

A GUIDELINE FOR THE ADOPTION OF ORDER  
PROCESSING FOR B2B E-COMMERCE

FREDERIK WILHELM VOGES

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**A GUIDELINE FOR THE ADOPTION OF ORDER PROCESSING FOR B2B  
E-COMMERCE**

by

**FREDERIK WILHELM VOGES**

**Dissertation**

submitted in partial fulfilment  
of the requirements for the degree

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in

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in the

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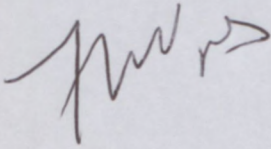
**CAPE PENINSULA UNIVERSITY OF TECHNOLOGY**

Supervisor: Mr S.C. Warden  
(e-Innovation Academy)

November 2006

## STATEMENT OF OWN WORK

I declare that **A guideline for the adoption of order processing for B2B e-commerce** is my own work, that it has not been submitted before for any degree or assessment in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

A handwritten signature in black ink, appearing to read 'FW VOGES', with a stylized flourish at the end.

**FW VOGES**

## **ACKNOWLEDGEMENTS**

This dissertation would not have been possible without the valuable input, assistance and guidance of my supervisor, Mr Stuart Warden. I also would like to thank my fiancée, Lezanne, for her valuable support while conducting the research.

## ABSTRACT

This research investigates the ordering process between small suppliers and retailers and the role of the Internet in this process. Product ordering and fulfilment are both important components of a supply chain, of which suppliers and retailers are members. The Internet as an enabling technology has an important role to play in supply chains and therefore also in order processing. Internet technology facilitates Business-to-Business (B2B) transactions.

Retailers and their suppliers collaborate to align production with customer demands. Internet-enabled B2B supports this collaboration between businesses, allowing them to gain knowledge about customer demands real-time. This enables them to determine the impact of these demands on their operations. Using the Internet has the advantage that it provides an ever present link that is less costly than private networks and Electronic Data Interchange (EDI). When the Internet is used to facilitate trade and commerce between businesses, e-commerce is established. With Internet-enabled B2B (or B2B e-commerce), multiple suppliers are connected to multiple customers. This reduces production cycle times, reduces inventory, improves speed and quality of communications and reduces costs.

This research investigates suppliers in the retail supply chain and focuses more specifically on small businesses due to their reported importance in the South African economy. They provide employment to a large portion of the country's population and contribute almost half to the economic activity. Small suppliers form part of supply chains and have to adhere to the demands exerted by larger supply chain members in order to be included in such supply chains. Small suppliers have just as an important role to fulfil in supply chains as larger companies. Small suppliers are also responsible for connecting and integrating supply chain members and in so doing, reduce costs.

Companies digitise the ordering process between themselves and their suppliers in order to eliminate manual procedures and thus improve collaboration, obtain control over various processes, improve efficiency and ultimately reduce costs. Web applications contribute to the reduction of paperwork in the ordering process and speeds up order fulfilment. South African small businesses however, find it difficult to take advantage of Internet technology due to their lack of knowledge,

high Internet bandwidth costs and high operating costs, and not knowing who to contact for assistance in managing their business's use of the Internet.

This research uses nine small supplier case studies and reports how they receive and process product orders from the retailers. The inefficiencies in this process are identified. The research also reflects on the role of the Internet and Web-based technology in the organisation and specifically in the ordering process. All the small suppliers experience challenges when conducting business with the retailers, similar to findings in the literature.

From the case study research it is evident that small suppliers need guidelines in order to use technology, specifically the Internet, more effectively in their operations with the retailers. Nine factors are established as essential ingredients to support B2B e-commerce order processing. These nine factors are mapped to a framework for implementing e-supply chain systems. This allows the author to establish guidelines to assist small suppliers in adopting B2B e-commerce for order processing.

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## 1. CHAPTER 1: INTRODUCTION

This chapter provides an overview of *order processing* in supply chains<sup>1</sup> and explores the role of the Internet, and specifically Business-to-Business (B2B) e-commerce within supply chains. Furthermore the research process, research design and methodology and research constraints are described. This research investigated the relationship between small enterprises representing small suppliers and Fast Moving Consumer Goods (FMCG) retailers. The research focused specifically on the process that is followed in terms of placement of orders by retailers and the supplier administration that governs this process up to the point where the merchandise is delivered. The chapter concludes with a brief summary and indicates the focus of the following chapters.

### 1.1 INTRODUCTION AND BACKGROUND

The Internet has had an impact on business and society, and has also changed the way businesses interact with their customers and suppliers. This is mainly due to the Internet facilitating the connection of every member of a supply chain to become part of a larger network (Rosenbaum, 2001:7). The availability of the Internet has enabled companies to manage their supply chains using the Internet as an enabling technology (Chalasan & Sounderpandian, 2004:449). Internet-enabled B2B transactions facilitate supply chain partners to transmit large amounts of information and at great speed (Gibson & Edwards, 2004:66). According to Cloete (2003:81), B2B e-commerce is "... a long-term electronic business relationship between two or more companies in order to manage the purchasing and supply of goods and services". Examples of using the Internet in supply chains include Web<sup>2</sup>-based utilities to enable buyers to search for products and services where Internet related technologies facilitate integration between trading partners. Furthermore the Internet facilitates online communications, online procurement and real-time data provision in the supply chain (Chou, Tan & Yen, 2004:342). Using the Internet and Web-based

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<sup>1</sup> A supply chain is a network of collaborating partners. These partners collectively engage in activities such as procurement, transformation of materials into products and distribution of the products to customers (Chalasan & Sounderpandian, 2004:449).

<sup>2</sup> The World Wide Web (WWW) enables businesses to share documents across a generalized, global network (Albrecht, Dean & Hansen, 2005:866).

technologies to link companies and their business partners together in supply chains, occurs in real-time (link is always present) and is less costly than utilising Electronic Data Interchange (EDI)<sup>3</sup> based networks for transmitting orders using a batch process (Chou *et al.*, 2004:341).

For about a ten year period from 1985, the focus shifted from EDI to client-server solutions<sup>4</sup>, mainly as EDI was expensive to purchase, difficult to implement, complicated to use and costly to maintain. During the 1990s companies of different sizes started interacting with each other using Internet-enabled communication channels at significantly lower costs than using a technology such as EDI (McIvor & Humphreys, 2004:244). This confirms the view of Porter (2001:74) that, using the Internet as the communications platform, is less costly than private networks or EDI for bidirectional communication and ease of connectivity. As an example, results from case study research conducted by McIvor and Humphreys (2004:253) supports this sentiment. They report on a single supplier that replaced an EDI-based solution with a Web-enabled solution, achieving the following advantages:

- Price reduction of materials and services of between 5 and 10 per cent.
- Reduction in purchasing and fulfilment cycles from 7.3 days to 2.0 days.
- Reduction of order administration costs from \$107 per requisition to \$30.
- Reduction in inventory holding costs of between 25 and 50 per cent.

### **1.1.1 The role of supply chains in facilitating order processing**

A supply chain allows its members to engage in the procurement of materials or to transform materials into products for distribution to customers (Chalasanani & Sounderpandian, 2004:449). A supply chain commences with the supply of raw materials, includes product or service processing facilities and warehouses and terminates with the end customer (Gibson & Edwards, 2004:60). Furthermore,

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<sup>3</sup> "EDI is most commonly used to mean the exchange of information according to the standards defined by the ANSI ASC X12 committee via a commercial Value Added Network (VAN) – although EDI messages could be transmitted in any way: e-mail, VAN, Internet etc." (Hsieh & Lin, 2004:70).

<sup>4</sup> In a client-server model, a client machine requests services from a server that is dedicated to providing services. A database server is used instead of a file server on the server side. The intent of the client/server architecture is to reduce network traffic by providing a response to a query rather than to transfer a total file (Sadoski, 1997).

supply chains include activities such as the placement of purchase orders and processing orders (Chalasanani & Sounderbandian, 2004:449). Muffatto and Payora (2004:304) report on examples where companies digitised the ordering process between themselves and their suppliers in order to eliminate manual procedures. By automating the ordering process, companies improve collaboration, obtain control over various processes, improve efficiency and ultimately reduce costs.

Koh and Maguire (2004:340) support the view of Chalasanani and Sounderbandian (2004:449) that Supply Chain Management (SCM) improves the way enterprises find raw materials to produce products or services, manufacture products or services and deliver them to their customers. Furthermore the connectivity provided by the Internet enable members of supply chain networks to be aware of customer demands, in real-time, and provides an understanding of the impact of these demands on their operations (Rosenbaum, 2001:7). Iyer, Germain and Frankwick (2004:647) indicate that supply chains based on B2B e-commerce utilise the Internet and EDI to facilitate integration and management of core business processes between key supply chain partners. According to Schlenker and Crocker (2003:11), Internet technologies<sup>5</sup> enable companies to extend and interconnect information technologies that assist in the designing of services to understand clients better, to understand the needs of the supply chain, and to understand the costs and benefits of improving basic business processes (Schlenker & Crocker, 2003:11).

### **1.1.2 An overview of B2B e-commerce in supply chain management**

Barnes, Hinton and Mieczkowska (2004:607) define e-commerce as "... the use of the Internet to facilitate trade and commerce". Albrecht, Dean and Hansen (2005:868) include EDI, web sites, B2B hubs, e-Procurement systems<sup>6</sup>, and Web

---

<sup>5</sup> Internet technology is the mechanism to extend and interconnect information technologies inside and outside the organisation using both the public and private telecommunications networks. When the information technologies are integrated within the firm, it is called the Intranet, between trading partners it is called the Extranet and between the firm and the market as a whole it is called the Internet (Schlenker & Crocker, 2003:11).

<sup>6</sup> Electronic procurement (e-procurement) systems mirror the procurement process by means of internal processing and external communication with the supply base. Goods and services are ordered through the Web using a PC (Croom & Johnston, 2003:544).

Services<sup>7</sup> as e-commerce technology platforms supporting B2B. Manufacturers, retailers and service providers recognise the potential of B2B e-commerce to improve supply chain performance and therefore the value delivered to consumers (Ahmed, Zairi & Alwabel, 2006:71).

The first major developments in the area of buying and selling using B2B e-commerce started in the mid-1990s. Companies such as Wal-Mart and General Electric started trading online to cut costs and reduce supply times (Ahmed *et al.*, 2006:71). According to Power (2005:104), the benefits that can be derived from applying B2B e-commerce in supply chain management are:

- The ability to connect to multiple suppliers and customers.
- Reductions in cycle times.
- Reductions in inventory.
- Improved speed and quality of communication.
- Reductions in costs.
- Reductions in overheads by eliminating non-value adding activities.

### 1.1.3 The role of small businesses in B2B e-commerce

SMEs<sup>8</sup> in the European Union with fewer than 50 employees provide 56 million jobs with a total collective turnover of around 11,500 Billion Euro (Calosso, Cantamessa, Vu & Villa, 2003:234). According to Schlenker and Crocker (2003:10), 98 per cent of all European, Middle East and African (EMEA) companies are SMEs. Collectively they employ 66 per cent of the labour force and are responsible for 54 per cent of the total private sector turnover.

A significant proportion of European SMEs are found in the manufacturing industry of which only 30 per cent have their output directed to the consumer market. For this reason, Calosso *et al.* (2003:234) is of the opinion that SMEs

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<sup>7</sup> Web services are reusable information system components that can be published, located and invoked over the Internet using standard protocols (Vidgen, Francis, Powell & Woerndl, 2004:373).

<sup>8</sup> SME refer to the international definition of Small and Medium Enterprises as defined by Wiseman, Roe and Elliott (2006:9) and Wainwright, Green, Mitchell and Yarrow (2005:45). When referring to small businesses within the South African context, the term SMME is used as defined by the National Small Business Act (South Africa, 2003).

should focus on B2B rather than business-to-consumer (B2C) relations. According to Folinas, Manthou, Sigala and Vlachopoulou (2004:274), customers expect companies to provide the following: Web-based order-status tracking, electronic proof of delivery, flexible manufacturing procedures and immediate service based on call centres and Web-based customer service systems, self-service, and personalised interaction. Browning and Anderson (2004:2) indicate that there is evidence that small and midsize businesses are being pressurised to establish more competitive links with their customers, partners and suppliers.

Redelinguys (2003:91) indicates that B2B e-business appears to be appropriate only to large companies, but it is evident that major impacts and cost savings may be found with SMEs in the supply chain. SMEs are just as important as larger companies for integration, connectivity, synchronisation and collaboration in the supply chain. As stated by Sparks and Wagner (2003:203), "... the supply channel is only as strong as its weakest link", and therefore all parties in the supply chain channel should develop at the same pace. Chalasani and Sounderpandian (2004:449) find that companies manage their supply chains by using the Internet as an enabling technology to reduce overall cost. This includes smaller companies, who do not need to invest in extensive physical infrastructures when using the Internet as the enabling technology in the supply chain.

The non-proprietary and universal accessibility of the Internet makes inter-organisational computer-based Information and Communication Technology (ICT) accessible to small businesses (Brock, 2000:399). Chapman, James-Moore, Szczygiel and Thompson (2000:354) state that "... e-mail and the World Wide Web present opportunities for SMEs to harness the benefits of ICT in an affordable, simple way". According to Browning and Anderson (2004:2), the Internet as the enabling technology offers small and midsize businesses the opportunity to participate as equal partners in different value chains. They can access sophisticated business applications and processes in an affordable way.

- According to Porter (2001:74), the Internet is an enabling technology and a powerful set of tools that can be used in most industries and as part of most strategies. Small, Medium and Micro Enterprises (SMMEs) however, find it difficult to take advantage of the Internet as an enabling technology due to their lack of knowledge, high Internet bandwidth costs and operating costs, and not

knowing who to contact for assistance in managing their business using the Internet (Preuss, 2002). Weidemann (2004) indicates that it is necessary to be aware of the impact of the lack of bandwidth in the South African environment when considering B2B e-commerce. Zheng, Caldwell, Harland, Powell, Woerndl and Xu (2004:35) found that SMEs perceive behavioural and cultural barriers to e-adoption. SMEs fear losing the personal touch and knowledge of their customers and lack confidence in utilising Internet transactions.

#### **1.1.4 Dependence of small suppliers on retailers**

Smaller businesses are often dependant on larger companies for a major part of their business. This link is likely to be critical for survival and they find it increasingly difficult to switch to alternative companies to deal with (Katz & Safranski, 2003:328). The retail industry deals with a significant number of product promotions which necessitate collaborative decision making between suppliers and retailers in order to align production with actual consumer demand (Rosenbaum, 2001:8). According to Lee, Pak and Lee (2003:360), many retail companies and manufacturers started to switch their network infrastructure from value-added networks (VAN) to the Internet because Web technologies became less expensive and easier to maintain. However, Croom (2005:61) found that the main constraint to supply chain integration is supplier readiness and capability, particularly where the supply base consists of a high proportion of SMEs. Many small suppliers do not have the necessary technology infrastructure to integrate with the supply chain of a customer (Croom, 2005:61).

## **1.2 THE RESEARCH PROCESS**

Saunders, Lewis and Thornhill (1997:3) define the research process as different stages consisting of formulating and clarifying a topic, reviewing the literature, choosing a research strategy, collecting data, analysing data and writing it up. The different stages of research could be revisited more than once in order to refine ideas.

After an extensive literature review was conducted to gather information on the research area, the research topic was finalised. Case study research using focussed interviews was chosen as the most appropriate research strategy for

this research. The research focused on the ordering process that exists between retailers and small suppliers. The data was analysed by means of explanation building (Yin, 2003b:120).

### **1.2.1 Background to the Research problem**

From reviewing the literature it is evident that electronic order processing is important to organisations (Rahman, 2003:499; Lancioni, Smith & Schau, 2003:214) and that small suppliers are finding it difficult to implement B2B e-commerce. These difficulties include factors such as lack of technology sophistication (O'Toole, 2003:118), perceived behavioural and cultural barriers (Zheng *et al.*, 2004:33), funding (Chan & Swatman, 2000:80; O'Gorman, 2000:296; Wagner, Fillis & Johansson, 2003:348) and lack of bandwidth for B2B (Weidemann, 2004; Preuss, 2002). In spite of the possible advantages offered by B2B e-commerce, the literature indicates that limited automated order fulfilment is deployed in SMEs (O'Toole, 2003:120; Zheng *et al.*, 2004:34). O'Toole (2003:120) states "... most firms still find it is possible to process orders manually and just don't see the financial case for integration even though orders may be taken, manually completed, and then transferred to a computerised financial system by different people".

### **1.2.2 Research problem**

The Internet is increasingly used as the enabling technology for establishing electronic relationships<sup>9</sup> (O'Toole, 2003:116). The electronic relationships include order placement and fulfilment that form part of the supply chain (Croom, 2005:58). Small suppliers are not necessarily equipped to receive electronic orders in the way that is expected from retailers. This may result in small suppliers being excluded as possible business partners of retailers (Sparks & Wagner, 2003:203).

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<sup>9</sup> An electronic relationship is established when a trading relationship is based on the usage of both computer and telecommunications technologies.

### **1.2.3 Background to the research question**

According to Sparks and Wagner (2003:203), as retailers grow and seek to enhance their activities and reduce costs, they search for the most appropriate management methods, tools and activities. Retailers are large and strong enough to request drastic changes in the supply chain. As found by Wagner *et al.* (2003:349), "... suppliers involved with powerful customers had little choice but to implement e-business strategies in order to maintain that business". Small suppliers may however not have the structures, systems and procedures to support such changes and may as a result of this not been used (Sparks & Wagner, 2003:203). Finding ways to accommodate the requirements of retailers in order to stay in business, such as receiving and processing orders electronically, has become necessary for small suppliers.

