for Internet-based sales transactions, this study is explorative in nature.

This study attempts to determine how the multiple-case study entities capture and record their South African Internet-based sales transaction information. The remaining aspect that must be dealt with in order to achieve the objectives of this study is to evaluate whether the methods that the multiple-case study entities use do in fact comply with the requirements of GAAP and, if not, to determine whether the methods they use could make a contribution to the improvement of accounting theory. In accounting it is acceptable to improve accounting theory by referring to actual accounting practice. This is supported by Ryan, Scapens and Theobald (2003:96), who state that “in the early stages of its development, accounting theory arose out of accounting practice”.

The hypothesis of this study is that *the four entities can account for their South African Internet-based sales transactions in a manner that complies with the requirements of GAAP.*

The motivation behind incorporating four entities is dealt with in chapter 3. To determine whether it is possible for the South African entities to account for their South African Internet-based retail sales transactions in a manner that complies with the requirements of GAAP, the following specific research questions must be answered:

- How do the four entities capture and record their South African Internet-based sales transactions?
- Are these sales transactions accounted for in a manner that complies with the requirements of GAAP?

The methods used to address the research questions are a combination of literature reviews, the collection of data with the aid of different qualitative research data collection methods and a comparative analysis within a multiple-case study design. These are in line with the exploratory nature of the study.

The literature reviews provide invaluable insight into how sales transactions can be accounted for as well as how the accounting of sales transactions evolved through the increased use of computer technology. The literature reviews also highlighted the inherent risks of the Internet that can affect sales transactions entered into through the communications medium of the Internet.

In order to explore the actual methods used by the entities to account for their South African Internet-based sales transactions, a qualitative research approach was used. Three different data collection methods were chosen, namely interviews, fieldwork and document or artefact reviews. With these three methods it was possible to triangulate the results obtained in order to identify the actual methods used by the entities to account for their South African Internet-based sales transactions.

Structured interviews were used to identify the methods each entity uses to account for its South African Internet-based sales transactions. The results of the structured interviews were followed up with evidence gathered through buying from the selected entities to identify the actual audit trail left by that specific Internet-based sales transaction (fieldwork). The information disclosed on the Web commerce servers of the entities was analysed, and the results of all three methods were compared and evaluated against the information gathered through the literature reviews. Finally, the methods used by the entities were compared with the requirements of GAAP to identify any differences. The results of the literature

review, the qualitative research and the comparative analysis were summarised and future areas of research identified. Further particulars of the actual research outline followed are given in section 1.5 below.

1.5 RESEARCH OUTLINE

This study consists of six chapters.

Chapter 1 The problem, significance and structure of the study

This chapter introduces the problem and describes the significance of the study.

The structure of the other chapters and the research methodology applied in this study are as follows:

Chapter 2 The accounting principles and risks inherent in the Internet

This chapter begins by describing the requirements of GAAP applicable to sales transactions. The requirements of both the Framework for the Preparation and Presentation of Financial Statements (Framework) and the Revenue Standard are described. The chapter highlights the assumptions generally made in accounting as well as the qualitative characteristics applicable to the recognition and measurement of accounting information, including the identification of the constraints that can influence the qualitative characteristics of accounting information. It describes the requirements of the Revenue Standard that prevails over the Framework and includes aspects such as the definitions of revenue and fair value. It also describes how revenue should be recognised by an entity.

The GAAP requirements describing the Framework for the Preparation and Presentation of Financial Statements are based on the 2004 version of the International Financial Reporting Standards (IFRS). The 2004 version is used as this version represents South Africa's move away from following its own local Accounting Standards to complying with the guidance of the IFRS (IASCF, 2004). No subsequent changes have been made to the Framework. The GAAP

requirements describing the capturing, processing and summarising of sales transaction information are based on the 2006 version to accommodate all relevant changes issued up to 30 November 2006 (IASCF, 2006). The current requirements of GAAP are supplemented in this chapter by descriptions of methods used to account for sales transactions as identified in the literature.

In the latter part of chapter 2 the risks of exposing the entity's accounting system to the Internet are highlighted. A description of the inherent risks of the Internet as reported in the literature is included. The risks inherent in the Internet were identified during the development of the Internet and are well documented. Information on the inherent risks was gathered through the use of a literature review on the historic development of the Internet.

Chapter 3 Research approach, design and method

Chapter 3 describes the research approach, design and methods used to identify the actual methods used to ensure the proper accounting of South African Internet-based sales transactions. Aspects that should be taken into consideration during the development, deployment and administration of the structured interviews are highlighted.

Chapter 4 Data analysis

In chapter 4 the methods used by the four entities to account for their South African Internet-based sales transactions are identified through the use of structured interviews. To obtain answers to the interview questions, the accounting and information technology (IT) managers of each entity were contacted by telephone for each selected entity. To accommodate the diverse nature of the entities, provision was made for the questions of the structured interviews to be asked of managers who are in a position to know how the entity accounts for its Internet-based sales transactions. In order to further support the information gathered through the structured interviews and follow-up interviews, goods were purchased from the selected entities to identify the actual audit trail left by the South African Internet-based sales transactions. In addition the information

disclosed on the web commerce servers of the entities was analysed and compared with the other information collected to develop a more comprehensive idea of how the entities accounted for their South African Internet-based sales transactions.

The results of the primary data collected through the deployment of the above methods are described and analysed in detail in this chapter.

Chapter 5 Comparison of data analysis with the requirements of GAAP

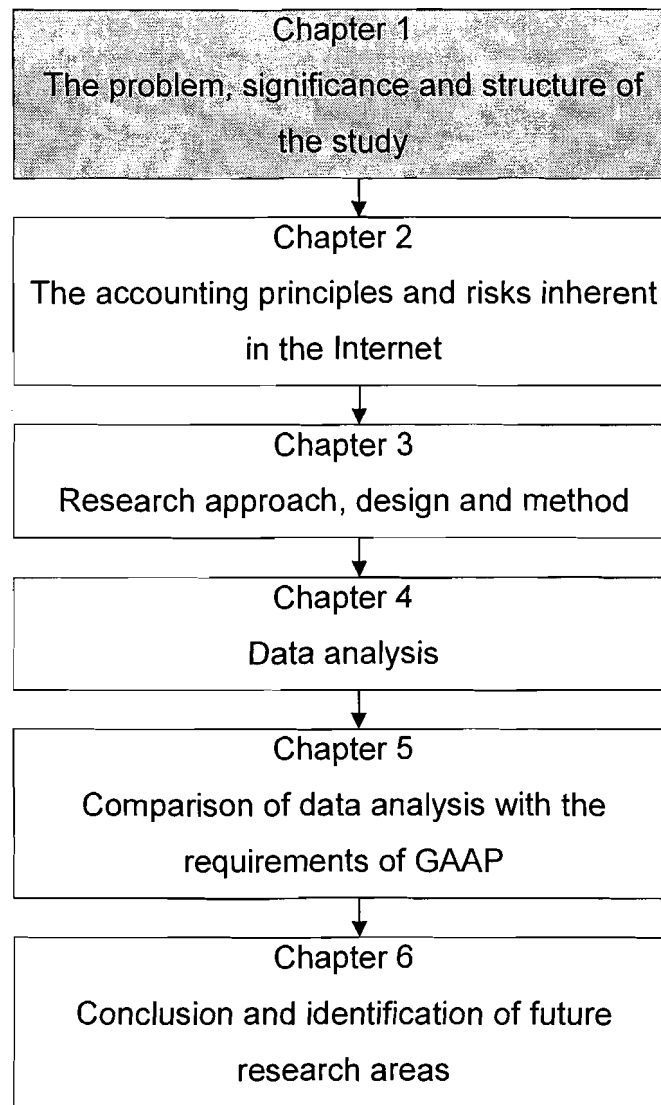
The results of the primary data analysis performed in chapter 4 enabled a comparison between the actual methods used to account for Internet-based sales transactions, as identified by the research, with the requirements of GAAP as identified in the literature review. Differences were analysed and the impact of these differences on the theoretical framework of the study was considered.

Chapter 6 Conclusion and identification of future research areas

Chapter 6 contains the summation of the research findings and highlights areas for future research as identified in this study.

The structure of this study as described above is represented below in figure 1.2 as a graphic dissertation map:

Figure 1.2 Dissertation map, chapter 1



1.6 CONCLUSION

The combined value of the information gathered through the literature reviews and the analysis of the primary data collected from the case studies enabled the study to answer all the research questions and positively conclude on the hypothesis. Possible areas for further research were also identified. The details on the conclusion the study reached in terms of the research questions, the hypotheses and areas warranting further research are disclosed in chapter 6.

However, a literature review was necessary to identify the theoretical framework that describes the accounting requirements that influence the accounting of

Internet-based sales transactions as well as the risks inherent in the Internet that could impact on the accounting of Internet-based sales transactions. The details pertaining to this literature review are dealt with in more detail in chapter 2.

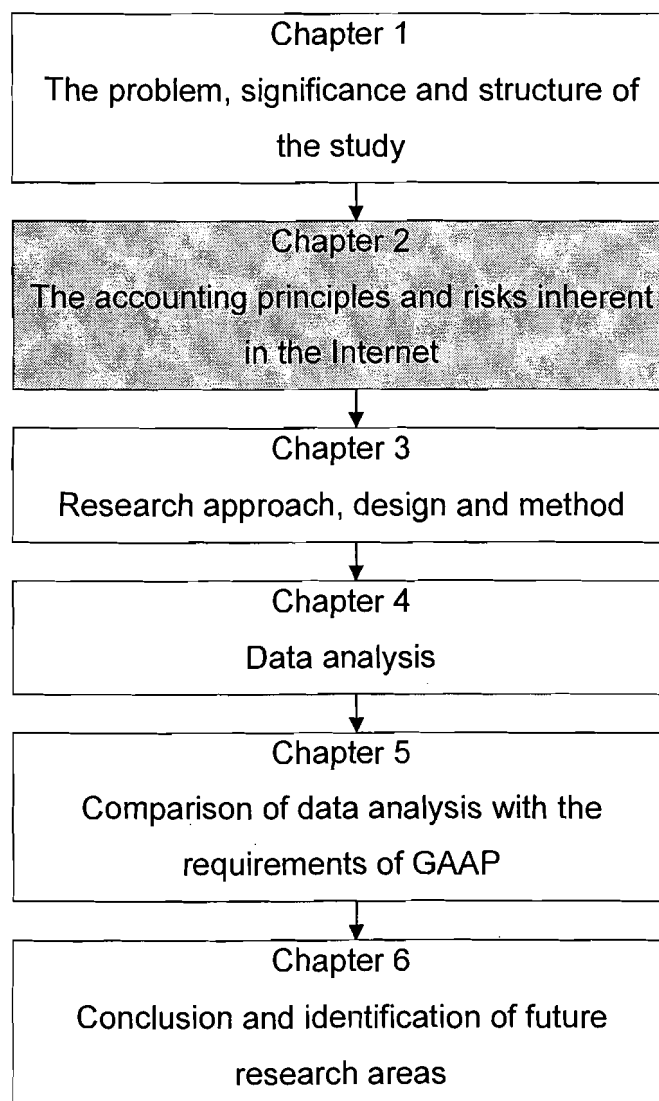
CHAPTER 2
THE ACCOUNTING PRINCIPLES AND RISKS INHERENT IN THE INTERNET
THAT COULD INFLUENCE THE ACCOUNTING OF TRANSACTIONS

Contents

Section	Page
2.1	30
2.2	31
2.2.1	33
2.2.1.1	33
2.2.1.2	34
2.2.1.3	38
2.2.2	39
2.2.2.1	39
2.2.2.2	40
2.3	44
2.4	49
2.5	51
2.5.1	53
2.5.1.1	53
2.5.1.2	54
2.5.1.3	55
2.5.1.4	56
2.5.1.5	59
2.5.2	61
2.6	63

Section	Page
List of figures	
Figure 2.1	Dissertation map, chapter 2 29
Figure 2.2	Online real-time processing of sales transactions 48
Figure 2.3	Invention model 62
List of tables	
Table 2.1	Sales transaction audit trail 45
Table 2.2	Accounting equation 46

Figure 2.1 Dissertation map, chapter 2



2.1 INTRODUCTION

This chapter forms the background to the study in that it reports on the main literature reviews performed. These literature reviews identified the current requirements of GAAP that apply to sales transactions as well as the risks inherent in the Internet that could affect Internet-based sales transactions. In order to put the accounting of Internet-based sales transactions into perspective, modern as well as traditional methods used to account for sales as described in the literature are explored. The literature review in this chapter that deals with the accounting of sales focuses on identifying the accounting principles applicable to the recording of sales transactions as described in the literature. Aspects relating to accounting by design, as outlined by Riahi-Belkaoui, such as his description of income smoothing, or creative accounting as also depicted by Naser, fall outside the scope of this study because these aspects focus on the manipulation of earnings or income after its initial recording (Naser, 1993:48-66; Riahi-Belkaoui, 2003:1-70 and 133-172). Before this study can determine whether the four retail entities can account for their South African Internet-based sales transactions in accordance with GAAP, the requirements of GAAP that are applicable to sales transactions should first be determined.

In general, the most prominent source of guidance used to determine the requirements for the proper accounting of transactions is GAAP or the Statements of GAAP as described in IFRS. Historically, most countries developed their own Statements of GAAP but, with the globalisation of entities, there has been a move to standardise all the different accounting treatments worldwide that resulted in the development of IFRS and the International Accounting Standards (IAS). These standards became applicable in South Africa in 2005. The current IFRS and IAS standards are the result of a global move towards a single set of accounting standards. Wong (2004:Introduction) describes the forces that pushed for the development of a global set of accounting standards in the following terms: "As the forces of globalization prompt more and more countries to open their doors to foreign investment and as businesses themselves expand across borders, both the public and private sectors are increasingly recognizing the benefits of having a commonly understood financial reporting framework supported by strong globally

accepted auditing standards.” In the process of establishing the new Accounting Standards the International Accounting Standards Board (IASB) is “committed to developing, in the public interest, a single set of high quality general purpose financial statements”. To accomplish this, the “IASB cooperates with national accounting standard-setters to achieve convergence in accounting standards around the world” (IASCF, 2004:xiii.)

To ensure that the study takes into account all the relevant theoretical aspects, a review of various publications on accounting theory was performed. These publications included the *Theory and Measurement of Business Income* (Edwards & Bell, 1961), *Positive Accounting Theory* (Watts & Zimmerman, 1986) and *Economics, Accounting and Property Theory* (Ellerman, 1982). After carrying out this review the author concluded that, although interesting, these sources could not add anything to the theoretical discussion around the requirements of GAAP which was not already in the Framework for the Preparation and Presentation of Financial Statements (Framework) or the International Accounting Standards.

In the latter part of this chapter (section 2.5), the literature review focuses on the development of the Internet in order to identify the risks inherent in the Internet. Section 2.2 below describes the general requirements of GAAP that apply to the study; this section also identifies the theoretical framework applicable to the study.

2.2 THE GENERAL REQUIREMENTS OF GAAP

The accounting principles applicable to the recording of an entity’s financial performance or transactions are mainly described in the Framework and in International Accounting Standard 1 on the Presentation of Financial Statements (IAS 1). In paragraph 13 (IASCF, 2006:788), IAS 1 describes the requirements applicable to the fair presentation of financial statements as follows:

Financial statements shall present fairly the financial position, financial performance and cash flows of an entity. Fair presentation requires the faithful representation of the effects of transactions, other events and conditions in accordance with the definitions and recognition criteria for

assets, liabilities, income and expenses set out in the *Framework*. The application of IFRSs, with additional disclosure when necessary, is presumed to result in financial statements that achieve a fair presentation.

Thus GAAP emphasises the importance of the fact that the results of transactions must faithfully represent the effect of the transactions. This requirement to faithfully represent the effect of transactions is not necessarily easy to implement. It is especially complex in an Internet-based sales environment where the information system must be designed and maintained in a manner that will allow it to record all transactions in such a way that the accounting of the transactions faithfully represents the effects of the transactions. IAS 1 goes on to describe fair presentation as follows in paragraph 15:

A fair presentation also requires an entity ... to present information, including accounting policies, in a manner that provides relevant, reliable, comparable and understandable information (IASCF, 2006:788).

In order to ensure fair presentation it is imperative to have a clear understanding of what relevant, reliable, comparable and understandable information is. The general dictionary definitions of these terms are:

Relevant – ideas that are valuable and useful to people in their lives and work

Reliable – can be trusted, can be relied upon

Compare – to examine people or things to see how they are similar and how they are different

Understandable – easy to understand (Oxford, 2000).

Guidance on how relevant, reliable, comparable and understandable accounting presentation can be achieved is contained in the Framework, and is given in more detail in section 2.2.1.2.

2.2.1 The Framework for the Preparation and Presentation of Financial Statements

The Framework “sets out the concepts that underlie the preparation and presentation of financial statements for external users” and deals with “the underlying assumptions, the qualitative characteristics that determine the usefulness of information in financial statements” and “recognition and measurement of the elements from which financial statements are constructed” (IASCF, 2004:23-24). These aspects are described in more detail below:

2.2.1.1 Underlying assumptions

The underlying assumptions in accounting, as described in the Framework, are firstly that the financial statements are prepared on the accrual basis, and secondly that the entity will continue to operate as a going concern in the foreseeable future.

The Framework describes accounting under the accrual basis in the following terms: “The effects of transactions and other events are recognised when they occur (and not as cash or its equivalent is received or paid) and they are recorded in the accounting records and reported in the financial statements of the periods to which they relate” (IASCF, 2004:27-28). Anthony (1993:75) agrees that in “order to measure income of a period, we must measure revenues and expenses of that period, and this requires the use of accrual accounting”, and states that accrual accounting is “more complicated but does make more information available for decision makers, which can aid in making the transaction information more relevant”. The accrual assumption directly relates to the requirement that each transaction should faithfully represent that specific transaction as described in section 2.2, as it dictates the recognition of the timing and measurement of the effects of a transaction. The pervasive nature of information systems can be useful in this determination as it allows “business event data to be entered directly into the information system at the time and place that the business event occurs” (Gelinas *et al.*, 2005:75).

The second assumption, namely that the enterprise is a going concern, implies that the “financial statements are normally prepared on the assumption that an entity is

a going concern and will continue in operation for the foreseeable future” (IASCF, 2004:28). In the context of this study the impact of the second underlying assumption should be seen together with the following GAAP definition of income as described in the Framework: “Income is increases in economic benefits during the accounting period in the form of inflows or enhancements of assets or decreases of liabilities that result in increases in equity, other than those relating to contributions from equity participants” (IASCF, 2004:37). The concept that income should increase wealth is neither new nor unique. Zeff (1982:15-16) said “the measurement of income should be directed at the question – has our wealth increased, decreased or remained the same?” Thus income generated from Internet-based sales must lead to either increased assets or reduced liabilities in order to comply with the definition of income. Income or revenue transactions must essentially be profitable to be recognised as revenue, and profitable entities are likely to continue to operate as going concerns in the foreseeable future. Zeff (1982:38) supports the going concern concept by stating that “a large part of accounting practice as well as accounting theory is based on the presumption that the accounting entity will continue to operate and not be liquidated in the foreseeable future”.

2.2.1.2 Qualitative characteristics

The framework further describes the qualitative characteristics of financial statements (IASCF, 2004:28) as “the attributes that make the information provided in financial statements useful to users”. The principal qualitative characteristics are “understandability, relevance, reliability and comparability” (IASCF, 2004:28). These four characteristics result in the fair presentation of transaction information in financial statements as they enable the faithful representation of transactions as described in section 2.2. In order to ensure that Internet-based sales transactions comply with the requirements for the qualitative characteristics of financial statements, it is important to consider the manner in which the Framework defines them.

The Framework (IASCF, 2004:28-31) describes the qualitative characteristics in detail and the following is an abbreviated extract of those characteristics that apply to this study:

Understandability

The information provided in financial statements must be readily understandable by the people (users) who are likely to use the information contained in the financial statements as a basis for economic decisions. The Framework assumes that users will have a “reasonable knowledge of business and economic activities and accounting and a willingness to study the information with reasonable diligence” (IASCF, 2004:28). The information disclosed that relates to sales transactions must therefore be disclosed in a manner that is understandable to the users of the financial information.

Relevance

In order for accounting information to be useful it must be “relevant to the decision-making needs of users”. Transaction information is relevant “when it influences the economic decisions of users by helping them evaluate past, present or future events or confirming, or correcting, the past evaluations”. Users frequently use the information about the financial position and past performance as a basis for predicting the future financial position and performance of the entity. The ability to make predictions from financial statements is enhanced by the manner in which information on past transactions and events is displayed. Thus the predictive value of the income statement can be enhanced if unusual, abnormal or infrequent items of income are separately disclosed. (IASCF, 2004:28-29.)

It can be concluded from the above that it may well be necessary to disclose the impact of Internet-based sales transactions separately from other sales transactions. Such separate disclosure will aid in highlighting the unique characteristics, risks and opportunities applicable to Internet-based sales and thus aid the users in their decision-making process.

Reliability

Information may be relevant, but could be so unreliable that its recognition may be misleading. To be useful, information must also be reliable. “Information has the quality of reliability when it is free from material error or bias and can be depended upon by the users to represent faithfully that which it either purports to represent or

could reasonably be expected to represent” (IASCF, 2004:29). Faithful presentation could be difficult to achieve because of the inherent difficulties in identifying or measuring individual transactions. Faithful representation also requires that the transactions be accounted for in accordance with their substance and economic reality and not merely their legal form (IASCF, 2004:29-31).

The revenue standard IAS 18 highlights the difficulty of balancing reliability and relevance. In situations where a refund is offered if the customer is not satisfied it states that: “Revenue in such cases is recognised at the time of sale provided the seller can reliably estimate future returns and recognises a liability for returns based on previous experience and other relevant factors” (IASCF, 2006:1066). The ECT Act allows a customer seven days after the receipt of the goods to cancel specified transactions (South Africa, 2002:s 44). This return or cooling-off period does not, however, apply to the following electronic transactions:

- a. for financial services, including but not limited to, investment services, insurance and reinsurance options, banking services and operations relating to dealings in securities;
- b. by way of auction;
- c. for the supply of foodstuffs, beverages or other goods intended for everyday consumption supplied to the home, residence or workplace of the consumer;
- d. for services which began with the consumer's consent before the end of the seven day period referred to in section 44(1);
- e. where the price for the supply of goods or services is dependent on fluctuations in the financial markets and which cannot be controlled by the consumer;
- f. where the goods
 - i. are made to the consumer's specifications;
 - ii. are clearly personalised;
 - iii. by reason of their nature cannot be returned; or
 - iv. are likely to deteriorate or expire rapidly;
- g. where audio or video recordings or computer software were unsealed by the consumer;
- h. for the sale of newspapers, periodicals, magazines and books;
- i. for the provision of gaming and lottery services; or

- j. for the provision of accommodation, transport catering or leisure services and where the supplier undertakes, when the transaction is conducted, to provide these services on a specified date or within a specified period (South Africa, 2002:s 42(2)).

The entities are, therefore, required to accommodate the impact of possible returns as allowed by the ECT Act.

This study will take the type of transaction into account in order to determine whether the cooling-off period applies and whether it is relevant in the determination of the event, in order to ensure the proper accounting of the specific transaction. Thus, from an accounting perspective, South African Internet-based sales transactions should be recognised as revenue but a provision should be made for possible returns. This can be difficult to achieve in practice, as the entity will not necessarily be able to determine when the customer received the goods – information that is necessary to assess when the seven day cooling-off period elapses. Information on how the entities deal with the cooling-off period, the return of goods, or the cancellation or repudiation of the transaction was gathered during the structured interviews and is described in chapter 4.

Non-repudiation is defined by IFAC (2002:10) as “the ability of IT-aided procedures to bring about desired legal consequences with binding effect”. In essence the information system should ensure that the person who initiates the transaction cannot deny its validity on the grounds that the transaction was “unintended or unauthorised” (IFAC, 2002:10). Whether the implementation of a non-repudiation element in Internet-based sales transactions is important for the relevant entity is an operational decision and falls outside the scope of this study. The ability of the entity to identify the customer is taken into consideration during the collection of data performed in chapter 4. The requirements of the ECT Act do have an impact on non-repudiation as it legalise and requires the cancellation of an Internet-based purchase under specific conditions (South Africa, 2002:ss 42 and 44). In addition, specific information relating to the cancellation of transactions is disclosed on the web/commerce servers of the entities. This aspect is explored in greater detail in chapter 4. As the information required for the processing of the payment is entered

at the same time as the sales transactions, it is not necessary for accounting purposes for the entities to identify the customer if the ordered goods have been paid for. However, it could be necessary for operational reasons (which are outside the scope of this study), as identifying the customer can enable the entity to track the purchasing pattern of the specific customer and could lead to improved marketing that is focused on customer needs (Shenkan, 2007).

Comparability

Comparability requires that users should be able to compare the financial statements of an entity over time in order to identify trends in its financial position and performance. Users should also be able to compare the financial position of different entities in order to evaluate their relative position, performance and changes in financial position. Thus the measurement and disclosure of similar transactions should be carried out in a consistently similar manner. Compliance with GAAP as described in the International Accounting Standards and the disclosure of which accounting policies are applied aid the users in comparing financial information from different entities. (IASCF, 2004:31.)

2.2.1.3 Constraints that impact on the qualitative characteristics

Constraints that affect the relevance and reliability of the information may be encountered. Examples of such constraints are the following: If there is an undue delay in the reporting of information it may lose its relevance; alternatively, to report information in a timely manner might impair reliability if the information is reported before all the aspects of the transaction are known. These constraints can be managed by balancing relevance and reliability in order to best serve the information needs of the users. The Framework acknowledges that, in practice, a trade-off between qualitative characteristics is often necessary. Generally the aim is to achieve an appropriate balance between the characteristics in order to meet the objectives of the financial statements, namely to present a true and fair view of the financial position, performance and changes in the financial position of an entity. (IASCF, 2004:31-32.)

The challenge of balancing relevance against reliability of accounting information is a well documented and continuous struggle (Miller & Bahnson, 2005; Watkins,

2007:8). Watkins (2007:8) states that a “decision-usefulness orientation of accounting places greater emphasis on the relevance of information provided to decision makers”. In contrast the regulatory environment in South Africa emphasises the importance of reliable information. See for example the Second King Report on Corporate Governance in South Africa (King II) and the Companies Act (King, 2002:73; South Africa, 1973:s 286).

In order to assess the accounting of Internet-based sales transactions it is also imperative to take into account the specific requirements applicable to such transactions. Such specific guidance is contained in International Accounting Standard 18 on Revenue (IAS 18). Although the guidance of the Framework is invaluable, in situations where there is conflict between the Framework and the Standards, the Standards prevail (IASCF, 2004:23). Thus the requirements and the definitions of the Revenue Standard are critical to this study, as the essential GAAP requirements applicable to this study are contained in the Revenue Standard.

2.2.2 The requirements of the Revenue Standard

IAS 18 describes revenue as “income that arises in the course of ordinary activities of an entity and is referred to by a variety of names including sales”. The objective of IAS 18 is “to prescribe the accounting treatment of revenue arising from certain types of transactions and events”. (IASCF, 2006:1062.) Guidance on how the revenue generated by Internet-based sales transactions should be recorded is therefore contained in IAS 18 and these guidelines should be complied with. More specific information on this guidance is given below.

2.2.2.1 Definition of accounting terms

IAS 18 specifies the following specific meanings:

Revenue is the gross inflow of economic benefits during the period arising in the course of the ordinary activities of an entity when those inflows result in increases in equity, other than increases relating to contributions from equity participants.

***Fair value* is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.**

Revenue includes only the gross inflows of economic benefits received and receivable by the entity on its own account. (IASCF, 2006:1063.)

In order to understand the definition of revenue it is necessary to understand the accounting equation and its elements. Dempsey and Pieters state that:

The three elements of the accounting equation are assets, liabilities and equity.

- *Assets* are the possessions of an enterprise which have monetary value.
- *Liabilities* are the claims of payables against the assets of an enterprise.
- *Equity* is the interest that the owner has in the assets of the enterprise.

This relationship between assets, liabilities and equity is represented by the basic accounting equation:

Assets = Liabilities + Equity (2005:12.)

2.2.2.2 Measurement and recognition of revenue

IAS 18 further describes the measurement of revenue as follows: "**Revenue shall be measured at the fair value of the consideration received or receivable**" (IASCF, 2006:1063). Thus the value at which each transaction must be recorded should be the actual amount agreed upon between the customer and the entity, as they are willing parties in an arm's length transaction. To achieve agreement on the transaction details, there should be agreement on the cost price per unit, the quantity of units included in the transaction, any discount, the delivery charges applicable to the transaction and the estimated delivery period. The above requirement for agreeing to the details of a transaction agrees with the ECT Act which states that an "agreement concluded between parties by means of data messages is concluded at the time when and place where the acceptance of the offer was received by the offeror" (South Africa, 2002:s 22). Fair value of the transaction, given the above requirements, must be the agreed upon value, and the legal timing of the transaction is the time when the acceptance of the offer was received by the offeror. Despite the legal requirement, revenue should only be

recognised for accounting purposes when the requirements listed below have been complied with. IAS 18 states that:

Revenue from the sale of goods shall be recognised when all the following conditions have been satisfied:

- (a) the entity has transferred to the buyer the significant risks and rewards of ownership of the goods;**
- (b) the entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;**
- (c) the amount of revenue can be measured reliably;**
- (d) it is probable that the economic benefits associated with the transaction will flow to the entity; and**
- (e) the cost incurred or to be incurred in respect of the transaction can be measured reliably. (IASCF, 2006:1065.)**

At first sight these requirements seem obvious and easily achievable but in practice it can be difficult to ensure that every transaction complies with all of these criteria. It is not necessarily easy or even possible to determine when the significant risks and rewards associated with the ownership of the goods purchased through the Internet are transferred from the entity to the customer. Such transactions could be recorded for accounting purposes when the customer orders the goods, when the goods are shipped, when the goods are paid for or when the customer receives the goods. The fact that transactions should be accounted for when the risks and rewards of the ownership of the goods are transferred to the customers was also highlighted by Sprague (1920:65) in the statement, "it is really the consumption or accretion of a right which we need to record".

The rapid incorporation of sales information, in order to ensure that information on sales is kept up to date and that it is relevant, can have a detrimental impact on the reliability of that information, as all the facts of the sale might not be known. Information such as when the risks and rewards, of the ownership of the goods, are transferred to the customer is important. Before the final agreement on the terms of the transaction is reached, the price and the delivery charge applicable to the

specific transaction should be communicated to the customer, and therefore the total value of the transaction should be known.

In determining the value of the transaction agreed upon, the quantity of units times the unit price, less any discount plus any delivery charges must be taken into consideration. This could be expressed as a mathematical formula as follows:

Agreed upon value = (units × unit price) – discount + delivery fees

However, the value of the transaction also depends on when the payment is received. If the payment is received at some future date the value at the date of the transaction should be reduced to make provision for the time value of money (Lubbe & Milligan, 2006; IASCF, 2006:1063-1064). The requirements that should be used to identify the value of a transaction are described in sections 7, 9, 10 and 11 of the Revenue Standard IAS 18 and SAICA's Circular 09/06 on transactions giving rise to adjustments to revenue/purchases (IASCF, 2006:1063-1064; SAICA, 2006:343-346).

These requirements are important as it is not always clear how to measure revenue appropriately. The question whether to show gross or net revenue was debated at length in the USA. Some of the questions this debate attempted to answer were:

- Should a company that acts as a distributor or reseller of products or services through the Internet record revenues as gross or net?
- Should a company that swaps website advertising space with another company record the advertising revenue and the expense?
- Should discounts or rebates offered be deducted from revenue? (Baker, 2006:667-367)

As the USA follow their own Statements of GAAP, also referred to as US GAAP, the problems they have been debating do not necessarily impact on South Africa. IAS 18 gives clear instructions on the accounting treatment of all the questions they asked in their debate. Therefore none of the questions debated above apply to this study as IAS 18 is explicit regarding the requirements that must be met in order to

recognise and measure Internet-based sales transactions in South Africa. (IASCF, 2006:1063-1066).

To measure and recognise a transaction is a continuous balancing of relevant information with reliable information (IASCF, 2006:40-41 and 43-44). Balancing relevant against reliable information would occur when the production of relevant information requires the capturing of an Internet-based sales transaction immediately after the details of the transaction have been agreed upon, while reliable information requires that the entity wait until delivery before the sale is recorded as a transaction. GAAP also acknowledges that revenue can only be recognised when it is probable that the economic benefits associated with the transaction will flow to the entity (IASCF, 2006:1065). It would therefore be possible for the entity to account for its Internet-based sales transactions after the initial legally binding agreement has been reached if the entity is sure that the transaction will be paid for. Internet-based sales transactions usually require that payment information such as credit card details should be submitted along with the original transaction. This payment information enables the entity to process the sale only once there is certainty that payment will be received or has been received. In the event of information on the cancellation of a transaction being received or the goods returned for valid reasons, the transaction can subsequently be cancelled and reversed from the accounting records.

The requirements that transactions should be recorded immediately, that they should be classified according to their nature; that all transactions should be fully explained and that all similar transactions recorded in the preliminary book should be posted to the specialised book maintained for that type of transaction go back as far as 622 AD (Zaid, 2004:163). Thus the accounting requirements applicable to transactions have remained more or less constant over time. Although the basic requirements have remained fairly constant over time, the computerisation of accounting information (refer to section 1.2) has influenced the methods used to account for sales transactions. The various methods used to account for sales transactions are described in more detail in the next section.

2.3 RECORDING SALES TRANSACTIONS IN THE ACCOUNTING RECORDS

In order to expand on the explanations given in chapter 1 of the unusual nature of Internet-based sales transactions, this study will begin by examining how traditional sales transactions were recorded. The following is a description of how traditional sales transactions were initially recorded in manual systems and how they were recorded in the first computerised accounting systems after the initial switch to computerisation (refer to section 1.2, for a description on the change brought about by the computerisation of accounting systems).

Dempsey and Pieters describe the recording of traditional sales transactions as follows:

As soon as goods are sold the transaction is recorded on a source document known as an *invoice* (2005:181).

All credit sales of merchandise are recorded in the *sales journal* or *sales book*. A duplicate sales invoice is used for recording the transaction in the sales journal. (2005:182.)

If goods are sold for cash, a *cash invoice* or *cash slip* is completed (2005:185).

Therefore the recording of a transaction is closely linked to the generation of a source document. This source document is completed at the same time or immediately after the occurrence of the transaction. This method complies with GAAP as the value of the transaction and the date of the occurrence of the transaction are known and are reflected on the source document, which is used in turn as the source from which the transaction is initially recorded in the accounting records. The important role of source documents is emphasised by Dempsey and Pieters (2005:61):

Each business transaction is recorded immediately onto a *source document* as it is taking place. In practice a great variety of source documents can be found, for example invoices, receipts, cheque stubs, etc.

The preparation of the source document for each transaction is the first step in the accounting cycle. The details of each transaction, as contained in the source document, are processed in order to supply useful information (ie financial statements) to interested parties.

Thus a traditional sales transaction is initially recorded on an invoice - the source document. The invoice is then used to record the transaction in the sales journal. The sales recorded in the sales journal are then taken to the sales account in the general ledger on a periodic basis. Finally the information in the general ledger is used to compile a trial balance and the trial balance is used as the source for compiling the financial statements. The process used to record a transaction is evidenced by the document trail it leaves, which is also called the audit trail, and is illustrated in table 2.1 below.

Table 2.1 Sales transaction audit trail
Occurrence of transaction <i>Customer selects goods to purchase</i>
↓
Immediate recording of transaction details on source document <i>Sale is invoiced or entered into a till where the result is printed on a till slip</i>
↓
Recording the details of the transaction as per the source document in the journal <i>Sales journal</i>
↓
Posting the journal to the general ledger <i>Sales journal to sales account in the general ledger</i>
↓
Listing the total of all the different general ledger accounts in the trial balance
↓
Using the information in the trial balance to compile the financial statements
Adapted from Dempsey & Pieters, 2005:79.

The above description of the accounting of a sales transaction corresponds to the description given by Dempsey and Pieters (2005:61-62, 79, 61, 181-182 and 185). Transactions are therefore recorded for accounting purposes after the occurrence of the event that triggered the transaction and generated the source document. In essence the recording of transaction information is historic in nature, *a posteriori*.

As noted in chapter 1, an event that led to a business deal or transaction must have a bearing on the elements of the accounting equation if it is to be considered a transaction for accounting purposes. Sales transactions have a bearing on the elements of the accounting equation. Sales transactions increase the net assets as the goods sold (assets in the form of inventory) are swapped for another asset, which is either cash, in the case of a cash sale, or a debtor, in the case of a credit sale. The profit attributable to that specific transaction would increase the equity of the entity, leading to an increase in the net assets, and in so doing complying with the definition of income and impacting on the accounting equation.

For example, the sale of a book with a cost price of R100 to a customer for R150 would affect the accounting equation as follows:

Table 2.2 Accounting equation				
Assets	=	Liabilities	+	Equity
-100 (inventory on hand)				
<u>+150 (cash/debtors)</u>				<u>+50 profit on sale</u>
+50				+50

This transaction complies with the requirements of GAAP for revenue, as it increases equity and assets and the accounting equation is balanced. Dempsey and Pieters (2005:28-29) agree with the above description and the example given in table 2.2 of how a sales transaction can influence the accounting equation.

The importance of the fact that a transaction must influence the accounting equation before it can be recorded as a transaction is highlighted not only in the

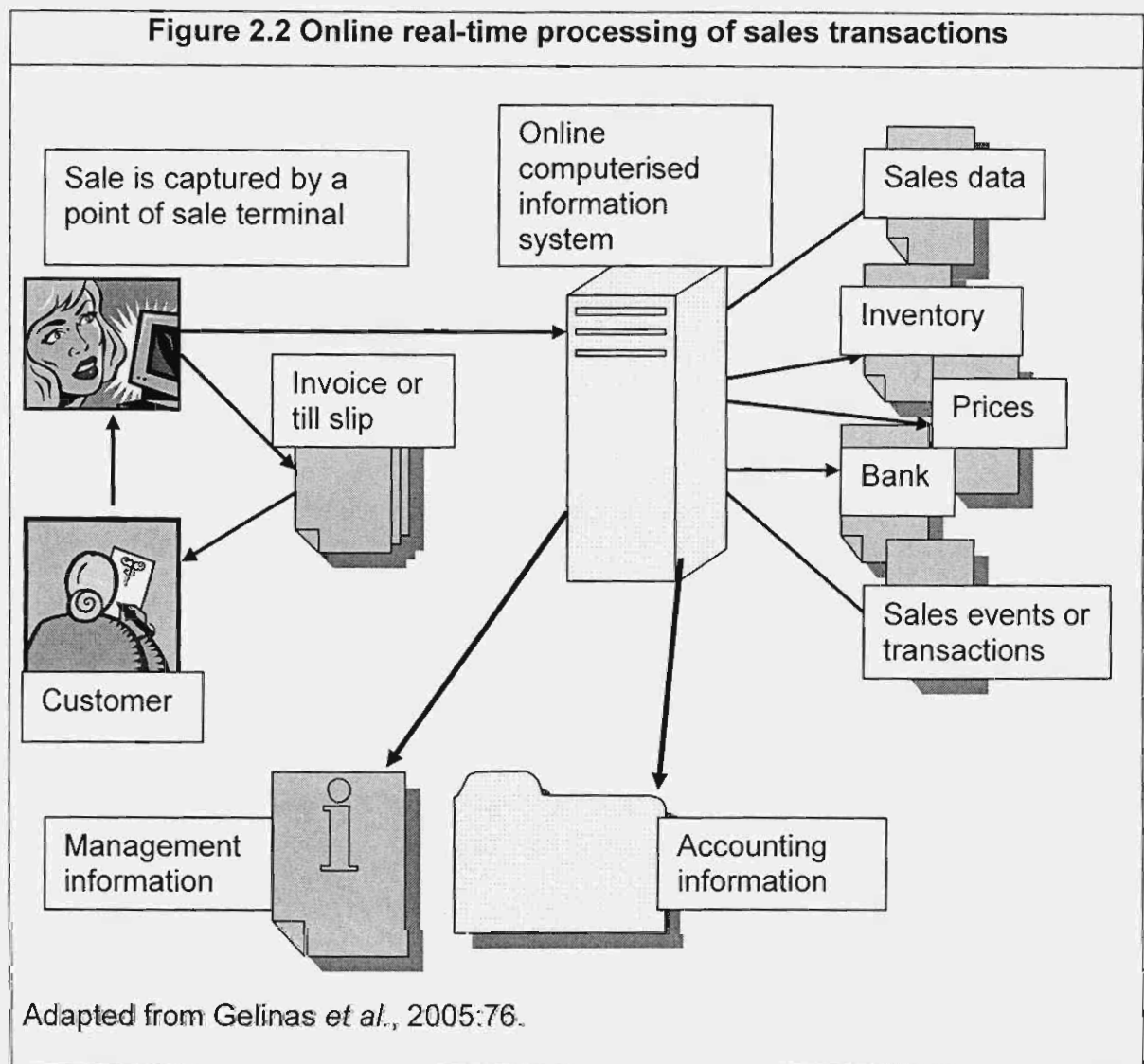
Framework and the Revenue Statement, but also in E-business and the accountant (IASCF, 2004:32-33; IASCF, 2006:1065; IFAC, 2002:11).

In contrast, sales transactions recorded in a pervasive information systems environment are not necessarily recorded in the same manner. Although a similar process could be followed for the recording of transactions, the automated and integrated use of information systems can ensure that the first five steps described in table 2.1 occur simultaneously. Another important difference in a complex information systems environment is that the originating source of a transaction, referred to above as the source document, is not necessarily a physical document. Internet-based transactions are not unique in moving away from paper-based source documents to electronic source documents. Gelinas *et al.* (2005:75) describe the information technology improvements applicable to accounting as follows:

Information technology improvements in recent years have provided a low-cost means for improving the efficiency of the traditional automated equivalents of manual accounting systems. ... data entry devices allows business event data to be entered directly into the information system at the time and place that the business event occurs.

The details of the transaction that has been agreed upon can be captured by a point of sale system, such as a barcode reader linked to a till, and directly entered into the accounting records. The accounting records are then updated and an electronic record of the transaction is maintained. In such instances the electronic medium used to generate the initial capturing of the details of the transaction also generates the source document. Thus an electronic source document and electronic maintenance of transaction data are not unique to Internet-based transactions. The till slip or invoice that records the transaction or event is the output document which is the physical evidence that all the transaction details have been updated. The customer can then receive a copy of the original output document as evidence of the transaction. But the entity itself need not maintain a paper trail of the transaction.

It might be more effective for the entity to print summarised versions of all the business events at intervals as this becomes necessary. This can take the form of up-to-date accounting records and management reports. Gelinias *et al.* (2005:77) state that an online real-time system can “gather business event data at the time of the occurrence, update the master data essentially instantaneously, and provide the results arising from the business event within a very short amount of time – that is real time”. A graphic example of processing sales transactions in an online real-time environment is given in figure 2.2 below.



One of the advantages of using an online real-time information system is that the timeliness of accounting information is ensured, as the transactions are fully integrated into the accounting system and the business information system when the event that initiates the transaction occurs. In an e-business environment,

commercial activity generated by an enterprise's website is automatically interfaced with its "back office" systems, such as the internal reporting system, the inventory management system and the accounting system (IFAC, 2002:11). As stated in chapter 1, section 1.2, an unusual aspect of Internet-based transactions is that the customer can enter the information relating to the sales transaction whereas the details of the transaction during a "normal" sale are entered by an employee of the company. In both instances the source document can be electronic and the information system used to process the details of the transaction pervasive throughout the business processes of the entity. Thus the accounting of normal transactions is totally within the control of the company. In contrast, during Internet-based sales transactions it is the customer who initiates the capturing of the information used to record the sales transaction. This occurs when the customer accesses the entity's web commerce servers as shown in figure 1.1.

After a transaction has initially been correctly recorded, the only remaining aspect is to ensure that the reliability of the information is protected and that the results of all the transactions are fairly reflected in the financial statements. In order to maintain the reliability of transactions initiated over the Internet it is important to consider the risks inherent in the Internet that could threaten the ability of the information system to secure the reliability of the transaction information.

2.4 SECURING ACCOUNTING INFORMATION SYSTEMS

Guidance on the principles for ensuring the reliability of accounting information in relation to Internet-based transactions is given by the Information Technology Committee of IFAC (2002:9), which states:

A prerequisite for reliable information in an enterprise's books and records and, hence, the financial statements is secure accounting data and information. For the purposes of this document, data are defined as the basis for information. Since data are processed using IT applications and the underlying IT infrastructure when obtaining accounting information, IT applications and the underlying IT infrastructure are also aspects relevant to accounting information systems. Management is responsible for meeting the prerequisites for accounting information security. To this end, it is necessary to develop, implement and

maintain an appropriate security concept to ensure the required degree of information security.

In order to accomplish this it is necessary to understand the Internet-related risks that could affect the accounting information in the IT system. In an environment where anyone in the world can access information systems that are linked to the Internet, all the risks that are inherent in the Internet are transferred to any information system linked to it. Because of the link to the Internet, new risks are transferred to any business or business information system that is linked to the Internet for trading.

The importance of a proper evaluation of the Internet risks is acknowledged in IAPS 1013 (2002), paragraph 13:

The entity's e-commerce strategy, including the way it uses IT for e-commerce and its assessment of acceptable risk levels, may affect the security of financial records and the completeness and reliability of the financial information produced.

Business risks relating to the entity's e-commerce activities are further described in IAPS 1013 (2002), paragraph 19 as follows:

Management faces many business risks relating to the entity's e-commerce activities, including:

- Loss of transaction integrity, the effects of which may be compounded by the lack of an adequate audit trail in either paper or electronic form;
- Pervasive e-commerce security risks, including virus attacks and the potential for the entity to suffer fraud by customers, employees and others through unauthorised access;
- Improper accounting policies related to, for example, capitalisation of expenditures such as web site development costs, misunderstanding of complex contractual arrangements, title transfer risks, translation of foreign currencies, allowances for warranties or returns, and revenue recognition issues such as:
 - Whether the entity is acting as principal or agent and whether gross sales or commission only are to be recognised;

- If other entities are given advertising space on the entity's website, how revenues are determined and settled (for example, by the use of barter transactions);
 - The treatment of volume discounts and introductory offers (for example, free goods worth a certain amount); and
 - Cut off (for example, whether sales are only recognised when goods and services have been supplied);
- Noncompliance with taxation and other legal and regulatory requirements, particularly when Internet e-commerce transactions are conducted across international boundaries;
 - Failure to ensure that contracts evidenced only by electronic means are binding;
 - Over reliance on e-commerce when placing significant business systems or other business transactions on the Internet; and
 - Systems and infrastructure failures or "crashes."

An additional consideration is the fact that the initial information relating to an Internet-based transaction is delivered to the entity's information system through the Internet. Elifoglu (2002:67) states that at "the centre of any accounting information is an underlying electronic transaction system" from which the financial statements are prepared and emphasises that "these systems are only as reliable as the underlying data, which points to the importance of keeping this data accurate and secure". Any possible additional risks to the information system and the accounting of Internet-based transactions that arise from the Internet connection should be considered, as they could impact on the reliability with which the entity accounts for its Internet-based sales transactions. Furthermore, the security measures that help to maintain the reliability of the information system that supports the accounting information should take these Internet-related risk exposures fully into account.

2.5 RISKS INHERENT IN THE INTERNET THAT COULD INFLUENCE THE ACCOUNTING OF INTERNET-BASED TRANSACTIONS

Before the entity's managers can attempt to analyse the underlying risks inherent in Internet transactions, the concept "risk" must first be examined. The general

dictionary definition of risk is “the possibility that something bad, unpleasant, or dangerous may happen” (Longman, 1995). Unfortunately, however, risk is defined differently by different industries. The problem posed by the different interpretations of what “risk” actually is, is acknowledged by Waring and Glendon (2001:xix) when they state that “the scope of risk management is wide and that particular professions and disciplines frequently use risk terms in different ways ... the term ‘risk’ itself has a variety of meanings”.

For the purposes of this study the definition of risk given by PricewaterhouseCoopers (2001:7) is used: In a business context risk can be defined as the “uncertain future events that could influence the achievement of the organization’s objectives...”.

This definition is closely correlated with the definition of risk provided by the Institute of Internal Auditors (IIA), which describes risk as follows and adds terms of measurement:

The uncertainty of an event occurring that could have an impact on the achievement of objectives. Risk is measured in terms of consequences and likelihood. (IIA, 2004.)

This definition of risk is also closely correlated with the definition used in the Second King Report on Corporate Governance for South Africa (King II), which states:

Risks are uncertain future events that could influence the achievement of a company’s objectives. These could include strategic, operational, financial and compliance objectives. Some risks must be taken in pursuing opportunity, but a company should be protected against avoidable losses. (King, 2002:73.)

In the fast-changing world of information communication and technology used to enable trading through the Internet, the proper identification of inherent risks (a subcomponent of risk) is essential to ensure that no unmanaged risk will threaten the continued existence of the entity’s ability to account for and secure its Internet-based sales transactions. In the context of this study, “inherent risk” is therefore

“the risk that is intrinsic to the entity’s business” (Sawyer, Dittenhofer & Scheiner, 2003:126). To properly identify these inherent risks, a literature review on the historical development of the Internet was performed to identify the inherent risks highlighted during the development of the Internet. The results of that review are summarised in the next section.

2.5.1 Inherent risks highlighted during the development of the Internet

Gromov (2007) stated that the spark that initiated the events that led to the birth of the Internet was the launch of Sputnik in 1957. This was a severe shock to the United States of America and led to newspaper headlines such as the following:

The same Soviet rocket that sent a satellite into orbit Friday can deliver an ICBM warhead on New York and Washington... (Diamond & Bates, 1995:34-35).

The response to the perceived threat, as described by Borden (2000:32), was the establishment of the Advance Research Projects Agency (ARPA), formed by the then President of the United States of America, President Roosevelt. ARPA directly funded most of the initial developments as well as the prototype that was needed to build the Internet as we know it today (Steyn, 2001:204-206). The security context within which the Internet developed is important as it contributed to the development of the inherent risks of the Internet, which are discussed below.

2.5.1.1 Open architecture networking

Leiner, Cerf, Clark, Kahn, Kleinrock, Lynch, Postel, Roberts & Wolff (2000) describe the initial motivation for the creation of the ARPANET, as the Internet was initially referred to, as the development of a method that would enable resource sharing between the very expensive computers of the time. The perceived security threat required tremendous computing power for the calculation of the trajectory of inter-continental ballistic missiles. Only computers were able to perform such calculations fast enough to respond timeously to a possible nuclear attack.

As very few computers existed at this time, the network had to develop a solution that would allow widely different computers that generally used different software to

communicate with each other successfully. Zakon (2000) describes the solution developed to network these computers, each with its own unique incompatible programming, as a “translator” that would enable communication through the network. This forced the developers of the ARPANET to use an open architecture networking system, which Leiner *et al.* (2007) describe as an enabling technology because the choice of any individual network technology was not dictated by a particular network architecture but rather could be freely selected by a provider and made to interwork with the other networks through a meta-level internetworking architecture. This innovation led to the development of an open system on the Internet where the actual hardware and software of the computer linked to the Internet were not important, as the design allowed any system to interface with the Internet.

Since this architecture allows internetworking between computers irrespective of the type of computer or the programming or network used for internetworking, it poses a threat to the maintenance of the integrity of transaction information captured on and communicated over an open architecture network. Thus the first inherent risk is the open architecture of the Internet.

2.5.1.2 Communication protocols for the Internet

The communication protocols that enable communication through the Internet are the Transmission Control Protocol and the Internet Protocol, more commonly referred to as TCP/IP. Leiner *et al.* (2007) describe their development and implementation during the 1970s as a direct response to meet the needs of the open architecture networking environment.

The development of TCP/IP protocols is important as they enable different types of computers to exchange packets despite varying packet sizes and computer processing abilities. The TCP converts messages into packet streams and reassembles them, and the IP transports these packets across different nodes, even across different types of networks. Leiner *et al.* (2000) describe the way the Internet works as follows: “It is a communication medium that transforms information into packets, by means of packet switching technology, transports

these packets successfully and reassembles them into information at their destination.”

However innovative this technology may be, the Internet’s ability to create open channels for communication poses a risk for the maintenance of the reliability of transaction information as anyone with any computer and a modem to link and interact with the Internet can possibly access your transaction information. The Deloitte 2006 Global Security Survey found that “[b]y taking advantage of software flaws or errors in configuration, outsiders are now able to bypass access controls to directly access applications and data.”

2.5.1.3 Nature of people

Davis (1994) describes the Internet as a society where there are also people who enjoy the electronic equivalent of “tagging other people’s walls with spray paint, knocking over their mailboxes ... or breaking into their homes”. The Internet is, therefore, like normal society, also exposed to people who relish the opportunity to make trouble and people with criminal intentions. The difference between the Internet and normal society is that on the Internet troublemakers or criminals are, like transactions over the Internet, not bound by the physical limitations of time and place. The impersonal nature of the Internet further helps to create an impression of anonymity. Unfortunately it is impossible to determine who will try to access the Internet merely to make trouble, who will access the Internet with criminal intent, and who will access the Internet for legitimate reasons, as well as what proportion of the global society is likely to do any of these things.

This problem is highlighted in a study performed by the General Accounting Office in the United States of America which describes how 38 000 of the systems of the Department of Defence were attacked in a test during the performance of audit procedures. What caused concern was that only 4% of the test attacks were detected and of the detected attacks only 27% were reported (Zuckerman, 1996:1). CERT (2004a:6) clearly indicates that this problem has not yet been resolved in the statement “Internet protocols were never engineered for today’s Internet, where the trustworthiness of users cannot be assumed and where high-stakes, mission-critical applications increasingly reside”.

In the 2003 Economic crime survey performed by PricewaterhouseCoopers in association with Wilmer, Cutler and Pickering, a difference was detected between the perception of cyber crime and actual occurrence of cyber crimes. PricewaterhouseCoopers (2003) reported that the globally perceived prevalence of cyber crime was 4%, while the actual global incidence of cyber crime was 15%. The perceived prevalence of cyber crime in Africa was 1% while the actual incidence was 12%, and in South Africa the perceived prevalence was 1% with a 14% actual incidence.

This emphasises the risk of underestimating the importance of security measures to protect against the risks of cyber crime and, more specifically, to safeguard Internet-based transactions.

In addition to the above the 2004 e-Crime watch survey found that:

Forty-three percent (43%) of respondents report an increase in e-crimes and intrusion versus the previous year and 70% report at least one e-crime or intrusion was committed against their organization. Respondents say that e-crime cost their organizations approximately \$666 million in 2003. (CERT, 2004b:6.)

These cases demonstrate the risk associated with human nature - unwarranted access to the systems of entities for illegal purposes. The Internet merely gives criminals an additional medium through which they can commit their crimes.

The third inherent risk is the fact that there are people out there with access to the Internet who will commit cyber crimes, and that the proportion of people who fall into this category is unknown.

2.5.1.4 Open Internet society

The fourth inherent risk is that the ARPANET was designed to facilitate the open sharing of information. Leiner *et al.* (2007) state that "a major initial motivation for both the development of the ARPANET and the Internet was resource sharing". Using the Internet to connect computers led not only to resource sharing among

computers, but also to the sharing of knowledge among the various specialists and scientists who worked on them. The sharing of ideas between the network researchers involved in the development of the Internet was documented in the form of RFCs (requests for comments), established by Crocker in 1969. Initially they were printed on paper and posted, but as the development of the Internet progressed to the development of file transfer protocols (ftp) the RFCs became available as online files that were accessible to the network researchers over the Internet (Leiner *et al.*, 2007).

These RFCs successfully documented the development of the Internet and successfully established another inherent risk. The risk of online resource sharing, the same sharing of resources that was a major motivator for the establishment of the Internet, became a risk in a commercial Internet environment as entities do not necessarily want to share all their transaction information, or their computing resources.

The first online resource sharing was enabled by allowing files to be transferred between computers on the network. Such a transfer of files was accomplished by using the ftp through remote login via Telnet (Leiner *et al.*, 2000). Telnet allowed a remote user to login onto a host computer and access files through the use of ftp. In effect the remote user's computer became a terminal and allowed access to the files stored on the host computer. This open sharing of files assisted with the development of the Internet, as it enabled a more efficient utilisation not only of the computers, but also of the people who were involved in the development of the network. Different institutions were able to focus on different parts of the development, while they all had access to each other's information and could easily and freely communicate their research findings to one another. (Leiner *et al.*, 2000.)

A user is only allowed to look at files and copy them when accessing ftp. The ftp sites were usually accessed with the user name "Anonymous" and the e-mail address of the user as a password (Kitchin & Sykes, 1995:23). With the commercialisation of the Internet, however, no entity can afford the risk of allowing

any user to have unlimited access to the information on its computer systems, even if the user is only able to see and copy those files.

The parties to an Internet transaction would not want anyone else to access any information that relates to their transactions, and especially not confidential information such as the physical addresses and banking details of customers. Ftp still exists on the modern Internet and is still useful, especially for the dissemination of information; therefore, controlling it in situations where information is confidential is critical.