### **1.2.4 Research question**

From the above discussion, the research question reads as follows:

**What are the criteria for SMMEs supplying retailers to successfully adopt order processing for B2B e-commerce?**

### **1.2.5 Investigative questions**

In order to assist answering the research question, a number of investigative questions were formulated by the author. By resolving the investigative questions, the research question was answered. The investigative questions are:

- a) To what extent do retailers demand SMME suppliers to conduct business in a prescribed manner?
- b) What process does the SMME supplier follow to receive orders from the retailer?
- c) What are the determinants for e-commerce adoption by the SMME?

### 1.3 THE RESEARCH DESIGN AND METHODOLOGY

Qualitative research methods are designed to assist researchers to understand people and the social and cultural contexts within which they live (Myers, 2004). According to Tenopir (2003:16), qualitative analysis is more useful for measuring what people want, or to say what they want and for explaining why they behave in a certain way. Open-ended questions and interviews reveal motivations and the differences between what people say they want, and what they would really find useful (Tenopir, 2003:16). Myers (2004) identifies qualitative methods of research that include action research, case study research and ethnography (focuses on the sociology of meaning through close field observation of sociocultural phenomena).

The research follows a qualitative approach for data collection and analysis. According to Myers (2004), qualitative research includes "... any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification". In order to deal with the investigative questions, a case study research strategy was followed, as it aims to answer "why?" and "how?" questions (Saunders *et al.*, 1997:77). According to Yin (2003b:13), case study research investigates a contemporary phenomenon within the context it occurs in. Case study research deals with many variables, relies on multiple sources of evidence and is guided by theoretical propositions to guide data collection and analysis (Yin, 2003b:14).

Taylor, McWilliam, England and Akomode (2004:257) indicate that case studies based on personal contact are particularly appropriate for investigating Information Technology (IT) practice. It is a holistic approach and helps overcome the problems of terminology and verification, which complicates the use of questionnaires. Case studies however are time-consuming for the researcher and disruptive for the organisation studied (Taylor *et al.*, 2004:257), a situation that has to be considered when conducting the interviews.

Explanation building was used to analyse the case study evidence. According to Yin (2003:69), explanatory case studies explain how and why events occurred in each case study. Explanation building occurs mostly in narrative form and reflects theoretical suggestions (Yin, 2003b:120). Remenyi, Money, Price and Bannister

(2002:10), suggest that the result of a case study has to be written or told as a story.

The unit of analysis is *e-commerce order processing*. Non-probability sampling is generally associated with case study research and this method was considered most appropriate for selecting the suppliers participating in the investigation. A list of all suppliers that supply merchandise to the retailer RetailerX<sup>10</sup>, was obtained. In order to identify SMME suppliers, the author extracted suppliers classified as Closed Corporations<sup>11</sup> (CCs) located in the Western Cape of South Africa from this list. The author made the assumption that a CC is a small business, which was confirmed with the owners of the selected companies.

Semi-structured interviews were conducted with the owner/general manager and other personnel within the organisation involved in order processing. The interviews were tape recorded and documented and confidentiality was assured. Triangulation (multiple sources of information) was achieved by collecting documentation and data from the suppliers in order to fully understand order processing.

A pilot case study was first conducted. The findings of the pilot case study greatly assisted the author to explain why SMME retail suppliers do not implement Internet-based B2B e-commerce for order processing. This enabled subsequent interviews to be refined, while the same process was followed with the subsequent case studies, refining the results as the research progressed.

#### **1.4 RESEARCH CONSTRAINTS**

The research constraints are the factors inhibiting the normal research process. The two main factors are limitations and de-limitations.

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<sup>10</sup> Pseudo names were used for the retailers involved in this research to protect their identities. Only when processes of the retailers were discussed, pseudo names were used. Where retailers are mentioned without reference to their processes, pseudo names were not used. RetailerX is one of the largest grocery retailers in Africa.

<sup>11</sup> A Closed Corporation is owned by a few people who are normally all directly involved in the conduct of the business. Shares are not for sale to the public and are not held by outside investors (Trautmann, 2003).

#### **1.4.1 Limitations**

The research focused specifically on suppliers that conduct business with RetailerX. Suppliers that do not conduct business with RetailerX might have a different experience in terms of e-commerce adoption.

#### **1.4.2 De-limitations**

The research focuses on SMME manufacturers and suppliers located in the Western Cape. The characteristics of the SMME manufacturers and suppliers were categorised within the "Manufacturing, Wholesale Trade, Commercial Agents and other Trade sector categories" as defined by the National Small Business Act (South Africa, 2003). Nine SMMEs were included in the research. Eight of the SMMEs conduct business with RetailerX and other retailers. This research focuses on the transactions integration stage of the stages model created by Subba Rao, Metts and Mora Monge (2003:15).

### **1.5 KEY RESEARCH OBJECTIVES**

The objective of the research is to establish guidelines for SMME retail suppliers to adopt B2B e-commerce for order processing. The research investigates the process that retailers follow when placing orders with suppliers, retailer demands on the implementation of this process and the inhibitors preventing the suppliers from adhering to the retailer demands. The research furthermore aims to determine whether the suppliers foresee any benefits in utilising the Internet as the enabling technology in order processing and whether they are planning to adopt the technology.

SMMEs are important to the economy (Calosso *et al.*, 2003:234; Schlenker & Crocker, 2003:10), and it is therefore critical that they keep up with technological demands to stay in business (O'Gorman, 2000:298). The research therefore aims to identify the criteria for the successful adoption of order processing for B2B e-commerce.

## **1.6 SIGNIFICANCE OF THE RESEARCH**

Wagner *et al.* (2003:347) found that e-business adoption in the B2B environment is mainly customer driven and that customers have considerable influence over the business development and strategy of their suppliers. Stockdale and Standing (2004:310) confirm that "... many smaller firms that supply large organisations are being forced into the e-environment to retain their trading partners". According to Hughes, Golden and Powell (2003:280), the driver for the adoption of Web-based e-commerce by SMEs is the flexible nature of the Internet compared to the closed proprietary networks and standards of EDI.

SMEs do not have appropriate guidelines and models to allow them to take advantage of the developing knowledge economy and to move towards the e-business era (Koh & Maguire, 2004:341). Preuss (2002) found that although most of the SMMEs they surveyed are connected to the Internet, the use of the Internet for e-commerce is in its infancy in South Africa. The results of this research should assist SMMEs to realise the benefits of Internet-based B2B e-commerce for order processing and provide guidelines for its implementation. This is important to the economy of this country to provide a mechanism by which SMMEs future business has a better chance of survival.

## **1.7 CHAPTER AND CONTENT ANALYSIS**

### **1.7.1 Chapter 1: Introduction**

Chapter 1 provides an overview of the research conducted. Order processing and its role within the supply chain, is explained. The importance of SMMEs in the supply chain is discussed with specific reference to the impact of B2B e-commerce on the operations of the SMME. The chapter also provides a broad overview of the research process, the research design and methodology and the research objectives.

### **1.7.2 Chapter 2: Order processing for B2B e-commerce**

Chapter 2 aims to answer the research question based on evidence found in the literature. Each one of the three investigative questions is discussed. This is followed by proposed guidelines for the adoption of order processing for B2B e-commerce with reference to the literature. Firstly, the demands retailers exert on SMMEs that supply them with merchandise, is discussed. Specific reference is made to collaboration between small businesses and retailers and the operational demands on small businesses in the role of suppliers. Secondly, the ordering process between retailers and SMMEs as suppliers is discussed. The supply chain and the role of both the Internet and e-business in the supply chain are explored. This is followed by feedback from the literature on customer and supplier expectations for the electronic ordering process. Lastly, the determinants of e-commerce adoption by the SMME are explored. Reasons for and barriers to e-commerce adoption are investigated. The chapter is concluded with guidelines to assist SMMEs in adopting order processing for B2B e-commerce.

### **1.7.3 Chapter 3: Research design**

In this chapter, the research method is defined and the research design described. The chapter starts by explaining the pilot case study that was conducted and the key problem areas that were identified. This is followed by reporting on the research strategy, research design and the target research group. The data collection process and the sample selection are described. The chapter is concluded by a list of themes for discussion during the interviews.

### **1.7.4 Chapter 4: Case study results**

In Chapter 4, the case study results are reported upon. An overview of the interview process is provided. Case study reporting is done for each business that participated in the research, based on the data that was collected. Technical capabilities, retailer demands, order receiving, order processing, the role of information technology and the business value of the Internet are reported on. The chapter is concluded by a summary of all of the case studies conducted.

### **1.7.5 Chapter 5: Comparative analysis**

Chapter 5 is devoted to the analysis of the data reported on in Chapter 4. In this chapter, commonalities and patterns are determined and themes generated. The themes are reported upon by using the key problem areas identified in the pilot study. This serves as the framework for reporting. The themes are also used to answer the investigative questions and therefore the research question. In Chapter 5 the criteria are established for consideration by the small supplier to successfully adopt order processing for B2B e-commerce.

### **1.7.6 Chapter 6: Conclusion**

Chapter 6 revisits the previous chapters, summarises the research conducted and indicates how the research areas were addressed. In this chapter, the research problem, research question, investigative questions and research objectives are revisited together with feedback on each of these areas, established by the research. The chapter concludes with a personal reflection and key lessons learned from the research conducted.

## **1.8 CONCLUSION**

The Internet as communication medium has the ability to connect every member of a supply chain. The Internet and Web-based technologies provide real-time links between companies and their business partners and is less costly than communication through batch orders using EDI. Muffatto and Payora (2004:304) found that companies digitalise the ordering process between themselves and their suppliers in order to eliminate manual procedures. SMMEs are part of the supply chain and important for the economy and it is therefore important to include them in B2B e-business to maximise the use of the Internet and the power of supply chain management.

Smaller businesses are often dependant on larger companies for their business and thus survival (Katz & Safranski, 2003:328). Various issues however prevent

SMMEs from taking advantage of the Internet, including lack of knowledge, high Internet bandwidth costs, high operating costs and not knowing who to contact for assistance with their business.

This research aims to produce guidelines to assist SMME retail suppliers to implement order processing using B2B e-commerce. This is done by conducting qualitative research using the case study methodology to identify the barriers to adoption and to establish guidelines for B2B e-commerce adoption.

## 2. CHAPTER 2: ORDER PROCESSING FOR B2B E-COMMERCE

In this chapter an in-depth literature review is conducted with the focus on the adoption of e-commerce by small businesses. Furthermore, this chapter explores the three investigative questions and reports on the in-depth findings from the literature.

The introduction presents an overview of e-business and the role that e-commerce fulfills in organisations. The first investigative question, "To what extent do retailers demand SMME suppliers to conduct business in a prescribed manner", is discussed in paragraph 2.2 using literature to reveal the underlying theoretical aspects pertaining to this question. The focus is on the relationship between small suppliers and their business customers and the customers' operational demands. In Chapter 5, investigative question one is dealt with using evidence collected from local case studies. This is accomplished with specific reference to demands of the retailers on the business processes of the case study suppliers.

In paragraph 2.3 the second investigative question, "What process does the SMME supplier follow to receive orders from the retailer", is discussed using literature. The processes that small suppliers have to put in place to receive orders from retailers are investigated. This investigation is conducted with reference to the supply chain management process, the role of the Internet and e-business in the supply chain and the implications of receiving and processing electronic orders. This investigative question is answered in Chapter 5 by reflecting on the processes that the case study suppliers follow to receive orders from retailers.

The third investigative question, "What are the determinants for e-commerce adoption by the SMME", is discussed in paragraph 2.4. In order to understand what persuades small enterprises to adopt e-commerce, the reasons for e-commerce adoption and the barriers to adoption are investigated and the stages of e-commerce adoption explained. In Chapter 5, the reasons for adopting e-commerce by the case study suppliers are discussed, answering the third investigative question.

The chapter concludes by identifying the factors to be considered for e-commerce adoption, revealing what factors small businesses should consider to successfully introduce e-commerce into their business processes. In Chapter 5, the research question is addressed by identifying criteria for the case study suppliers to adopt order processing for B2B e-commerce.

## **2.1 INTRODUCTION**

According to Croom (2005:59), organisations aim to reduce costs to improve operations on an ongoing basis, and they also expect their suppliers to reduce prices accordingly. E-business plays a strategic role in cost reduction and provides opportunities for improved supply chain management. The literature is reviewed to investigate the role of suppliers in supply chain management and the opportunities offered by e-business and specifically B2B e-commerce in the supply chain process. Moodley (2002:37) indicates that South Africa has a well-established telecommunications infrastructure and is deeply integrated into global economic networks and therefore "... is better positioned than any other African nation to take advantage of growth opportunities in B2B e-commerce".

### **2.1.1 Defining e-business and e-commerce**

From literature, different definitions were found describing e-business and in many cases the same meaning is linked to the terms "e-business" and "e-commerce". Koh and Maguire (2004:339) define e-business as an application that is used for electronic business transactions in B2B and B2C environments in order to meet customer requirements. Turban, McLean and Wetherbe (2002:168) argue that e-business is more than just e-commerce and that it involves "... servicing customers, collaborating with business partners, and conducting electronic transactions within an organization". McNurlin and Sprague (2002:77) define e-business as the use of telecommunication networks, particularly the Internet, to conduct business transactions. They identify three types of e-business: business-to-employee (B2E), B2C or e-commerce, and B2B. For the purposes of this research, e-business is assumed to take on the meaning defined by McNurlin and Sprague (2002:77).

Turban *et al.* (2002:168) do not view e-commerce and B2C as the same concept, but refer to both B2B and B2C as e-commerce. They define e-commerce as business transactions that are conducted using the telecommunications network, primarily the Internet. For the purposes of this research, in the light of the foregoing definitions, e-commerce will be defined as either B2B or B2C, depending on the context in which it is used. Barnes *et al.* (2004:608) indicate that e-commerce has created a new economy based on information, where people "... work with their brains more than with their hands".

### **2.1.2 The role of the Internet**

According to Kaynak, Tatoglu and Kula (2005:625), traditionally large businesses made use of private networks for e-commerce, but it was too costly for small businesses to benefit from them. The Internet however changed this situation by making it simple and inexpensive for businesses to conduct business and exchange information. According to Hughes *et al.* (2003:277), more small businesses have adopted the World Wide Web (WWW) for conducting business with their trading partners since its introduction than adopted EDI over the previous 20 years.

Preuss (2002) indicates that South African SMME owners often obtain their Internet experience by using the Internet at home. However this experience is not sufficient for using the Internet effectively in their businesses. Most of these businesses do not have IT management expertise and only have limited skills to promote their businesses over the Internet. Moodley (2002:39) indicates that small businesses not participating in e-commerce activities may become locked out of the supply chain. Furthermore he suggests that the South African Department of Trade and Industry (DTI) supports small businesses in the use of e-commerce "... through training and skills development programs, the diffusion of e-commerce best practises, and the dissemination of critical success factors". Anon. (2002) indicates that the key to real success and progress for SMMEs in South Africa is the implementation of IT, in terms of computer applications, e-mail usage, Internet utilisation and e-business in the individual business set-up. Chapman *et al.* (2000:358) report that small businesses survive through their responsiveness, especially when dealing with industrial customers, and that ICTs are ideal media for improving responsiveness. Schlenker and Crocker (2003:11)

indicate that Internet technologies enable companies to redesign and improve their business processes in order to add value to their products and services.

### **2.1.3 Integrating business activities**

One of the challenges for manufacturers is to determine how they can adapt their operations to gain maximum benefit from the opportunities presented by the Internet-based ICTs of the information age (Barnes *et al.*, 2004:608). Therefore, the third investigative question focuses on how the suppliers in this study can incorporate the Internet and related technologies into their operations. According to Lal (2005:185), e-business merges activities such as order processing, payments and after sales services into a single process. E-business reduces operational costs because electronic information is more accurate, timely and easily available. Web-enabled services change the supplier-customer relationship by creating a stronger link between companies and their clients (Lal, 2005:185). This research concludes that small suppliers have not implemented e-commerce optimally. This is in agreement with Jeffcoate, Chappell and Feindt (2002:125) stating that "... most SMEs have been slow to adapt to the Web and face stiff competition from online competitors with first mover advantages".

## **2.2 DEMANDS OF RETAILERS ON SMALL SUPPLIERS**

This paragraph deals with investigative question one, "To what extent do retailers demand SMME suppliers to conduct business in a prescribed manner". In order to understand the retailer demands, the collaboration between small suppliers and retailers is investigated. This is followed by an investigation into the operational demands of the retailer.

### **2.2.1 Collaboration between small businesses and retailers**

Muffatto and Payaro (2004:302) define the procurement process as searching for suppliers, negotiation, agreement on the type of supply, signing a contract, sending an order and exchanging money for goods and services transferred. According to Morrison and Van Assenselft (2006:7), it is important to share data

across the procurement process to establish an integrated organisation. Sparks and Wagner (2003:202) confirm that integration is needed, because up to 30 per cent of information in the product listings (catalogues) used by retailers to order products from manufacturers is incorrect. This results in 10 to 15 per cent of products being not available when the consumer requires them.

According to Rosenbaum (2001:8), it is essential for retailers and suppliers to collaborate in order to align production with customer demands. Collaborative planning, forecasting and replenishment (CPFR) is a technique that allows retailers and suppliers to share information and collaborate on forecasting and supply planning. Folinas *et al.* (2004:278) define CPFR as "... a process by which supply chain partners co-ordinate plans to better match supply and demand". Rosenbaum (2001:8) indicates that retailers have to keep suppliers informed about forecasts including planned promotions. Furthermore, suppliers can perform capacity planning and inform the retailers whether or not they will be able to meet their expectations.