Despite the historic move to develop a system that enabled the open sharing of information through RFC and ftp, some security developments were initially included in the development of the Internet, the most noteworthy being the incorporation of access controls. Generally, access through Telnet was protected by requiring a user name and password before access to the system was granted. There were, however, open sites that allowed for open access and in so doing created a “weak link” at these sites that could allow unauthorised access even to other protected sites. (Kitchin & Sykes, 1995:23.)

The developers of the Internet faced immense challenges in attempting to network the widely different computers of the time but were helped in the process by the fact that the development fell under the auspices of the Defence Advance Research Project (DARPA) and that they could use the network to communicate with each other through e-mail and ftp (Gromov, 2007; Leiner *et al.*, 2007). In fact the first Internet was a closed system (Encyclopaedia Britannica 2006, s.v. “Internet”). It is therefore understandable that security was not a major initial consideration in the development of the Internet or ARPANET, as it was referred to at the time. This is why security considerations are so important today now that the Internet is an open system and computers are readily available.

An open architecture system therefore creates an inherent risk in that it was developed for the open sharing of information, not the closed protected communication between specified points, as is necessary to ensure the proper accounting of Internet-based transactions. Mahadevan (2003) states that any

Internet “transaction or message, financial or otherwise, would be subject to the following risks”:

- Identity or authenticity of the person
- Data integrity
- Denial of service
- Non Repudiation
- Confidentiality

He also concluded that it is possible to manage these risks to ensure that secure communication can be enabled (Mahadevan, 2003).

2.5.1.5 Size and growth of the Internet

The last inherent risk of the Internet relates to its size and growth. Securing Internet trading would not be a concern if the transactions were relatively small in volume, or if only a few companies or individuals were exposed to the risks of the Internet because the impact of the risk would then be immaterial. Trading on the Internet is, however, not small, neither in volume nor in value, as the following statistics will clearly indicate.

Hobbe’s Internet Timeline shows the increase of Web servers from 130 servers in June 1993 to 9 560 866 servers in December 1999 (Zakon, 2000). Along with this tremendous growth, the number of security incidences reported to the Computer Emergency Response Team (CERT) Coordination Centre increased from only 6 reported incidents in 1988 to 1334 incidents in 1993 and 6844 incidents in 1999 (CERT, 2001). With the increased availability of automated attack tools, attacks against Internet connected systems became so commonplace that counting the number of reported incidents provided little information to aid in assessing the scope and impact of these attacks. For the years 2000 to 2003 the following increases in incidents were reported by CERT (2006):

Year	2000	2001	2002	2003
Incidents	21 756	52 658	82 094	137 529

Unfortunately the words of James Settle, a supervisory agent of the FBI's National Computer Crimes Squad, that "most networks connected to the Internet are potentially at risk", came true (Romei, 1993:20).

The tremendous growth of the Internet continued to put a great deal of pressure on business to develop a presence on the Internet. Fuelled by forecasts that speculated on the growth potential of the commercial opportunities offered on the Internet, a risk was created that entities would be so desperate to implement Internet trading solutions in their systems that they would not give due consideration to the risks associated with their actions. While warranting research, the risks related to the implementation of inappropriate business solutions or unsuitable strategies in Internet trading fall outside the scope of this study. The "hype" was supported by real growth in Internet-based transactions. Weisman (2000) reported that the Christmas shopping of 1998 lifted the annual sales of Amazon (a company that sells books only over the Internet) over the \$1 billion barrier, while AOL (American Online, an Internet service provider) generated \$1,2 billion sales in 10 weeks of holiday shopping in the same year alone. In the few years after 1998 the importance of Internet trading solutions increased to such an extent that in 2001 the worldwide purchases of Internet commerce software alone equalled \$1 billion, and the market of the website analysis vendors alone grew in revenue from \$18 million in 1998 to \$115,8 million in 2000 with an estimated revenue of \$321,5 million in 2004 and \$463 million in 2005 (PricewaterhouseCoopers, 2002:248 and 469). These statistics show that both the size and the value of Internet trades are so extensive that special consideration for the security aspects safeguarding the reliability of the accounting of these transactions is warranted even after the collapse of the technology markets in 2000 and the negative impact the September 11 attack on the World Trade Centre had on the global business environment. This growth continued. In 2006 FordDirect (2006) stated that its 2005 sales were 10% of Ford Division's retail sales, and that the average cost per vehicle sold (\$100) was about one fourth of traditional average cost per vehicle sold. This trend was not limited to the USA. During 2005 there was a reported increase of about 50% in sales over the Internet during the ten weeks leading up to Christmas in comparison with the same period in the previous year. At the same time several retailers complained about the impact of

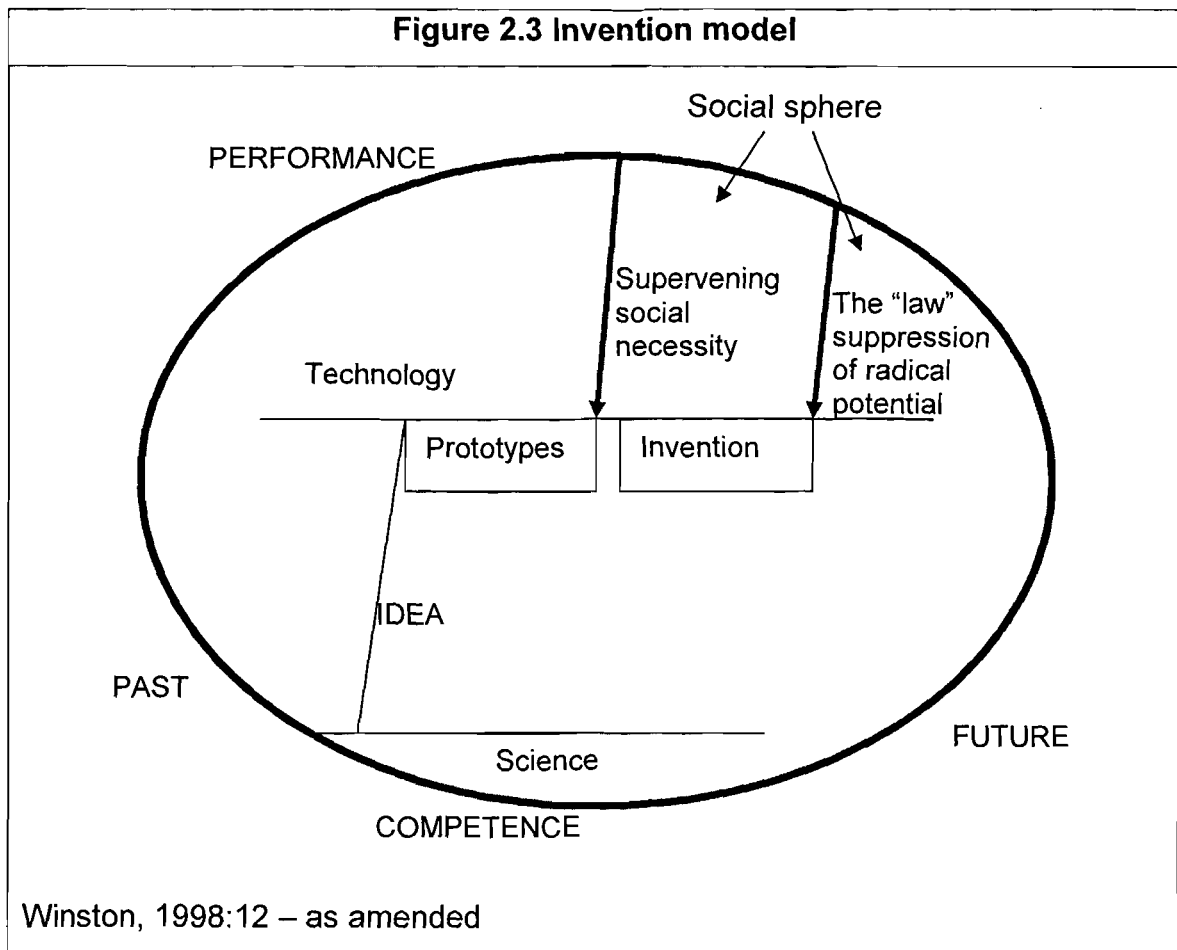
online sales on their business. During 2005 the total amount spent online on goods increased by 32% to a billion pounds. (Anon., 2006a.)

The tremendous pace of the growth of the Internet, together with the rise in the incidences of attacks launched through it, is described as “a wake-up call to all concerned that this new world on the Internet may be growing faster than the ability to protect it and its users” (Anon., 2000).

2.5.2 Compensating for the inherent risk in the underlying technology

The risks inherent in the Internet (as discussed under 2.5.1) started to become apparent during the development of the Internet and these risks were well documented and disseminated during the development process. The accountant or manager needs an understanding of why the Internet or any other new technology developed in the way it did, as well as which inherent risks became part of it, in order to manage the business events that incorporate a new technology in a manner that will still allow for the proper accounting of such events.

In this quest to understand the impact of the Internet and its associated risks the accountant can use the historical patterns that describe the social forces that led to new technological inventions such as the Internet. The same concept can be used to incorporate any new technology into the broader accounting field. The following generic model developed by Winston (1998:12) comprehensively describes the pre-requisites and forces that lead to the development/invention of any new technology.



Winston (1998:2) states that “there is nothing in the histories of electrical and electronic communication systems to indicate that major significant changes have not been accommodated by pre-existing social formations”. Thus his invention model relies on a social force called the supervening social necessity to develop current competence and science into a prototype and to push for the development of the prototype to enable an invention, after which, unless there are social forces that suppress the invention, the product will be disseminated.

Therefore, the social force that enabled the development of the prototype and the invention should also be considered when a new invention is incorporated into the business processes used in commercial environments. This development path, as described in Winston's model, can aid any manager who wants to incorporate a new technology into business processes with the identification of the risks that are inherent in the new technology. It is imperative that when new technologies are incorporated into business processes, or otherwise brought into the commercial

arena, the people responsible for incorporating those new technologies should investigate the historical development thereof in order to properly assess the inherent risks and the business opportunities offered by the use of the new technology. This is applicable to the commercial use of the communication medium of the Internet for transactions as well as to the incorporation of any new technology, for example wireless networking or mobile phones that can be connected to the Internet or otherwise directly incorporated into the information systems of entities. In essence Winston's model is merely a reminder that we need to learn from history in order not to repeat the mistakes already made and documented. The need to continuously innovate is best described by Dembla, Palvia and Krishnan (2007) in their statement that "innovation is synonymous with growth and is something that every business has to do to compete".

Once the risks inherent in the Internet have been identified it is possible to manage them. Kesh, Ramanujan and Nerur (2002:153) state that there are "various transaction security technologies", of which the most prominent are secure sockets layer (SSL), which uses encryption to "secure transmission between Web clients and servers" and secure electronic transaction (SET), which "is a group of security protocols that protect credit card transactions ensuring that the information travelling across the network is confidential and that data integrity is maintained". The use of SSL and SET can protect the customer during an Internet-based sales transaction against the open nature of the Internet with its accompanying exposure to people who might want to misuse the technology. The use of these security measures can enable the customer to enter into an Internet-based transaction with a reasonable element of trust. Methods used to ensure that the commercial website is authentic through the use of third party authentication such as Verisign Secure Site Seal and SSL help to improve customer trust (Holsapple & Sasidharan, 2005:377-378).

2.6 SUMMATION

Whether or not sales transactions originate through the Internet does not change the accounting requirements applicable to sales transactions. The Statements of GAAP adequately describe the requirements for ensuring that Internet-based sales

transactions are properly accounted for as required by GAAP. The accounting requirements might differ from the legal requirements pertaining to transactions but in such situations GAAP requires that preference should be given to the nature of the actual transaction. In effect a transaction should be accounted for in accordance with the economic reality underpinning the transaction not its legal form (IASCF, 2006:42). The other aspect that influences the accounting of Internet-based sales is the extensive use of the information technology necessary to facilitate the transaction and the exposure of the information system used to the risks inherent in the Internet. The risks inherent in the Internet that can influence the accounting of Internet-based sales transactions were examined in the latter part of this chapter.

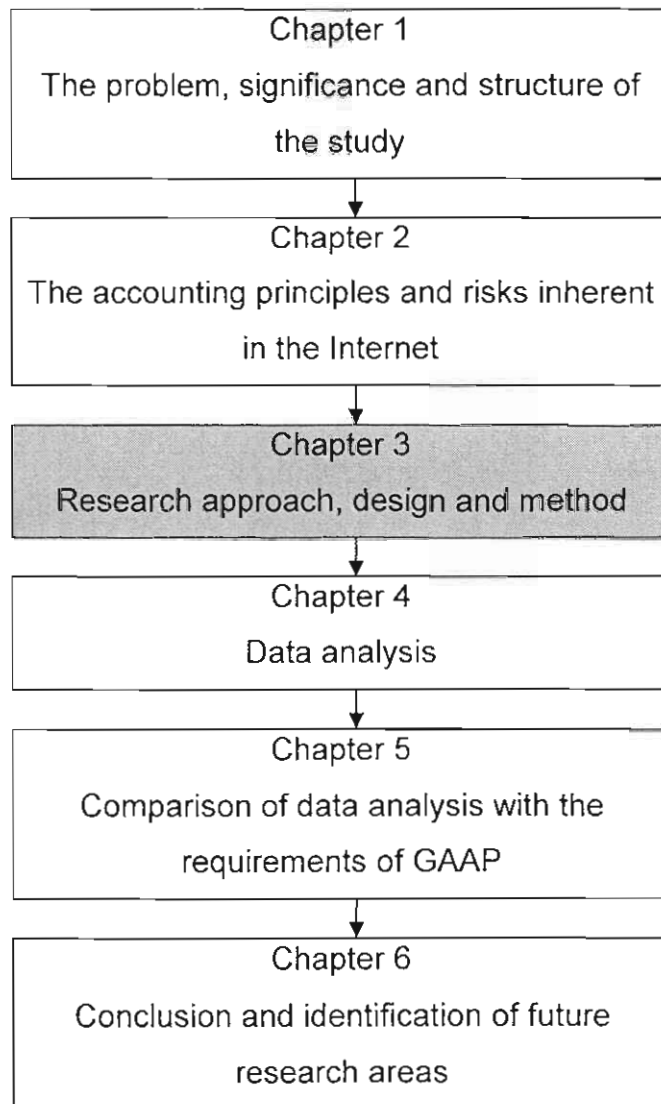
As the methods that can be used to account for sales transactions and the GAAP requirements have been identified in this chapter the next step in this study is to determine which research approach, design and methods would be best suited to identifying the actual methods used to account for Internet-based transactions in a manner that complies with the requirements of GAAP. This aspect is discussed in chapter 3.

CHAPTER 3
RESEARCH APPROACH, DESIGN AND METHOD

Contents

Section	Page
3.1 Introduction	66
3.2 Research approach	69
3.3 Research design	71
3.4 Research methods	76
3.4.1 Instrument development	79
3.4.2 Evaluating and administering the instrument	82
3.5 Summation	82
 List of figures	
Figure 3.1 Dissertation map, chapter 3	66
 List of tables	
Table 3.1 Research design types	71

Figure 3.1 Dissertation map, chapter 3



3.1 INTRODUCTION

The extensive use of information technology to enable Internet-based sales transactions and the Internet-related risks coupled with the specific legal requirements applicable to transactions can impact on the manner in which South African Internet-based sales transactions are accounted for. Methods used to account for sales, from manual sales transactions to online real-time sales transactions, as documented in the literature, were described in the previous chapter. During the literature review no detailed description was found of the method used to account for South African Internet-based sales transactions. A

search of current and completed research on Sabinet online, using the advanced search options and the keywords “sales and transactions”, “e-commerce and transactions” and “GAAP” rendered no research results under accounting. One article related to auditing, two articles dealt with taxation and two with management accounting, but none referred to sales transactions. One of the main motivations behind this study was to consider the possible influence of a new technology such as the Internet on the ability of an entity to account for its sales transactions. Because this is an aspect that has never been researched and it is unsure what the answer would be, the study follows an exploratory approach. Research can, therefore, play a valuable role by identifying the actual methods used to account for Internet-based sales transactions. The important role of research in developing accounting is emphasised by Weirich and Reinstein (1992:4) in the following statement:

Efficient and effective accounting or auditing research is often necessary in order to determine the proper recording, classification, and disclosure of economic events; or to determine the preferability of alternative accounting procedures.

To be applicable, the research must be designed to address the research questions. To answer the first research question it is necessary to determine how Internet-based sales transactions are actually accounted for. These results must then be compared with the requirements of GAAP to answer the second research question. The research approach, design and methods this study will use to obtain evidence on the actual accounting practices used for Internet-based sales transactions, and whether they agree with the requirements of GAAP, had first to be determined and evaluated for suitability. This chapter focuses on identifying and evaluating a suitable research approach, design and methods. The research approach, design and methods are closely linked in order to ensure that the research questions, as described in section 1.4, will be addressed.

Weirich and Reinstein (1992:37) acknowledge that “GAAP is not a static, well-defined set of accounting principles, but a fluid set of principles based on current accounting thought and practice” and that “GAAP changes in response to change

in the business environment". This is in line with the positivist philosophical stance of the study where Ryan *et al.* (2003:75) state that "positive theories are concerned with explanation and prediction (what does/will happen)". It is therefore possible that this study could identify areas in which GAAP needs to be amended to better facilitate the accounting of Internet-based sales transactions after it identified and explained how the four South African entities account for their South African Internet-based sales transactions.

An unusual aspect of Internet-based sales transactions is that the customer, who could be anywhere at any time, captures the information relating to the sale directly into the entity's information system. This is supported by Gelinis *et al.* (2005:93), who describe Internet commerce as the "computer-to-computer exchange of business event data in structured or semi-structured formats via Internet communication that allows the initiation and consummation of business events". In systems that enable Internet transactions the extensive and applicable use of information technology can facilitate the correct capturing and recording of transactions.

The pervasive impact that information systems have on the accounting of transactions is acknowledged by Read *et al.* (2001:vi) in the statement that: "many of finance's well-established and familiar functions will be outsourced or automated". Information systems will, however, only follow the process they were programmed to follow. Thus it is important to identify how Internet-based sales are in fact recorded.

In the literature review in section 2.2.2.2 it was found that the accounting requirements applicable to transactions have remained more or less constant over time. Although the information in the literature review described the process to be followed during the accounting of sales transactions, the possible technological influence of the Internet on the accounting of those transactions has never been investigated. This study will therefore explore the possible technological influence of the Internet on the accounting of sales transactions. Page and Meyer (2003:22) describe an exploratory study as "*an exploration of a phenomenon/event/issue/problem*". In this instance the study explored the

accounting of a specific business event, namely a South African Internet-based sales transaction.

An *a posteriori* approach will be used to ensure that the results of the research reflect the actual methods used to account for South African Internet-based sales transactions. An *a posteriori* approach is necessary as this study is based on the hypothesis that an understanding of whether *the four entities can account for their South African Internet-based sales transactions in a manner that complies with the requirements of GAAP* will be achieved.

A literature review was performed in this chapter on the available research approaches, designs and methods in order to identify the most suitable alternatives to address the study's hypothesis and research questions. The result of this literature review on the research approach is described in section 3.2, research design in 3.3 and research methods in section 3.4.

3.2 RESEARCH APPROACH

The two research approaches available are qualitative and quantitative research. The choice between the two research approaches depends on the type of data needed to answer the research questions. This influences the data collection methods, which in turn influence the research design and ultimately the research approach. The selection of a research approach also indirectly depends on the personal preferences of the author, as it is the author who originally identified the research objectives and research questions. The research questions applicable to this study are:

- How do the four entities capture and record their South African Internet-based sales transactions?
- Are these sales transactions accounted for in a manner that complies with the requirements of GAAP?

At first glance it might seem that the answers to the research questions should be obvious, and that this research has fallen into the trap of "paddling powerfully

towards the white cliffs of the obvious” (Abdel-khalik & Keller, 1978:48). Such a view does not, however, fully take into account either the complex nature and impact of the increased use of various information technology systems in the accounting process or the different needs of users of financial statements.

Page and Meyer (2003:17) make the point that “[t]here are some authors who stress a need for the hard facts and numbers of the quantitative approach, while others stress a need for the qualification of meaning provided by the words and perceptions gathered in a qualitative approach”. Page and Meyer (2003:17-18) note that a “**quantitative approach** *places greater value upon information that can be manipulated in a meaningful way, and this is the traditional scientific approach to research*”. Quantitative is “usually regarded as referring to the collection and analysis of numerical data” whereas qualitative is “used to refer to forms of data collection and analysis which rely on understanding, with an emphasis on meanings” (Scott & Marshall, 2005:s.v. “qualitative versus quantitative debate”). To answer the *how* in the first research question (*How do the four entities capture and record their South African Internet-based sales transactions?*) clearly requires more than numerical data. In addition Myers (1997) describes qualitative research as the study of “social and cultural phenomena”. Leedy and Ormrod (2005:133) describe qualitative research more comprehensively as research that focuses on “phenomena that occur in their natural settings – that is, in the real world” and “studying those phenomena in all their complexity”. Thus, as the aim is to study the actual methods used to account for Internet-based sales transactions, in essence to study the accounting aspect in its natural setting, a qualitative approach is required.

The nature of the first research question required the use of a qualitative approach as it required a description of how the four South African entities captured their Internet-based sales transactions. According to Leedy and Ormrod (2005:134), qualitative research can “reveal the nature of certain situations, settings, processes” and it can also enable the researcher to “discover the problems that exist within the phenomenon”. To answer the second research question a comparative analysis must be performed based on the information gathered to answer the first research question and the information gathered in the literature

reviews that form the theoretical foundation of the study. This is also in line with the qualitative nature of the study as it enables an explanation that addresses the research questions. Henning *et al.* (2004:5) describe qualitative research as research that “denoted the type of inquiry in which *qualities*, the *characteristics* or the *properties* of a phenomenon are explained for better understanding and explanation”.

In brief, it can be concluded from the above that in order to answer the research questions this study will use a qualitative approach. This forms the foundation which must be used to identify the applicable research design.

3.3 RESEARCH DESIGN

The qualitative and exploratory nature of the study must be taken into account during the selection of an appropriate research design. In qualitative research the common types of design are case study, ethnography, grounded theory and action research (Henning *et al.*, 2004:40-48; Myers, 1997; Leedy & Ormrod, 2005:135-142).

The requirements of the different design types are summarised in table 3.1.

No.	Name	Characteristics
1	Case studies	Yin (2003:1-2) states that the “case study is used in many situations to contribute to our knowledge of individual, group, organizational, social, political, and related phenomena” and that it “allows investigators to retain the holistic and meaningful characteristics of real-life events”.

No.	Name	Characteristics
1	Case studies - continue	Myers (1997) notes that case studies "can be positivist". Henning <i>et al.</i> (2004:41) describe a case study as "characterised by the focus on a phenomenon that has identifiable boundaries", that "a description of <i>how, where, when</i> and <i>why</i> things happen in the case are noted and form an essential part of the case".
2	Ethnography	Leedy and Ormrod (2005:137) state that in "ethnography the researcher looks at an <i>entire group</i> – more specifically, a group that shares a common culture - in depth ... it is especially useful for gaining an understanding of the complexities of a particular, intact culture". Myers (1997) notes that "ethnographers immerse themselves in the lives of the people they study". Henning <i>et al.</i> (2004:42) state that in ethnography research "the group must be clearly identifiable and their life studied over a period of time with the aim of capturing typical activities and tools, ways to communicate and meaning making".
3	Grounded theory	Leedy and Ormrod (2005:140) state that the "major purpose of grounded theory is to <i>begin with the data and to use them to develop a theory</i> ". Myers (1997) notes that grounded theory "seeks to develop theory that is grounded in data systematically gathered and analyzed". Henning <i>et al.</i> (2004:47) describe grounded theory as a "good qualitative inquiry that is not theory-driven, but data driven".

No.	Name	Characteristics
4	Action research	Henning <i>et al.</i> (2004:47-48) state that action research is "usually driven by a sense of social action" and is "implemented with the participation of the people for whom the intervention is designed". Avison, Lau, Myers and Nielsen (1999) note that "[a]ction research combines theory and practice ... through change and reflection in an immediate problematic situation within a mutually acceptable ethical framework".

Given the various research designs described in table 3.1, the one most applicable to the study is a case study design. This is because the case study design allows the research to contribute to our knowledge of a phenomenon in a manner that retains the holistic and meaningful characteristics of real-life events – in this situation – South African Internet-based sales transactions. It enables the use of a positivistic framework, and permits the question *how* to be answered.

The exploratory nature of the study excluded ethnography as a design as it requires an in-depth immersion. The theoretical framework of this study, which was significantly influenced by the requirements of GAAP, had already set the theoretical boundaries of the study. Grounded theory was, therefore, excluded as a design as it uses the data gathered to develop theory. In contrast, this study focused on using the theory to evaluate the assessed data. Action research was also excluded as the study did not aim to improve the methods used to account for Internet-based sales transactions; it merely wished to identify them.

The use of a case study design for research purposes should not be confused with the use of case studies in teaching. Case studies used in teaching need not be factually correct or disclose complete information. In research Yin (2003:2) states that the distinctive need for case studies arises from the desire to understand complex social phenomena. Although neither qualitative research nor the use of case studies is commonly used in accounting research, both these methods are

currently gaining ground. In the *SA Journal of Accounting Research*, volume 19 no 1 of 2005, two out of the five articles were reports on multiple-case studies.

The remaining aspect was to determine whether one case study would be enough or whether the study should focus on multiple-case studies. One of the qualitative characteristics of financial statements identified in section 2.2.1.2 was understandability. This characteristic required that the information provided in financial statements should be readily understandable by the people (users) who are likely to use the information contained in the financial statements as a basis for economic decisions (IASCF, 2004:28). The accounting practices followed can therefore be influenced by who the users of the financial information are. The other element is that not all entities integrate their information systems in the same manner. To determine if an entity has the ability to account for its Internet-based sales transactions according to GAAP, the case study or case studies used must take the users and the complexity of the information system of the specific entity into account. This study therefore had to employ multiple-case studies to ensure sufficient diversity in terms of information system complexity and variety of users. Multiple-case studies also enable the study to use replication logic to enhance its external validity. Yin (2003:34) recommends the use of replication logic as a tool to enhance the external validity in multiple-case studies.

The four entities included in the multiple-case studies were selected on the basis of their diversity within the retail sector in South Africa. The decision to focus on four entities was taken in order to incorporate sufficient diversity. In identifying the entities the following factors were taken into consideration:

- Entities that are based in South Africa were chosen.
- Entities were chosen that sell goods over the Internet for delivery to customers in South Africa
- The size and type of the entity were considered, along with the question whether it is listed or possibly owner managed.
- The integrated use of complex technology was also taken into account.

This diversity of entities was also expected to reveal whether the type or size of the entity influences the accounting method it uses. Different types of entity could

choose to apply different accounting methods, depending on their individual accounting information needs, especially as only entities that are companies are legally required to comply with the requirements of GAAP in South Africa (South Africa, 1973:s 286), and entities that are listed must comply with the JSE listing requirements (JSE, 2007) while owner-managed entities might prefer to use other methods such as cash accounting to give them information on the entity's cash flow position.

Although the selection process focused on selecting diverse entities, the type of entity was not always obvious during the initial selection. In addition the selection was subjectively influenced by the author as it also focused on goods which the author would normally purchase. Another factor taken into consideration was the convenience with which it was possible to purchase goods from the entities. The convenience factor excluded entities from which immediate impulse purchases were not possible in situations where registration was required on the website coupled with a waiting period that was longer than four hours. This process led to the selection of four entities, which included a listed retail company that uses multi-channels (sells goods through physical shops as well as over the Internet), an entity that specialises in Internet-based sales, an entity that sells information technology equipment through multi-channels and a small retail entity. These entities were referred to as Cases A to D in the analysis of the data. The fact that the small retail entity also uses multi-channels was discovered during the structured interviews.

According to Leedy (1993:125), the "research design is the visualisation of the data and the problems associated with the employment of those data in the entire research project". In this process of visualisation Leedy (1993:127-128) also states that the researcher must resolve the following four fundamental questions with respect to the data:

- *What are the data needed?* ... To resolve the problem, what data are mandatory? What is their nature? Are they documentary? statistical? interview data? questionnaire replies? observations? experimental data,

recorded before and after certain processes? Specifically, what data do you need and what are their characteristics.

- *Where are the data located?* If you are doing a documentary study, where are the documents you need? Precisely *what library* and *what collection* do you need to use?
- *How will the data be secured?* To know where the data are is not enough; you will need to know how they may be obtained.
- *How will the data be interpreted?* ... You have the data in hand. Now, spell out *precisely* what you intend to do with the data to effect the solution of the research problems.

Abdel-khalik and Ajinkya (1979:29) state that research design “provides the plan and structure enabling the researcher to answer research questions as validly, objectively, accurately and economically as possible”. To ensure the design is appropriate Yin (2003:33-39) recommend the use of four tests, namely construct validity, internal validity, external validity and reliability. References to these tests were made in the selection of research methods in section 3.4 as well as in the assessment of the quality of the analysis of the data performed in section 5.3.

The determination of the methods of collecting the correct data to address the questions described by Leedy above, in a manner that enhances the validity and reliability of the study, is done in section 3.4.

3.4 RESEARCH METHODS

As described by Leedy above, the data needed to answer the research questions are the starting point. Myers (1997) describe the following data collection techniques as applicable to qualitative research, interviews and questionnaires, documents and text, observation and participant observation (fieldwork), and the researcher’s impressions and reactions. All these methods are not equally applicable to a positivist framework that focuses on the objective collection of data. When case studies are used the use of multiple sources of data collection is recommended to enhance the validity of the study. Yin (2003:36) recognises the use of multiple sources of data or evidence collection as well as the establishment of a chain of evidence as methods that increase the construct validity. Henning *et*

a/. (2004:6) concur with this and recommend the “use of at least two methods or sources and preferably three”.

The question of which three sources of data could address the research questions should therefore be addressed. The first and obvious source is to ask the people involved in the accounting of Internet-based sales transactions. Interviews especially telephone interviews, in which the physical location of the person being interviewed is not a constraint, are therefore the first data source. To ensure that the questions asked relate directly to the theoretical framework the author decided to use structured interviews. These interviews were structured to accommodate the qualitative characteristics of financial statements and the requirements pertaining to the recognition and measurement of revenue as described in IAS 18. In line with the positivist framework of the study, the questions were administered independently by an experienced market researcher.

The use of structured interviews still relied on the evidence presented by people, and people may make mistakes or have flawed perspectives. To enhance the validity of the total body of evidence the author purchased goods through the Internet from the entities. This enabled the author to establish an audit trail supported by documentation that directly related to actual Internet-based sales transactions. It could be argued that this direct involvement by the author could have a negative impact on the objectivity of the data collected. However, the data relating to Internet-based sales transactions are generated by the information systems of the entities and information systems deal with items in the same manner according to the constraints of their programming. This enabled a comparison between the data gathered during the structured interviews and the audit trail data gathered to develop a more comprehensive picture of how the entities account for their Internet-based sales transactions. The last source was a review of the information disclosed on the websites of the entities, a document or artefact review. This information was added to the information that had already been gathered. In essence the data collected from all three of these sources were described and then triangulated to identify a better quality description of how the different entities accounted for their Internet-based sales transactions. Structured

interviews, data collection through fieldwork and document or artefact reviews are all acknowledged qualitative data collection methods (Myers, 1997).

The data collected through the use of these techniques as well as the results of the triangulation are discussed in detail in chapter 4 and serve to address the first research question. During the analysis and triangulation of the data collected, pattern matching was used to enhance internal validity and replication logic was used to enhance external validity. Both pattern matching and replication logic are acknowledged tactics for enhancing the validity of multiple-case studies (Yin, 2003:34). Finally, the way the entities account for their South African Internet-based sales transactions as identified was compared with the requirements of GAAP as identified in the literature review. This comparative analysis was discussed in detail in chapter 5 to address the second research question.

As GAAP can be adapted to accommodate changes in the broader business environment, the study will use the following theoretical aspects as a basis for the evaluation of the success with which Internet-based sales are accounted for. Hendriksen (1982:2) classified accounting theories according to their prediction levels as follows:

1. Theories that attempt to explain current accounting practices and predict how accountants would react to certain situations or how they would report specific events. These theories relate to the *structure* of the data collection process and financial reporting (syntactical theories).
2. Theories that concentrate on the relationship between a phenomenon (object or event) and the term or symbol representing it. These can be referred to as *interpretational* (semantical) theories.
3. Theories that emphasize the behavioral or decision-orientated effects of accounting reports and statements. These are referred to as *behavioral* (pragmatic) theories.

In essence GAAP does take the above-mentioned accounting theories into account. The Revenue Standard, IAS 18, gives specific guidance on the measurement and recognition of revenue (IASCF, 2006:1065-1066).

With the increased use of complex computerised information systems in accounting, the accountant may have lost control over the most basic of accounting transactions. Concern about the importance of a move back to the basics of accounting was voiced by Charles (2005), who stated that “anyone involved in financial management should be growing increasingly concerned by the proliferation of accounting problems” and pointed out that the fallacy that “because computers are good at adding up and don’t make mistakes, computer accounts must always be right”. Charles (2005) contends that this does not fully acknowledge the possibility of “computerised accounting systems” being “set up incorrectly”.

In the development of the structure of the questions for the structured interviews the requirements of GAAP as identified in chapter 2 were taken into consideration. In addition, the guidance applicable to surveys as described in the literature was also taken into consideration. Aspects relevant to the instrument development are described in section 3.4.1 and aspects important in the evaluation and administration of the instrument are described in section 3.4.2.

3.4.1 Instrument development

The telephonic interviews were structured with the aid of a standardised list of questions to be asked of the financial manager and/or the information systems manager at the four entities. Alternatively, the questions were asked of persons in a management position who were deemed to be in a position to understand how the specific entity recorded its Internet-based sales transactions. The interviews were conducted by a specialist market research interviewer in order to ensure that the author’s expectations did not influence the answers to the questions. This is in line with the positivistic framework of the study. Details pertaining to the questions asked in the structured interviews are shown in Addendum 1. Background information that was given to the specialist market research interviewer is shown in Addendum 2.

Babbie (1990:118) states that “scientific research has two primary goals: *description* and *explanation*”. That is also true of this research. The research

design requires the measurement or identification of the variables used to actually account for Internet-based sales transactions – the description of the accounting methods. Once the description is known it can be compared with the requirements of GAAP and this comparison can lead to an explanation. An instrument therefore had to be designed that would enable the research questions to be answered in a manner that would produce adequate descriptions and explanations to maintain the scientific nature of the study.

Survey methods were used to develop the structure or list of questions for the interviews so as to ensure a comprehensive coverage of the research questions. The general theoretical guidelines followed during the construction of the questions involved focusing on the requirements of IAS 18 as well as the qualitative characteristics of financial statements to identify the actual accounting methods used by the entity. These general guidelines helped to ensure that the questions were formulated in a manner that facilitated the reading and understanding of the intent of the question. Page and Meyer (2003:81) emphasise the importance of “getting the wording right” in order to minimise measurement error. They note that the “researcher, therefore, needs to use language appropriate for the population in order to minimize misinterpretation and maximise uniform comprehension”.

During the development of the questions different authors (Babbie, 1990:129-132; Page & Meyer, 2003:81-83) recommend the avoidance of negatives, the use of few words in complete sentences, the limiting of the questions to one concept per question and the avoidance of biased terms.

All the questions selected had to be relevant to the research questions. Not all the research questions were necessarily equally relevant to all the respondents. It is also expected that the responses may have been influenced by the expertise of the respondents. The questions more relevant to one group, for instance the accountants, would be better understood by and more relevant to all the accountants.

All the general guidelines followed were in accordance with the general survey method guidelines described by Babbie (1990:127-132). To achieve the objectives

of the study, a combination of questions that allowed for open- and close-ended responses was used. Babbie (1990:127) describes open- and close-ended questions as follows:

- Open-ended questions – “respondents are asked to provide their own answers to the questions”.
- Close-ended questions – “respondents are asked to select their answer from among a list provided”.

A shortcoming applicable to questions that require close-ended responses lies in the structure of the options available to the respondent. Babbie (1990:128) highlighted this risk when he stated that the “author’s structuring of responses might overlook some important aspect”. In this study an additional open-ended option was added to the questions that required close-ended responses for all situations where there could possibly be another option in addition to the options listed. This compensated for the general shortcoming of close-ended responses. Although questions that allow for open-ended responses can lead to improved information, the administration and analysis of that information is more complex. However, as this is a qualitative approach, the data were not analysed statistically as with other surveys that follow a quantitative approach. The results of the structured interviews were described on a question-by-question basis to enable comparison with the requirements of GAAP as well as on a case-by-case basis to identify the methods used by each entity to account for their Internet-based sales transactions.

Page and Meyer (2003:83) stated that the “manner in which the instrument is set out and presented can have a significant impact on the response rate”. Babbie (1990:135) agrees that the format of a questionnaire can be just as important as the nature and wording of the questions asked. Thus the questions were sequenced from an initial personal perspective on Internet-based sales to the actual position of the entity the respondents represented. In determining the position of the entity, the questions focused on identifying the opportunities and threats applicable to Internet-based sales, the method used to account for these sales, the method used to secure the accounting information of these sales and

the legal requirements applicable to electronic transactions. Questions pertaining to the security and legal requirements of Internet-based sales transactions were deemed to be more sensitive. This deemed sensitivity was incorporated in the layout of the questions to enable the main questions on the accounting of Internet-based sales to be answered in situations where the respondents did not answer the more sensitive questions.

3.4.2 Evaluating and administering the instrument

A draft list of questions developed for the structured interviews was reviewed by an expert in marketing research from Unisa's Bureau of Market Research. This review highlighted questions that were not required by this study and recommended the grouping and sequencing of questions under the sections described in section 4.3.1.

3.5 SUMMATION

To enable the study to answer the research questions and conclude on the hypothesis, exploratory research was conducted within a qualitative approach and a multiple-case study design. In line with the nature of the case study design, multiple methods (structured interviews, fieldwork and document or artefact reviews) were used to gather research data that were analysed and triangulated to enable the author to answer the first research question. The information gathered to answer the first research question was used as a basis for the comparison with the requirements of GAAP to answer the second research question and conclude on the hypothesis.

During the development and deployment of the structured interviews the guidance of Unisa's Bureau of Market Research (BMR) was invaluable. The involvement of the BMR limited the possibility that the author could influence the outcome of the structured interviews and improved the structure and layout of the list of questions used in the interviews. This was critical to enhance the objectivity of the study in line with the positivist framework applicable to the study. The results of the structured interviews, fieldwork and document or artefact reviews are described

and triangulated in detail in chapter 4 and the final comparison between the results of the collected and analysed data and the requirements of GAAP are described in chapter 5.

CHAPTER 4 DATA ANALYSIS

Contents

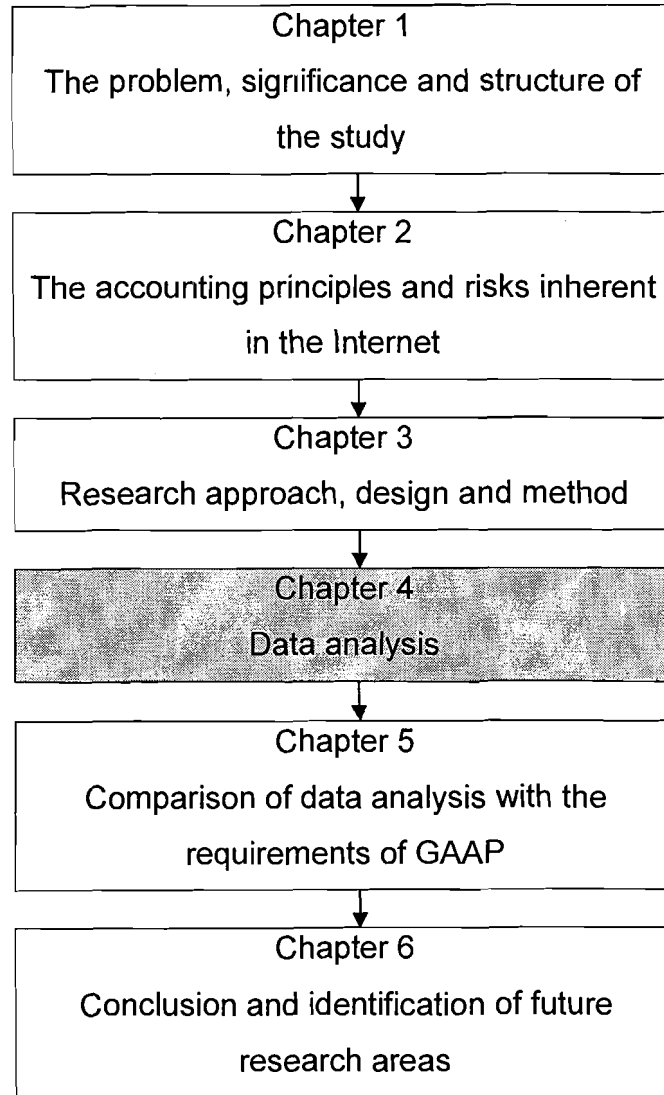
Section	Page	
4.1	Introduction	86
4.2	Characteristics of the entities	88
4.3	Structured interviews	89
4.3.1	Description of the structured interview layout	90
4.3.2	Interview results	93
4.3.3	Detailed analysis of interview results	94
4.4	Follow-up interviews	105
4.5	Detailed analysis of audit trail data collected	106
4.5.1	Comparison between data collected from structured interviews and audit trail data	111
4.6	Website information review and analysis	117
4.6.1	Repudiation of transactions	119
4.7	Accounting for South African Internet-based sales transactions case-by-case	128
4.8	Summation	131
 List of figures		
Figure 4.1	Dissertation map, chapter 4	86
 List of tables		
Table 4.1	Users of financial statements	99
Table 4.2	Summary of follow-up interview results	105
Table 4.3	Analysis of audit trail data collected	107
Table 4.4	Comparison between the initial document of the audit trail data and the document described in the interviews	112
Table 4.5	Comparison of transaction date of the audit trail data with data obtained in the interviews	114

Table 4.6	Comparison of IT security information disclosed on the websites, gathered during the audit trail and the information gathered during the structured interviews	117
Table 4.7	Comparison of information required by the Electronic Communication and Transaction Act with information provided on the company's websites	121
Table 4.8	Comparison of information disclosed on the websites on the return of goods and customer refunds	124
Table 4.9	Legal timing of transactions and the right of the company to cancel	125
Table 4.10	Tracking of Internet-based sales transactions	128
Table 4.11	Accounting of Internet-based sales transactions	129

List of charts

Chart 4.1	Perspective on transaction timing	94
Chart 4.2	Correlation between management's expertise and their perceptions of threats	97
Chart 4.3	Transaction date	99

Figure 4.1 Dissertation map, chapter 4



4.1 INTRODUCTION

“Military action is important to the nation – it is the ground of death and life, the path of survival and destruction, so it is imperative to examine it.”

(Sun Tzu, 1988:41.)

In modern society accounting is one of the cornerstones of the broader economic environment. Accounting principles are used to communicate information on the economic performance of all entities. As with military action, it is therefore

imperative to examine accounting, as it can also spell either survival or destruction for business entities.

Chapter 3 described the research approach, design and methods used to collect the primary data applicable to this study. This chapter focuses on describing and analysing the results of the various methods used to collect primary data. Initially the primary data collected through the structured interviews were summarised to better facilitate a comparison with the theory. Thereafter the results of the audit trail data collected by purchasing goods from the selected entities were summarised and compared with the structured and follow-up interview results. Lastly, the data gathered by reviewing the information disclosed on the entities' websites that relate to sales transactions were summarised. The information gathered during the above process were analysed together to describe the methods used by each entity to account for their Internet-based sales transactions. Yin (2003:8) describes the collection of data from various sources in the statement that "the case study's unique strength is its ability to deal with a full variety of evidence ... beyond what might be available in a conventional historical study". The information gathered and analysed as mentioned above made it possible to answer the first research question.

The comparisons between actual methods used by the entities to account for their South African Internet-based sales transactions, as identified in the study, and the requirements of GAAP required to answer the second research question are described in chapter 5.

Because of the qualitative and exploratory nature of this study and the case study design, the results of the data collection are analysed and described. One of the distinguishing factors of qualitative research is described by Henning *et al.* (2004:6) as being that the "analytical instrument is largely the researcher ... [h]er knowledge, understanding and expertise will determine what happens to the data". Which is why doing a case study is so difficult. Yin (2003:57) states that "case study research is among the hardest types of research to do because of the absence of routine formulas".

The results of case study research can not be statistically analysed and projected to the broader population involved in Internet-based sales transactions in South Africa. It was, however, never the intention of this study to statistically analyse or project the results to any population that would have been against the exploratory nature of the study. However, this study could form the basis for further *quantitative* studies aimed at identifying the accounting methods used for South African Internet-based sales transactions by different sectors in South Africa. This could be done in a manner that achieves a statistically representative picture of the methods used to account for South African Internet-based sales transactions to enable projections to the broader population.

The diversity of the selection of the entities that form the cases of the multiple-case studies enables the study to determine whether different entities would prefer different accounting methods. In addition, the information gathered can be used to improve the underlying accounting theory. The use of case study research results to improve the underlying theory is an acceptable and even a required aspect when case study design is used in research. This is supported by Yin (2003:10) in the statement “that case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes”. The data collected in this chapter are described and analysed through the use of descriptive analysis. The descriptive analysis enabled the answering of the research questions and the identification of areas that require further research.

A description of the different entities selected for the multiple-case studies is given in 4.2 and a description of the layout of the structured interviews in 4.3.

4.2 CHARACTERISTICS OF THE ENTITIES

Four different entities were selected. As described in section 3.3, this selection took the following aspects into consideration:

- The incorporation of diversity, taking into account the type and size of the entity, and whether it is listed.
- Entities based in South Africa that sell goods over the Internet for delivery to customers in South Africa.

- The integrated use of complex information systems technology.
- Entities that use Internet-based sales as an additional sales or marketing channel (multi-channel) to complement their traditional “brick and mortar” business operations or focus only on an Internet-based sales channel.
- Entities that sell goods that the author would normally purchase in a manner that enabled impulse purchases.

Four entities were selected. The organisation type of only the listed company was evident to the author during the selection of the entities for the multiple-case studies. One of the entities specifically included is an entity that only sells goods over the Internet. In line with the positivist nature of the study and to ensure confidentiality for the selected entities, an aspect that was also emphasised during the structured interviews, the entities are referred to as Cases A to D. More details on the structured interviews are given in section 4.3 below.

4.3 STRUCTURED INTERVIEWS

In qualitative research the use of interviews is an acceptable data gathering technique (Myers, 1997). However, the structured use of interviews in this instance, and the fact that the guidance of normal survey design and administration were taken into consideration in the development and administration of the structured interviews (as discussed in sections 3.4.1 and 3.4.2) should not be confused with a change to a quantitative approach.

In qualitative research the use of a structured interview would not enable the researcher to add richness to the data by taking into account other observed elements, elements that fall outside the structure developed for the interview. Thus the information collected would be limited by the structure and would result in what is referred to as “thin” information. In situations where the researcher *only presents what the interviewees said*, the description of the information gathered is referred to as “thin” (Henning *et al.*, 2004:7). Henning *et al.* acknowledge (2004:7) that qualitative research “may be superficial and present a ‘thin description’, following the post-positivistic fashion”.

Research performed from a positivistic philosophical framework focuses on allowing the facts of the case to speak for themselves. The results of positivistic research are generally criticised for heralding a thin description (Henning *et al.*, 2004:17-27). This criticism is largely intended to contrast the impact of philosophical differences between the application of positivist, interpretive or critical philosophical frameworks. Interpretive and critical philosophical frameworks follow a significantly more subjective approach in the analysis of the data and allow the researcher to add meaning to the data (Henning *et al.*, 2004:17-27).

Scott and Marshall (2005:s.v. "positivism") explain that positivism "has become an almost meaningless term of abuse that can be applied to almost any kind of empirical research that appears not to pay sufficient attention to the complexity of social meanings". In this research the use of the positivist framework remains acceptable as accounting of transactions, especially when being performed by computer information systems, should be allowed to let the facts of the transactions speak for themselves and should not be influenced by specific social meanings or subjectivity.

Thus the use of structured interviews to collect data is in line with the positivist nature of the study. A brief description of the structure used for the structured interviews is given below.

4.3.1 Description of the structured interview layout

The preamble to the list of questions (Addendum 1) used in the structured interviews asked the respondent to give his or her name, together with particulars on area of expertise, position, the name of the entity, the type of organisation, namely close corporation or company, and an e-mail address if the respondent wished to receive a summary of the research findings. Assurance that the identities of both the entities and the respondents would be kept confidential was given to the respondents during the initial contact (Addendum 2). Information on the area of expertise of the respondent and the organisational type is used in the evaluation of some of the responses as the organisational type and expertise can influence the answers to some of the questions. For example, listed companies are required to

comply with the JSE listing requirements (JSE, 2007) and that could influence their accounting choices. It is also to be expected that IT managers will not be as knowledgeable on accounting matters as accountants. The structured interviews were conducted by a specialist market research interviewer during May and June 2006.

The interviews were structured in different parts, as follows:

Part A – Internet purchases

The questions in this section were intended to determine whether the respondent had previously purchased goods through the Internet as well as the date the respondent would use to account for such purchases in his or her personal capacity.

Part B – Internet sales: opportunity and threats

This section was included to identify the strategic reason behind the entity's deployment of an Internet-based sales solution. The strategy can influence the information needed by the entity and that could influence the way in which transactions are accounted for. Thus, although the strategic and operational reasons or decisions why an entity would use an Internet-based sales solution are specifically excluded from the study, the decision itself is brought in here to help identify the users of the accounting information. The information needs of the users of the accounting information would have to be taken into consideration in order to assess the usefulness of the accounting information produced by the entity's information systems. This is evidenced by the fact that the scope of the Framework for the Preparation and Presentation of Financial Statements (Framework) specifically includes qualitative characteristics that help to determine the usefulness of information for the purposes of financial statements (IASCF, 2004:28-32). In addition, the Framework lists a variety of users and describes how the financial statements can give them the information they require for their decision making process (IASCF, 2004:23-25). The threats could highlight areas that can have a negative influence on the ability of the entity to account for its Internet-based sales transactions.

Part C – Accounting

This section deals with the information needed to record a transaction. This includes determining if there was specific agreement on the transaction details, as well as identifying the source document, the transaction date and the physical documents delivered to the customer as evidence of the transaction. This part also identifies the users of the financial statements, and establishes whether the profitability of individual transactions or Internet-based sales can be determined, how the sales are disclosed in the financial statements and, finally, whether in the opinion of the respondent, the method used to account for the Internet-based sales transactions does in fact comply with the requirements of GAAP.

Part D – Information system supporting accounting of Internet-based sales transactions

This section focuses on identifying the method used to ensure that Internet-based transaction information is adequately secured, especially during the initial capturing of that information, as well as on identifying whether there have been any recent information system security incidents.

Part E – Legal requirements

This section focuses on the requirements of the ECT Act. The main reason for including this is to determine whether the cooling-off period as described in the ECT Act impacts on the methods used to account for Internet-based sales transactions, specifically with regard to the possible cancellation or repudiation of transactions.

The structure of the interviews was designed to collect information to help to answer the question:

- How do the four entities capture and record their South African Internet-based sales transactions?

The results of the interviews are described in detail in section 4.3.3 and a summary is included in Addendum 3.

4.3.2 Interview results

The request to the interviewer was to interview the information technology (IT) manager and the accountant for each entity telephonically, or alternatively, given the diversity of the entities, to interview a manager who should be in a position to know how the entity's South Africa Internet-based sales transactions are recorded for accounting purposes. It was imperative to receive a response from each of the entities or to replace the original entity with a similar entity. No replacements were, however, necessary.

The interviews showed that all the entities are companies. The respondents of two entities indicated that they are private companies. From the information available on the main and online trading websites when the initial judgemental selection was made, the organisational nature of only the listed entity, of the entities used in the multiple-case studies was evident. From this point forward this study will refer to the entities as companies. The fact that they are all companies means that section 286 of the Companies Act, which requires that the financial statements of a company must comply with the requirements of generally accepted accounting practice, applies to the whole selection (South Africa, 1973:s286).

The respondents included a credit marketing manager, two IT managers, a financial director and a store manager. The only company with two respondents, one with an IT background and one with an accounting background, was Case C. Although valuable information was obtained from the initial respondents, follow-up interviews were performed by the author in situations where the information provided did not adequately answer the research questions. The follow-up interviews were conducted during August and September 2006. The results of these follow-up interviews are discussed in 4.4.

As the results cannot be extrapolated or statistically analysed owing to the qualitative, exploratory case study nature of this study, the results of the structured interviews are summarised and discussed on a question-by-question basis that highlight the impact of the different questions on each case in section 4.3.3, and

the accounting methods used as identified from the research data are summarised on a case-by-case basis in section 4.7.

4.3.3 Detailed analysis of interview results

Part A – Internet purchases

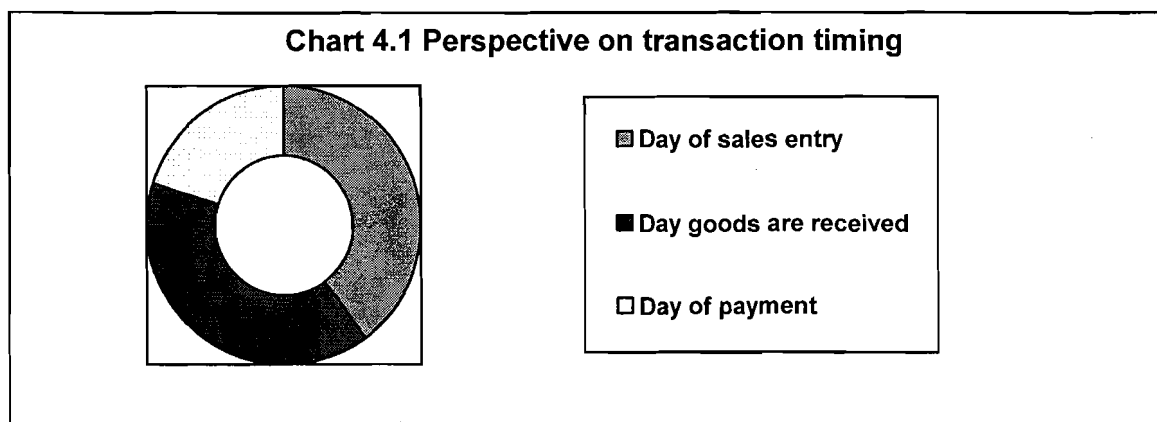
The goal of the questions in part A was to help set up a more responsive environment for the questions in the other parts of the structured interview, to identify the personal attitude of the respondent to Internet purchases and to identify the date the respondent would personally prefer to record such a purchase.

Question 1 asked the respondents if they, personally, ever purchased goods through the Internet. All the respondents reported in the affirmative.

Question 2 asked the respondents to indicate which date they would use to account for an Internet-based sales transaction in their personal capacity. They were given the following alternatives:

- The day you entered the sale on the Internet
- The day the payment went through
- The day you received the goods
- Another day, specify

This question helped to establish a “customer’s perspective” towards the timing of an Internet-based sales transaction. The day the respondents would personally choose to record the transaction is summarised in chart 4.1.



The different days the respondents selected to personally account for their Internet-based transactions is an indication that there are various possible interpretations regarding the recognition of the day on which Internet-based transactions should be recognised.

Part B – Internet sales: opportunity and threats

The questions in this section focused on identifying the strategic reason for the company's engagement in Internet-based sales transactions. The strategic reasons are important as they could influence the information required from the accounting system and highlight the risks that could threaten the ability of the company to properly account for its sales transactions. The importance of "understanding the economic motives underlying management's accounting choices" in respect of "revenue-reporting practices" was emphasised by Bowen, Davis and Rajgopal (2002:525).

Question 3 asked the respondents to indicate the opportunities their companies could gain from the practice of selling goods through the Internet. They were given the following possible advantages as options:

- Improved market share
- Improved profitability
- Competitive advantage
- Other, specify

All the respondents selected all the specific alternatives listed. The respondent in Case B added bigger reach as an additional advantage. The respondent in Case D added promotion and advertising as an additional advantage. Any of these strategies could influence the accounting of sales transactions by encouraging a less prudent approach to the recognition of revenue to show that the strategy is effective. Chung, Firth and Kim (2003:20) acknowledge that managers "have incentives in some circumstances to recognise potential gains early". The possibility that the economic environment influences managers to follow "aggressive revenue-recognition policies" "to report relatively high levels of revenue" was also a concern noted by Bowen *et al.* (2002:525-526).