There are various ways to establish integrated organisations. Kim and Umanath (2005:815) propose electronic integration between companies by creating a product code translation table to allow employees to place/receive orders using internal product codes. The computer applications of the buying organisations can also determine the need for products, based on reorder levels, and automatically transmit orders to the supplier systems without human intervention. The integration of processes can be done more efficiently by speeding up data communication between supply chain partners (Gibson & Edwards, 2004:66). For complete integration, suppliers, transporters and partners have to be included (Morrison & Van Assenselft, 2006:12). As stated by Morrison and Van Assenselft (2006:12), "... a fully integrated merchandising-supply network enables retailers to overcome longstanding operating problems and deliver a more compelling customer experience".

- Sheu, Yen and Chae (2006:44) state that "... collaboration is critical for successful supply chain and organizational performance". According to Moodley (2002:37), organisations can only integrate their functions across businesses if each organisation first integrates its internal processes. Optimal collaborative supply chain management is therefore dependent on the integration of a business's front-office systems (sales, marketing and customer support services)

with its back-office systems (databases, order processing, inventory and accounting) (Moodley, 2002:37). Furthermore Sheu *et al.* (2006:45) indicate that social and technical factors influence collaboration between suppliers and retailers. The technical factors include inventory systems, information sharing channels, and IT capabilities which require financial and emotional investments from both parties. The architecture chosen for the supply chain depends on the business relationship and financial commitment of suppliers and retailers (Sheu *et al.*, 2006:45).

According to Gibson and Edwards (2004:66), Internet-enabled B2B assists in communicating large amounts of information at a great speed between supply chain partners. B2B e-commerce is quick and cost effective and allows asynchronous communication in supply chains (Gibson & Edwards, 2004:67).

### **2.2.2 Operational demands on small businesses**

According to O'Gorman (2000:297), most small businesses are undercapitalised, have limited resources for marketing and are owner-managed. The owner is responsible for managing all functions including operations, finance, staff and marketing and often does not have the expertise and management skills to manage each of these areas effectively. Small business are characterised by informal processes and poorly implemented IT systems. The majority of small businesses have limited influence on technological trends and innovations that impact business in general. As technological developments occur, the technical demands on small businesses increase significantly and technological competence becomes a prerequisite to survival in many sectors (O'Gorman, 2000:298).

According to Gibson and Edwards (2004:62), manufacturers are no longer the drivers of supply chain management in terms of how, when, where and which products are to be manufactured. Customers now drive supply chain processes in terms of demanding cost-effective, quality products. It is thus important to integrate business functions through improved supply chain relationships between trading partners (Gibson & Edwards, 2004:62). According to Sharma and Bhagwat (2006:216), the survival of small suppliers is determined by their ability to manufacture/supply a greater number of products, at a competitive cost, with shorter delivery times, minimum defects and using fewer resources.

Information systems have an important role to play in this as they are able to provide the right information at the right time. Wagner *et al.* (2003:350) found that suppliers are forced by the companies who they supply and whose corporate strategy involves e-business, to change with them. By changing, communication, information sharing and the relationship between the company and its suppliers improve within the supply chain.

From the foregoing discussion, it is evident that small businesses are subject to the demands of their business customers, which include retailers, and that they have to adapt their business processes accordingly.

### **2.3 OVERVIEW OF ORDER PROCESSING**

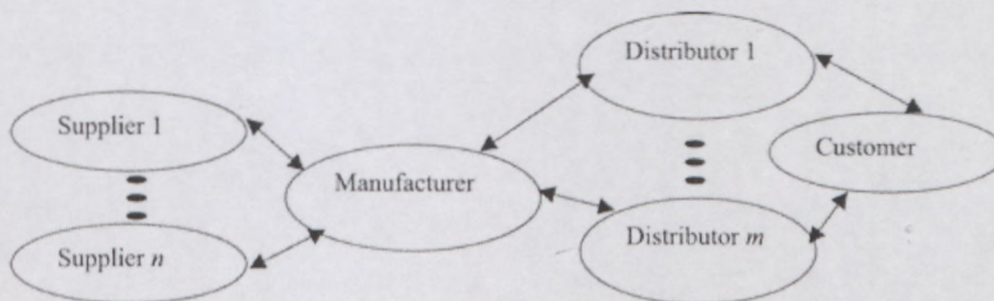
In this paragraph, the supply chain management process is defined and the role of the Internet and specifically e-business in the SCM process explored. The role of order processing in the supply chain and its applicability to the small enterprise is explained.

Investigative question two, "What process does the SMME supplier follow to receive orders from the retailer", is addressed. Although small suppliers are part of the supply chain, they are not necessarily able to integrate properly with it due to technology constraints (Croom, 2005:62). In order for suppliers to deliver services that benefit both themselves and customers, it is necessary to pay special attention to both the supply chain and the demand chain. In supply chains goods are transferred from the point of origin to the end customers. The demand chain transfers customer demands to suppliers. It is therefore important that suppliers take advantage of better information about customer demand (ECR, 2006:18).

According to Folinas *et al.* (2004:278), the Internet can assist companies move away from the traditional *push* strategy employed by most supply chains. The Internet assists companies to end up with a hybrid strategy, i.e. a *push/pull* supply chain, taking into consideration customer demands. Furthermore, Electronic Commerce (EC) makes it easy for customers to find the suppliers offering the best price. It is thus important that suppliers focus on improving their service in order to assist customers to improve their performance.

### 2.3.1 The Supply Chain Management process

It is important to understand the SCM process in order to explore the impact on small suppliers with reference to order processing. Arend and Wisner (2005:403) define SCM as "... the integration of key business processes among industry partners to add value for customers". According to Kim and Umanath (2005:815), the exchange of goods and services between trading partners is supported by the integration of essential business processes between the partners. The business processes are integrated by means of sharing information between the trading partners about the products and the processes. Figure 1 is an example of a supply chain consisting of two suppliers, one manufacturer and two distributors. Manufacturers receive materials from suppliers and provide the manufactured products using distributors to the end customers. Manufacturers receive materials from suppliers and provide the manufactured products using distributors to the end customers.



**Figure 1.** Collaboration in a SCM system (Chalasani & Sounderpandian, 2004:459)

Companies are starting to increase the use of the Internet for managing their supply chains, reducing the overall cost of managing supply chains (Chalasani & Sounderpandian, 2004:449). Koh and Maguire (2004:340) categorise SCM into Supply Chain Planning (SCP) and Supply Chain Execution (SCE).

#### 2.3.1.1 Supply chain planning

SCP relies on the information stored in an Enterprise Resource Planning (ERP) application and uses high-level mathematical algorithms to improve the flow and efficiency of the supply chain and to reduce inventory. ERP is an accounting-oriented information system for identifying and planning resources needed to take, manufacture, ship and account for customer orders (Koh & Maguire,

2004:340). ERP systems are utilised to support operations process management (Croom, 2005:65). According to Koh and Maguire (2004:340), ERP systems become easily accessible due to the advent of the Internet. ERP systems and the Internet simplify and reduce the cost of data exchange for customers and suppliers (ECR, 2006:14).

According to Bendoly and Kaefer (2004:396), smaller businesses more often use the lesser-known ERP systems. The majority of these ERP systems do not handle purchase updates using the Internet or EDI and are not even partially equipped with e-payment. For small businesses to keep track of purchases, they have to rely on additional application vendors or in-house development effort which is an extremely costly proposition for most small businesses (Bendoly & Kaefer, 2004:396).

#### 2.3.1.2 Supply chain execution

According to Koh and Maguire (2004:340), SCE is responsible for the automation of the different steps of the supply chain. SCE for example will electronically route an order from a manufacturing plant to a supplier. SCM and ERP systems are e-business applications for B2B.

#### 2.3.2 The role of the Internet in supply chains

Large companies aim to benefit from implementing just-in-time inventory management systems (Hsieh & Lin, 2004:68). In retailing, EDI provide vendors with access to stores' selling information and enables retailers and vendors to place orders and pay bills electronically, reducing time and the expense of paperwork (Hsieh & Lin, 2004:71). EDI services are however expensive, inefficient, relatively secure and based on one-to-many relationships (Murtaza, Gupta & Carroll, 2004:328). Gibson and Edwards (2004:66) confirm this by stating that EDI "... facilitates point-to-point flow of data, is expensive, needs costly updating of programs and requires a dedicated server".

According to Levinson (2006:72), although large companies benefited from EDI, they could not extend EDI to their smaller suppliers because these suppliers

could not afford it. With the Web gaining popularity in the late 1990s, companies started to establish Web portals to place and confirm orders with their small suppliers instead of using telephones or facsimiles. Porter (2001:67) indicates that the Internet increases the bargaining power of suppliers. The Internet allows suppliers to get access to more customers and intervening companies can be reduced in the customer channel. The Internet further provides more companies equal access to suppliers and simplifies market entry for suppliers (Porter, 2001:67). Gibson and Edwards (2004:66) confirm that Internet-enabled tools and Extensible Markup Language (XML) based technology<sup>12</sup> are cost effective. An advantage of the Internet is that it speeds up the supply chain (Pant, Sethi & Bhandari, 2003:206; Lankford, 2004:303). The Internet further decreases the supply chain costs, makes the supply chain more flexible and potentially shortens it (Lankford, 2004:303).

The Internet and the availability of extensive computing power have a major impact on how companies manage their supply chains (Rosenbaum, 2001:6). According to Lankford (2004:303) the Internet provides exchange of information crucial to efficient supply chain management, either in the form of Web pages accessible only to specific vendors or by means of an Intranet accessed via the Internet. B2B e-commerce helps organisations to automate the trading process by conducting transactions electronically over the Internet, Intranets, advanced Extranets, Internet-based EDIs or Virtual Private Networks (VPNs) (Gibson & Edwards, 2004:63). Mullane, Peters and Bullington (2001:390) are of the opinion that an entrepreneurial company can develop a long-term relationship with another company by supplying contracts through B2B e-commerce. The smaller business can thus get "... a foot in the door" by following the B2B e-commerce route.

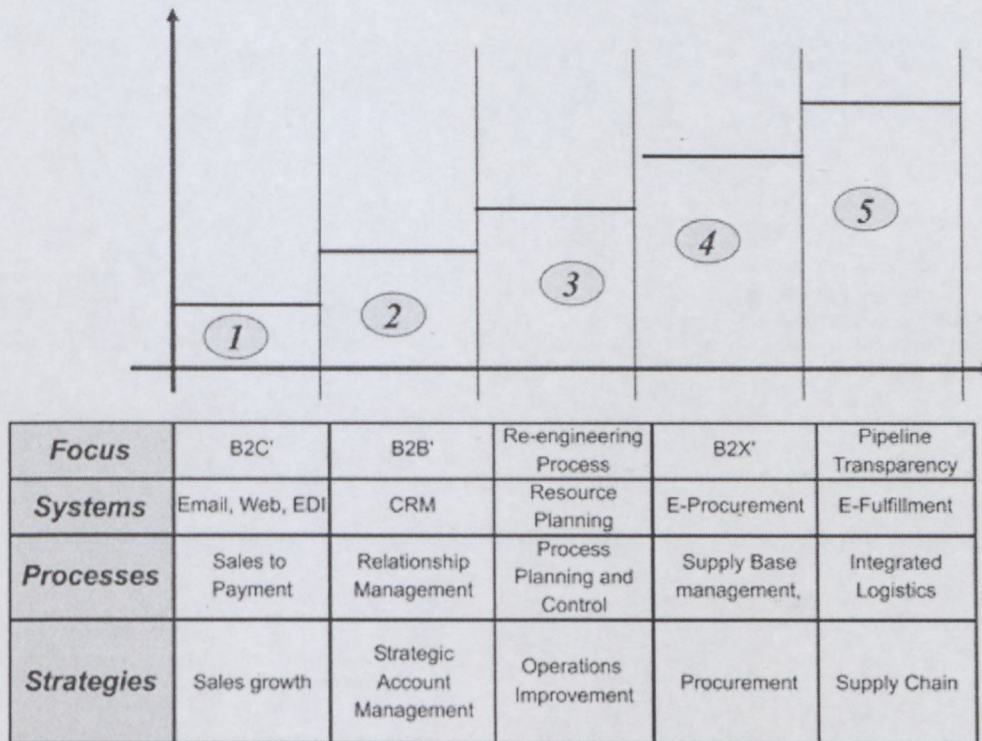
### **2.3.3 The role of e-business in supply chains**

Croom (2005:64) found that e-business developments in supply chain management follow a number of distinct phases of evolution. He created a five-

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<sup>12</sup> XML is a method for defining structures in documents. The information in XML documents can be identified through a set of rules. Web browsers can interpret, display, or process the data in XML documents (Hsieh & Lin, 2004:72).

stage model describing the impact of e-business developments on supply chain management, as displayed in Figure 2 below.



**Figure 2.** *E-business in the supply chain - five phases of evolution (Croom, 2005:67)*

Each of the phases one to five includes the systems in the previous phase. As the focus shifts from one phase to the next one, the supply chain becomes more integrated.

- Stage one: Standard e-business protocols such as e-mail and web sites are used to gain improved access to customers and markets.
- Stage two: The emphasis is on the management of customer relationships supported by the use of Customer Relationship Management (CRM)<sup>13</sup> systems and internal customer intelligence.
- Stage three: E-business systems, typically ERP systems, are utilised to support operations process management.

<sup>13</sup> CRM is relationship marketing values and strategies with emphasis on customer relationships (Gummesson, 2004:138).

- Stage four: Integrates supply-side activities by deploying e-procurement systems to support management of the total costs of purchase.
- Stage five: Integrated e-supply chain management is implemented. It involves the use of e-business platforms such as e-fulfilment, global positioning and order tracking in order to improve materials management.

Croom (2005:61) found that the main constraint to supply chain integration was that suppliers did not have the necessary technology infrastructure and were not capable of properly integrating with the supply chain. This was especially true for smaller suppliers. O’Gorman (2000:298) explains this by indicating that many small businesses lack the capacity to investigate and assess new technical developments, pursuing a reactive strategy and responding to external changes as they appear.

According to Simpson and Docherty (2004:315), B2B solutions increase the inter-business support while reducing the need for telephone calls and facsimiles. Lee *et al.* (2003:351) differentiate between “collaborative B2B commerce” and “basic B2B commerce”. Basic B2B commerce is the application of technology to automate existing data transmission, for example the exchange of order information. With collaborative B2B commerce, organisations establish new collaboration mechanisms that change business processes and support the Continuous Replenishment Process (CRP). In CRP, retailers send retail sales and inventory levels to manufacturers, which they use to determine the quantity and timing of the product shipments (Lee *et al.*, 2003:351). According to Gibson and Edwards (2004:62), B2B tools enable the integration of supply chain functions by enabling trading partners to conduct business activities electronically.

#### **2.3.4 Processing electronic orders**

According to Rahman (2003:499), the Internet is used in supply chains for order processing applications to support order placement and customer order status requests. Further Rahman (2003:499) found that using the Internet for order placement reduces the costs of order processing for customers. Porter (2001:76)

supports these findings indicating that suppliers going on-line are able to reduce the transactional cost of order taking. But this is often complicated by additional requests for information and quotes from customers complicating traditional activities. Rahman (2003:499) found that the cost saving introduced by the Internet in order processing can largely be attributed to the reduction of paperwork involved in traditional order processing systems. In addition, the time from when an order is placed to the time the goods are received by a customer is halved (Rahman, 2003:500).

Muffatto and Payaro (2004:304) find that by digitalising the relationship with suppliers, companies can eliminate all the manual procedures in the ordering process. Large companies push either their suppliers or customers to adopt the companies' own personal information systems, for example by using the Private Trading Exchange model. The Private Trading Exchange is a one-to-many model and the property of a company or of an influential member in the supply chain. This company manages the exchange to improve collaboration, to control the various processes, to improve efficiency, and thus to reduce costs (Muffatto & Payaro, 2004:304).

According to Kim and Umanath (2005:814), Electronic Integration (EI) is the integration of business processes of two or more independent organisations by means of computers and communication technologies. EI allows partnering companies to integrate their decisions and operations. Both buyers and sellers should invest in the relationship by investing in the underlying hardware, software and communication systems and also by providing user training and support. The partners should share information relevant to the relationship and the buyer should be in a position to monitor the status of the supplier's production process. The production process includes the production capacities, inventory levels, shipping/delivery schedule and the quality of the products being produced (Kim & Umanath, 2005:818).

Research conducted by Kula and Tatoglu (2003:328) on small businesses in Turkey, found that the most popular usage of the Internet was for e-mail. Receiving orders from clients using the Internet was ranked eighth and not high on the priority list of the small businesses. They however found that small businesses with a relatively strong position in their own industry make more use

of Internet applications for e-mailing, intra-company communication, order receiving and market and product research.

From the literature reviewed in this paragraph, different ways were revealed in which small businesses integrate with their business customers for order fulfilment.

## **2.4 DETERMINANTS OF E-COMMERCE ADOPTION**

This paragraph discusses the third investigative question "What are the determinants for e-commerce adoption by the SMME". This paragraph explores the reasons why some small enterprises do adopt e-commerce while others do not adopt e-commerce as part of their strategy. Porter (2001:77) states that it is necessary to "... tailor Internet applications to a company's overall strategy in ways that extend its competitive advantages and make them more sustainable". This paragraph further investigates the process companies follow when adopting e-commerce as part of their strategy.

According to Porter (2001:64), companies have to deploy the Internet as they "... have no choice if they want to stay competitive". The Internet enables companies to establish distinctive strategic positioning, that previous generations of information technology could not provide (Porter, 2001:64). Jones, Hecker and Holland (2003:293) however indicate that small businesses are delaying Web-based commerce adoption due to a lack of foresight of the benefits.

### **2.4.1 Reasons for e-commerce adoption**

Simpson and Docherty (2004:319) found that the main reason for e-commerce adoption amongst UK small businesses is to increase sales. E-commerce allows businesses to trade and receive payments online, lowers the running costs of the business, allows access to a wider market and saves time for the customer. The benefits of e-commerce adoption identified by Simpson and Docherty (2004:326) are further supported and complimented by various authors that include Browning and Anderson (2004), Lumpkin and Dess (2004), Mehrtens, Gragg and Mills (2001) and Lal (2005).

Table 1 shows the reasons for e-commerce adoption, as identified by Simpson and Docherty (2004:326) from literature and case study research.

**Table 1.** Reasons for e-commerce adoption (Simpson & Docherty, 2004:326)

	Reason		Reason
1	To improve business competitiveness	11	Impression management
2	To try out new e-commerce models	12	Advertising costs can be reduced
3	Management eagerness/motivated CEO	13	Company size and perceived importance of e-commerce to business purpose
4	The need for better communications	14	To improve communications with customers
5	Admission to world markets	15	External pressures from a new type of customer value proposition
6	Greater opportunities for innovation in SMEs due to SMEs smaller size and flatter organisational structure	16	Responding to competitors
7	Perceived benefits	17	Low entry costs
8	Organisational benefits and external pressures	18	To enhance customer relationships
9	Opportunistic and based on cost	19	The Internet as a "lifesaver" for ailing businesses
10	To increase sales	20	May reduce working hours for owner-managers in some businesses

According to Mehrtens *et al.* (2001:168), a small business's decision to adopt the Internet is influenced by the perceived benefits of the Internet, the organisational readiness of the company and external pressure. According to Mehrtens *et al.* (2001:169), customers put pressure on small businesses to be Internet users and to communicate electronically. Simpson and Docherty (2004:323) found in their research using case studies that there is also pressure from within companies, in this case family members, to adopt the Internet for specific activities for example marketing. Browning and Anderson (2004:3) indicate that e-commerce extends business processes and information. According to Browning and Anderson (2004:2), in many small and midsize businesses, Chief Information Officers (CIOs) believe that Web-enabled applications can cost-effectively expose, enhance, leverage and extend business processes and information to customers, vendors, partners and employees.

According to Lumpkin and Dess (2004:162), the Internet can add value by providing searching, evaluating, problem-solving and transacting activities. The

Internet enables this by enhancing the speed of information gathering and the breadth of information availability. Web-based technologies thus assist in finding small suppliers more easily. The Web further enables cost and benefit comparisons of various products. Services available on the Internet can assist people to identify problems or needs and to generate ideas and action plans to address those needs. Using the Internet also contributes to the selling process that includes negotiation, contract agreement, payments and delivery (Lumpkin & Dess, 2004:164). Lal (2005:196) found that profit on e-business is not very high. The reason for this could be that companies using advanced e-business tools adopted them to survive and to remain competitive in international markets (Lal, 2005:196). This concurs with the findings of Simpson and Docherty (2004:319) that the Internet is a “lifesaver” for ailing businesses.

#### 2.4.2 Barriers to e-commerce adoption

In Table 2, the barriers to e-commerce adoption are summarised, as identified by Simpson and Docherty (2004:326) from literature and case study research.

**Table 2.** Barriers to e-commerce adoption (Simpson & Docherty, 2004:326)

	Reason		Reason
1	The unwillingness of managers to be responsible for technological change	13	Limited resources
2	Use of ICT to reduce costs and improve efficiency rather than for trading online	14	Costs
3	Fear of entry into global markets	15	Lack of awareness of what is involved
4	Readiness and adoption rates vary by industry sector	16	Lack of skills
5	The older the SME, the less likely they were to use e-commerce	17	Lack of knowledge
6	Integration of legacy systems is difficult	18	Lack of help
7	Executive understanding is poor	19	Lack of time
8	Ignorance surrounds the technology, fuelling concerns about security costs	20	Inadequate telecommunications infrastructure
9	Legislation and interoperability	21	Lack of trust
10	Lack of profitable business models	22	Lack of relevance to their particular industry sector
11	Lack of qualified employees	23	Lack of SME bespoke information
12	Complexity of available e-commerce services	24	Wrong type of product or service for e-commerce

Ahmed *et al.* (2006:77) studied the benefits and challenges of trading electronically in Saudi Arabian companies. The challenges are the continuing reliance on face-to-face contact, problems with information overload, expensive Internet charges, need for technical support and expertise, the lack of management commitment and understanding of the role of IT, and the reluctance of middle aged and older people to use IT. Lefebvre, Lefebvre, Elia and Boeck (2005:1452) found that reasons for non-adoption are a lack of pressure from business partners and the impression that e-commerce initiatives will not generate any economic payback. Zheng *et al.* (2004:35) found that small businesses perceived behavioural and cultural barriers to e-adoption more critical than resource and technical issues. Small businesses fear losing the personal touch and knowledge of their customers and they lack confidence in utilising Internet transactions.

According to Wagner *et al.* (2003:348), small business managers do not have sufficient time to invest in change management and exhibit anxiety about their ability to handle increased business generated by e-business. Funding is emerging as a major problem or barrier. No evidence is found of customer assistance being given to the supplier company to invest in equipment. Chan and Swatman (2000:80) found that financial barriers are still difficult to overcome when dealing with small and medium trading partners, due to the high costs associated with the start-up and ongoing activities of an Electronic Trading Gateway (ETG). According to O'Gorman (2000:296), strategic weaknesses in the small business include the lack of financial and managerial resources, reliance on a small customer base and poor technological competence.

Furthermore, security hampers e-commerce growth. Differing standards is a major problem to be overcome and reaching agreement on data standards, processes and functionality is a barrier to improving B2B business. Many potential clients are committed to old technology, whereas an important issue for B2B players is managing the migration process to newer technology (Weidemann, 2004). According to Love and Irani (2004:238), smaller organisations do not appear to invest in networks and concerns related to security are not considered an issue.

Chapman *et al.* (2000:354) found that company size is a major characteristic amongst UK small businesses in determining the use of e-mail and the

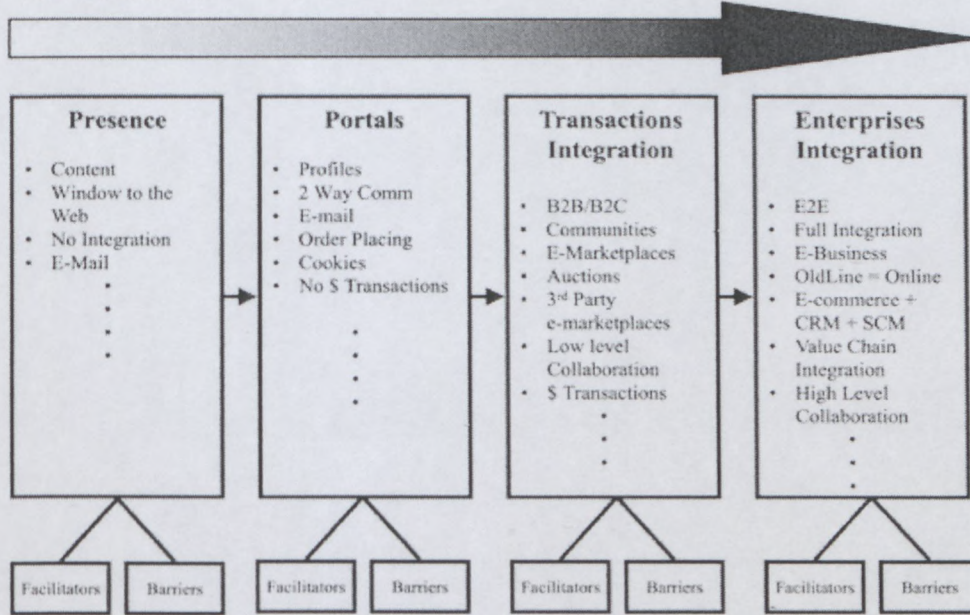
implementation of web sites. Smaller businesses use technology less than bigger companies. Furthermore they do not understand the opportunities offered by the Internet, they do not understand how to implement the technology, they lack the skills to implement the technology and the technology is pricy. Small businesses also lack the willingness to dedicate time and resources to resolving their lack of understanding and skills (Chapman *et al.*, 2000:354).

According to Fillis, Johansson and Wagner (2004b:181), business and product level opportunities available on the Internet may be perceived as threats and barriers as there is a perception that the establishment of e-business processes is technically difficult, increases the workload and is time consuming. Love and Irani (2004:238) found that small businesses in construction are cash flow dependent and tend to focus on securing the next project and expect IT to produce immediate benefits and improve both performance and productivity.

#### **2.4.3 Stages of e-commerce adoption**

The four-stage model for e-commerce adoption by small and medium sized enterprises, identified by Subba Rao *et al.* (2003:15), can be used as a framework for explaining the adoption process. According to Subba Rao *et al.* (2003:14), the four stages of e-commerce development are Web presence, portals, transaction integration and enterprise integration, as shown in Figure 3. Cost, technological demands, and complexity increase during later stages of the model.

## Stages of E-Commerce Development and their characteristics



**Figure 3.** A stage model for e-commerce development (Subba Rao et al., 2003:15)

The four stages of e-commerce development are described as follow:

- In the presence stage, the organisation gets involved in a digital environment. Information is displayed on a web site and there is one-way communication to potential users.
- There is two-way communications between the business and customers (B2C) and/or between businesses (B2B) in the portal stage. Information is linked to inventory data and the user has facilities to search, order, provide product feedback and participate in product and/or quality surveys. It is not possible to process financial transactions during this stage.
- Financial transactions between partners are present in the Transactions Integration (TI) stage. This requires considerable technical capabilities and a good IT infrastructure.
- Enterprises Integration (EI) integrates all business processes and involves high levels of collaboration between customers and suppliers. E-commerce systems provide CRM and SCM.

According to Subba Rao *et al.* (2003:15), it is not necessary for small businesses to, for example, start at the Web presence stage and progress through the subsequent stages sequentially, they could enter at any stage and progress from there.

In contrast, Lefebvre *et al.* (2005:1446) identify six different stages of e-commerce adoption that small businesses have reached:

- Non-adopters with no interest in e-commerce,
- non-adopters with interest in e-commerce,
- adopters that perform electronic information search and content creation,
- adopters that execute electronic transactions,
- adopters that execute complex electronic transactions and
- adopters that collaborate electronically.

Lefebvre *et al.* (2005:1446) found that the size of a company plays a role in the stage of adoption. The average annual sales are higher as the companies' progress from stage to stage. Most of the small businesses pass through the stages in order, not jumping stages. (Lefebvre *et al.*, 2005:1446). Del Aguila-Obra and Padilla-Meléndez (2006:101) found that most of the companies in the initiation stage of Internet technology implementation are small businesses. These businesses are beginners in Internet usage and do not have their own server providing Internet access and have not established an Intranet for their internal communication. Teo and Pian (2004:458) found that smaller businesses tend to restrict their Web adoption to either e-mail, or web sites that provide information and brochures that are non-strategic in nature or web sites that provide customers with functionality that includes product information, news, events, interactive content, personalised content and e-mail support.

In this paragraph, the reasons for the introduction of e-commerce into the operations of small businesses are revealed. As indicated by Porter (2001:77), companies should use Internet technology strategically to enhance service, increase efficiency and leverage existing strengths. Companies should tailor Internet applications to the overall strategy to extend their competitive advantages and make them more sustainable. Kula and Tatoglu (2003:330) confirm that Internet adoption is a strategic decision and that the intuition and personal opinions of small business managers determine to what extent the

Internet is used. Del Aguila-Obra and Padilla-Meléndez (2006:102) found that the bigger the company, the more likely it is to have its own web site and the more intensively the company will make use of its Intranet. They also found that the smaller the size of the company, the greater the likelihood that they will use external advice in adopting Internet technologies, because small businesses usually lack specialised managerial capabilities.

## **2.5 B2B E-COMMERCE ORDER PROCESSING ADOPTION**

Paragraphs 2.2, 2.3 and 2.4 referred to literature findings to explain what the three investigative questions entail. Paragraph 2.5 refers to the research question and identifies criteria from the literature to be considered by small businesses in order to adopt order processing for B2B e-commerce.

### **2.5.1 Adoption of B2B e-commerce**

Davis (1989:320) developed the Technology Acceptance Model, identifying two determinants that cause people to accept or reject Information Technology: *perceived usefulness*, that is, the extent to which people believe an application will help them perform their job better and *perceived ease of use*, determining if the effort of using the application is superseded by the performance benefits of usage. Davis (1989:334) found that perceived usefulness has a strong correlation to user acceptance and should not be ignored when attempting to design or implement successful systems. Kaynak *et al.* (2005:638) confirm this for small businesses, stating that they are more open to e-commerce adoption if they perceive benefits in using Internet-based e-commerce. According to Quaddus and Achjari (2005:148), organisations perceive e-commerce success in terms of the potential benefits obtained rather than the reduction of impediment factors. According to Kaynak *et al.* (2005:638), Internet-based e-commerce makes it possible for small businesses to communicate externally and gather information for market and product research.

According to Kaynak *et al.* (2005:638), it is important that small businesses perceive that benefits of e-commerce will outweigh the costs and that the Government and the private sector provide incentives to help small businesses to

engage in e-commerce with minimal investment and costs. Businesses must make managers aware of the potentials of the Internet in order to obtain the benefits of e-commerce (Kaynak *et al.*, 2005:638). According to Moodley (2002:39), lack of high quality inter-firm information and data exchange are responsible for supply chain inefficiencies. Moodley (2002:39) suggests that the DTI has a role to play in supporting and encouraging businesses to adopt the Internet for managing information flows and to promote inter-firm networking.

### 2.5.2 Large company supply chain expectations

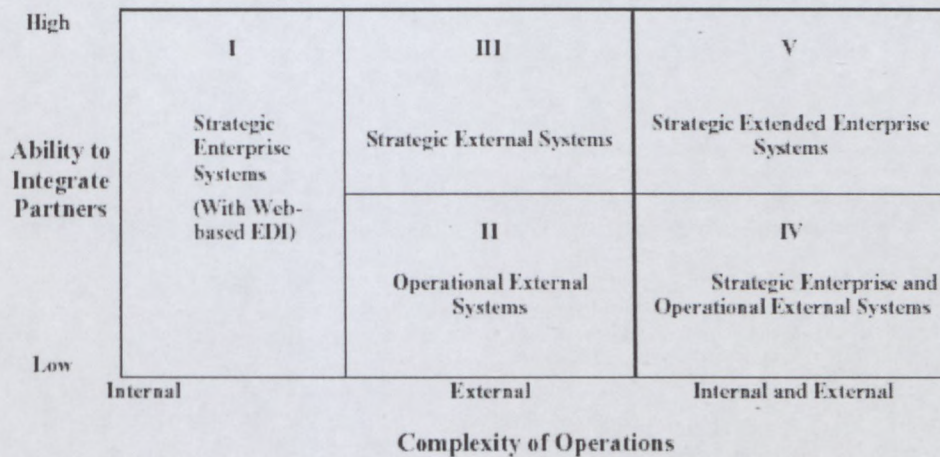
According to Macpherson and Wilson (2003:174), large companies focus on their supply chains as a source of competitive advantage. Small suppliers in the supply chain form part of the supplier organisations that provide this source of competitive advantage to large companies. When selecting suppliers to conduct business with, organisations consider certain competences that the suppliers have to have (Macpherson & Wilson, 2003:170). The competences are shown in Table 3. Small suppliers that show that they have the necessary competences have a competitive edge. However, according to Macpherson and Wilson (2003:174), small suppliers struggle to develop these competences.

**Table 3.** Supplier competence requirements (Macpherson & Wilson, 2003:174)

<b>Business process competences</b>	
Benchmarking	Competitive business processes delivering cost, quality and performance
Continuous improvement	Development orientation required across all business processes and staff
Flexibility	Adaptive products, processes, organisation and staff
Innovative approach	Change orientation to processes and products
<b>Interactive competences</b>	
Customer focus	Service orientation. Proactive in understanding and responding to customer requirements.
Communication	Formal and ad hoc interactions. Quality information systems and information sharing. Collaborative approach, possibly multi-level and multi-functional.
<b>Production competences</b>	
Performance	Delivery accuracy and cost are used as direct comparisons with competitors. Production optimisation should achieve this.
Quality	The product must meet the appropriate national or internal quality standards. A quality culture should be evident in the supplier.

### 2.5.3 Supply chain implementation factors

Pant *et al.* (2003:212) developed a framework for creating and implementing e-supply chain systems (supply chains that are Web-based).



**Figure 4.** A framework for supply chain implementation (Pant *et al.*, 2003:213)

From Figure 4 it is evident that the implementation of supply chains depends on the complexity of the organisation's operations and the organisation's ability to integrate business partners into their supply chain.

According to Pant *et al.* (2003:218), organisations should first assess the level of integration needed in their e-supply chains and then consider the following factors before embracing e-supply chains:

- If integration to business partners is not high, the organisation does not have to invest in systems that enable collaborative planning, forecasting, and replenishment, and integrated CRM.
- If an organisation does not have complex internal systems and does not need a high level of internal integration, it does not need an elaborate strategic enterprise system.
- Organisations have to assess their IT infrastructure to determine if they need an off-the-shelf software package to enable their e-supply chain system or if they need to build the required functionality on top of their existing information systems.