Question 4 asked the respondents to identify the threats that could impact on their companies because of their Internet-based sales connection. They were given the following possible threats as options:

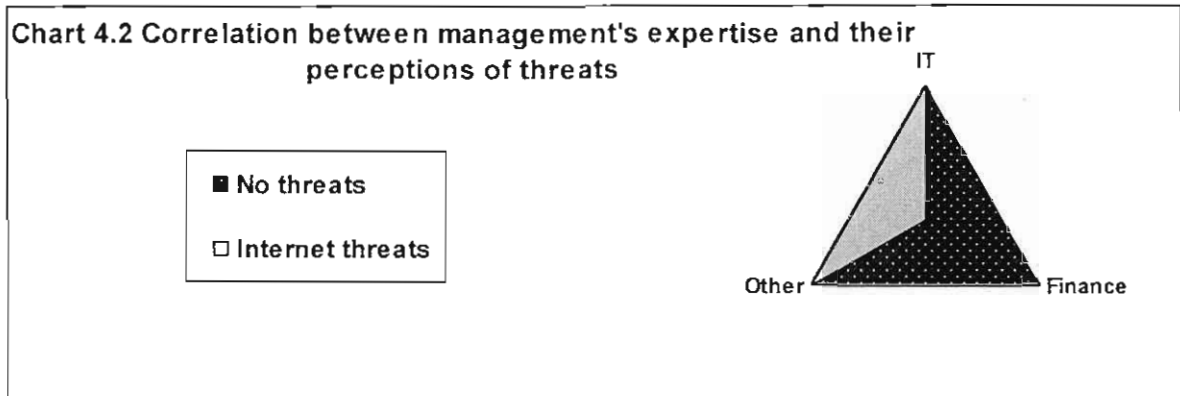
- Lagging behind other competitors
- Internet-related security concerns such as viruses and hackers
- Other, specify

The respondents at two companies selected Internet-related security concerns such as viruses and hackers as a threat. One respondent emphasised that this was a minor threat. The respondents of the other two companies indicated that there were no threats.

One of the findings of PricewaterhouseCoopers (2003) in the South African section of their Global economic crime survey was that the perception of cyber crime was 1%, which is significantly less than the actual occurrence of cyber crime at 14%. In an interview Louw stated that companies “are unwilling to face reality about their information security” ... “the risks are often overlooked in favour of other operational and business risks” and there “is often a significant gap between how secure local companies think they are and the actual security measures in place” (Anon., 2006b). Clearly the perception of the impact of the risk of exposing an entity’s accounting system to the threats posed by the Internet versus the actual threats involved is an area that requires further research.

The implementation of control measures such as Verisign Secure Site Seal that assures customers that the website is authentic and securing transactions with SSL encryption helped to address customer concerns surrounding the threats posed by the Internet connection (Holsapple & Sasidharan, 2005:378).

Interestingly, there was no direct link between the answers to question 4 and the respondents with IT expertise. However, the respondent with a financial background did not perceive the Internet-based sales connection to the company as a threat, because of the security measures that were implemented. The expertise of the respondents versus their perception of threats is graphically represented in chart 4.2.



Part C – Accounting

This part, which deals with accounting, focuses on the questions most pertinent to answering the first research question as described in section 1.4, namely to determine how the four entities capture and record their Internet-based sales transactions.

Question 5 asked whether the customer is required to specifically accept the details in terms of description, quantity and price of the goods selected. The combined effect of these details determines the total value of the specific transaction. All the respondents answered this question in the affirmative. This specific acceptance of the information reflects the value of the transaction the customer agreed to, and ensures that the company has enough detail captured in its system to measure the value of the transaction.

Question 6 asked which document is presented to the customer as evidence of the transaction immediately after the customer enters the transaction on the Internet. This question enables the comparison of the information obtained by the structured interview with the audit trail documentation gathered through actual purchases of goods through the Internet. This comparison is discussed in detail in section 4.5.1. The respondents were given the following options to select from:

- Order
- Pro forma invoice
- Invoice

- Other document, specify

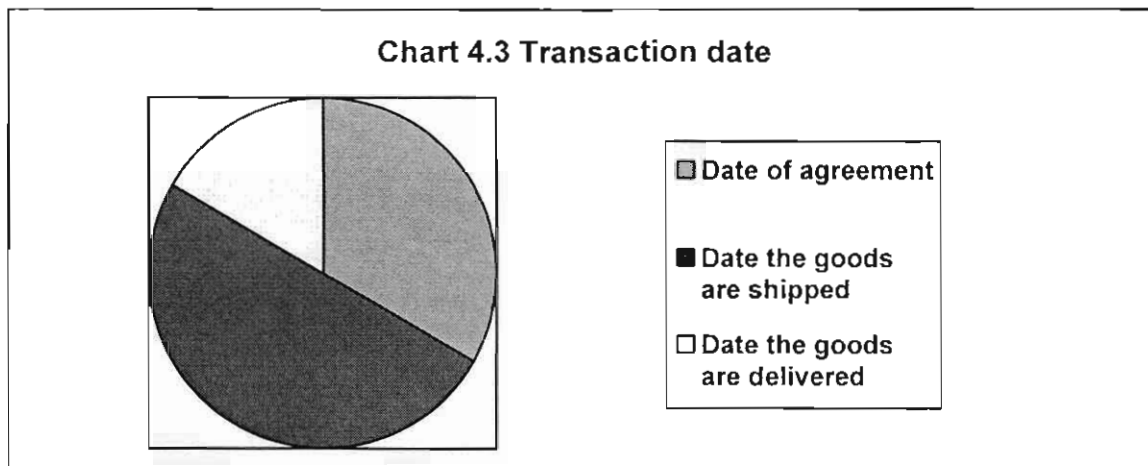
Case C's respondents selected an order form and a pro forma invoice. Case B indicated that an invoice was printed by the customer. Case A stated that they use e-mail, and Case D used an order form.

Question 7 asked respondents the important remaining question needed to properly account for a transaction, namely to identify the date on which the transaction should be recorded. The respondents were asked to select from the following dates on which the transaction should be recorded in the accounting records:

- On the date of the agreement of the details of the sales transaction
- On the date the sales transaction is paid for by the customer
- On the date the goods are shipped to the customer
- On the date the goods are delivered to the customer
- Another date, specify

The respondents choose the first, third or fourth alternatives. Nobody indicated another date. One respondent selected two options, namely the day the goods are shipped and the day the goods are delivered to the customer. It is possible that the customer could receive the goods on the day they were shipped. It is, however, more likely that the goods would be received by the customer within a few days as courier firms generally guarantee delivery periods of between 24 and 48 hours.

As with the response to question 2, there is no agreement on the date that should be used to account for Internet-based sales transactions. However, there was also no direct correlation between the responses to question 2 and the responses to question 6. The responses to question 6 are summarised graphically in chart 4.3 below.



The perceptions of the respondents regarding the transaction date were also compared with the audit trail data in table 4.5.

Question 8 asked the respondents to identify the document presented to the customer as evidence of the transaction upon delivery of the goods. The respondents were given the option to choose between a till slip and an invoice or to indicate another document. Case A's representative stated that the till slip and invoice are the same document. The actual documentation received when purchasing goods through the Internet from Case A did confirm the respondent's statement. All the other respondents stated that their companies send the customer an invoice together with the goods as evidence of the transaction.

In question 9 the respondents were asked who the users of their company's financial statements were. The respondents were given a list of examples of possible users and specifically asked to identify all the appropriate users. The responses are summarised in table 4.1 below.

Users	Case A	Case B	Case C	Case D
Owners	√		√√	√
Management	√	√		√
Employees	√			√
Employee unions	√			

Users	Case A	Case B	Case C	Case D
SARS	√		√	√
Financial institutions	√			√
Customers	√			
Suppliers	√			
Other		Finance		Auditors

Table 4.1 indicates that the most common users of financial statements are the owners, management and SARS.

Question 10 asked the respondents how their company disclosed Internet-based sales transactions in its financial statements. They were given the following options to choose from:

- Incorporated as part of revenue
- Disclosed separately
- Don't know
- Other, specify

There was a correlation between the expertise of the respondents and their responses to this question. All the managers whose expertise was in IT did not know how Internet-based sales were reflected in the financial statements. The other respondents indicated that Internet-based sales were incorporated as part of revenue for accounting purposes. Question 11, which asked what the main motivation was behind disclosing Internet-based sales information separately, was therefore not applicable.

Question 12 asked the respondents to indicate how they knew that the goods sold during Internet-based sales transactions were sold at a profit. The respondents indicated that all the companies used gross profit to determine profitability. Case C also used the price list from its suppliers to determine profitability.

Question 13 asked whether, in the opinion of the respondents, the method used by the company to account for its Internet-based sales transactions was in agreement with GAAP. Excluding Case C's IT manager who did not know, all the respondents stated that their companies account for Internet-based sales transactions in a manner that complies with GAAP. The accountant of Case C answered in the affirmative.

Question 14 asked whether it was possible to determine the cost price of an individual transaction and all the respondents answered in the affirmative.

Question 15 followed up on the identification of the cost of individual transactions to the overall identification of cost of sales for the whole financial period. The respondents indicated for the whole selection that the companies could identify the cost of sales for the whole financial period. This is not really surprising as the respondents stated in reply to question 12 that they used gross profit to determine the profitability of sales transactions. The fact that in all instances Internet-based sales transactions are profitable enables all the companies to comply with the requirements of the definition of "revenue" as described in IAS 18 (IASCF, 2006:1062).

Part D – Information system supporting accounting of Internet-based sales transactions

Part D deals with the information systems that support the accounting of Internet-based sales transactions.

Question 16 asked the respondents to describe how the data relating to Internet-based sales transactions were secured in the accounting system from the initial capturing of the data or information until the summation thereof in the financial statements. Case A's respondent indicated that he or she did not know. Case D used a normal point of sale system. Case C and Case B used secured database technology. More details on the security of the systems used (gathered while purchasing goods from the selected companies) are shown in table 4.6.

Question 17 asked the respondents how they knew whether their security measures were effective. This question produced various answers. Case C indicated that they use high-level security and are not having any problems. Case A is not experiencing any problems either. Case B follows best practices and is not having any trouble and Case D is guided by Internet protocols.

The open-ended responses to questions 16 and 17 did not generate detailed information on how the systems were secured. More detailed information on the security of the systems was gathered during the audit trail and the follow-up interviews. Details of the comparison of the security information gathered during the structured interviews and the audit trail are shown in table 4.6. The information disclosed on the companies' websites relating to IT security were reviewed and compared with the information from the structured interviews in table 4.6.

As the focus of this study was accounting as a discipline and in view of the rather sensitive nature of the security-related questions, the author was of the opinion that the responses to question 18, together with the follow-up interview information, the audit trail information, and the information gathered from the websites compensated for the lack of detail in the responses to questions 16 and 17.

Question 18 asked the respondents to indicate which of the following security incidents had occurred in their companies during the past 6 months:

- Worm and virus attack
- Unauthorised access by an outsider
- Unauthorised access by an insider
- Sabotage by an outsider
- Sabotage by an insider
- Extortion by an outsider
- Extortion by an insider
- Other, specify

All the respondents selected “Other” and qualified their selection with the statement that their companies had not experienced any security incidents during the last six months.

Part E – Legal requirements

This section was included to determine whether the legal requirements applicable to Internet-based sales transactions influenced the accounting of such transactions. The legal requirements can especially influence the timing of the recognition of a sales transaction and the cancellation thereof.

Question 19 asked the respondents if they could distinguish between Internet-based sales transactions with a seven day cooling-off period and those without the seven day cooling-off period. The responses indicated that two companies could identify transactions with a seven day cooling-off period but the other two could not. These two exceptions are acceptable as both companies described the following legitimate reasons for not considering the impact of the seven day cooling-off period:

- Case A followed a 30-day return policy -- which is even more generous than the legal requirements.
- The seven day cooling-off period does not apply to Case D as it sells goods that are specifically exempted under the ECT Act (South Africa, 2002:s 42(2)).

Question 20 asked the respondents if they could identify the products that are governed by the seven day cooling-off period. Except for Case B, whose respondent did not know, all the other respondents listed “Not applicable” as their answer.

As all the responses to question 20 were “not applicable”, question 21, which asked the respondents if they could identify the products the cooling-off period applied to in situations where it only applied to some products, was accordingly inapplicable as well.

One of the reasons why identifying the products for which the cooling-off period applies is important in accounting is that it allows the customer a specific period during which the goods purchased can be returned. It in effect allows for the cancellation or repudiation of an Internet-based sales transaction under specific conditions as described in section 2.2.1.2. The cooling-off period is important as it can impact on repudiated or cancelled transactions. This does not influence the initial recording of a transaction but it does influence the total sales as shown in the income statement because cancelled transactions decrease the total reported sales figure, and it does require the company to provide for such possible returns of goods (IASCF, 2006:1066). The policies and procedures as described on the companies' web pages and their impact on the repudiation of transactions are analysed in more detail in section 4.6.1. The information gathered in this manner was used to add to the rest of the information gathered to describe how the companies accounted for their Internet-based sales transactions on a case-by-case basis as described in section 4.7.

Question 22 asked the respondents if they could reverse a transaction where the goods were returned within the prescribed period. All the respondents answered in the affirmative.

Question 23 explored returned, cancelled or repudiated transactions further by asking the respondents to identify how a returned sales transaction would be reversed. Case D reversed it by means of a manual transaction. The IT manager in Case B stated that the accounting of returns was handled by the accounts department. All the other respondents indicated that they credit or reimburse the customer.

As it is possible that the perceptions of the managers questioned during the interviews could differ from the actual methods used to account for Internet-based sales transactions, goods were purchased from the selected companies and the audit trail of the transaction was recorded to enable a comparison between the two data sets. This comparison is described in detail in section 4.5.1 The information generated by this comparison was used to identify shortcomings in the information gathered by the initial structured interviews to ensure that the required additional

information would be gathered during the follow-up interviews and incorporated in the comparison.

4.4 FOLLOW-UP INTERVIEWS

Follow-up interviews were conducted during August and September 2006 with people with sufficient knowledge to understand and describe the processes used to account for Internet-based sales transactions. As the managers who responded to the structured interviews did not have accounting or IT expertise, follow-up interviews were conducted for Case A and Case D.

These follow-up interviews were conducted telephonically by the author and focused on asking the respondent to describe the sales process followed during Internet-based transactions, with specific focus on the accounting thereof. A summary of the results is given in table 4.2.

Table 4.2 Summary of follow-up interview results		
	Case A	Case D
Which document is available to the customer at the initiation of the transaction?	Order	Order
Was agreement to the details of the transaction specifically requested?	Yes	Yes
Was the transaction re-entered into the accounting system to initiate the accounting of the transaction?	Yes -- on the existing point of sales system.	Yes -- on the existing point of sales system.
How is your accounting system secured from the risks inherent in the Internet?	The existing point of sales system is not integrated with the web/commerce servers.	The existing point of sales system is not directly linked to the Internet.

	Case A	Case D
What is the transaction date for the company?	Shipment date	Shipment date
What is the source document?	Till slip/invoice	Invoice

Both companies used their prior existing “brick and mortar” shops to ship the goods from, and the existing point of sales system to account for their Internet-based sales transactions. The inherent risks of the Internet, therefore, have no direct impact on the accounting of their sales transactions. These transactions are also accounted for in exactly the same manner as their other sales transactions. Thus these companies did not amend their accounting method to accommodate the subsequent delivery of their Internet-based sales transactions. The date used to account for the sales transaction is the date on which the invoice or till slip was printed and the date the goods were dispatched, or in other words the date when the goods left the control of the company. Although accounting for their normal sales transactions in this manner is acceptable as the customer would normally leave the shop with the goods, the same method does not take the unique nature of Internet-based transactions fully into consideration, especially not with regard to the acknowledgement of the timing of the transaction.

4.5 DETAILED ANALYSIS OF AUDIT TRAIL DATA COLLECTED

To supplement the information gathered in the interviews and to enhance the validity of the study the author bought goods from the selected companies. The initial purchases occurred during the period December 2005 to March 2006 and are described below. In August 2006 follow-up purchases were made to confirm the accounting process followed by the companies as described in section 4.7.

The audit trail left by the transaction, as seen from the author’s, or a customer’s perspective, was tracked, and the data gathered through these actual transactions are summarised in table 4.3 below:

Table 4.3 Analysis of audit trail data collected

Audit trail	Case A	Case B	Case C	Case D
Date the transaction details were entered on the website.	10/03/2006	17/02/2006	13/12/2005	08/12/2005
What document was made available on the website after the required transaction's initiation?	Online invoice (not a VAT invoice) Note 1	Order	Proforma invoice	Order
Did the transaction details shown on the website contain information on the description, unit price, unit quantity and delivery charges?	Yes	Yes	Yes	Yes
Was agreement to the details of the transaction specifically requested?	Yes	Yes	Yes	Yes
Did the website require payment details to be submitted in order to complete the processing of the requested transaction?	Yes	Yes	Yes	Yes
Was the website used to submit payment details secured?	Yes, note 2	Yes, note 2	Yes, note 2	Yes, note 2
What document accompanied the goods when the goods were delivered to the customer?	Invoice	Invoice	Invoice	Invoice, see comment below.

Audit trail	Case A	Case B	Case C	Case D
Invoice date	13/03/2006	22/02/2006	22/12/2005	No invoice was received with the initial delivery as one of the four items ordered was delivered later.
Payment date	13/03/2006	28/02/2006	23/12/2005	08/12/2005
Delivery date	14/03/2006	24/02/2006	18/01/2006 Note 3	14/12/2005
Dispatch date	13/03/2006	22/02/2006	22/12/2005	13/12/2005
Confirmation of transaction sent per e-mail	No	Yes	Yes	Yes
Document or reference used to follow-up on the status of the transaction	Order number	Order number	Pro forma invoice number	Reference number generated after the submission of the payment details.
<p>Note 1: According to the terms and conditions on the website, the online invoice is viewed by the company as an order until specific conditions have been met, and the online invoice also has an order number as a reference.</p>				
<p>Note 2: In all instances the payment information was submitted under secure conditions that used encryption.</p>				

Note 3: There was a warning on the website on the date of purchase that deliveries could be delayed. On the first delivery date there was nobody at the author's home to receive the goods. Following an enquiry, the ordered goods were delivered within 24 hours. During this enquiry information was also gathered on how Internet-based transactions are recorded for accounting purposes.

According to the information gathered through actual purchases, it would appear that the event that triggers the accounting of Internet-based sales transactions for Cases A, B and C is the generation of an invoice that leads to the delivery of the goods and not the initiation of the order on the website. Dempsey and Pieters (2005:61) acknowledge that in "practice a great variety of source documents can be found". There is a direct link between the generation of an invoice and the delivery of the goods; therefore there is also a direct link between the accounting of the event and the loss of control over the goods when the goods are dispatched. With Case D, it appears that the payment could be the trigger for the accounting of the transaction. Situations where the payment is accepted before the invoice is generated could be an indication that the company would prefer to base its accounting on a cash basis and not follow the normal practice of accrual accounting. The fact that the reference number is generated by the entering of the payment details seems to support this view. However, the information gathered during the follow-up interview with Case D (refer to table 4.2) confirmed that even though the payment is triggered immediately the generation of an invoice is still the event that triggers the accounting of the transaction. Therefore all the companies used the principles of accrual accounting in contrast to the principles of cash accounting.

As the event that triggered the accounting of Internet-based sales transactions is the generation of an invoice, which is also linked to the shipment of the goods, it seems that the companies are influenced by the loss of control over the goods in the determination of the timing of a transaction. Interestingly, the entering of the transaction details on the website was not the event that triggered the accounting of the transaction. The reason could be that the company does not view the

transaction process as sufficiently advanced to be entered into the accounting records. There was an indication that the companies used the prudence principle. “[P]rudence is the degree of caution in the exercise of the judgements needed in making the estimates required under conditions of uncertainty” (IASCF, 2006:42). Dempsey and Pieters (2005:7) add to this description of prudence by stating that when cautious decisions are made and judgements exercised “income must not be overstated”. Since recognising income at the time the order is placed but before there is certainty about the delivery of the goods could be seen as a breach of the prudence principle it seems reasonable that the companies wait until there is more certainty that the income will in fact be earned by the company before it is recognised.

However, the generation of a reference number at initiation shows that sufficient information is received by the company to warrant specific control of the business information captured on the website. The need to control the information, even when the transaction has not yet been recorded for accounting purposes is best described by the following definition of internal control that also highlights the main control objectives applicable to any entity:

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) (1994:13) defines internal control as:

Internal control is a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the following categories:

- Effectiveness and efficiency of operations.
- Reliability of financial reporting.
- Compliance with applicable laws and regulations.

Although the ERP systems available to companies enable the integration of the accounting process with the control process, the fundamental objectives of accounting and control are not always the same and the two systems should not be confused. It is also clear from the above definition that an emphasis on control encourages the identification of reliable information, whereas the concept that

information should be useful to users encourages the identification of information that is relevant to the decision needs of users. The influence that the need to control business processes and information has on the accounting process is an aspect that warrants further in- depth research.

To identify any shortcomings in the data collected during the structured interviews, those data were compared with the audit trail data. The results of this comparison were taken into consideration during the follow-up interviews to ensure that where required additional information was gathered to address any identified shortcomings in the data. The evidence of the audit trail data prevails over the interview data as it is supported by documents and not reliant on the personal perceptions of the interviewers. The audit trail data were, therefore, used to add to the interview data to improve the total body of information on how the different companies account for their Internet-based sales transactions.

The differences between the audit trail data and the structured interviews are highlighted in the comparison between the data collected from the interviews and the data collected from the audit trail described in section 4.5.1.

4.5.1 Comparison between data collected from structured interviews and audit trail data

It is imperative from a legal as well as an accounting perspective that there should be agreement between the customer and the company on the details of the transaction. This agreement establishes a legal transaction and aids the accountant in establishing the fair value of the transaction.

In question 5 the companies all indicated that the customer was required to specifically accept the details in terms of the description, quantity and price of the goods selected. The agreement of the customer on this information enables the measurement of the value of the transaction as traded between two willing parties. During the collection of the audit trail data all the transactions disclosed the description, quantity, unit price and delivery charges before the transaction was accepted. However, the Revenue Standard also requires that the timing of the

payment of the transaction should be taken into account in the requirement that “when the inflow of cash or cash equivalents is deferred, the fair value of the consideration may be less than the nominal amount of cash received or receivable” (IASCF, 2006:1064). Therefore if the goods ordered are paid for significantly later the time value of money should be taken into account to reduce the face value of the transaction to a fair value for accounting purposes.

In all instances where goods were purchased through the Internet the payment was sufficiently closely related to the purchase of the goods to ensure that the face value of the transaction is also the fair value. In addition, in all instances, the goods selected for purchases had to go through a “checking out process” where the customer was afforded the opportunity to specifically agree to the details of the transaction or to abort the transaction. In all instances information regarding the payment details (e.g. credit card number) pertaining to the sales transaction was required for the transaction to be processed.

The document that the author was able to print after the goods were “checked out” differed from the documents the respondents described in their answer to question 6. These results are reflected in table 4.4 below:

Table 4.4 Comparison between the initial document of the audit trail data and the document described in the interviews				
Details	Case A	Case B	Case C	Case D
Document available at the initiation of the transaction as per the responses to question 6.	e-mail Note 1	Invoice Note 2	Proforma invoice, Order Note 3	Order
Document available at the initiation of the transaction as per the audit trail – on the customer's side.	Online invoice Note 1	Order	Proforma invoice	Order

Note 1: The document available at the initiation of the transaction is called an online invoice but it has an order number. In the follow-up interview the respondent confirmed that the document is viewed as an invoice, but not a VAT invoice, that it is used for control purposes in a manner similar to an order.

Note 2: Although the document available at the initiation of the transaction is called an order, with a unique order number to make it easier to trace, it is also called an invoice at the end of the document. According to the terms and conditions on the website this initial document is seen as an order.

Note 3: No follow-up action was taken as the accountant correctly indicated a pro forma invoice as the answer.

The companies used either orders or invoices as the initial document the customer could print after the initiation of the transaction. There was a correlation between the expertise of the respondents and the responses to question 6. The respondents with an IT background all incorrectly indicated the type of document and the respondents with an accounting background correctly indicated which document was available at the initiation of the transaction. With the increased use of complex integrated IT systems to support accounting, it is imperative that the accountant continues to be part of the team that develops and implements new IT systems or adaptations to existing IT systems to ensure the maintenance of proper accounting practices. It is also imperative that the accountant understand more about the technological impact. The blurring of boundaries and its impact on accountants are described by Tsay (1997:53) in the following words: "the boundaries between managing financial information, managing data, and managing systems have shifted and are losing their definition" ... people "who should be managing financial information are called upon to make decisions that were previously made by information systems people".

Question 7 asked the respondents to indicate on which day the company accounts for its Internet-based sales transactions. The initial responses differed from the information gathered through purchasing on the Internet. Only the answer of the

accountant in Case C was taken into account in this section. During the subsequent interviews the confusion caused by the difference between the audit trail and the structured interviews was resolved. These different transaction dates are summarised in table 4.5 below:

Table 4.5 Comparison of transaction date of the audit trail data with data obtained in the interviews				
Details	Case A	Case B	Case C	Case D
Possible transaction date per the audit trail	Invoice date	Invoice date	Invoice date	Payment date Note 1
Transaction date for the company per the structured interview	Agreement date	Shipment date	Shipment date and delivery date Note 2	Shipment date
Transaction date for the company as per the follow-up interview	Shipment date, when the till slip is generated		Note 2	Shipment date, when the invoice is printed
Note 1: The follow-up interview confirmed that they use the invoice date to record the transaction and not the payment date.				
Note 2: Although the shipment date and the delivery date should have been 24 hours apart the invoice is generated when the shipment is initiated. The follow-up enquiry regarding the late delivery of the ordered goods highlighted that as the goods are handed over to the control of a courier firm when delivery is initiated they are considered to have been "delivered". Only the view of the respondent with an accounting background was taken into consideration here as the accountant is judged to be in a better position to understand the timing of the recognition of a transaction and the documents that support it. The IT respondent indicated the agreement date as the date of the transaction.				

From the above it is clear that it is more difficult to achieve consensus on the identification of the date of a sales transaction than it is to achieve consensus on the fair value of the transaction. The identification of the fair value and date of a transaction is necessary to ensure that the specific sales transactions are recorded in a manner that complies with the requirements of GAAP. GAAP requires that enough should be known about the transaction to satisfy the recognition and measurement criteria (IASCF, 2006:50-54). The audit trail and follow-up interviews do agree on the actual date used to account for Internet-based sales transactions. Given the difference between the timing of the transactions the respondents would have preferred in their personal capacity and the methods they use in the companies, it is clear that the recognition of the timing of an Internet-based sales transaction is open to some debate. Historically GAAP was influenced by actual accounting practice. This is supported by Mathews and Perera (1991:36) in the following statement: "The basic idea was to find out 'what accountants did in practice' and to codify this as accounting theory." Hendriksen (1982:2) describes "[t]heories that concentrate on the relationship between a phenomenon (object or event) and the term or symbol representing it ... as *interpretational* (semantical) theories", and "[t]heories that emphasize the behavioral or decision-orientated effects of accounting reports and statements ... as *behavioral* (pragmatic) theories".

In the attempt to balance relevant and reliable information, the level of control exercised by the company over the asset that is sold also plays a role. It seems that the loss of control shifts the balance between relevant and reliable accounting information to such an extent that a loss of control leads to the generation of the source document and triggers the accounting of the transaction. This rapid acknowledgement of accounting information is in line with the need to keep information useful, the acknowledgement of accounting information when it becomes relevant to the users leading to useful information. Such information is useful to the managers who also use the financial information to execute their managerial responsibilities. The need to control and safeguard the assets (goods sold) of a company seems to be influencing the timing used to recognise a transaction in a manner that could have a detrimental impact on the reliability of the method used to account for the transaction. This is because the transaction is

recognised before the significant risks and rewards of the ownership of the goods are transferred to the customer. Thus it is not only the balancing of relevance against reliability that influences accounting, it is also the need to balance the control requirements applicable to safeguarding the assets of the company against the requirement to ensure that the financial information is reliable. The King Report on Corporate Governance for South Africa (King, 2002:73-74 and 138) requires directors of companies "to maintain an effective system of internal control" and describes internal control as "a process designed to provide reasonable assurance regarding the achievement of organisational objectives" with regard to "the safeguarding of the company's assets" and the "reliability of reporting".