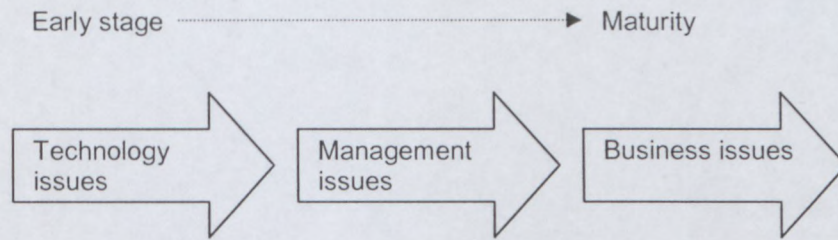
- Organisations have to be aware of the substantial redesign of business processes that integrated e-supply chain systems require. Processes have to be redesigned jointly with business partners. Change management is needed as current practices and organisational structures may be affected.

In addition to the listed factors, Lankford (2004:303) proposes that the following factors have to be considered when using the Internet to integrate supply chains:

- Increased interdependence: an integrated supply chain increases reliance and information sharing between members of the supply chain, which results in an increased dependence of companies on each other.
- Cost of implementation: To integrate the supply chain using the Internet is expensive. Expenses include hardware costs, software costs, reorganisation costs and training costs.
- Keeping up with the change in expectations: customer expectations increase, changing the manufacturing strategy from a *push* to a *pull* strategy.

#### **2.5.4 Planning an e-commerce implementation**

Gibson and Edwards (2004:60) state that "... the most significant enabler of improved supply chain management efficiency is business-to-business (B2B) e-commerce". According to Chan and Swatman (2000:80), three main issues have to be considered when implementing e-commerce: technology, management and business. In the early stages of implementing e-commerce, technology issues dominate. As the implementation becomes more mature, the management and business issues become more important (Chan & Swatman, 2000:80). Figure 5 shows the "Implementation issues paradigm shift".



**Figure 5.** Implementation issues paradigm shift (Chan & Swatman, 2000:80)

Molla and Licker (2005:887) found that human, business and technological resources (organisational factors) and awareness are more influential than environmental factors in the initial adoption of e-commerce in South Africa. Furthermore, as organisations adopt e-commerce practices, the advantages from human, business and technological resources become less important. Environmental factors, together with commitment and the governance model that organisations install, then become more important because they affect extending e-commerce adoption (Molla & Licker, 2005:887).

Kao and Decou (2003:238) assert that e-commerce ventures fail because of a lack of planning. They define an e-commerce venture as a move towards an e-commerce mode, including any form or degree of e-commerce adoption. Kao and Decou (2003:238) studied various e-commerce models and developed a model to assist businesses in planning e-commerce ventures. The model consists of eight dimensions that include strategy, finance, legality, logistics, marketing, operations, security and technology. Figure 6 depicts the e-commerce planning model.



**Figure 6.** The e-commerce planning model (Kao & Decou, 2003:247)

An explanation of each of the e-commerce planning dimensions as identified by Kao and Decou (2003:242) follows:

- **Strategy:** Companies need to understand their own strategic direction before embarking on a new e-commerce venture. It is important that the e-commerce venture adopted is compatible with the existing strategies and complement them. The company's leadership have to be involved with the e-commerce venture and have to actively promote the suggested e-commerce venture (Kao & Decou, 2003:242). Chan and Swatman (2000:79) confirm that management 'buy-in' into e-commerce implementation is crucial. Resistance to changing traditional ways of doing business might be an issue. Training and awareness programs play an important role in addressing this issue and lead to greater acceptance of the implementation (Chan & Swatman, 2000:79). Hughes *et al.* (2003:283) found that the presence of a formal e-commerce strategy has a positive impact on the success of a small business's web site.
- **Finance:** Companies have to be able to arrange sufficient funding to support the venture and to provide a satisfactory return on investment (Kao & Decou, 2003:242). A company needs a budget for Web related hardware, software and to support internal staff (Hong & Zhu, 2006:216).
- **Legality:** Companies need to be aware of potential legal problems, different legislation for different jurisdictions and legal implications to electronic requests for personal information (Kao & Decou, 2003:242).
- **Logistics:** It is important to consider the efficient and effective flow of digital communications and products across telecommunications networks. The company has to consider its ability to deliver its product to potential customers. The company has to confirm that its market has reliable access to the Internet (Kao & Decou, 2003:242). Browning and Anderson (2004:3) confirm this by stating that small and midsize businesses have to consider network and server implications in order to avoid the risk of poor performance and unexpected costs.

- **Marketing:** Companies should consider marketing issues in the e-commerce environment. The parties to the e-commerce transactions have to trust each other. The company should consider the language implication of the marketing venture and should ensure that the customers feel comfortable with the technology (Kao & Decou, 2003:242). Chan and Swatman (2000:80) also indicate that trading partner relationships have to be considered by supporting customers when implementing e-commerce technologies.
- **Operations:** The company has to ensure that sufficient skilled staff are available to operate the e-commerce venture and that the company has the ability to accept payment for transactions (Kao & Decou, 2003:242). Schlenker and Crocker (2003:10) indicate that e-business has to produce business value. Employees therefore have to be trained for e-business in order to assist them to coordinate information flows to improve business processes, to apply Internet technologies to address business challenges and to enrich information to meet clients' needs and objectives.
- **Security:** The company has to protect both the business and its customers from security threats. "Decisions must be made as to the level of risk of security breaches that the organization is willing to assume" (Kao & Decou, 2003:242). Love and Irani (2004:238) confirm this by stating that organisations linked to the Internet are prone to "cyber-attacks" and therefore security is important.
- **Technology:** The company has to consider the technological capabilities of the organisation and technological capabilities of the consumer. It therefore needs to consider the existing hardware and software of both the company and the customer (Kao & Decou, 2003:242). Chan and Swatman (2000:79) include technology complexity and compatibility when integrating companies: the new systems required for electronic trading might not be compatible with the existing systems. Interfaces and file formats have to be changed, which is costly (Chan & Swatman, 2000:79). According to Hong and Zhu (2006:216), companies that have a good number of Web-compatible technologies are likely to be early adopters of e-commerce. The variety of Web functionalities is indicative of a company's level of technological capabilities as well as an indicator of the importance they place on e-commerce.

According to Power (2005:99), e-commerce places new demands on the design of business processes with the danger that legacy processes could potentially be an obstacle for the implementation of e-commerce. Chapman *et al.* (2000:358) confirm that small businesses should understand their business processes by mapping and analysing the processes. This will enable them to understand the opportunities available through using ICTs. Technology is however currently forcing organisations to embark on e-commerce before they have built a logical model of the business processes they need (Power, 2005:99).

According to Wainwright *et al.* (2005:40), to be competitive, organisations need to improve goods and services continuously. They can do this by using benchmarking to identify what must be improved within the organisation. Smaller organisations however do not have large budgets or the time to invest in benchmarking. Mehrtens *et al.* (2001:168) indicate that a company is ready for Internet adoption when non-IT managers are knowledgeable about the Internet and when the company has acquired the appropriate hardware and software. It is more important to have an Internet knowledgeable manager than to have an IT expert or an IT department. It is thus necessary to convince managers of the benefits of the Internet before embracing it.

However, Simpson and Docherty (2004:325) indicate that academic work has little relevance for small business owner-managers. They state that "Books may prove useful for stimulating interest in the technology and in answering some of the more basic questions but the constraints on the owner-managers' time would suggest that many of these books will not be read". Fillis, Johansson and Wagner (2004:351) agree by indicating that small enterprises do not find traditional time-consuming, theoretical, and lecture-oriented courses useful. Alternative educational opportunities are needed. Chapman *et al.* (2000:359) state that small businesses will be enabled to exploit Internet ICTs in a structured manner by preloading a PC with commercially available software, staff training and a business process analysis application. O'Toole (2003:118) however found that technology sophistication needed for integrated e-relationships is much higher than the purchase of front-end applications. Training of owner/managers is critical in order to exploit e-relationships (O'Toole, 2003:118).

An alternative view proposed by Sparks and Wagner (2003:202) reveals that retail exchanges can be considered as a trading platform between suppliers and

retailers. A retail exchange is a neutral intermediary that allows retailers direct access to distributors and suppliers to conduct either one-to-one or multiple transactions. Suppliers gain access to more buyers, and buyers can contact many suppliers. The Internet makes retail exchanges open to anyone who chooses to use them. Levinson (2006:70) confirms this by stating that “mid-market” companies can outsource their B2B trading platforms to vendors that operate trading hubs. These vendors automate the transactions between buyers and suppliers, taking the complexity away from the customer company. Sparks and Wagner (2003:202) propose however that retail exchanges are not that successful because they require data to be correct and consistent. Businesses experience internal problems with poor or non-standardised information, resulting in companies sticking to conventional buying methods or the building of proprietary networks for e-business (Sparks & Wagner, 2003:202).

## **2.6 CONCLUSION**

Internet-based ICTs present opportunities to companies and encourage them to adapt their operations to take advantage of this. The size of a company plays a role in the stage of its Internet adoption. The more sales a company generates, the more advanced is the adoption stage. The main reasons why small businesses do not adopt e-commerce are that there is no pressure from business partners, behavioural and cultural barriers, insufficient managerial time, lack of funding, lack of technological competence, differing standards and negative perceptions.

Supply chains based on B2B e-commerce utilise the Internet and EDI to facilitate integration and management of core business processes between key supply chain partners. Croom (2005:61) found that the main constraint to supply chain integration was lack of supplier readiness and capability, especially small suppliers who do not have the necessary technology infrastructure.

The Internet is used by order processing applications in supply chains to support order placement and customer order status requests. Using the Internet for order placement reduces the costs of order processing for customers. Pant *et al.* (2003:212) developed a framework of factors to be considered before an organisation becomes part of an e-supply chain. To do this, the organisation first need to assess the level of integration needed in the e-supply chain. It is further

important that the organisations consider technology, management and business issues when implementing e-commerce. To ensure a successful e-commerce venture, planning is important. Kao and Decou (2003:238) developed a model to assist businesses in planning an e-commerce venture. The model has eight dimensions to be considered in order to ensure a successful e-commerce implementation. The core of the model is strategy. It is important that the e-commerce venture adopted is compatible with the existing company strategies and that the venture complements them.

Further factors to be considered when implementing an e-commerce venture are business processes, benchmarking, knowledge about the Internet and training. Retail exchanges are an alternative technical solution for businesses, allowing mid-market companies to outsource their B2B trading platforms and thus removing the complexity from small business.

In Chapter 3, the research design is outlined. A pilot case study is discussed elaborating on the key findings. The sampling method and data gathering process are explained. The chapter provides the methodology for conducting the case study research.

### **3. CHAPTER 3: RESEARCH DESIGN**

In this chapter the research process is described, the approach to data collection explained, the target population defined and the research design discussed. The research is designed to assist answering the research question “What are the criteria for SMMEs supplying retailers to successfully adopt order processing for B2B e-commerce?” The chapter concludes with a list of themes that will be discussed with the research subjects to enable the data gathering process.

#### **3.1 INTRODUCTION**

According to Taylor *et al.* (2004:257), case studies based on personal contact are particularly appropriate for investigating IT practice. It is a holistic approach and helps overcome the problems of terminology and verification, which complicates the use of questionnaires. The case study is however time-consuming for the researcher and disruptive for the organisation studied (Taylor *et al.*, 2004:257). The case study research method assisted the author to understand the process of how SMMEs receive and process retailer orders. As this research focused on the way suppliers receive and process orders from retailers, investigation of the complexities in the ordering process was required. The role of information technology and specifically the Internet in this process was investigated, and looked at the adoption of Internet technology in the internal processes of the SMMEs. The research included manufacturers/suppliers in the SMME enterprises sector supplying the retailer RetailerX.

Before the data collection process started, a pilot case study was conducted. The reason for conducting a pilot case study was to assist the author to understand how SMMEs operate, to assist in formulating questions and to identify themes.

#### **3.2 PILOT CASE STUDY**

The aim of a pilot case study is to test and refine the interview questions by testing them in a real life scenario. According to Yin (2003b:79), a pilot case study helps to refine data collection plans with respect to the data content and

the procedures to be followed. Furthermore, Yin (2003b:79) states that the main criteria for selecting a pilot case study can be convenience, access and geographic proximity. In the light of this, the author selected Bakery Supplier One<sup>14</sup> for the pilot case study because this supplier was the first business willing to participate and was geographically easily accessible, while the other suppliers were located further off in industrial areas.

### **3.2.1 Planning and conducting the pilot case study**

The author obtained a list of 6,382 companies that are suppliers to RetailerX. From this list, the author selected suppliers identified trading as CCs and that are located in the Western Cape of South Africa. This resulted in a list of 104 possible small suppliers. The author contacted the suppliers by telephone to ascertain whether they were willing to participate in the research. This process was followed until a supplier, Bakery Supplier One, was found, willing to participate in the research. The author approached the owner of this company, using e-mail, to introduce himself, to explain what the research was about and to confirm that the company meets the criteria for being defined as an SMME. When conducting the interview with the owner of Bakery Supplier One, the author enquired about the use of information technology, the supplier's interpretation of e-business and the usage of the Internet in the business. The author also observed the business operations while conducting a tour of the manufacturing plant. During the interview, the author documented the responses to the questions and summarised and analysed the findings afterwards. The author also documented the lessons learnt. As stated by Yin (2003b:80), the pilot report has to be explicit about the lessons learned for both research design and field procedures.

### **3.2.2 Pilot Case Study findings**

The supplier selected for the pilot case study has a staff compliment of 24 people and conducts business with RetailerX, RetailerZ, RetailerY (RetailerZ and RetailerY are grocery retailers, similar to RetailerX) and other smaller companies

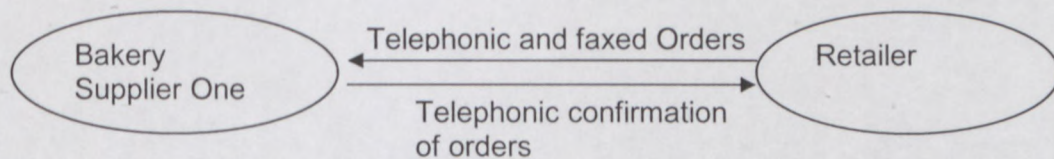
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<sup>14</sup> Pseudo names were used for the case study subjects. The author agreed not to disclose their identities.

based in the Western Cape. Bakery Supplier One has one computer for label printing and day to day administration. Internet access is established using a dialup Telkom<sup>15</sup> line and they pay per call because they do not have a bundled deal.

No electronic order processing is in place. RetailerX informed Bakery Supplier One as far back as 2004 that they intended to move them onto electronic order processing, but that they were first focussing on the larger suppliers. Bakery Supplier One is waiting for RetailerX to initiate the process. Bakery Supplier One is of the opinion that electronic orders will provide proof of the quantities ordered by the various retailer stores. There are occasional disputes about order quantities when orders are placed telephonically. They view electronic orders as time saving and more accurate than verbal orders.

Bakery Supplier One pays salaries of senior staff electronically using Internet banking. They are starting to put pressure on the rest of the staff to get bank accounts in order to enable electronic salary payments. Bakery Supplier One also uses the Internet occasionally to search for recipes.



**Figure 7.** Bakery Supplier One's ordering process

Figure 7 illustrates the process that retailers follow to place orders with Bakery Supplier One. Bakery Supplier One calls the stores by telephone the day before delivery is made to confirm the order quantities. They start calling the retailers from 08h30. Bakery Supplier One requires all orders to be finalised by 11h00 to allow enough time to produce the goods. They deliver twice per week to a store, starting at 06h00. Bakery Supplier One makes 25 to 30 telephone calls per day

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<sup>15</sup> Telkom is an integrated communication company and the only fixed-line operator in South Africa.

and repeat calls are made to the same store if recipients are unavailable. This results in a high monthly telephone account.

The book keeper contracted by Bakery Supplier One works off-site and uses e-mail to send statements for payment to the retailers from her PC. The book keeper monitors the acknowledgement of statement receipts. Bakery Supplier One communicates with the personnel responsible for buying of RetailerX using e-mail and telephone, but with the rest of the retailers only by telephone. All the retailers make electronic payments to Bakery Supplier One. They received an ultimatum from RetailerX to accept electronic payments (as opposed to receiving cheques) or to risk losing their business. RetailerX publishes claims<sup>16</sup> on their Intranet to which Bakery Supplier One has access.

### 3.2.3 Key problem areas identified

The pilot case study identified problem areas in the ordering process between the retailers and Bakery Supplier One. These problem areas included inefficiencies in the ordering process, disputes on order quantities, lack of funding for technology, lack of technical expertise and retailer demands. Similar problems were found in case study research conducted by Zheng *et al.* (2004:34). This research was conducted on 19 SMEs in four supply chains in the United Kingdom and identified problems with the implementation of e-business by these companies. In none of the cases did the SMEs have an e-business strategy or a plan for future e-adoption due to a lack of customer pressure. The owner-managers of the SMEs were driven by operational rather than strategic issues and therefore did not consider the potential strategic benefits of e-commerce. Zheng *et al.* (2004:34) confirm that the preferred mechanism for purchase orders continues to be by telephone, sometimes confirmed by or supplemented by a facsimile. The research by Zheng *et al.* (2004:34) found limited use of electronic transactions between large customers and small suppliers.

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<sup>16</sup> In RetailerX's case, they will submit a claim against a supplier when the quantities received are less than the quantities invoiced or when the invoiced amount is more than the amount on the purchase order.