Given the dates of the different documents as shown in tables 4.3 and 4.5, it would appear that the invoice is generated on the day the goods are shipped to the customer and that the invoice can be the source document for the recording of the sales transaction. This perception was confirmed in the follow-up interviews. Another possible factor that could influence the timing of the accounting of sales transactions is the company's strategy. The responses to question 3 in the interviews all indicated an improved market share, improved profitability and improved competitive advantage as reasons for using Internet-based transactions. Following a strategy that requires the company to grow and improve profitability could be an incentive for the faster recognition of sales transactions. As the accounting of transactions requires the maintenance of a balance between the reliability and relevance of the transaction information, this balancing act could be influenced by the strategy and the information required by the users of the financial information. Bowen *et al.* (2002:538) found that 73% of the firms that had the option to report grossed-up revenue and not net revenue used gross-up. In this instance grossed-up revenue is for example the disclosure of total gross revenue and not merely the commission earned on a sale (Bowen *et al.*, 2002:538). The study described by Bowen *et al.* (2002) focused on firms in the United States of America and the gross-up revenue accounting option was only available in the USA (as they use US GAAP), it does, however, indicate that managers are likely to use an option that enables them to show revenue at the highest possible figure.

The interview and audit trail information must be compared with the information disclosed on the websites to render a more complete picture of the methods used to account for South African Internet-based sales transactions.

4.6 WEBSITE INFORMATION REVIEW AND ANALYSIS

In addition to creating an audit trail, documentation gathered in the process of purchasing goods over the Internet also provided the opportunity to gather information on the security of the transaction from the websites of the selected companies. In situations where accounting information is exposed to the risks of the Internet there must be security measures to maintain the integrity of the accounting information. In table 4.6 below, these security measures described on the websites are compared with the interview responses and information collected while purchasing goods over the Internet.

Table 4.6 Comparison of IT security information disclosed on the websites, gathered during the audit trail and the information gathered during the structured interviews				
Details	Case A	Case B	Case C	Case D
Security information disclosed on the website	Payment security in a secure online environment with 128 bit encryption.	Use encrypted Secure Socket Layers (SSL) for credit card transactions, use Thawte.	Use BBBOnline privacy programme.	Use SSL encryption, handled by Virtual card services.
Security information from the interviews	Respondent did not know.	Use secure database.	Use Thawte as certifying agent, use secure internal database with Pastel evolution.	Use a normal point of sales system.

Details	Case A	Case B	Case C	Case D
Security information from the follow-up interviews	The accounting system is not integrated into the web/commerce servers. Payments are processed in a secure environment.			The accounting system is not directly linked to the Internet. Payments are processed in a secured outsourced environment.
Security information on the audit trail	Use Thawte to authenticate website, payments were submitted through a secured encrypted gateway.	Use Thawte to authenticate website, payments submitted with SSL encryption.	Use BBBOnline privacy seal. Only registered customers can initiate payment and complete transaction. Payment details are submitted in a secured encrypted environment that includes Thawte authentication.	Payments secured by Virtual card services with SSL encryption.

Given the sensitivity of the payment information submitted by the customer, along with the submission of the transaction details, it is not surprising that websites focus on communicating the security arrangements surrounding the payment to enhance customer trust. The security arrangements surrounding the payments for the transactions supported the claims by the respondents that the systems were secure as well as the claims made on the websites. The security arrangements surrounding the payment are in line with the requirements of section 43(5) of the

ECT Act that requires the supplier to use a "payment system that is sufficiently secure with reference to accepted technological standards at the time of the transaction and the type of transaction concerned" (South Africa, 2002:s 43 (5)). However, although the payment information was entered onto the website in a secured environment, not all the personal details that had to be captured beforehand were captured in a secured environment. This could lead to identity theft. Even when payment information is captured in a secured connection, it does not mean that the customer's computer is not vulnerable. There could be keystroke logging software on the customer's computer that keeps a record of all the keys used by the customer. However, the security of personal information does not affect the accounting of the transaction but breaches in security, even when on the side of the customer, during Internet-based transactions could lead to negative publicity, as shown in section 1.2.

The remaining aspect that is important is the impact of cancelled or repudiated transactions. Cancelled transactions will not directly affect the accounting of the initial sales transaction but will influence the overall sales figure for the year as they would effectively nullify the financial impact of the original transactions. The ability of the selected companies to account for repudiated or cancelled transactions is described in more detail below.

4.6.1 Repudiation of transactions

In addition to the seven day cooling-off period the ECT Act, as described in chapter 2, also allows customers to cancel transactions within 14 days after the delivery of the goods under section 43. This section becomes relevant in situations when the supplier fails to disclose the following information on the website where goods or services are offered:

- a. Its full name and legal status;
- b. Its physical address and telephone number;
- c. Its website address and e-mail address;
- d. Membership of any self-regulating or accreditation bodies to which that supplier belongs or subscribes and the contact details of that body;
- e. Any code of conduct to which that supplier subscribes and how that code of conduct may be accessed electronically by the consumer;

- f. In the case of a legal person, its registration number, the names of its office bearers and its place of registration;
- g. The physical address where that supplier will receive legal service of documentation;
- h. A sufficient description of the main characteristics of the goods or services offered by that supplier to enable a consumer to make an informed decision on the proposed electronic transaction;
- i. The full price of the goods or services, including transport costs, taxes and other fees or costs;
- j. The manner of payment;
- k. Any terms of agreement, including any guarantees, that will apply to the transaction and how those terms may be accessed, stored and reproduced electronically by consumers;
- l. The time within which the goods will be dispatched or delivered or within which the services will be rendered;
- m. The manner and period within which consumers can access and maintain a full record of the transaction;
- n. The returns, exchange or refund policy of that supplier;
- o. Any alternative dispute resolution code to which that supplier subscribes and how the wording of that code may be accessed electronically by the consumer;
- p. The security procedure and privacy policy of that supplier in respect of payment, payment information and personal information;
- q. Where appropriate, the minimum duration of the agreement in the case of agreements for the supply of products or services to be performed on an ongoing basis or recurrently; and
- r. The rights of consumers in terms of section 44, where applicable.

This section also states that the supplier must provide the customer with an opportunity:

- a. to review the entire electronic transaction;
- b. to correct any mistakes;
- c. to withdraw from the transaction, before finally placing any order (South Africa, 2002:ss 43 (1) and (2)).

In table 4.7 below the requirements of the ECT Act are compared with the information disclosed on the websites from which the purchases were made.

Table 4.7 Comparison of information required by the Electronic Communication and Transaction Act with information provided on the company's websites

Details	Case A	Case B	Case C	Case D
Full name and legal status	√	Company designation not shown.	√	Company designation not initially shown, updated since initial access.
Physical address and telephone number	√	√	√	√
Website address and e-mail address	√	√	√	√
Membership of any self-regulating or accreditation bodies	√	√	√	No
Any code of conduct to which that supplier subscribes and how that code of conduct may be accessed electronically by the consumer	√	√, there is no electronic link to the code of conduct.	√	No
The company's registration number, the names of its office bearers and its place of registration	√	√	√	No
Physical address where that supplier will receive legal service of documentation	√	√	√	√

Details	Case A	Case B	Case C	Case D
A sufficient description of the main characteristics of the goods or services offered by that supplier to enable a consumer to make an informed decision on the transaction	√	√	√	√
The full price of the goods or services, including transport costs, taxes and other fees or costs	√, shown during initiation of the transaction.	√, shown during initiation of the transaction.	√, shown during initiation of the transaction.	√, shown during initiation of the transaction.
The manner of payment	√	√	√	√
Any terms of agreement, including any guarantees, that will apply to the transaction and how those terms may be accessed, stored and reproduced electronically by consumers	√	√	√	√
The time within which the goods will be dispatch or delivered or within which the services will be rendered	√	√	√	No
The manner and period within which consumers can access and maintain a full record of the transaction	√	√	√	No
The returns, exchange or refund policy of that supplier	√	√	√	√

Details	Case A	Case B	Case C	Case D
Any alternative dispute resolution code to which that supplier subscribes and how the wording of that code may be accessed electronically by the consumer	√	√	√	No
The security procedure and privacy policy of that supplier in respect of payment, payment information and personal information	√	√	√	√

Only Case A and Case C fully complied with all the requirements of section 43 of the ECT Act. The noncompliance of the other companies with some of the requirements of section 43 of the ECT Act could expose those companies to the risk of transactions being repudiated within 14 days after the delivery of the goods. However, the respondents all indicated that their companies can deal with cancelled or repudiated transactions and that they have practices in place to do so. In some instances, as indicated in table 4.8 their internal policies were more generous than the requirements of the ECT Act.

Table 4.8 below contains a comparison of the information disclosed on the period during which customers are allowed to return goods as well as the method and timing of customer refunds.

Details	Case A	Case B	Case C	Case D
Period allowed to return goods	One month, goods must be in the same condition as when they left the store. 14 days for a specific group of goods.	14 day return policy, prefer to replace goods but refund is also possible for specific products.	Seven day return policy in line with the requirements of section 44 of the ECT Act (1).	14 day replacement policy for faulty products.
Method and timing of refund described on the website	Credit customer.	Replace goods or refund customer.	Refund customer within 30 days.	No information.

(1) Refers to South Africa, 2002:s 44.

Case A, Case B and Case C have made specific provisions and communicated those provisions to allow customers to return goods and receive a credit or refund. Case D only provides for the replacement of faulty products within 14 days. Case D sells products exempted from section 44 of the ECT Act (South Africa, 2002:s 44). One item was ordered from Case D and then cancelled before delivery. The cancellation was correctly processed by them and the money refunded within a month. Thus even though they did not communicate the process to be followed during a cancellation of a transaction they were able to successfully cancel a transaction.

Table 4.9 below contains information disclosed on the websites that identified the options available to the company to cancel the transaction as well as how they establish the legal timing of the transaction.

Details	Case A	Case B	Case C	Case D
Did the company communicate its right to remove items from the shopping list or refuse an order on the web page?	Yes	Yes	No	No
Did the company communicate its right to cancel an order on the web page?	The order is seen as an offer made by the customer that must be accepted.	Yes	The order is seen as an offer made by the customer that must be accepted.	No
Can the company identify its customers?	Yes, personal details are entered to enable delivery, the customer may register.	Yes, personal details are entered to enable delivery, the customer may register.	Yes, customers are required to register on the website by using a user id and password before they can place an order, authenticating themselves in the process.	Yes, personal details are entered to enable delivery, since website update customers must register before they can place an order, authenticating themselves in the process.

Details	Case A	Case B	Case C	Case D
When does the legal agreement of the transaction come into effect?	On receipt of the credit card confirmation from the issuing bank, when acknowledgement of the transaction is sent to the customer	On receipt of the payment confirmation from the issuing bank	Acceptance of the order by the company and the communication of the acceptance to the customer	Unknown
Does the company communicate details on the dispute procedure to be followed on its web page?	Yes, use arbitration in terms of the South African Arbitration Foundation's rules	Yes, use arbitration in terms of the South African Arbitration Foundation's rules	Yes, Trust-Enforce.org online dispute resolution	No

From the information shown in table 4.9 and table 4.8 it is clear that both the company and the customer can cancel transactions. As Internet-based transactions have an aura of anonymity about them, because there is no physical interaction, the identity of the trading partners is not necessarily known. From the customer's perspective it is important to ensure that the website visited is in fact a real website. Standard Bank sends an e-mail to its clients (see Addendum 4) warning them of phishing attacks that are designed to get customers to divulge their confidential banking details by luring the customer to a fake website. Phishing attacks only impact on the customer who gets caught in the attack. However, this does highlight the need for the customer to be sure that the website visited for trading purposes is in fact the real website, to enable the customer to trust the website. This can be done by using authentication techniques. This is typically a service offered by Thawte or Verisign. You can click on the lock and they will certify the identity of the website. An example of a website with a certificate is shown in Addendum 5.

Table 4.6 highlights the security measures taken by the companies to secure the payments. The main websites were all unsecured. It is only after the customer either logs onto the website or enters the payment section of the transaction that the Internet link becomes secured. Thus it is only when the customer needs to submit sensitive payment information that the website is secured. Although all the companies give customers the option to register, it was only initially compulsory for Case C. Subsequently Case D also made prior registration compulsory. Registration by the customer could enable the company to positively identify the customer. The identification of customers can enable the company to better track the customer's purchase patterns and focus its marketing on specific customer needs. This is, however, an operational advantage. For accounting purposes the positive identification of a customer is only required if the sales transaction is on credit, and the customer's account has to be debited. Credit Internet-based sales should be accounted for as follow:

Date: Dr Customer's trade receivables account	R xx
Cr Sales	R xx
Merchandise sold for credit	

This example is supported by Dempsey and Pieters (2005:98).

In other situations where the customer pays for the transaction at the initiation of the transaction it is normally irrelevant to the company if the customer enters a false name as long as the goods were delivered at the place the customer specified. Thus, although there is a need for the company to authenticate its website to help foster customer trust, there is not a need to authenticate either the company or the customer during an Internet-based sales transaction for accounting purposes. It is only necessary to authenticate a customer during a credit sales transaction for accounting purposes. In cash Internet-based sales transactions the identity of the customer is not required for the accounting of the transaction, what is important is that the customer should pay or the transaction should be aborted.

All the information collected through the structured and follow-up interviews was combined with the data collected during the purchases of goods over the Internet from the Cases and the accompanying audit trail. The results were combined in

turn with the data collected from an analysis of the web pages of the Cases to describe how the Cases actually account for their Internet-based sales transactions. The results of this combined analysis are described in section 4.7.

4.7 ACCOUNTING FOR SOUTH AFRICAN INTERNET-BASED SALES TRANSACTIONS CASE-BY-CASE

Given all the information gathered through the structured interviews and amended to take the information gathered during the follow-up interviews, the audit trail data collected and the review of information disclosed on the websites into account, this study gathered enough data to describe the methods used by the companies to account for their South African Internet-based sales transactions by first describing the tracking of the transaction in table 4.10 and then describing the accounting process in table 4.11.

Details	Case A	Case B	Case C	Case D
Can the customer select goods on the website?	Yes	Yes	Yes	Yes
Does the customer process an order to communicate the desire to purchase or go to checkout?	Checkout	Checkout	Checkout	Order
Can the customer see the description, quantity, unit price and delivery charge of goods to establish the value of the transaction?	Yes	Yes	Yes	Yes
Does the customer enter payment details at this stage?	Yes	Yes	-	-
Does the customer agree to the details of the order?	Yes	Yes	Yes	Yes

Details	Case A	Case B	Case C	Case D
Does the customer enter payment details after agreement?	-	-	Yes	Yes
Is payment information entered on a secured website?	Yes	Yes	Yes	Yes
Does the customer receive a reference number after the initiation of the purchase?	Yes	Yes	Yes	Yes
What document is received by the customer at initiation?	Online invoice with an order number.	Numbered order.	Numbered pro forma invoice.	Confirmation of payment with a reference number.
What document accompanies the goods at delivery?	Till slip /invoice	Invoice	Invoice	Invoice

The above description of the transaction from an operational perspective, which incorporates customer information, serves to enhance clarity and ensure that there is no confusion between some of the operational information that supports an Internet-based sales transaction and the accounting thereof described below.

Details	Case A	Case B	Case C	Case D
Did the customer agree to the details of the transaction on the website before the processing of the order?	Yes	Yes	Yes	Yes

Details	Case A	Case B	Case C	Case D
What document's generation is initiated by the customer during a website purchase?	Online invoice also referred to as an order	Order	Pro forma invoice	Order
Is the value of the transaction known to the customer before the transaction is agreed to and submitted?	Yes	Yes	Yes	Yes
Were payment details submitted at this point?	Yes	Yes	Yes	Yes
Is the initiation of payment by the customer done on secured web pages?	Yes	Yes	Yes	Yes
What document is used to initiate the accounting of the transaction?	Invoice	Invoice	Invoice	Invoice
What does the company use to ensure that the transaction is profitable?	Gross profit margin	Gross profit margin	Gross profit margin, suppliers price list	Gross profit margin
Is it possible to determine the cost price of the sale?	Yes	Yes	Yes	Yes
Is delivery after the generation of the invoice?	Yes	Yes	Yes	Yes
Which account would be debited?	Payment clearing account for matching to the credit card payment	Payment clearing account for matching to the credit card payment	Payment clearing account for matching to the credit card payment	Payment clearing account for matching to the credit card payment
Which account would be credited?	Sales	Sales	Sales	Sales

From the above it appears that there is a definite correlation between the methods used to account for Internet-based sales transactions and cash sales transactions. Dempsey and Pieters (2005:98) describe the accounting of a cash sales transaction as follows:

Date:	Dr Bank	R xx
	Cr Sales	R xx
Merchandise sold for cash		

Therefore, as the information relating to the payment of the Internet-based sales transaction is captured at the same time as the initiation of the transaction by the customer, it seems that the companies account for their Internet-based sales transactions in much the same way as cash sales. This is also supported by the fact that none of the multi-channel companies disclosed the results of their Internet-based sales transactions separately from their other sales (question 10).

This does not, however, fully take into account the unique nature of Internet-based sales transactions. Another factor to consider is that the goods have to be delivered. Although there is specific agreement on the fair value of a transaction, the transaction is recognised early.

4.8 SUMMATION

In this chapter data were collected that aided in the development of a description (recorded in table 4.11) of how the four companies captured and recorded their South African Internet-based sales transactions. This description answered the first research question.

At the beginning of this chapter the layout of the questions used as a guide during the interviews was discussed. In line with the case study design of the study, different methods were used to gather primary data. These methods included the purchase of goods from the four companies, and the comparison of the results of the actual purchases with the results of the structured interviews, the performance of follow-up interviews in order to enhance the quality of the primary data collected,

and the review of information disclosed on the websites. Finally, the results of all the data collected were analysed and compared to develop a description of how the four companies actually account for their South African Internet-based sales transactions.

The remaining step, namely the comparison of the primary data collected that describe the methods the companies' used to account for their South African Internet-based sales transactions with the requirements of GAAP, still has to be done in order to address the outstanding research question. The outstanding research question, namely whether these sales transactions are accounted for in a manner that complies with the requirements of GAAP, can only be answered after the actual methods used to account for Internet-based sales transactions as shown in table 4.11 have been compared with the requirements of GAAP. This comparative analysis was carried out in chapter 5.

CHAPTER 5
COMPARISON OF DATA ANALYSIS WITH THE REQUIREMENTS OF GAAP

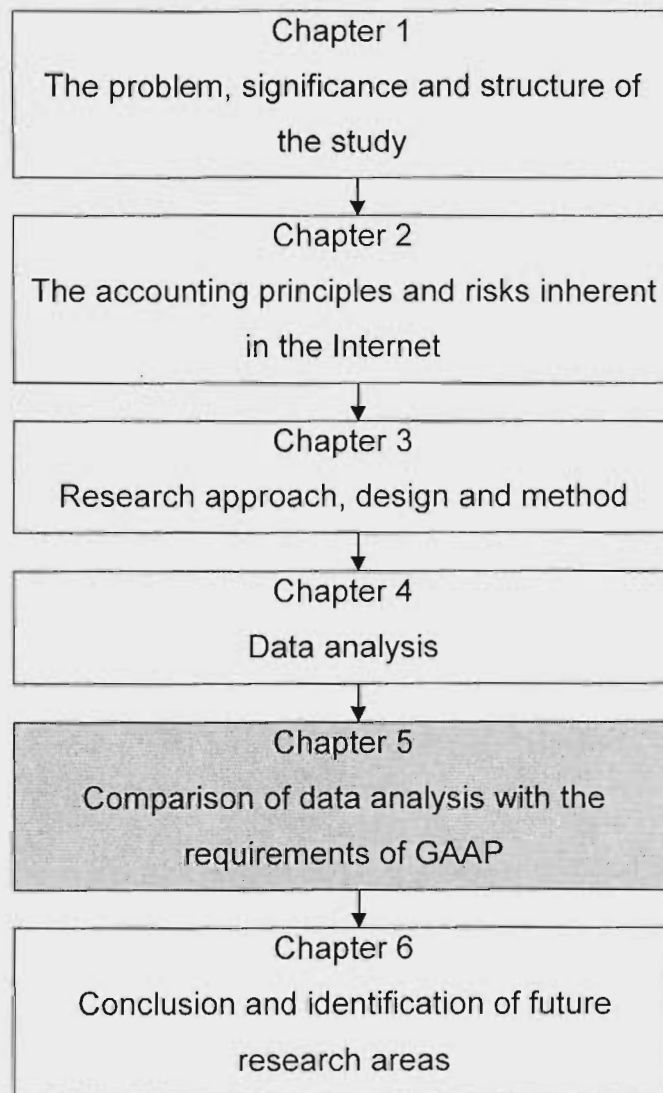
Contents

Section	Page
5.1 Introduction	134
5.2 Detailed comparison with GAAP	135
5.3 Assessment of the quality of the multiple-case study results	140
5.3.1 Quality tests	140
5.4 Summation	142

List of figures

Figure 5.1 Dissertation map, chapter 5	134
--	-----

Figure 5.1 Dissertation map, chapter 5



5.1 INTRODUCTION

In chapter 4 various different qualitative data collection methods were used to identify the methods used by the companies to account for their South African Internet-based sales transactions. As the commercial use of the Internet as a communication medium is a fairly new adaptation, this research followed an exploratory multiple-case study approach to identify the actual methods four companies use to account for their South African Internet-based sales transactions. Triangulation was used to combine the results of the analysis of the different data collection methods to ensure that the combined analysis of the data collected does

in fact show how the four companies account for their South African Internet-based sales transactions. The combined information as described in section 4.7 did in fact show how the four companies account for their South African Internet-based sales transactions and this information answered the first research question.

In order to answer the second research question the methods the four companies used to account for their South African Internet-based sales transactions were compared with the requirements of GAAP as identified in the literature review performed in chapter 2 and the results were analysed. This comparison was done in section 5.2.

Before conclusions can be reached or the results of the study used to recommend improvements to accounting theory, the quality of the answers to the research questions must be assessed. The tests or assessments must ensure that the quality of the information gathered complies with the validity and reliability requirements applicable to case study research. Yin (2003:34) recommends the use of four tests, namely construct validity, internal validity, external validity and reliability. The results of the tests were described in section 5.3.

The second research question asks if the identified sales transactions are accounted for in a manner that complies with the requirements of GAAP.

To answer this question, the methods the four companies use to account for their South African Internet-based sales transactions as identified in chapter 4 are compared with the requirements of GAAP as identified in chapter 2. This comparative analysis is done in section 5.2.

5.2 DETAILED COMPARISON WITH GAAP

As described in section 2.2.1.1, accounting is based on two assumptions. The first is that financial statements are prepared on the *accrual basis*, and the second is that the entity or company will continue to operate as a *going concern* in the foreseeable future (IASCF, 2004:27-28). The respondents indicated that it is possible for their companies to determine whether they sell their goods at a profit

and that they all used gross profit to ensure profitability. Thus the going concern status of these companies is not in question. As all the companies used invoices to account for their Internet-based sales transactions as described in section 4.5 and not the payment. They also follow the principles of accrual accounting. Accounting for Internet-based sales transactions under the accrual accounting method requires that “the effects of transactions and other events are recognised when they occur (and not when cash or its equivalent is received or paid) and they are recorded in the accounting records and reported in the financial statements in the periods to which they relate” (IASCF, 2004:27-28). To accomplish this, the companies must be able to identify sufficient transaction details to enable them to comply with the requirements of the Revenue Standard. They must be able to recognise the transaction and measure its fair value.

IAS 18 requires that **“Revenue shall be measured at the fair value of the consideration received or receivable”** (IASCF, 2006:1063). In the structured interviews all the respondents stated that the customer specifically accepts the details in terms of the description, quality and price of the goods selected. The perception of the respondents that the companies require specific agreement to the transaction was confirmed by the data collected through purchasing goods from the same companies. All the goods purchased through the Internet by the author required acceptance of the type, quantity and price of the goods purchased, and the shipping or delivery charges. This specific agreement of the transaction details enables the determination of the actual value of the transaction. This agreed upon value is deemed to be a fair value as it is the value agreed upon between two willing trading parties under normal trading conditions. As payment details of all the transactions were entered at the same time as the transaction, it is not necessary to adjust the fair value of the transaction to accommodate later payment. IAS 18 requires that “when the inflow of cash or cash equivalents is deferred, the fair value of the consideration may be less than the nominal amount of cash received or receivable” (IASCF, 2006:1064).

The Revenue Standard also requires that revenue should only be recognised for accounting purposes when the following requirements of IAS 18 have been complied with:

Revenue from the sale of goods shall be recognised when all the following conditions have been satisfied:

- (a) the entity has transferred to the buyer the significant risks and rewards of ownership of the goods;**
- (b) the entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;**
- (c) the amount of revenue can be measured reliably;**
- (d) it is probable that the economic benefits associated with the transaction will flow to the entity; and**
- (e) the cost incurred or to be incurred in respect of the transaction can be measured reliably. (IASCF, 2006:1065.)**

Section (a) is the requirement that the company must have transferred the significant risks and rewards of the ownership of the goods to the buyer. This occurs when the buyer accepts delivery of the goods. The actual date on which the buyer accepts delivery of the goods is not necessarily known to the specific company as the goods are not necessarily delivered by the company. Cases A and C used courier firms for their deliveries, Cases B and D used the postal 24-hour delivery service. Generally these options allow for a delivery to occur within 24 hours. In situations where there is a problem with the delivery the company will only be notified if the customer communicates the non-delivery. It is thus not always possible for a company to be sure of exactly when the ownership of the purchased goods is transferred to the customer. It is, however, a fair assumption that when a 24-hour delivery option is used the goods will be delivered within 24 hours. Given the requirement of section (a), the company should account for its Internet-based sales transactions 24 hours after the dispatch of the goods. The current practice followed by the companies does not enable the company to ensure that the accounting of its Internet-based sales transaction is a faithful representation of the effects of the transaction as required by IAS 1 (IASCF, 2006:788). It is also a breach of the requirement of IAS 18 that the company must have transferred the significant risks and rewards of the ownership of the goods to the buyer (IASCF, 2006:1065). In its appendix IAS 18 specifically states that in situations of cash on

delivery sales, revenue is recognised when delivery is made and cash is received by the seller or its agent (IASCF, 2006:1071).

However, if the company consistently records a sales transaction on the date the goods are shipped to the customer, it should still ensure that the accounting records are a fair reflection of the sales transactions over time, if all the other requirements of the Revenue Standard are satisfied.

In none of the instances where goods were purchased through the Internet did the company retain any continuing managerial involvement or other rights to the product purchased. Thus section (b) of the above requirements is satisfied.

As described above in the discussion on the fair value of the transaction, it is possible to measure the amount of the transaction reliably and thus section (c) is satisfied.

All the transactions where goods were purchased through the Internet required the submission of credit card details or the use of another form of payment before the transaction could be finalised. Thus the companies have access to enough information to ensure that the economic benefits of the transaction will flow to the organisation and satisfy section (d). The impact of the use of false or fictitious credit card details to initiate an Internet-based sales transaction is an aspect that falls outside the scope of this study as it relates to criminal law. It was specifically excluded in section 1.1.2.2.

The responses to the structured interview indicated that all the companies could identify the cost applicable to a specific sales transaction. Thus the companies have access to enough information to satisfy section (e) of the above requirements.

In addition to the requirements of the Revenue Standard, this study should also consider the impact of the qualitative characteristics on the accounting of Internet-based sales transactions in comparison with the actual accounting methods used with GAAP. The qualitative characteristics as described in the Framework disclose

“the attributes that make the information provided in financial statements useful to users” (IASCF, 2004:28).

The correct recognition of a transaction is dependent on obtaining an appropriate balance between the relevance and reliability of the transaction. Relevance is when information is “relevant to the decision-making needs of users” (IASCF, 2004:28-29). This occurs when the information “influences the economic decisions of users by helping them evaluate past, present or future events or confirming, or correcting, the past evaluations” (IASCF, 2004:28-29). Information on the effect of sales transactions is necessary for the users of accounting information to help them to evaluate how successfully the company is being managed as well as assess the sustainability of the company’s business. The other qualitative characteristic important in the recognition of sales transactions is the reliability of the information. As described above, the reliability of the fair value of the transaction is acceptable as there is agreement on the details of the transaction, which makes it possible to establish the fair value of the transaction. The reliability of the timing of the transaction is more uncertain. The Framework states that “information has the quality of reliability when it is free from material error or bias and can be depended upon by the users to represent faithfully that which it either purports to represent or could reasonably be expected to represent” (IASCF, 2004:29).

The consistent application of an accounting practice that records Internet-based sales transactions when the goods leave the control of the company while reasonably expecting the customer to receive the goods within 24 hours cannot materially affect the fairness of the recorded sales transactions over time. The Framework states that the “balance between benefit and cost is a pervasive constraint” and the cost of more accurate information should be considered against the benefits thereof (IASCF, 2006:43-44). It would be expensive to track goods dispatched to customers, especially when the company itself does not deliver the goods, as such a system requires the company to maintain an information trail outside its organisational borders. It is unlikely that the benefit of knowing that sales transactions are accounted for on the day the goods were received by the customer, or even seven days thereafter, allowing for the elapse of the cooling-off period, will add any additional value to the company’s financial information.

Even though the methods used by the companies do not fully comply with all the detailed requirements of the Revenue Standard, because it cannot recognise the timing of the transaction reliably, because it can measure the value reliably, it does comply with the spirit of the following statement:

Revenue is recognised when it is probable that future economic benefits will flow to the entity and these benefits can be measured reliably (IASCF, 2006:1062).

From the above it seems that the reliability requirement is more applicable to the recognition of the value and the cash flow than the recognition of the timing of the transaction. The study can, therefore, agree with the claims of the respondents that in all material aspects the four companies can account for their South African Internet-based sales transactions in accordance with the requirements of GAAP.

5.3 ASSESSMENT OF THE QUALITY OF THE MULTIPLE-CASE STUDY RESULTS

The research design must be executed in a manner that represents a logical discourse that describes the process followed to answer the research questions. The logic behind the process must therefore be tested to judge the quality, especially in a qualitative study. There are four tests that have commonly been used to establish the quality of an empirical study, namely construct validity, internal validity, external validity and reliability (Yin, 2003:33). The use of these tests as recommended by Yin is acceptable in the accounting sciences and was successfully used by Waweru and Uliana (2005:42).

5.3.1 Quality tests

Construct validity was addressed in the study by using multiple sources of information. An aspect that was strongly recommended by Henning *et al.* (2004:6) and Yin (2003:36) was the use of multiple sources to collect data. The sources used in the study included structured interviews, follow-up interviews, participant observation (the collection of audit trail data) and document and artefact review

(including a review of the audit trail documentation) as well as the information disclosed on the websites. When the information gathered from these different sources was analysed as a whole it rendered a more detailed description of the methods used by the four companies to account for their South African Internet-based sales transactions than any one source would have done.

The second test is internal validity. To ensure internal validity, pattern matching was used to discern a pattern in the cases themselves, identify similarities between the requirements of GAAP and the cases, or highlight differences between the cases. Yin (2003:36) describes that available tactics to address internal validity as pattern matching, explanation building, considering the impact of rival explanations and using logic models. As the requirements of GAAP form the theoretical foundations of the study the most suitable tactic was pattern matching, which entailed matching the methods used by the companies to the requirements of GAAP by analysing and critically comparing the data.

The third test is external validity. Yin (2003:37) specifically recommends the use of replication logic in multiple-case studies. This recommendation is motivated by the statement that a “theory must be tested by replicating the findings for a second or third” case. The determination of fair value, the use of an invoice as the source document, and the timing difference between the recording of the South Africa Internet-based sales transaction and the receipt of the goods by the customer were replicated by all the cases.

The fourth test is reliability. To enhance the reliability of the findings, goods were purchased from the companies again after the methods used to account for their Internet-based sales transactions had been identified to ensure that the methods identified were in fact used. No exceptions occurred.

These tests supported the validity and reliability of the study.

5.4 SUMMATION

This chapter used a comparative analysis to compare the methods used by the four companies to account for their South African Internet-based sales transactions to the requirements of GAAP. This comparison enabled the study to answer the remaining research question. Although the timing used to recognise their South African Internet-based sales transactions did not agree to the precise requirements of the Revenue Standard IAS 18, the overall impact of being one or two days out consistently over a long period such as a year would not change the reasonableness of the total revenue to such an extent that it was not a fair reflection. Thus, although the study found that the South African Internet-based sales transactions are not a faithful reflection of the transaction, it did conclude that the revenue would be a fair reflection considering that IAS 18 also requires revenue to be "recognised when it is probable that future economic benefits will flow to the entity and these benefits can be measured reliably" (IASCF, 2006:1062).

In addition the quality of the research design and findings were assessed by using the four quality tests, namely construct validity, internal validity, external validity and reliability.

The conclusion of this study that *the four entities can account for their South African Internet-based sales transactions in a manner that complies with the requirements of GAAP* is therefore based on the primary data collected, analysed and compared with requirements of GAAP. In the next, and final, chapter this conclusion is examined in the context of the other elements of the study. Areas that were identified from either the literature review or the collection of primary data and that require further research are also highlighted in the next chapter.

CHAPTER 6
CONCLUSION AND IDENTIFICATION OF FUTURE RESEARCH AREAS

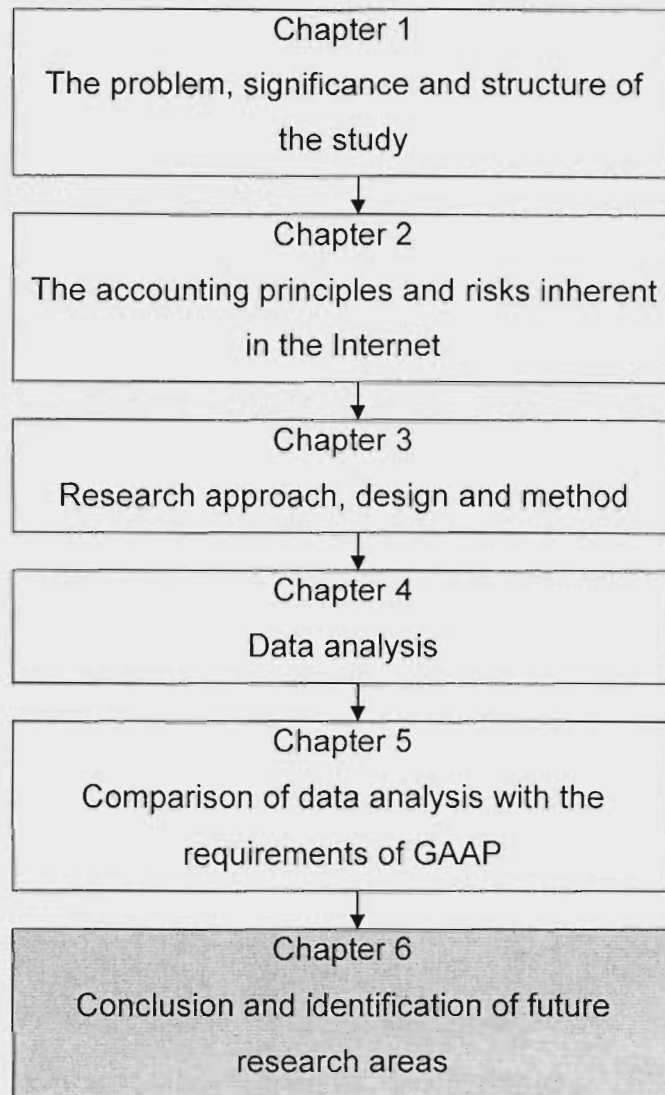
Contents

Section	Page
6.1 Introduction	144
6.2 Study overview	145
6.3 Scope, limitations and exclusions	148
6.3.1 Scope and limitations	149
6.3.2 Exclusions	151
6.4 Identification of future research areas	152
6.5 Conclusion	154

List of figures

Figure 6.1 Dissertation map, chapter 6	144
--	-----

Figure 6.1 Dissertation map, chapter 6



6.1 INTRODUCTION

As the commercial use of the communication medium of the Internet is a fairly new adaptation, this research followed an exploratory approach to identifying the actual methods used to account for South African Internet-based sales transactions. Owing to the exploratory nature of the research and the nature of the research questions, a qualitative research approach was followed that focused on getting quality information on the actual processes used to account for Internet-based sales transaction. Four entities were used as the multiple-cases studies in view of the choice of a case study design. Owing to the exploratory nature of the research,

the qualitative approach and the multiple-case study design, the results of this study cannot be extrapolated to the broader retail environment involved in Internet-based sales transactions in South Africa. It can, however, be used to engage in discourse on the theoretical foundations that support the accounting of Internet-based sales transactions. The results of the primary data collected for this study are described in detail in chapter 4 and the comparison of the primary data as analysed with the requirements of GAAP in chapter 5.

6.2 STUDY OVERVIEW

The hypothesis of this study focuses on identifying through exploration whether *the four entities can account for their South African Internet-based sales transactions in a manner that complies with the requirements of GAAP*. To gather enough evidence to support the hypothesis, the following research questions were identified:

- How do the four entities capture and record their South African Internet-based sales transactions?
- Are these sales transactions accounted for in a manner that complies with the requirements of GAAP?

The process followed to gather evidence to support the hypothesis and answer the research questions is graphically represented throughout this study in the form of dissertation maps and can be described in more detail as follows:

Chapter 2 began by describing the requirements of GAAP. This description of the requirements of GAAP included taking into consideration the underlying assumptions, the qualitative characteristics and constraints as described in the Framework for the Preparation and Presentation of Financial Statements as well as the requirements of the Revenue Standard. Thereafter, the actual methods used - from the traditional method used to account for sales transactions to the method used in an online real-time information systems environment - were identified from the literature. Although the literature did refer to e-commerce as an option for

commercial transactions, no reference was found that described how Internet-based transactions were recorded for accounting purposes.

The next section of chapter 2 focused on identifying the inherent risks of the Internet to enable a better assessment of the risks that the Internet link can expose the accounting process to. In this process five inherent risks were identified and described in 2.5.1.1 to 2.5.1.5. The literature review used to identify the inherent risks associated with the Internet also provided valuable insight into the advantages of using a literature study to research any new technology before decisions are taken to incorporate that new technology into a business process. The development of new technologies is generally well documented, as shown in this literature review, and information on the development process as well as the problems encountered during that process is available in the literature. Managers who have to decide whether to incorporate any new technology into the business processes of their entities should review the literature on the development of that technology before they finalise their decision. The importance of “stepping softly” when considering the incorporation of a new technology into the entity’s business processes was also highlighted by Ernst & Young (2005:3).

Chapter 3 focused on using the information identified in the literature review to develop a suitable research approach design and suitable research methods to ensure that the primary data collected would sufficiently supplement the information gathered in the literature review to enable the research questions to be answered. A literature review was performed on the recommended best practices to be used during instrument design and these identified best practices were taken into consideration in the development of the questions used in the structured interview. Because of the case study design of the study the questions used to structure the interviews were only evaluated by a market research expert and were not tested through the use of a pilot study. The author decided to use the information gathered by the structured interviews as a basis and to perform follow-up interviews to resolve any uncertainties or gather any additional information that was required.

Chapter 4 briefly described the characteristics of the entities selected as the cases for the multiple-case studies, as well as the layout of the questions used in the structured interviews. The results of the interviews were the first set of data described in this chapter. Thereafter the results of the audit trail data collected were described. These two sets of primary data allowed for a comparison between the two data sets. The initial comparison between the results of the structured interviews and the audit trail data yielded interesting results as it highlighted one of the flaws of relying on the perceptions of people. Their perceptions are not necessarily supported by the facts. One of the possible contributing factors to the difference between the perceptions and the actual audit trail evidence is that the accounting of sales is seen as a simple and straightforward, even obvious, process. Gibran said in Cook (1993:198), "The obvious is that which is never seen until someone expresses it simply." To enhance the quality of the information gathered, follow-up interviews were conducted and incorporated into the analysis and comparison of the results.

Up to this point this study focused on identifying the methods used to account for Internet-based sales transactions. However, repudiated or cancelled transactions can influence the original transaction by effectively reversing it. The next section of chapter 4 considered the legal requirements that allow customers to return goods as per the ECT Act in combination with the responses to the interviews that stated that all the selected companies could cope with a cancelled transaction and the information communicated on the websites on the legal timing and cancellation of transactions. This section also considered the information relating to the security of the website and any requirements relating to the return of defective goods or any other form of cancellation or repudiation as disclosed on the websites of these companies. In addition, a document and artefact review was performed on the documents collected when purchasing goods from the cases during the establishment of the audit trail. A further purpose of the review was to analyse information disclosed on the websites. The information from all the various sources was combined to describe how the cases account for their Internet-based sales transactions. This information answered the first research question.

In chapter 5 the description of the methods used by the Cases to account for their Internet-based sales transactions was compared with the requirements of GAAP that formed the theoretical foundation of the study as identified in the literature review in chapter 2. This comparison highlighted the fact that the recognition of the timing of an Internet-based sales transaction did not fully comply with the specific requirements of the Revenue Standard as the goods were recorded for accounting purposes before the delivery of the goods to the customer. Thus the most notable problem identified by this study concerned the identification of the date on which the transaction should be recorded. However, as the accounting of Internet-based transactions is supported by pervasive information systems if the companies elect to account for the sales transaction on the day the goods leave the control of the company, the fact that a consistent method is followed will ensure that the South African Internet-based sales transactions can be fairly accounted for over time. The importance of fair presentation of financial information is supported by paragraph 13 of the International Accounting Standard, IAS 1, on the Presentation of Financial Statements, which describes the accounting requirements as follows:

Financial statements shall present fairly the financial position, financial performance and cash flows of an entity (IASCF, 2004:565).

The primary data collected in this study did support the hypothesis that *the four entities can account for their South African Internet-based sales transactions in a manner that complies with the requirements of GAAP.*

The specific scope, limitations and exclusions applicable to this study is described again in section 6.3 below to ensure that the conclusion of the study is seen in the proper context.

6.3 SCOPE, LIMITATIONS AND EXCLUSIONS

To ensure that the boundaries and extent of the study are clear, the scope, limitations and exclusions of the study, as initially described in sections 1.1.2.1 and 1.1.2.2, are listed again in the following sections.

6.3.1 Scope and limitations

This study is of a qualitative and exploratory nature; it was designed to identify the actual methods used by four diverse entities, as multiple-case studies, to account for their Internet-based sales transactions. Once the methods had been identified, the methods these entities use to account for their Internet-based sales transactions were compared with the requirements of GAAP in order to address all the elements of the title. The research approach, design and methods, as well as the identification of the four entities, are discussed in detail in chapter 3.

In order to accomplish the above, literature reviews were used to identify the methods used to account for sales transactions (from the historical manual recording of sales to sales processed in an online real-time computerised environment), as well as the requirements of GAAP that apply to the recording and disclosure of sales transactions.

Because the information required to account for Internet-based sales transactions is reliant on the entity's information systems, this study considered how the data relating to the sales transactions were entered into the information system. In the process of identifying the methods used to account for Internet-based sales transactions this study used the historical development of the Internet as described in the literature to identify the risks specifically associated with the Internet that could influence the initial recording of the accounting information of Internet-based sales transactions.

A literature review was also used to identify the most suitable research methodology for answering the research questions applicable to the study and enable a conclusion on the hypothesis. The information gathered during the literature reviews was used as the theoretical basis for the further qualitative research that collected primary data to identify the methods used by the entities to account for their Internet-based sales transactions. Since this study is essentially a case study it was important to ensure that sufficient data were collected. Three different data collection methods were therefore used to identify the actual methods used to account for Internet-based sales transactions. The data were triangulated to enable the study to answer the first research question. The results were

compared with the requirements of GAAP and other relevant information identified in the literature to enable the study to answer the remaining research question and arrive at a conclusion on the hypothesis. The research questions and hypothesis are described in detail in section 1.4.

To ensure that the scope of the study was manageable, the following limitations applied:

- The study focused on retail entities that sell goods over the Internet for delivery to customers.
- The study required both the entities and the customers to be in South Africa.
- The requirements of the Electronic Communications and Transactions Act 25 of 2002 (ECT Act) were taken into account in so far as this Act bestows legal status on the data message that transports the information on the Internet-based transaction, requires contact details to be disclosed, requires the payment process to be secured and allows for the repudiation or cancellation of specific transactions. These elements were taken into consideration because they have a direct impact on the accounting of an Internet-based sales transaction.
- The identification of the possible influence of the Internet on the accounting process and the inherent risks of the Internet relied heavily on Internet-based sources. These sources included newspaper or news articles, which were the only source that highlighted some Internet-related problems, and were also the main source of information on the growth of Internet-based sales during different periods. At times older sources were used as these sources highlighted principles that are still valid. In general older sources were also used because they provided the best explanation of the highlighted principles.
- No studies were found that described the impact or influence of allowing the customer to enter the transaction information into the information system, or studies that determined whether the mere fact that the Internet is used to record the initial transaction details will lead to different accounting methods being used by the different types of entities.

As the scope and limitations of the study are clear the remaining element required to define the boundaries of the study is the elements that are specifically excluded. These exclusions are listed below.

6.3.2 Exclusions

The following are excluded from the study:

- Value Added Tax (VAT). The VAT value attributable to a transaction is not recorded as revenue by the entity involved in the transaction.
- The study focused on the accounting of basic South African Internet-based sales transactions and therefore any subsequent manipulation of income to achieve income smoothing or provisions falls outside the scope of this study.
- Fraud, fictitious transactions or white collar crime are excluded from the study as they fall within the ambit of criminal law.
- The strategic and operational reasons why an entity engages in Internet-based transactions can influence the manner in which it accounts for its Internet-based transactions. However, determining whether the selected strategy or operational business solution is suitable for the specific entity is a business decision and falls outside the scope of this study.
- Integrated information systems are used by entities today, especially with the deployment of enterprise resource planning (ERP) or enterprise resource management systems (ERM), where the information system closely integrates accounting information with management information. This study focuses only on how the system records its Internet-based sales transactions for accounting purposes. Aspects relating to the control of the business process that supports Internet-based sales transactions as well as any other management information generated by this process that does not directly influence the accounting transaction fall outside the scope of this study.
- Behavioural elements could affect the perceptions surrounding the methods used to account for sales transactions. Behavioural accounting research falls within the ambit of industrial psychology and is therefore excluded.
- Multi-channel income represents income generated through the traditional “brick and mortar” business as well as through Internet-based sales. This

study focused only on the Internet-based sales channel within multi-channel income, as the title indicates.

- As this study focused on Internet-based sales transactions where the goods are sold from an entity in South Africa to a customer in South Africa, there was no cross-border or foreign exchange impact.

These exclusions enabled the study to focus on the accounting of a basic retail sales transaction, entered into in South Africa through the communication medium of the Internet.

The remaining part of this study highlights all the areas identified during this study that could require further research. This is done in 6.4 below.

6.4 IDENTIFICATION OF FUTURE RESEARCH AREAS

The first area identified for further research is to determine whether Winston's model as described in section 2.5.2 is a useful guide to assist accountants to identify the risks inherent in new technologies as described in the literature. It is important to identify the extent to which Winston's model can act as an aid in the decision process when deciding whether or not to incorporate a new technology into a business or accounting process.

The second area that warrants further research is the perception of the security threat posed by the Internet connection to the accounting information on the company's information system versus the actual threat. The responses to the interviews did not, in general, consider the Internet link to the company's information system to be a threat. This is supported by detailed descriptions of the responses to question 4 given in section 4.3.3. In addition, the respondent with a financial background did not perceive the Internet connection to the company's information system to be a threat at all. In the light of the survey performed by PricewaterhouseCoopers (2003), which clearly indicated that the actual occurrence of cyber crimes was significantly greater than the perception of such crimes, this is an area that requires further research.

A third potential area for further research is the possible exposure a company has when it requires its customers to capture personal information on an unsecured web page.

A fourth possible area for further research is the influence of control on accounting. The extent to which accountants are influenced in their accounting choices by the requirement to provide “reasonable assurance regarding the achievement of organisational objectives with respect to:”

- the effectiveness and efficiency of operations;
- the safeguarding of the company’s assets (including information);
- compliance with applicable laws, regulations and supervisory requirements;
- supporting business sustainability under normal as well as adverse operating conditions;
- reliability of financial reporting; and
- behaving responsibly towards all stakeholders (King, 2002:73-74).

Finally, this study could be used as the basis for a more extensive study on the accounting methods used by Internet-based retail entities in South Africa in a manner that would allow for the results to be applied to a broader retail environment. A more comprehensive study could also focus on individual accounting elements of this study, such as:

- determining if the current accounting practices do in fact give the users of financial information enough information to make useful decisions
- identifying who needs information on Internet-based sales transactions in a post King II corporate governance environment
- identifying the actual methods used to reverse Internet-based sales transactions with a specific focus on the recognition and measurement of the transaction
- determining if cash accounting and not accrual accounting could improve the information relating to Internet-based transactions for owner managed businesses
- determining if the identification of the timing of other transactions that use the Internet as a communication medium also follows a specific pattern

- determining whether the identification of the timing of other transactions where the goods also have to be delivered to the customer follows a similar accounting pattern to that followed for South African Internet-based sales transactions as described in the study

6.5 CONCLUSION

The results of this study supported the hypothesis that *the four entities can account for their South African Internet-based sales transactions in a manner that complies with the requirements of GAAP*. The study also highlighted areas which should be further researched.

STRUCTURED QUESTIONS FOR THE INTERVIEWS

Accounting of Internet-based sales transactions

Name of entity: _____

(The name of the person who answered these questions as well as the name of the entity will be kept confidential.)

Type of entity: (i.e. company or close corporation)

Name of respondent: _____

Position: _____

Expertise of respondent: (i.e. accounting or information systems)

If you would you like to receive an e-mailed summary of the results, please provide your e-mail address.

E-mail address: _____

A. INTERNET PURCHASES

1. Have you ever bought goods through the Internet?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

2. If you bought goods, for example a book, through the Internet, on which date would you account for that transaction in your personal capacity? Please select ONE of the following.

The day you entered the sale on the Internet	<input type="checkbox"/>
The day the payment went through	<input type="checkbox"/>
The day you received the goods	<input type="checkbox"/>
Another day, specify _____	<input type="checkbox"/>

B. INTERNET SALES: OPPORTUNITY AND THREATS

3. What opportunities do you think your entity can benefit from by selling goods through the Internet? Please select the appropriate alternatives.

Improved market share	
Improved profitability	
Competitive advantage	
Other, specify _____	

4. What threats do you think could impact on your entity because of sales through the Internet? Please select the appropriate alternatives.

Lagging behind other competitors	
Internet-related security concerns such as viruses and hackers	
Other, specify _____	

C. ACCOUNTING

5. After the customer selected the goods to be purchased through the Internet, is the customer required to specifically accept the details in terms of description, quantity and price of the goods selected?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

6. Which document is presented to the customer as evidence of the transaction immediately after the customer entered the transaction on the Internet?

Order	
Pro forma invoice	
Invoice	
Other document, specify _____	

7. On which date will the Internet-based sales transaction be recorded as a sale in the accounting records of the entity?

On the date of the agreement of the details of the sales transaction	
On the date the sales transaction is paid for by the customer	
On the date the goods are shipped to the customer	
On the date the goods are delivered to the customer	
Another date, specify _____	

8. Which document is presented to the customer as evidence of the transaction together with the delivery of the goods?

Till slip	
Invoice	
Other document, specify _____	

9. Who are the users of your entity's financial statements? Please select all the appropriate alternatives

The owners of the organisation	
The organisation's management	
Employees	
Employee unions	
SARS	
Financial institutions	
Customers	
Suppliers	
Other, specify _____	

10. How does your entity disclose Internet-based sales transactions in the financial statements?

Incorporated as part of revenue	
Disclosed separately	
Don't know	
Other, specify _____	

11. If your entity discloses its Internet-based sales separately, what was the main motivation?

The unusual nature of the sales transaction, as it is Internet-based	
The volume and amount of the Internet-based transactions is material	
Other, specify _____	

12. How do you know if the goods sold during an Internet-based sales transaction are sold at a profit?
-

13. In your opinion, does the method used by your entity to capture Internet-based sales transactions enable the sales transaction to be captured in a manner that agrees with generally accepted accounting practice?

Yes		No		Don't know	
-----	--	----	--	------------	--

14. Can you identify the cost price of an individual transaction?

Yes		No		Don't know	
-----	--	----	--	------------	--

15. Can you identify the cost of sales for the whole financial period?

Yes		No		Don't know	
-----	--	----	--	------------	--

D. INFORMATION SYSTEM SUPPORTING ACCOUNTING OF INTERNET-BASED SALES TRANSACTIONS

16. How are the data relating to the Internet-based sales transaction secured in the accounting system from the initial capture of the information until the summation thereof in the financial statements?

17. How do you know these security measures are effective?

18. Which of the following security incidences occurred in your entity's web commerce environment in the last six months? Please select the appropriate alternatives.

Worm and virus attack	
Unauthorised access by an outsider	
Unauthorised access by an insider	
Sabotage by an outsider	
Sabotage by an insider	
Extortion by an outsider	
Extortion by an insider	
Other, specify _____	

E. LEGAL REQUIREMENTS

19. Can you distinguish between Internet-based transactions with a seven-day cooling-off period as per the Electronic Transaction and Communication Act and transactions without the seven-day cooling-off period?

Yes		No		Don't know	
-----	--	----	--	------------	--

20. Please indicate if the seven-day cooling-off period applies to:

All products	
Some products	
Not applicable	
Don't know	

21. If the cooling-off period only applies to some of the products, please indicate how your entity distinguishes between the products?

22. Can you reverse a transaction where the goods were correctly returned within the prescribed period?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Don't know	<input type="checkbox"/>
-----	--------------------------	----	--------------------------	------------	--------------------------

23. How would you reverse such a returned sales transaction?

--X--

ADDITIONAL INFORMATION FOR THE INTERVIEWS

Information needed for a Postgraduate Research Project on the Methods used to account for Internet-based sales transactions

I am appealing for your assistance in collecting research data for my dissertation for the degree Magister Comercii in Accountancy at the North-West University. The title of my dissertation is THE ABILITY TO ACCOUNT FOR INTERNET-BASED SALES TRANSACTIONS ACCORDING TO GAAP. I would greatly appreciate your assistance in this regard.

This is an exploratory study designed to identify the actual methods used by different entities in their accounting of Internet-based sales transactions. Given an environment where the accounting requirements are becoming more prescriptive, the aim of the research is to identify whether entities are guided in their choice of accounting method by the information they need, the legal requirements or the Statements of GAAP. It is possible that the pervasive nature of information technology systems can have an impact on the methods chosen to account for sales transactions. It is also possible that entities might choose different methods to account for their sales, especially in situations where the entity has no legal obligation to comply with the Statements of GAAP. This is also applicable in situations where Internet-based sales transactions are so small that their impact is immaterial. The identification of actual accounting practices can enhance the understanding of the underlying accounting theory and aid in the development of different accounting practices. In South Africa there is currently a need to differentiate between the accounting requirements applicable to listed companies and small owner-managed entities. All entities are currently required to comply with the Statements of GAAP as described in the IFRS's standards. It is expected that different actual accounting methods could be preferred by listed companies in comparison to other companies, and especially owner-managed businesses, and that actual practices can be used to develop different accounting practices based on the information needs of different entities.

Your response will be treated in the strictest confidence. To ensure the confidentiality of the participants in the study, none of the people or entities who participate in this study will be identified.

Thank you for your assistance

Blanché Steyn
CA(SA), ACMA, CISA, CIA

SUMMARY OF INTERVIEW RESULTS

Accounting of Internet-based sales transactions
--

Type of entity: All the selected entities were companies.

Position: Four of the respondents were managers and one was a director.

Expertise of respondent:

Accounting	1
IT	2
Other management positions	2

The responses are indicated next to the questions. Out of a possible eight responses, five were received. The minimum of one response per selected entity was received.

A. INTERNET PURCHASES

1. **Have you ever brought goods through the Internet?**

Yes	5	No	0
-----	---	----	---

2. **If you bought goods, for example a book, through the Internet, on which date would you account for that transaction in your personal capacity? Please select ONE of the following.**

The day you entered the sale on the Internet	2
The day the payment went through	1
The day you received the goods	2
Another day, specify _____	0

B. INTERNET SALES: OPPORTUNITY AND THREATS

3. **What opportunities do you think your entity can benefit from by selling goods through the Internet? Please select the appropriate alternatives.**

Improved market share	5
Improved profitability	5
Competitive advantage	5
Other, specify: bigger reach, promotion and advertising	2

4. **What threats do you think could impact on your entity because of sales through the Internet? Please select the appropriate alternatives.**

Lagging behind other competitors	0
Internet related security concerns such as viruses and hackers	2
Other, specify: <i>none</i>	3

C. ACCOUNTING

5. **After the customer selected the goods to be purchased through the Internet, is the customer required to specifically accept the details in terms of description, quantity and price of the goods selected?**

Yes	5	No	0
-----	---	----	---

6. **Which document is presented to the customer as evidence of the transaction immediately after the customer entered the transaction on the Internet?**

Order	2
Pro forma invoice	1
Invoice	1
Other document, specify: <i>e-mail</i>	1

7. **On which date will the Internet-based sales transaction be recorded as a sale in the accounting records of the entity?**

On the date of the agreement of the details of the sales transaction	2
On the date the sales transaction is paid for by the customer	0
On the date the goods are shipped to the customer	3
On the date the goods are delivered to the customer	1
Another date, specify _____	0

One respondent stated the date of the transaction as both the date the goods are delivered to the customer and the date the goods are shipped to the customer.

8. Which document is presented to the customer as evidence of the transaction together with the delivery of the goods?

Till slip	1
Invoice	5
Other document, specify _____	0

One company used a till slip that doubles as an invoice.