### 3.2.3.1 Inefficiencies in the ordering process

The pilot case study conducted on Bakery Supplier One revealed that receiving orders using the telephone is costly and time consuming. The owner however did not have plans to expand the business's use of the Internet, indicating their lack of an e-business strategy, similar to the findings of Zheng *et al.* (2004:34). According to the owner, RetailerX will only introduce electronic orders to them at a later date. There is also no pressure regarding this from the other retailers. O'Toole (2003:118) indicates that most companies still process orders manually and do not grasp the financial reasons for integration. Manual orders are taken, completed and then transferred to a computerised financial system by different people.

### 3.2.3.2 Order quantity disputes

There are occasional disputes on the quantities that were ordered by the stores when the orders are placed telephonically. Bakery Supplier One is of the opinion that electronic orders would serve as proof of products and quantities ordered and that this would reduce telephone costs.

### 3.2.3.3 Lack of funding for technology

Bakery Supplier One indicated that they do not have a web site because money is only spent on revenue generating initiatives, although they did confirm the potential marketing benefits of having a web site. According to Schlenker and Crocker (2003:16), suppliers require up-front capital investments for purchasing hardware, software and service, which make small businesses reluctant to embrace Internet technology to the full.

### 3.2.3.4 Lack of technical expertise

The pilot study revealed that the technical capabilities of small suppliers are limited. The owner asserts that one of his supervisors has enough skills to initiate electronic order processing, because he has some computer hardware skills.

According to O'Toole (2003:118), a lack of technology sophistication in SMEs is a significant barrier to developing integrated e-relationships.

#### 3.2.3.5 Retailer demands

The demand from RetailerX to accept electronic payment or risk losing the business, confirmed that small suppliers are subject to the demands of the retailers. As an example, Koh and Maguire (2004:340) indicate that business customers of SMEs exert pressure on them to implement ERP systems in order to enable order processing to be computerised and performance to be monitored real-time.

#### 3.2.4 Conclusion of the Pilot Case study

The pilot case study revealed an understanding of how small businesses operate and their physical limitations. The study confirmed that small suppliers have limited exposure to information technology and specifically, to the Internet and B2B e-commerce. After the interview was documented and analysed, the author identified more questions that could have been asked to make the study more complete. This was taken into consideration when interviews were conducted in later case studies.

### 3.3 RESEARCH STRATEGY

According to Saunders *et al.* (1997:74), the research strategy is a plan of "... how you will go about answering the research question(s) you have set". The research strategy chosen for this research is the case study. Case studies enable researchers to test theory against a real live situation.

The research is a cross-sectional study. Saunders *et al.* (1997:77) define a cross-sectional study as "... the study of a particular phenomenon (or phenomena) at a particular time". The case studies are based on interviews conducted over a short period of time. The research is an explanatory study as it investigates the relationship between the restrictions on SMMEs to adopt order processing for B2B e-commerce and the process they therefore follow to receive and process

orders. According to Saunders *et al.* (1997:79), explanatory studies establish causal relationships between variables.

The research strategy has to ensure that the findings are reliable and valid. The research is reliable if similar observations will be made by different researchers on different occasions (Saunders *et al.*, 1997:81). The research is valid if "... the findings are really about what they appear to be about" (Saunders *et al.*, 1997:82). The research conducted addressed reliability and validity. This was done by studying nine different small suppliers. The suppliers covered the spectrum of SMMEs, including one micro supplier, small enterprises and medium enterprises. The interviews were conducted with two employees of each business, interviewing them on different occasions.

### **3.4 RESEARCH DESIGN**

A phenomenological research approach was followed to allow the author to understand what is happening and why it is happening (Saunders *et al.*, 1997:72). According to Saunders *et al.* (1997:72), this approach is more appropriate for a small sample of subjects using qualitative data. This approach allows the author to answer the research question and the investigative questions. According to Tenopir (2003:16), qualitative analysis is more useful for measuring what people want or say they want and for answering why they behave in a certain way. Case study research was conducted by means of interviews. According to Yin (2003b:89), "... interviews also are essential sources of case study information".

The research followed a case study research strategy. As stated by Remenyi *et al.* (2002:3), "... the term case study may be used as a research objective in its own right. In this instance, the researcher is interested in the case per se". As the author wants to understand how the SMME conducts order processing, why it is done in a specific way and what problems are experienced during this process, case study research is the appropriate strategy. According to Yin (2003b:67), a case study protocol guides the investigator who wishes to carry out data collection from a single-case study. A case study protocol contains an overview of the case study project, field procedures around access to the case study sites, case study questions and a guide for the case study report including the format

for the data (Yin, 2003b:67). The author defined the case study themes, identified the names of the sites to be visited and prepared for the visit by means of a telephonic introduction as well as using e-mail to confirm what the research is about.

From the pilot case study the author learned that it is necessary to interview the owner/manager as well as the operational staff in order to completely understand how the ordering process is executed. The author interviewed two homogenous samples of SMME personnel in the selected companies. According to Barnes (2001:1081), the researcher can obtain an overall view of the operations strategy formation process by assessing a wide range of perspectives within the organisation. As stated by Barnes (2001:1081), "... it seems necessary to include those from a senior level who can offer a strategic view of the company's intentions and those who can report on realised operations strategy by describing what actions have been taken and the motivations behind those actions". The interviews conducted by the author generally lasted for one hour and were semi-structured. The author first interviewed the owner or manager of the business and in a subsequent interview, met with the clerk responsible for the day-to-day administration around the ordering process. The interview with the clerk was tape recorded and documented. According to Barnes (2001:1082), when conducting interviews alone, it is better to tape record the interview rather than to try to take detailed notes. Transcribing the tape recording helps to recall the interview details for later data analysis.

Triangulation was achieved by conducting more than one interview within the same business. In most of the cases, the owner or manager led the author on a conducted tour of the manufacturing plant, explaining the manufacturing process. The clerk showed the author how the system works and explained the flow of information between the retailer and the SMME supplier. The author also collected data by means of observation. The Plant supplier was interviewed only once being a micro supplier where the owner is responsible for the whole ordering and retailer interaction process. In addition, the author used four Internet search engines to provide more comprehensive information on the nine suppliers. The four search engines used were Google, Ananzi, Yahoo and Aardvark.

The interview schedule used contained themes allowing a mixture of open ended and closed questions, providing sufficient flexibility for further discussion and data

gathering. The questions posed to the owner/manager focussed on the use of Information Technology, the use of the Internet, details on order processing, electronic invoicing and payment. The questions also included some demographic questions, such as type of industry, size of company (number of employees) and job title of the interviewee. The same process was followed in all the case studies, refining the questions as the research progressed. During the write-up of the interviews, areas were identified that needed clarification. These areas were covered in follow-up interviews.

After the third business had been interviewed, the author included a question to ask specifically whether they prefer electronic orders over telephone and facsimiled orders. This gave businesses an opportunity to expand on the problems they experience with their ordering process. From the fourth interview, the author asked more questions about the role of the sales agents in the ordering process.

Explanation building was identified as appropriate for analysing the case study evidence. During the analysis phase, the author identified specific areas where more information was needed from four of the suppliers. The author interviewed those suppliers by telephone to gather information on these additional incomplete areas.

### **3.5 TARGET RESEARCH GROUP**

This research investigates SMME suppliers that supply RetailerX directly and that are located in the Western Cape. A total of nine case studies were conducted. During the period of conducting the case studies (February 2005 to March 2006), it became evident that all the businesses were experiencing similar constraints implementing online order processing. In eight of the nine case studies, the suppliers supply not only RetailerX, but other retailers as well. The Plant supplier only supplies RetailerX. Some of the SMMEs also sell directly to the public. Table 4 shows the profiles of the nine case study suppliers.

**Table 4.** Case study suppliers.

Supplier	Number of employees	Delivery areas
Smoked Products Supplier	16	South Africa
Manufacturer Representative Supplier	125	Western Cape.
Bakery Supplier One	24	Western Cape.
Abrasives Supplier	50	South Africa and Africa
Gifts Supplier	20	South Africa
Bakery Supplier Two	20	Western Cape and Eastern Cape
Poultry Supplier	70	Western Cape
Plants Supplier	4	Western Cape
Stainless Steel Accessories Supplier	70	Western Cape

### 3.6 DATA COLLECTION

Data was collected by means of interviews. The interviews conducted were "focused interviews" (Yin, 2003b:89), interviewing the respondents for a short period of time following a set of questions to gather an understanding of the SMME's ordering process. The interviews were open ended and conducted in a conversational manner. The interviews were recorded for later analysis.

### 3.7 SAMPLING METHOD

Non-probability sampling is generally associated with case study research, because the probability of each case being selected from the total population is not known (Saunders *et al.*, 1997:141). The technique for selecting the cases is based on subjective judgement. The author used purposive non-probability sampling to identify the cases that were used. According to Saunders *et al.* (1997:145), purposive or judgemental sampling allows the researcher to select cases that will best answer the research questions and objectives.

The author used the original supplier list that was received from RetailerX and from which the pilot case study supplier was selected. The author called each supplier trading as a CC by telephone to determine whether they were willing to participate in the research. This process was followed until five more suppliers were found willing to participate in the research. An e-mail was sent to each one of these suppliers to explain the objectives of the research and to request an

interview. Using e-mail, the author required confirmation that the supplier was an SMME. A business was classified as SMME if the number of employees complied with the “company size” as specified by the National Small Business Act (South Africa, 2003). Only one of the businesses interviewed was willing to share information on its turnover and therefore this criterion was not considered as a factor in determining the company size.

Six suppliers, which include the pilot case study supplier, were initially identified as participants in the research and were interviewed. The author also requested names from the buyer responsible for non-food products at RetailerX and the buyer responsible for foods. The non-food buyer provided the name of one other supplier and the food buyer provided names of two more suppliers. Thus the sample consisted of nine suppliers. Yin (2003b:51) indicates that the number of cases is “... a reflection of the number of case replications – both literal and theoretical – that you need or would like to have in your study”. Because the products of the different suppliers are very different and the business sizes are also different, nine case studies were considered as being appropriate. The more replication, the more accurate is the result, creating a theoretical framework. As Yin (2003b:47) states, “... the framework needs to state the conditions under which a particular phenomenon is likely to be found (a literal replication) as well as the conditions when it is not likely to be found (a theoretical replication)”.

### **3.8 INTERVIEW QUESTIONS**

According to Yin (2003b:89), interviews are essential sources of case study information. The interviews are guided conversations rather than structured queries. It is important to ask the questions in an unbiased manner that also serves the needs of the inquiry (Yin, 2003b:90). Barnes (2001:1083) indicates that interviews provide high quality research data, not requiring the researcher to spend extended periods of time on site, although it is still time consuming in terms of data collection and data analysis.

Semi-structured interviews were conducted by following a list of themes to be discussed. As indicated by Saunders *et al.* (1997:212), “... in semi-structured interviews the researcher will have a list of themes and questions to be covered, although these may vary from interview to interview”. The interviews started off

by explaining who the author was and what the research was about. The author assured confidentiality and explained the way in which the interview would be conducted and the themes to be covered. The author first enquired about the interviewee's role in the business and asked general questions about how the business operates. The questions enquired about the retailers that the business trades with and the extent to which it uses information technology.

The questions addressing the business operations and specifically the ordering process included the following:

- How are orders received from the different retailers?
- Are there any demands from retailers to conduct business with the supplier in specific ways and if so, what difficulties is the business experiencing in addressing these demands?
- How can the Internet add value/be of benefit to the business and are there any future plans for further adoption of Internet technology?
- What are the technical abilities within the business?

The questions asked were verified for completeness against questions developed by Kim and Umanath (2005:825). Kim and Umanath (2005:825) developed a four-factor instrument containing 18 questions to assist retailers in measuring electronic information transfer between them and their suppliers in the supply chain. The four factors are Decision and Operation Integration (DOI), Mutual Investment in Relationship-Specific Assets (MIRSA), Information Sharing (IS) and Monitoring and Control (MAC). The instrument is shown in Appendix A.

### **3.9 CONCLUSION**

This chapter provided an overview of the research design process and of the research scope and objectives. The intention of the research is to understand the ordering process, the retailer demands on the implementation of this process and the inhibitors preventing the supplier from adhering to the retailer's demands. The research is limited to SMME manufacturers and suppliers located in the Western Cape.

A pilot study was first conducted to test and refine the interview questions. The key problem areas identified are the costs associated with the ordering process and time wastage, disputes on order quantities, availability of technology funding, availability of technical expertise and retailer demands.

The target sample and sampling method is explained. The research design and specifically the case study research are described. The interviews conducted were "focused interviews". Barnes (2001:1081) indicates that senior level staff as well as operational staff have to be interviewed to obtain a complete understanding of the operations strategy formation process. The research strategy includes case study research, which is cross-sectional and explanatory in nature. The chapter concludes by explaining the interview process and the selection of interview questions.

The next chapter provides feedback on the case study findings. It reports in detail what process is followed in each of the case study businesses. It explains the operational procedure that each of the businesses follow to receive and process orders.

## 4. CHAPTER 4: CASE STUDY RESULTS

In this chapter the results of the case studies are presented. It also covers the interviews conducted in each business and the information gathered is structured, based on the questions that were used. As stated by Saunders *et al.* (1997:377), "The purpose of your project report is to communicate the answer to your research question(s) to your audience in as clear a manner as possible". In this chapter, the case study evidence is reported under themes and gives answers to the investigative questions. The chapter concludes by providing a summary of the case study findings.

### 4.1 INTRODUCTION

Each interview was documented during the interview and summarised afterwards. Where possible, the interviews were tape recorded. The tape recorded interviews were transcribed afterwards and summarised under appropriate themes. The transcripts of the tape recordings were used to create a case study report for each case. The interview themes and questions were similar to the themes and questions used in the pilot case study. The key problem areas identified in the pilot case study were used as a guide where applicable to these suppliers.

The same interview process was followed with all nine case studies. The open ended interview questions that were used were based on findings from the literature study which were tested in the pilot case study. The key problem areas identified by the pilot case study, as discussed in Chapter 3, were:

- Inefficiencies in the ordering process.
- Order quantity disputes.
- Lack of funding for technology.
- Lack of technical expertise.
- Retailer demands.

According to the definition of the National Small Business Act (South Africa, 2003), three of the suppliers are medium businesses, two are small, three are

very small and one supplier is a micro business. The first interview with each business was conducted with either the owner of the business or with a senior manager. Furthermore, the first interview served to obtain an overview of the organisation and its procedures and included questions to find out basics, such as the number of employees, organisational processes, customers, competitors, usage of technology (specifically the Internet) and the retailer ordering process. The second interview was conducted with an employee responsible for receiving and processing the orders from the retailers. This person was encouraged to explain the business processes. This was usually followed by a demonstration of their computer system in order to understand how technology is used to assist the ordering process.

According to Saunders *et al.* (1997:80), multiple sources of evidence enable triangulation. Three of the companies advertised themselves on the web sites of search engines or the web sites of local radio stations. One advertised on a bulletin board. Web sites of two of the businesses were found, but one was only a home page under construction. The smoked chicken supplier was referenced in a couple of articles because it was chosen in 2005 as the Cape Argus Entrepreneur of the Year. Thus the information for analysis was gathered mainly from the interviews that were conducted with the companies.

The interviews aimed to answer the three investigative questions. The first investigative question **“To what extent do retailers demand SMME suppliers to conduct business in a prescribed manner”** is addressed by the findings reported under the following headings:

- Technical capabilities.
- Retailer demands.

The second investigative question **“What process does the SMME supplier follow to receive orders from the retailer”** is discussed under the following headings:

- Receiving orders.
- Processing orders.

The third investigative question “**What are the determinants for e-commerce adoption by the SMME**”, is addressed under the following headings:

- The role of information technology.
- Business value of the Internet.

Paragraphs 4.2 to 4.10 are detailed reports on the findings of each case study. The reporting is done under the headings outlined above. Each section reports on the case study research that was conducted for each supplier, addressing the investigative questions.

## **4.2 SMOKED PRODUCTS SUPPLIER**

### **4.2.1 Company background**

Smoked Products Supplier is a small business consisting of sixteen employees and produces smoked chicken products. Smoked Products Supplier won the *Cape Argus* 2005 Entrepreneur of the Year award. Their customers include local residents as well as big retailers such as RetailerX, RetailerY, RetailerZ and a catering company. They also send their products to butcheries and other stores in Johannesburg, Durban and Port Elizabeth.

### **4.2.2 Technical capabilities**

Smoked Products Supplier does not have any technical skills in the business. They make use of a technology vendor to support their software and hardware installations. The Internet setup is also maintained by this company.

#### **4.2.3 Retailer demands**

Orders are not received using e-mail, although it would be preferable, because e-mail would serve as a confirmation of orders received. There is no pressure from the retailers to conduct business in a specific way.

#### **4.2.4 Receiving orders**

Smoked Products Supplier employs one sales representative responsible for both the RetailerX and RetailerZ orders. They do not have a sales representative for RetailerY because RetailerY sends a consolidated order on behalf of all their stores to Smoked Products Supplier.

The sales representative sends the store's order by an SMS message or calls Smoked Products Supplier by telephone to place the order. If it is a RetailerX order, the store supplies an order number. If it is a RetailerZ order, the store provides the name of the person placing the order. The Smoked Products Supplier order clerk writes the order into a book. When the sales representative visits a store and their order clerk is not available to place an order, he leaves without an order and goes to the next store. The first store will then call Smoked Products Supplier to place the order or Smoked Products Supplier will call the store. The sales representative does not visit stores that are located outside the borders of the Western Cape. Such stores have to place their orders by telephone. If they do not call, Smoked Products Supplier usually calls them.

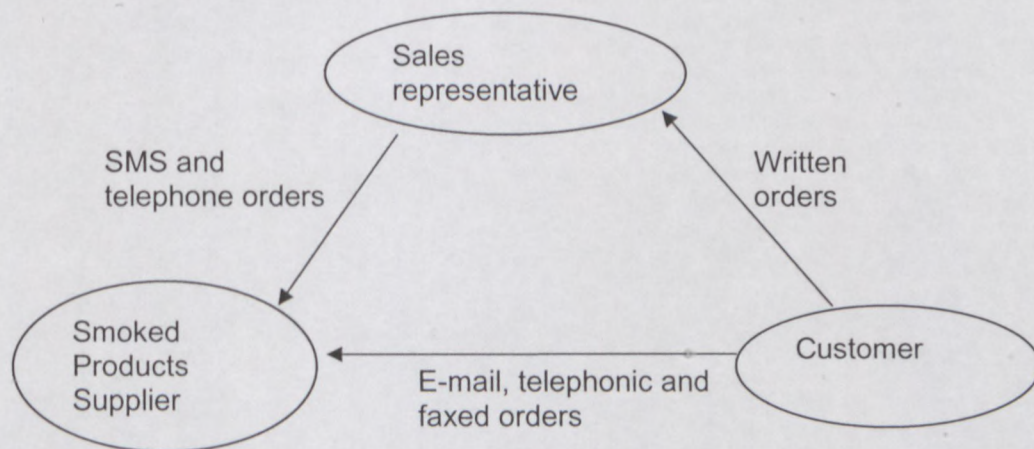
Smoked Products Supplier also supplies two catering companies. One company sends their orders by facsimile and the other one places their orders by telephone, supplying the name of the person placing the order as their order reference. Other independent stores place orders by telephone or Smoked Products Supplier calls the stores to obtain the orders.

RetailerY e-mails a schedule to Smoked Products Supplier showing the week days on which the RetailerY stores need their merchandise delivered. Smoked Products Supplier has to deliver the day before the date required by the store. Deliveries are made to the RetailerY Distribution Centre (DC) and there is thus

one account for RetailerY. Smoked Products Supplier calls the RetailerY stores to obtain their order quantities. There are about a 100 RetailerY stores. They call each store two days prior to the required date to confirm the quantities and deliver the following day. Some stores call to place the orders while others send the orders by facsimile.

A clerk at Smoked Products Supplier creates a Microsoft Excel spreadsheet that indicates the requested quantities from each store and e-mails this to the RetailerY order clerk as confirmation. The clerk needs this before 15h00 in the afternoon. The stores sometimes realise that they need stock after Smoked Products Supplier has spoken to them and then they call after 15h00 requesting the merchandise. This results in Smoked Products Supplier having to send the order confirmation list to the RetailerY order clerk as many as three times per day. In response to this, RetailerY e-mails the order number and a summary of the order. Smoked Products Supplier manually compares this summarised order from RetailerY to the sheet that they originally created containing the quantities from the stores.

Figure 8 depicts the ordering process for Smoked Products Supplier.



**Figure 8.** Smoked Products Supplier's ordering process

#### 4.2.5 Processing orders

There is no computer in the production area. A paper order sheet is taken to the production area to indicate the products to be produced. The clerk creates an invoice using QuickBooks Pro<sup>17</sup> and prints two copies which accompany the delivery. In RetailerY's case, the RetailerY DC receives the invoices. Each RetailerX and RetailerZ store that ordered, receives two invoices per delivery made out to that specific store.

Sometimes a RetailerY store says that they do not need stock, and then two days later, after deliveries have been made to the other stores, maintains that they did in fact place an order. This happens because of poor management in that particular store. RetailerY Head Office informs the owner of Smoked Products Supplier of the store complaints. Smoked Products Supplier does not have proof that the store did not place the order. The store concerned then normally instructs Smoked Products Supplier to deliver the required merchandise directly to the store, but Smoked Products Supplier can not do this because the store is not willing to pay cash for this special delivery. In addition to this, an order number must first be created by the RetailerY Head Office before a delivery can take place.

Another difficult situation arose when stores omitted to place orders directly with Smoked Products Supplier, but only called RetailerY Head Office. Then, when Smoked Products Supplier delivered the consolidated order, as confirmed with the DC, merchandise went to the stores that ordered late while stores that ordered on time went without. Smoked Products Supplier has therefore changed their delivery procedure by writing the store name and the date on each box. This prevents stores from receiving merchandise for which they did not place an order.

RetailerX has a B2B web site from where the orders can be printed, but Smoked Products Supplier does not use this application. They could not explain why they do not. They do however print the claims on short deliveries and claims on incorrect cost prices from that site.

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<sup>17</sup> QuickBooks is accounting software to assist small businesses with their financial management (Intuit Inc, 2006).

#### **4.2.6 The role of Information Technology**

Smoked Products Supplier has two computers in their office. They use e-mail to receive orders from RetailerY and to send statements to RetailerX. They do not have a web site but are in the process of creating one. They are awaiting a web site address to be allocated to them. They are doing this to advertise their brand and to publish recipes that suggest ways of using their products. They use QuickBooks Pro for their invoicing, statements and accounts.

#### **4.2.7 Business value of the Internet**

The Internet is used to access e-mail and to print the claims from the RetailerX B2B web site.

### **4.3 MANUFACTURER REPRESENTATIVE SUPPLIER**

#### **4.3.1 Company background**

Manufacturer Representative Supplier is a manufacturer representative for suppliers that are too small to have their own representatives. They distribute products on behalf of some suppliers and they sell and distribute on behalf of others. They also have a small manufacturing plant, fabricating a cleaning aid range called MX19. Manufacturer Representative Supplier employs 125 people.

Their customers include big retailers such as RetailerX, RetailerZ, RetailerE, Jumbo, Giant, Sentra, RetailerY, RetailerB, RetailerC and RetailerD. They also conduct business with spazas<sup>18</sup> and independent wholesalers. Their two biggest customers are RetailerX and RetailerZ who buy predominantly grocery products but also some perishable products. The customers as well as the suppliers are located in the Western Cape. The customers furthest away are in Oranjemund, Swellendam and Mosselbay.

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<sup>18</sup> Spaza shops are small, informal convenience stores located mainly in disadvantaged communities in people's houses or backyards. They sell groceries including fresh and dry household products (Triple Trust Organisation, 2003).

#### **4.3.2 Technical capabilities**

This is the only business interviewed that has a person with the job title "IT manager". However they do not have the technical capability to create a web site. They perform their own AccPac Accounting<sup>19</sup> support but make use of a computer company to carry out the hardware, software and network setup and support.

#### **4.3.3 Retailer demands**

No mention was made of any specific retailer demands.

#### **4.3.4 Receiving orders**

Sales representatives collect orders from stores and are responsible for merchandising the stores. Manufacturer Representative Supplier has ten sales representatives who visit the stores once or twice a week. They are allocated to different areas. The sales representative and a team of people responsible for merchandising go to the store, when goods have been delivered, to merchandise the store. It is not always practically possible to do this at every store. In such cases, the goods are off loaded and the staff at the store merchandise the goods.

The sales representatives supply the written orders in an order book which are left in the front office before 08h00. Seven order clerks are responsible for allocated suppliers and for all retailers supplied by those suppliers. Each order clerk in turn looks at the order books from the sales representatives. They have to do this before 10h00. They capture all orders into their system, because they do not receive them in an electronic format that is easily downloadable. When a retailer places an order by telephone, the clerk writes it in the order book and takes it to the order clerk responsible for that supplier's account.

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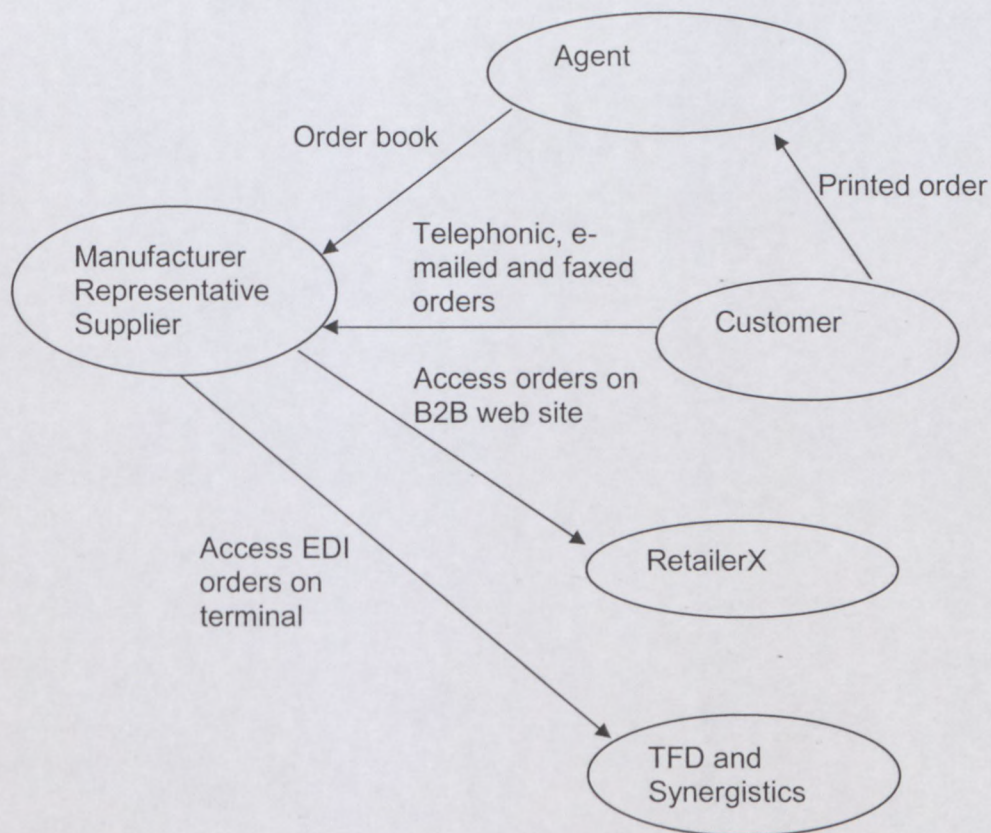
<sup>19</sup> AccPac is an accounting system that forms part of the AccPac Pro Series. AccPac provides business management solutions ranging from small business applications to enterprise wide systems (Accounting Software World, 2006).

Manufacturer Representative Supplier receives orders over a frame relay network from Tongaat Food Distributors (TFD) using the EDI system. Manufacturer Representative Supplier requests orders from a TFD terminal located in their own office. Other orders from the EDI system are received via Synergistics. Synergistics provides a service to suppliers by receiving the EDI-based orders on their behalf. Manufacturer Representative Supplier extracts these orders from a Synergistics terminal located in their own office.

In the case of RetailerX, the order clerk prints the orders for each store from the RetailerX B2B web site. According to Manufacturer Representative Supplier, the B2B site has the advantage of confirming the product cost prices. This can reduce retailer claims made later on goods received, because it ensures that the correct prices are used when the invoices are created. The B2B orders are also available by the time that the order clerks start to work. They therefore do not have to wait for the sales representatives to bring in the paper orders. The sales representatives come in between 09h00 and 10h00. They have order books in which they capture the orders, including the orders from RetailerX. The order clerks cross check the RetailerX orders against the B2B system. If the printed B2B order is different from the order in the sales representative's order book, the clerk calls both the sales representative and the store to confirm the order.

The sales representative responsible for RetailerZ receives a roster, on paper, of goods ordered by RetailerZ. RetailerZ has Supermarkets and Family stores. The Supermarket stores provide a printed order to the sales representative. In the case of the Family stores, the sales representative writes the orders into an order book. If the Supermarket stores call to place an order, they have to provide an order number or the name of the person placing the order. When Family stores call to place orders, they do not provide order numbers. If the order is not ready when the sales representative visits a store, the store faxes the order.

Orders from RetailerB are generated at their Head Office and sent in a Microsoft Excel format by e-mail. RetailerY e-mails a consolidated order daily to Manufacturer Representative Supplier. Figure 9 indicates how Manufacturer Representative Supplier receives orders from their different customers.



**Figure 9.** *Manufacturer Representative Supplier's ordering process*

#### 4.3.5 Processing orders

The order clerk captures the order using AccPac Accounting. The clerk generates the stock picking slip which is printed in the warehouse. The order clerk writes the stock picking slip number on the printed order and files it in the retailer's file. The copy is kept for two months before it is thrown away.

The warehouse picks the goods and ticks off on the picking slip whether they were able to pick the stock or not. The warehouse returns the slip to the administration office. If there are products on the stock picking slip without stock, the order clerk deletes these products from the order.

The order clerk generates the invoice number from AccPac Accounting and writes it on the stock picking slip. The clerk prints three copies of the invoice, files one and sends the other two copies to the warehouse. The warehouse confirms whether the picked products are on the invoice. Manufacturer Representative

Supplier returns one of the copies from the retailer with a stamp showing that the goods were received.

When Manufacturer Representative Supplier delivers merchandise to RetailerX, the store applies a Goods Received Voucher (GRV) stamp to the invoice. If there are short deliveries, RetailerX attaches a claims sheet to the invoice with the GRV stamp on it. RetailerX attaches a slip to the invoice showing the goods that were taken in and the goods that are returned or that were short delivered.

#### **4.3.6 The role of Information Technology**

There are 17 computers used mainly for invoicing. The Internet is used for e-mail. They are busy moving over to Internet Solutions as their service provider. They understand the value of having a web site but do not have one, nor do they have the expertise to create a web site themselves. They use AccPac Accounting for Windows for accounting purposes.

#### **4.3.7 Business value of the Internet**

Manufacturer Representative Supplier prints the RetailerX store orders from the RetailerX B2B web site. They would prefer the sales representatives to obtain the orders from the Internet rather than from the stores. However they still want the sales representatives to visit the stores to ensure that the stores place their orders. These visits are important because the sales representatives are responsible for managing the relationship with the retailers.

### **4.4 BAKERY SUPPLIER ONE**

#### **4.4.1 Company background**

Bakery Supplier One is a small bakery supplier supplying fresh-baked products to retailers. There are 24 employees excluding the owner. The personnel consist of a general manager, two supervisors, a secretary/personal assistant, three drivers

and a quality assurance controller. The rest of the staff works in the production line.

Manufacturing is done during the day and at night. They operate almost 24 hours per day. Their customers include RetailerX, RetailerZ, RetailerY and other smaller companies, all located in the Western Cape.

#### **4.4.2 Technical capabilities**

The owner believes that one of his production supervisors has the necessary skills to get an electronic ordering process established, because he assists him with the computer hardware maintenance. The general manager trains the staff in using the software. He trained himself to use Pastel Accounting<sup>20</sup>, passing his knowledge onto the staff.

#### **4.4.3 Retailer demands**

There is no pressure from any of the retailers to change to electronic order processing. RetailerX mentioned this during 2004, but they indicated that their first priority was to convert their larger suppliers to B2B orders. According to the owner, the implementation of electronic payments by RetailerX resulted in receiving their money a day later than when payment is made. In contrast, when a cheque was collected directly from the retailer, funds were made available on the same day. The owner preferred cheque payment to electronic payment.

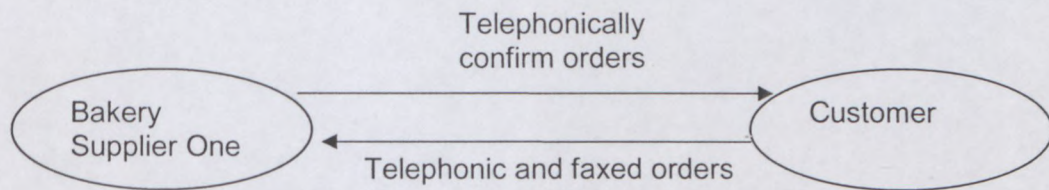
#### **4.4.4 Receiving orders**

Bakery Supplier One calls the retail stores the day before delivery to confirm the order quantities. All orders must be received by 11h00 in the morning to allow enough time for production. The clerks make 25 to 30 telephone calls per day in total to all of the stores. If the person responsible for placing orders is not available, Bakery Supplier One has to make multiple calls to the same store until

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<sup>20</sup> Pastel Accounting forms part of the Softline Pastel product range that provides accounting and business management software solutions suitable for small, medium and larger size businesses (Softline Pastel, 2006).

the correct person is spoken to. This results in a large telephone bill. Figure 10 illustrates the ordering process.



**Figure 10.** Bakery Supplier One's ordering process

Due to the products being perishable, Bakery Supplier One confirms the orders with RetailerX on a daily basis. The RetailerX stores place orders telephonically. Some stores like Springbok and Vredendal send their orders by facsimile. No orders are electronic.

RetailerX has cake promotions on Fridays resulting in the stores ordering more of the promotional products. Bakery Supplier One is afraid that the quantities needed for promotions might not be reflected on an electronic order and therefore they prefer to confirm quantities by telephone. The factory manager is also of the opinion that a computer would be too slow to confirm orders from the stores and for that reason they confirm order quantities directly with the stores.

The completeness of the orders depends largely on the stores' bakery managers. If the bakery manager is knowledgeable, orders are accurate and on time. There are retailers who send the product order for that day to Bakery Supplier One by facsimile. Bakery Supplier One prefers personal contact in order to ensure that bakery managers place their orders. Orders must be received by 11h00 in the morning to ensure delivery the next day. An order may be for a future date.

RetailerY sends a consolidated order by facsimile from their DC. They supply Bakery Supplier One with an order number. If a facsimile is not received by 17h00, Bakery Supplier One calls the DC. Some RetailerY stores order directly from Bakery Supplier One. In such an instance, they order by telephone and do not supply an order number. The stores pay Bakery Supplier One directly in cash or on account. Two big RetailerZ family stores buy from Bakery Supplier One and these stores do not submit an order number.