9. Who are the users of your entity's financial statements? Please select all the appropriate alternatives

The owners of the organisation	4
The organisation's management	3
Employees	2
Employee unions	1
SARS	3
Financial institutions	2
Customers	1
Suppliers	1
Other, specify: <i>auditors and finance</i>	2

10. How does your entity disclose Internet-based sales transactions in the financial statements?

Incorporated as part of revenue	3
Disclosed separately	0
Don't know	2
Other, specify _____	0

11. If your entity discloses its Internet-based sales separately what was the main motivation?

Due to the responses to question 10, this question was not applicable to all the selected entities.

The unusual nature of the sales transaction, as it is Internet-based	
The volume and amount of the Internet-based transactions is material	
Other, specify _____	

12. How do you know if the goods sold during an Internet-based sales transaction are sold at a profit?

Gross profit	4
Price list from suppliers	1

13. In your opinion, does the method used by your entity to capture Internet-based sales transactions enable the sales transaction to be captured in a manner that agrees with generally accepted accounting practice?

Yes	4	No	0	Don't know	1
-----	---	----	---	------------	---

14. Can you identify the cost price of an individual transaction?

Yes	5	No	0	Don't know	0
-----	---	----	---	------------	---

15. Can you identify the cost of sales for the whole financial period?

Yes	4	No	0	Don't know	1
-----	---	----	---	------------	---

D. INFORMATION SYSTEM SUPPORTING ACCOUNTING OF INTERNET-BASED SALES TRANSACTIONS

16. How are the data relating to the Internet-based sales transaction secured in the accounting system from the initial capture of the information until the summation thereof in the financial statements?

Secure system	3
Normal point of sales system	1
Don't know	1

17. How do you know these security measures are effective?

No problems	3
Follow best practices	1
High level security	1
Guided by Internet protocols	1

18. Which of the following security incidences occurred in your entity's web commerce environment in the last six months? Please select the appropriate alternatives.

Worm and virus attack	0
Unauthorised access by an outsider	0
Unauthorised access by an insider	0
Sabotage by an outsider	0
Sabotage by an insider	0
Extortion by an outsider	0
Extortion by an insider	0
Other, specify: <i>no problems</i>	5

E. LEGAL REQUIREMENTS

- 19. Can you distinguish between Internet-based transactions with a seven-day cooling-off period as per the Electronic Transaction and Communication Act and transactions without the seven day cooling-off period?**

Yes	2	No	2	Don't know	1
-----	---	----	---	------------	---

One respondent who selected "No" indicated that the cooling-off period does not apply and another stated that they used a 30 day return policy. The one IT manager did not know but the accountant for the same company indicated that they could distinguish.

- 20. Please indicate if the seven-day cooling-off period applies to:**

All products	
Some products	
Not applicable	4
Don't know	1

- 21. If the cooling-off period only applies to some of the products, please indicate how your entity distinguishes between the products?**

Due to the responses to question 20, this question was not applicable to all the selected entities.

- 22. Can you reverse a transaction where the goods were correctly returned within the prescribed period?**

Yes	5	No	0	Don't know	0
-----	---	----	---	------------	---

- 23. How would you reverse such a returned sales transaction?**

Credit or reimburse the customer	3
Accounts department will reverse the transaction	2

--X--

SECURITY WARNING SENT OUT BY STANDARD BANK TO ITS CUSTOMERS

Our Internet Security team has become aware of a growing number of phishing attempts aimed at obtaining your personal banking information to fraudulently transfer money out of your accounts.

Phishing is the act by a fraudster of sending e-mail that claims to be from a well-known organisation, e.g. Standard Bank, to trick the recipient into revealing information for use in identity theft. The recipients are told to visit a website where they are asked to enter information such as passwords, credit card details or bank account numbers. The website usually appears as if it belongs to the organisation in question and may silently redirect the recipients to the real organisation's website after collecting their data.

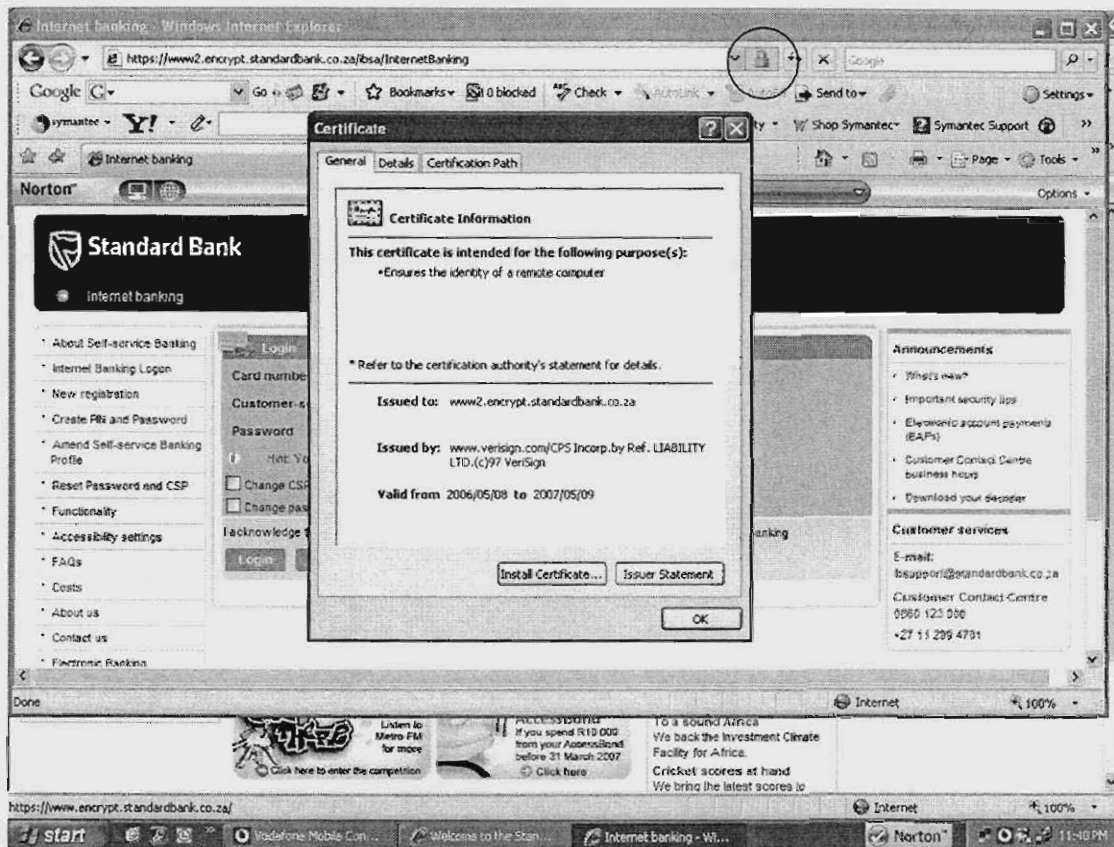
Please take extra precautions when transacting over the Internet. Remember, it is safer to type Standard Bank's web address (www.standardbank.co.za) into your browser rather than click on a link in an e-mail.

Never pass on your personal information such as card numbers and PINs to third parties. We will never ask you to divulge your personal details. You must start viewing certain e-mails with the same amount of suspicion as you would the person standing behind you in an ATM queue. Your personal details are just as vulnerable in cyber space as they are in the real world if the correct precautions are not taken.

We remain committed to protecting the integrity of your personal details. However, we urge you to ensure that you have also taken effective security measures when transacting over the Internet.

CERTIFICATE AUTHENTICATING THE WEBSITE

To view the certificate the customer must click on the lock; the details describing the website are then shown in the Certificate window



LIST OF SOURCES

- ABDEL-KHALIK, A.R. & KELLER, T.F. 1978. *The impact of accounting research on practice and disclosure*. Durham, NC: Duke University Press. 217 p.
- ABDEL-KHALIK, A.R. & AJINKYA, B.B. 1979. *Empirical research in accounting a methodological viewpoint*. Sarasota, FL: American Accounting Association. 125 p.
- ACTS **see** SOUTH AFRICA.
- ANON. 2000. Hackers make public nervous. *World News*, 16 Feb.
<http://www.iafrica.com/news/worldnews/story05.htm> Date of access: 16 Feb. 2000.
- ANON. 2003. SA joins identity fraud "crime wave". *Mail & Guardian online*, 24 Jul.
[http://archive.mg.co.za/NXT/gateway.dll?f=templates&fn=default.htm\\$vid=MailGuard:MailGuardView&nusername=MailGuard&npassword=MailGuard](http://archive.mg.co.za/NXT/gateway.dll?f=templates&fn=default.htm$vid=MailGuard:MailGuardView&nusername=MailGuard&npassword=MailGuard) Date of access: 23 May 2005.
- ANON. 2006a. Internet sales on the rise. *Huddersfield Daily Examiner*, 20 Jan.
http://ichuddersfield.icnetwork.co.uk/0100news/0300/businessnews/tm_objectid=166085... Date of access: 23 Jan. 2006.
- ANON. 2006b. Local companies lax in information security. *Business day*, 1 Jun.
<http://www.businessday.co.za/Articles/TarkArticles.aspx?ID=2074755> Date of access: 26 Jun. 2006.
- ANTHONY, R.N. 1993. *Essentials of accounting*. 5th ed. Reading: Addison-Wesley. 106 p.
- AVISON, D., LAU, F., MYERS, M. & NIELSEN, P.A. 1999. Action research – To make academic research relevant, researchers should try out their theories with practitioners in real situations and real organizations. *Communications of the ACM*, 42(1):94-97, Jan.
- BABBIE, E. 1990. *Survey research methods*. 2nd ed. Belmont, CA: Wadsworth. 395 p.
- BAKER, C.R. 2006. Epistemological objectivity in financial reporting - Does internet accounting require a new accounting model? *Accounting, Auditing & Accountability Journal*, 19(5):663-680. Available: ProQuest. Date of access: 21 Mar. 2007
- BEISIEGEL, H. 2002. True partnerships are built on trust, cooperation and commitment. *eSecure*, 4(2):22-24, Mar.
- BORDEN, M. 2000. A brief history of the net. *Fortune (Asia)*, 42(8):30-34, Aug.
- BOWEN, R.M., DAVIS, A.K. & RAJGOPAL, S. 2002. Determinants of Revenue-Reporting Practices for Internet Firms. *Contemporary Accounting Research*, 19(4):523-562, Winter. Available: ProQuest. Date of access: 21 Mar. 2007.

BRITANNICA **see** ENCYCLOPAEDIA BRITANNICA.

BUYS, R., ed. 2000. *Cyberlaw @SA the law of the Internet in South Africa*. Pretoria: Van Schaik. 501 p.

CANADIAN BANKERS ASSOCIATION. 2001. *The new age of commerce*. http://www.cba.ca/eng/Tools/Brochures/tools_ecommerce2.htm Date of access: 18 Apr. 2001.

CHARLES, P. 2005. Bookkeeping isn't working: profession must reinforce basic disciplines. *Insight*, Jan. <http://www.cimaglobal.com/cps/rde/xchg/SID-0AAAC564-60FDA4E7/live/root.xsl/638...> Date of access: 15 Jul. 2005.

CHUNG, R., FIRTH, M. & KIM, J. 2003. Auditor conservatism and reported earning. *Accounting and Business research*, 33(1):19-32.

THE COMMITTEE OF SPONSORING ORGANIZATIONS OF THE TREADWAY COMMISSION (COSO). 1994. *Integrated control – integrated framework*. Vol.1. Jersey City, NJ. 157 p.

COMPANIES ACT NO 73 OF 1973 **see** SOUTH AFRICA. 1973.

COMPUTER EMERGENCY RESPONSE TEAM (CERT) COORDINATION CENTRE. 2001. *CERT/CC statistics 1988-2001*. http://www.cert.org/stats/cert_stats.html Date of access: 30 Oct. 2001.

COMPUTER EMERGENCY RESPONSE TEAM (CERT) COORDINATION CENTRE. 2004a. *CERT 2004 Research Annual report*. 64 p. http://www.cert.org/nav/index_red.html Date of access: 20 Feb. 2006.

COMPUTER EMERGENCY RESPONSE TEAM (CERT) COORDINATION CENTRE. 2004b. *2004 e-Crime watch survey: summary of findings*. CSO magazine in cooperation with the U.S. Secret Service and CarnegieMellon Software Engineering Institute CERT® Coordination Centre. 39 p. http://www.cert.org/nav/index_red.html Date of access: 20 Feb. 2006.

COMPUTER EMERGENCY RESPONSE TEAM (CERT) COORDINATION CENTRE. 2006. *CERT/CC statistics 1988-2005*. http://www.cert.org/stats/cert_stats.html Date of access: 20 Feb. 2006.

COOK, J. 1993. *Positive quotations*. New York: Gramercy books. 564 p.

DAVIS, P.T. 1994. *Manager's guide to Internet security*. San Francisco, CA: Computer Security Institute.

DELOITTE. 2006. *2006 Global Security Survey*. London: Deloitte Touch Tohmatsu. 42 p. <http://www.deloitte.com/dtt/research/0,1015,sid%253D54002%2526cid%253D12492> Date of access 17 Mar. 2007

- DEMBLA, P., PALVIA, P. & KRISHNAN, B. 2007. Understanding the adoption of web-enabled transactions processing by small businesses. *Journal of Electronic Commerce Research*, 8(1). Available: ProQuest. Date of access: 21 Mar. 2007.
- DEMPSEY, A. & PIETERS, H.N. 2005. *Introduction to Financial Accounting*. 5th ed. Durban: LexisNexis Butterworths. 662 p.
- DIAMOND, E. & BATES, S. 1995. The ancient history of the Internet. *American Heritage*, 46(6):34-41, Jun.
- EDWARDS, E.O. & BELL, P.W. 1961. *The Theory and Measurement of Business Income*. Los Angeles, CA: University of California Press. 313 p.
- ELECTRONIC COMMUNICATIONS AND TRANSACTIONS ACT NO 25 OF 2002 (ECT Act)* **see** SOUTH AFRICA. 2002.
- ELIFOGLU, I.H. 2002. Navigating the "Information Super Highway": How Accountants Can Help Clients Assess and Control the Risks of Internet-Based E-Commerce. *Review of Business*, 23(1):67-71, Winter. Available: ProQuest. Date of access: 21 Mar. 2007.
- ELLERMAN, D.P. 1982. *Economics, accounting and property theory*. Lexington, MA: D.C. Heath and Company. 195 p.
- ENCYCLOPAEDIA BRITANNICA*. 2006. S.v. "Internet" & "e-commerce". London: Encyclopaedia Britannica. [DVD].
- ERNST & YOUNG. 2005. *Global information security survey 2005: report on the widening gap*. EYGM Limited. 25 p. http://www.ey.com/Press_Release_-_2005_Global_Information_Security_Survey Date of access: 26 Oct. 2006.
- FORDDIRECT. 2006. *Ford Internet sales increased 15 percent*, 10 Feb. <http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=104&STORY=/www/story/02-10...> Date of access: 13 Feb. 2006.
- GATES, B. & HEMINGWAY, C. 1999. *Business @ the speed of thought - using a digital nervous system*. London: Penguin Books. 470 p.
- GAULKE, M. 2002. Risk management in IT projects. *Information Systems Control Journal*, 5:37-39.
- GELINAS, U.J., SUTTON, S.G., & HUNTON, J.E. 2005. *Accounting Information systems*. 6th ed. Mason: Thomson Corporation, South-Western. 637 p.
- GERMAIN, C. 1997. *Summary of the City University security survey 1997*. <http://www.city.ac.uk/~eu687/security/summary.htm> Date of access: 2 May 2000.
- GROMOV, G.G. 2007. *History of the Internet and WWW: The roads and cross roads of Internet history*. <http://www.internetvalley.com/cgi-bin/intval/print.pl?sdf=1&sad+75> Date of access: 8 Mar. 2007.

- HENDRIKSEN, E.S. 1982. *Accounting theory*. 4th ed. Homewood: Richard D Irwin. 589 p.
- HENNING, E., VAN RENSBURG, W. & SMIT, B. 2004. *Finding you way in qualitative research*. Pretoria: Van Schaik. 179 p.
- HOLSAPPLE, C.W. & SASIDHARAN, S. 2005. The dynamics of trust in B2C e-commerce: a research model and agenda. *ISeB*, 3: 377-403. Available: ProQuest. Date of access: 21 Mar. 2007.
- INFORMATION SYSTEMS AUDIT AND CONTROL ASSOCIATION (ISACA). 2006. *CISA review manual 2006*. Rolling Meadows, IL. 586 p.
- INSTITUTE OF INTERNAL AUDITORS (IIA). 2004. *New guidance for the professional practices framework*. Altamonte Springs, FL. 167 p.
- INTERNATIONAL ACCOUNTING STANDARDS COMMITTEE FOUNDATION (IASCF). 2004. *International financial reporting standards*. London. 2250 p.
- INTERNATIONAL ACCOUNTING STANDARDS COMMITTEE FOUNDATION (IASCF). 2006. *International financial reporting standards*. Volume 1A. London. 1276 p.
- INTERNATIONAL AUDITING PRACTICE STATEMENTS (IAPS) 1013. 2002. *Electronic commerce – Effect on the audit of financial statements*.
<http://handbook.saica.co.za/ntx/gateway.dll/7hda/hj0wa/w87ya/y87ya/997ya/ga8ya?f...> Date of access: 2 May 2007
- INTERNATIONAL FEDERATION OF ACCOUNTANTS (IFAC). 2002. *E-Business and the accountant*. New York. 24 p.
<http://www.ifac.org/S.../Category.tmpl?Categorie=Information%20Technolog> Date of access: 14 Oct. 2006.
- INTERNATIONAL STANDARD ON AUDITING (ISA) 315. 2004. *Understanding the entity and its environment and assessing the risks of material misstatement*.
<http://handbook.saica.co.za/ntx/gateway.dll/7hda/hj0wa/w87ya/y87ya/c97ya/197ya?f=...> Date of access: 2 May 2007
- JSE. 2007. *Listing requirements*. http://www.jse.co.za/listing_requirements.jsp
Date of access: 18 Mar. 2007
- KESH, S., RAMANUJAN, S. & NERUR, S. 2002. A framework for analyzing e-commerce security. *Information Management and Computer Security*, 10(4): 149-158. Available: ProQuest. Date of access: 21 Mar. 2007.
- KING, M.E., chair. [King II]. 2002. *King report on corporate governance for South Africa 2002*. Parktown: Institute of Directors in Southern Africa (IoD). 285 p.
- KITCHIN, R. & SYKES, L. 1995. Invisible geography on the Internet. *Geographical Magazine*, 67(11): 22-27, Nov. Available: Academic Search Primer. Date of access: 15 Jun. 2001.

- KORPER, S. & ELLIS, J. 2000. *The E-commerce book building the e-empire*. Academic press: London. 284 p.
- LEEDY, P. 1993. *Practical research, planning and design*. 5th ed. Columbus, OH: Merrill. 348 p.
- LEEDY, P. & ORMROD, J.E. 2005. *Practical research, planning and design*. 8th ed. Upper Saddle River, NJ: Pearson Education. 319 p.
- LEINER, B.M., CERF, V.G., CLARK, D.D., KAHN, R.E., KLEINROCK, L., LYNCH, D.C., POSTEL, J., ROBERTS, L.G. & WOLFF, S. 2000. *A brief history on the Internet*. <http://www.isoc.org/Internet-history/brief.html> Date of access: 15 Feb. 2000.
- LEINER, B.M., CERF, V.G., CLARK, D.D., KAHN, R.E., KLEINROCK, L., LYNCH, D.C., POSTEL, J., ROBERTS, L.G. & WOLFF, S. 2007. *A brief history on the Internet*. <http://www.isoc.org/Internet/history/brief.shtml> Date of access: 10 Mar. 2007.
- LONGMAN DICTIONARY OF CONTEMPORARY ENGLISH. 1995. 3rd ed. Essex: Longman Group.
- LUBBE, I. & MILLIGAN, J. 2006. Finding Measurement of revenue – what value? *Accountancy SA*. Aug. <http://www.accountancysa.org.za/resources/ShowItemArticle.asp?Issue=601&ArticleID=89> Date of access: 14 Oct. 2006.
- MAHADEVAN, C. 2003. E-Commerce Security – Components Which Make it Safe. *Information Systems Audit and Control Association InfoBytes*. <http://www.isaca.org/art20p.htm> Date of access: 9 Apr. 2003.
- MARTIN, D. 2000. Risk assessment when auditing e-commerce activities. *IT Audit*, 1 Feb. <http://www.theiia.org/itaudit/index.cfm?fudeaction=forum&fid=238> Date of access: 6 Feb. 2003.
- MARCELLA, A.J. 1998. Electronic commerce – part 1. *IT Audit*, 1 Sep. http://www.itaudit.org/member_area/forum/e-commerce/f101ec.htm Date of access: 31 Mar. 2000.
- MATHEWS, M.R. & PERERA, M.H.B. 1991. *Accounting theory and development*. London: Chapman & Hall. 373 p.
- MERRYWEATHER, J. 2000. *Ethics in a cyber world: ethical considerations and electronic commerce*, May. <http://www.ifac.org/Library/SpeechArticle.tmp?NID=958022091266> Date of access: 10 Mar. 2007.
- MILLER, B.W. & BAHNSON, P.R. 2005. Fixing the framework: Relevance and reliability. *Accounting today*, 19(2). 24 Jan. - 6 Feb. Available: ProQuest. Date of access: 22 June 2005.

MYERS, M.D. 1997. Qualitative Research in Information Systems, *MIS quarterly* (21:2), Jun: 241-242. *MISQ Discovery*, archival version, June 1997. http://www.misq.org/discovery/MISQD_isworld/. *MISQ Discovery*, updated version, last modified www.qual.auckland.ac.nz/ Date of access: 13 Jan. 2006.

NASER, K.H.M. 1993. *Creative financial accounting: its nature and use*. Hertfordshire: Prentice Hall. 250 p.

OXFORD ADVANCED LEARNER'S DICTIONARY. 2000. WEHMEIER, S. ed. 6th ed. Oxford: Oxford University Press.

PAGE, C. & MEYER, D. 2003. *Applied research design for business and management*. Sydney: McGraw-Hill. 331 p.

PARKER, X.L. 2001. *An e-risk primer*. Altamonte Springs Fl: Institute of Internal Auditors Research Foundation. 121 p.

PLONIEM, M. 1998. Electronic commerce on the Internet. *The CPE Journal*, 68(5):82-84, May.

POTTER, C. 2001. Managing e-business risk – a UK perspective. *IT Audit*, 1 Jan. <http://www.theiia.org/itaudit/index.cfm?fuseaction=forum&fid=373> Date of access: 6 Feb. 2003.

PRICEWATERHOUSECOOPERS. 2001. *Risk management forecast: 2001*. PricewaterhouseCoopers LLP. 304 p.

PRICEWATERHOUSECOOPERS. 2002. *Technology forecast 2002-2004 Volume 1: Navigating the future of software*. Menlo Park, CA: PricewaterhouseCoopers Technology Centre. 750 p.

PRICEWATERHOUSECOOPERS. 2003. *Economic crime survey 2003 report*. PricewaterhouseCoopers. <http://www.pwc/extweb/insights.nsf/docid/662DFC05C90F69E680256D6E0052125A> Date of access: 13 Feb. 2006.

READ, C., ROSS, J., DUNLEAVY, J., SCHULMAN, D. & BRAMANTE, J. 2001. *eCFO sustaining value in the new corporation*. New York: John Wiley & PricewaterhouseCoopers. 372 p.

ROMEI, L.K. ed. 1993. Management's responsibility to preserve and protect business information. *Managing office technology*, 38(12):19-22, Dec.

RIAHI-BELKAOUI, A. 2003. *Accounting – by principle or design?* London: Praeger Publishers. 276 p.

RYAN, R., SCAPENS, R.W. AND THEOBOLD, M. 2003. *Research method and methodology in finance and accounting*. 2nd ed. London: Thompson. 243 p.

- SAWYER, L.B., DITTENHOFER M.A. & SCHEINER, J.H. 2003. *Sawyer's internal auditing: The practice of modern internal auditing*. 5th ed. Altamonte Springs, Fl: The Institute of Internal Auditors. 1446 p.
- SCOTT, J. & MARSHALL, D. 2005. *A Dictionary of Sociology*. Oxford Reference online, S.v. "qualitative versus quantitative debate" & "positivism". Oxford: Oxford University Press <http://0-www.oxfordreference.com.oasis.unisa.ac.za:80/views/ENTRY.html> Date of access: 17 Mar 2007.
- SHENKAN, A.G. 2007. Recording customers in motion. *Multichannel Merchant*, 3(1). Jan. Available: ProQuest. Date of access: 6 Mar. 2007.
- SOUTH AFRICA. 1973. *Companies Act no 73 of 1973*. Pretoria: Government printer.
- SOUTH AFRICA. 2002. *Electronic Communications and Transactions Act no 25 of 2002*. <http://pol.mcm.co.za/html/govdocs/legislation/2002/act25.html> Date of access: 24 Oct. 2002.
- SOUTH AFRICAN INSTITUTE OF CHARTERED ACCOUNTANTS (SAICA). 2006. Circular 09-06 *Transactions giving rise to adjustments to revenue/purchases*. Volume 3: Auditing. Kenwyn: SAICA.
- SPRAGUE, C.E. 1920. *The philosophy of accounts*. 4th ed. New York: Ronald Press. 161 p.
- STEYN, B. 2001. The historical development of the Internet during the 20th century. (*In* Accountancy today: Issues and practice papers read at the SAAA Gauteng North 2001 conference held in Pretoria on 18 July 2001. Pretoria p 166-181.)
- SUN TZU. 1988. *The art of war*. Translated from Chinese by Thomas Cleary. London: Shambhala. 172 p.
- TANG, J., FU, A.W. & VEIJALAINEN, J. 2004. Supporting Dispute handling in E-Commerce Transactions, a Framework and Related Methodologies. *Electronic Commerce Research*, 4(4): 393-413, Oct. Available: ProQuest. Date of access: 21 Mar. 2007.
- TSAY, B. 1997. What did you do to the system? *Management accounting*, 78(8):53-58, Mar. Available: ProQuest. Date of access: 27 Mar. 2007.
- WARING, A.E. & GLENDON, A.I. 2001. *Managing risk critical issues for survival and success into the 21st century*. London: Thomson Learning. 493 p.
- WATKINS, A.L. 2007. An Accountability View of Accounting. *CPA Journal*, 77(2). Feb. Available: ProQuest. Date of access: 23 Mar. 2007.

- WAWERU, N.M. & ULIANA, E. 2005. Predictors of management accounting change in South Africa: Evidence from five retail companies. *SA Journal of Accounting Research*, 19(1):37-58.
- WATTS, R.L. & ZIMMERMAN, J.L. 1986. *Positive accounting theory*. Ellerwood Cliffs, NJ: Prentice-Hall. 382 p.
- WEIRICH, T.R. & REINSTEIN, A. 1992. *Accounting and auditing research a practical guide*. 3rd ed. Cincinnati, OH: South-Western. 182 p.
- WEISMAN, J. 2000. The making of E-Commerce: 10 key moments. *E-Commerce Times*, 22 Aug. <http://www.newsfactor.com/perl/printer/4085> Date of access: 18 Apr. 2001.
- WHYSALL, P. 2000. Retailing and the Internet: a review of ethical issues. *International Journal of Retail & Distribution Management*, 18(11): 481-489. Available: ProQuest. Date of access: 21 Mar. 2007.
- WONG, P. 2004. *Challenges and successes in implementing international standards: achieving convergence to IFRSs and ISAs*. New York: International Federation of Accountants. 27 p.
https://www.ifac.org/MediaCentre/?q=taxonomy_menu/4/11 Date of access: 7 July 2006.
- WINSTON, B. 1998. *Media technology and society a history: from the Telegraph to the Internet*. London: Routledge. 374 p.
- YIN, R.K. 2003. *Case study research: Design and Methods*. 3rd ed. London: Sage Publications. 179 p.
- ZAID, O.A. 2004. Accounting systems and recording procedures in the early Islamic state. *Accounting historians journal*, 31(2):149-170, Dec.
- ZAKON, R.H. 2000. *Hobbes' Internet timeline v5.0*.
<http://info/isoc.org/guest/zakon/Internet?History?HIT.html> Date of access: 23 Jan. 2000.
- ZEFF, S.A. ed. 1982. *The accounting postulates and principles controversy of the 1960s*. New York: Garland Publishing. 353 p.
- ZUCKERMAN, M.J. 1996. Hackers crack Pentagon military's computers - attacked 250,000 times. *USA Today*: 1, 23 May.