#### **4.4.5 Processing orders**

Bakery Supplier One delivers twice a week to a store, starting at 06h00. The delivery schedules to the stores are fixed, but calls to the stores are necessary to confirm the order quantities. When Bakery Supplier One delivers stock, two invoices are given to the retailer. A GRV is allocated to both copies. The retailer keeps one copy and the second copy is signed as proof of delivery and returned to Bakery Supplier One.

Bakery Supplier One sends a statement to the retailers containing the invoice numbers. The sales journal and the invoices are used to create the statement. For RetailerZ and RetailerY, the Microsoft Excel statements are created according to a standard layout and format from the sales journal. However RetailerX expects the Microsoft Excel statement in a specific format and in store number sequence (date, invoice number, store number, Bakery Supplier One account code per store and amount). The accountant exports the sales journal for RetailerX each month from Pastel Accounting and creates a Microsoft Excel statement by hand in the format required by RetailerX. This is very time consuming and has to be performed twice a month. There are about 30 invoices for RetailerX per day because one is generated for each store. For RetailerY and RetailerZ, Bakery Supplier One creates about six invoices per week because a consolidated order is received each day from the RetailerY DC and business is conducted with only two big RetailerZ stores.

If there is a discrepancy on the statement which means that it does not correlate with RetailerX's figures, RetailerX does not process the statement. This results in a delayed payment. Payment is made by RetailerX directly into Bakery Supplier One's account. Smaller customers pay by cheque.

#### **4.4.6 The role of Information Technology**

Bakery Supplier One has one computer linked to three printers. The computer is used for label printing and daily administration. The service provider for Internet

access is Metroweb using a dialup Telkom line. Each call is paid for and no fixed packaged contract is in place.

The computer is used mainly for invoicing, using Pastel Accounting. The computer is also used for word processing, Microsoft Excel and to print/maintain the quality control sheets and check lists. The accountant has a computer at her office and uses it to create statements for payment. The computer of the accountant is not linked to the computer of Bakery Supplier One. The accountant uses e-mail to send the statements to the retailers and she monitors acknowledgement of receipts.

The owner of Bakery Supplier One stated that there is no web site because money must only be spent on income generators. However Bakery Supplier One sees potential marketing benefits in having a web site.

One of the production supervisors assists with the computer hardware maintenance. The general manager trains the staff in using the software. The secretary/personal assistant works full time on the computer.

#### **4.4.7 Business value of the Internet**

Bakery Supplier One uses the Internet occasionally to search for recipes. Claims are printed from the RetailerX B2B site. Internet banking is used to pay personnel and creditors and to review bank statements. Apart from these functions there is very little use of the Internet.

### **4.5 ABRASIVES SUPPLIER**

#### **4.5.1 Company background**

Abrasives Supplier is a small supplier consisting of 50 employees. They provide surface finishing solutions and allied products ranging from abrasives, buffs, chemicals, solvents and lubricants, power and hand tools, engineering tools, paints and spray equipment.

Abrasives Supplier separates their operations into three areas:

- A conversion plant where products are made on demand.
- Ready-to-sell products – these are products bought in from other manufacturers, rather than being produced by themselves.
- Repackaged products - solvents like thinners and turpentine are repacked into cans ready for sell.

The business supplies retailers that include RetailerX, Brights, De La Rey, MICA and Federated Timbers. They also supply industrial businesses including AMC, Swartland Pine Doors and Gabriel. Their customers are located all over South Africa and even in parts of Africa.

Abrasives Supplier has a bricks-and-mortar shop at a different location where they sell their products to the general public. There is a plan to implement a wireless network for the shop. A web site has been introduced for marketing purposes.

#### **4.5.2 Technical capabilities**

The software on the main server, SysPro<sup>21</sup>, is maintained by a software company. An independent person is used for the hardware maintenance. An external company was responsible for the Internet setup.

#### **4.5.3 Retailer demands**

This case study confirms that Abrasives Supplier has tailored their processes to accommodate the needs of the retailers. An example of this was when RetailerX introduced a B2B web site for the printing of orders.

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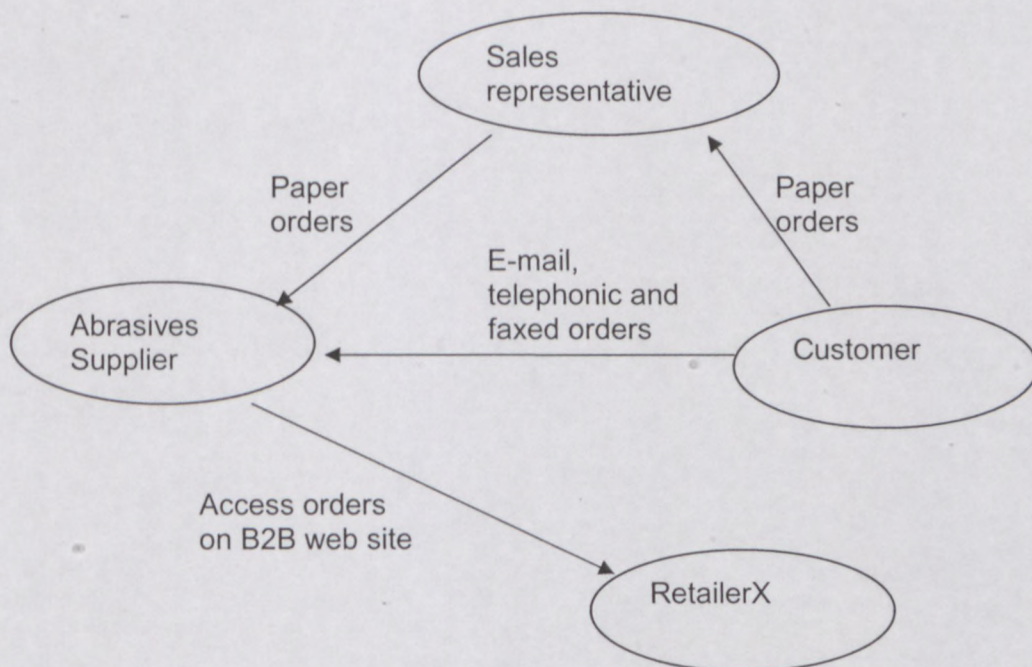
<sup>21</sup> SysPro software consists of more than 40 application modules that include accounting, sales, purchasing and inventory. It assists in the planning and management of business processes (SysPro, 2006).

Abrasives Supplier posts statements to most of their customers. However the RetailerX statement is generated in a format prescribed by RetailerX and is e-mailed to them. The statement creation is very time consuming.

#### 4.5.4 Receiving orders

Orders are received in various ways. Most of the retailers send their orders by facsimile or place them using the telephone. Abrasives Supplier employs eight sales representatives that visit stores on a scheduled basis and capture their orders in an order book. Some sales representatives are responsible for hardware and industrial sales while others are responsible for one or the other of the two. If the retailer's stock runs out prior to the sales representative's visit, the retailer places an order telephonically. Most of the orders are received directly from the retailer stores.

The Western Province Co-operative places orders using e-mail. RetailerX publishes their orders on a B2B web site for Abrasives Supplier to access. Figure 11 depicts the flow of order requests from the business customers to Abrasives Supplier.



**Figure 11.** Abrasives Supplier's ordering process

When Abrasives Supplier realises that they are not receiving orders from their regular customers, they call them to enquire why they have not placed orders. When the sales representative visits a retailer and the order is not ready, the retailer sends the order by facsimile and confirms it by telephone.

TradeWorld, an initiative from the Cape Town City Council, sends requests for tenders on behalf of the various city departments to possible suppliers. Abrasives Supplier is a registered vendor of the City Council. TradeWorld sends an e-mail to Abrasives Supplier containing an HTML sheet which has to be completed by a certain date and time in order to tender for a specific request. If the tender is accepted, Abrasives Supplier receives orders from that City Council department.

#### **4.5.5 Processing orders**

A team, consisting of four sales clerks, processes the paper orders brought back to the office by the sales agents. A stock picking slip is created that goes to the relevant plant. There is a computer in the production area but it is not used. The order clerk physically takes the paper order to the production area for processing.

Orders are delivered directly to the stores within two days. The order value has to be more than R1,000 to make the delivery worthwhile. If the store is nearby and it is a big retailer such as MICA, delivery will be provided for orders valued at less than R500.

#### **4.5.6 The role of Information Technology**

Abrasives Supplier has twenty computers. They are linked to the Internet using an ADSL line. There are 18 e-mail accounts mainly used for communication to customers.

Abrasives Supplier has 18 registered domain names. They have also registered domain names that are similar to those of their competitors in order to attract traffic to their site. The domain names relate to the product descriptions of

products sold by them. These web sites contain hyperlinks pointing to the main web site of Abrasives Supplier.

The web site was developed eleven months ago by a company called MOJO. MOJO maintain the web site at the request of Abrasives Supplier and there is thus no maintenance agreement in place. The newsletter on the web site is very outdated because it is only published when Abrasives Supplier raises a work request against MOJO. Since no support agreement is in place, the site is only updated on an ad hoc basis.

In order to access the newsletter, the name of the web site visitor has to be provided. This allows Abrasives Supplier to track and build a database of potential customers. There is no site registration process in place.

#### **4.5.7 Business value of the Internet**

Abrasives Supplier uses the Internet to conduct product research. They also submit online tenders (quotes) to TradeWorld on TradeWorld's web site. If the request is received by e-mail, Abrasives Supplier e-mails the tender to TradeWorld.

### **4.6 GIFTS SUPPLIER**

#### **4.6.1 Company background**

Gifts Supplier is a small supplier consisting of 20 full time employees. They have an annual turnover of between R10M and R12M. Gifts Supplier is a manufacturer and packer of toiletry and home-fragrance gifts. The gifts are mainly seasonal and 70 per cent of sales are aimed at the Christmas market. Christmas manufacturing starts around August and lasts until the end of the year.

RetailerB is their biggest customer, making up 70 per cent of the business. RetailerW is about 20 per cent of the business. They also conduct business with RetailerX, RetailerZ and RetailerF.

#### **4.6.2 Technical capabilities**

The Internet setup was outsourced to a company because Gifts Supplier does not have sufficient technical capability. Their technical capabilities are limited to the Microsoft Office application suite. Hardware and software assistance is outsourced to a small computer company.

#### **4.6.3 Retailer demands**

RetailerW has developed a web portal that Gifts Supplier has to use to capture stock quantities available and to print despatch labels.

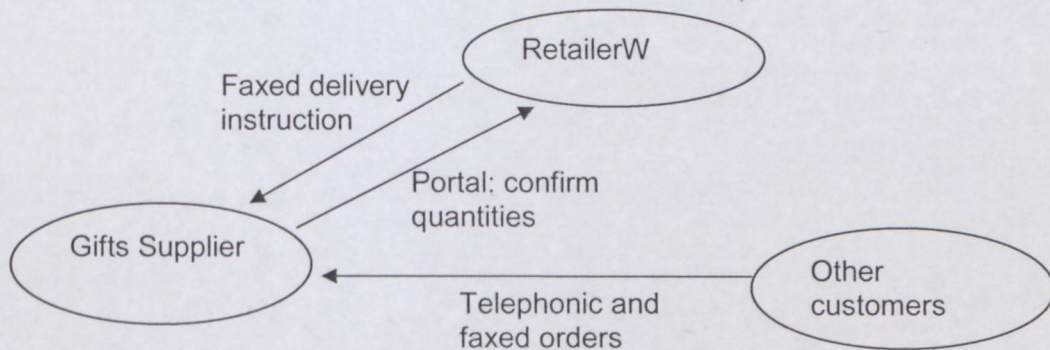
#### **4.6.4 Receiving orders**

Gifts Supplier receives orders by facsimile or telephone. They do not have a preferred way of receiving orders and are of the opinion that electronic orders will not be of any benefit to them because the orders are seasonal and not received in a continuous flow. The owner, the product manager and the buyer of the customer company work together to establish what an order should consist of.

When a RetailerB order is negotiated, the product manager creates a Microsoft Excel spreadsheet that includes the agreed quantities and prices. The product manager e-mails this to RetailerB. The orders are received in product category sequence. RetailerB orders are sent mainly by facsimile which contain the order date and delivery date. Every product category is ordered every second week. Over the Christmas period (September to early December), one consolidated order per product category is received. The accounts clerk verifies the requested quantities, prices, units and pack sizes on the order against the information on the Microsoft Excel spreadsheet that was negotiated with RetailerB.

RetailerW sends a pre-production contract to Gifts Supplier. Gifts Supplier sends a stock availability list to RetailerW showing what they can deliver and by when. The contract goes through stages until it is confirmed and accepted by RetailerW.

Gifts Supplier has to send samples to RetailerW, and the Technologist from RetailerW has to confirm whether the product is accepted. Once approved, RetailerW sends a Delivery Instruction (DI) by facsimile. Figure 12 shows the ordering process of Gifts Supplier.



**Figure 12.** Gifts Supplier's ordering process

#### 4.6.5 Processing orders

Gifts Supplier files the orders received by facsimile from RetailerB. An order is reviewed by the product manager, supervisor, despatch clerk and the technical manager. In the case of a promotion, the delivery date is non-negotiable. The stock has to be in RetailerB's DC two weeks before the promotion is launched. The dispatch sheet is captured in Pastel Accounting from where the invoice is generated.

If there is enough stock, a booking is made at the RetailerB DC. The courier (called RDS) is informed as well. The courier has to pick up the order at 16h00 and has a Service Level Agreement (SLA) of 5 days.

Every year during the Christmas period, a different courier (called BlueBay) is used to deliver orders. RDS is not available over this period and the deliveries are larger. The invoice and a copy of the invoice accompany the delivery to RetailerB's DC and a third copy of the invoice is filed. A stamped invoice is received from RetailerB as proof of delivery.

Gifts Supplier accesses the RetailerW web portal using the Internet. This is done to confirm stock quantities available and the colours and the pack sizes. Gifts Supplier prints the dispatch label and the "final handover schedule" from the web portal. They stick the dispatch label onto the container which RetailerW scans on receipt of delivery.

The dispatch clerk brings the dispatch document, the picking list, the list with the different pack sizes and the final handover schedule to the accounts clerk. The clerk captures the information into the RetailerW web portal and generates an invoice from the portal.

#### **4.6.6 The role of Information Technology**

Gifts Supplier has eight computers and use Pastel Accounting. They have eight e-mail accounts and use the Internet mainly for e-mail. The product manager also uses the Internet for product searches.

They do not have a web site and do not see the need for one because they conduct business with local retailers. They believe it would only be appropriate to have a web site if they were conducting business with overseas markets.

#### **4.6.7 Business value of the Internet**

Gifts Supplier uses the Internet to perform product research. They also access the RetailerW web portal using the Internet.

### **4.7 BAKERY SUPPLIER TWO**

#### **4.7.1 Company background**

Bakery Supplier Two is a bakery and confectionery supplier with a staff compliment of 20 people. They conduct business with RetailerX, RetailerZ and RetailerY.

#### **4.7.2 Technical capabilities**

A small computer company is responsible for their hardware maintenance. Bakery Supplier Two does not have any technical capabilities.

#### **4.7.3 Retailer demands**

RetailerX requires a standard format for the statements that Bakery Supplier Two sends to them on a monthly basis. If there is a problem with the format of the statement, it is rejected and payment is delayed until a rectified statement is received.

#### **4.7.4 Receiving orders**

Bakery Supplier Two conducts price negotiations with the retailers with whom they conduct business. As part of the price negotiations, the retail buyer provides Bakery Supplier Two with information regarding the stores to be supplied and the quantities that will be required by the stores. There is a 48 hour turn around time. If an order is received today, production is tomorrow and delivery the day after that.

RetailerX orders are printed from a B2B web site that was developed by RetailerX. This is performed at 12h00, Mondays to Wednesdays and on Fridays.

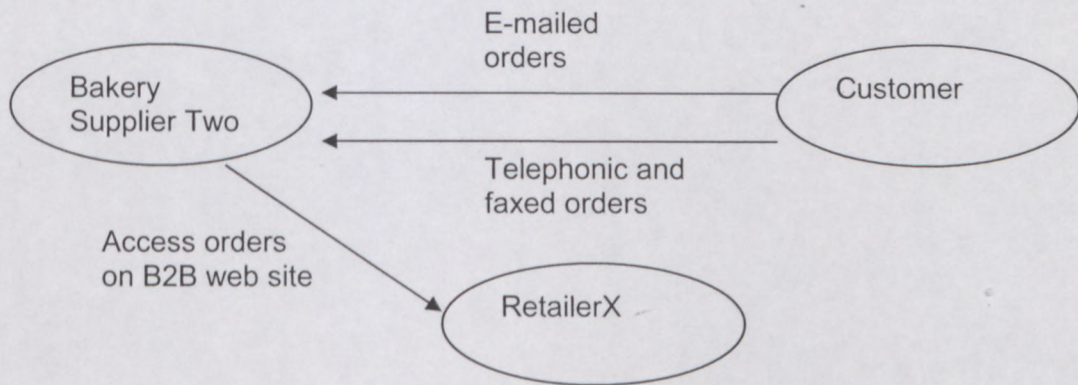
The RetailerY stores communicate the required quantities to the RetailerY Head Office. RetailerY e-mails from their Head Office an HTML attachment for every individual store containing the order number, delivery date and the product details. Bakery Supplier Two prints the orders and captures the quantities into Pastel Accounting. RetailerY can place orders up to 17h00.

RetailerY stores in the Western Cape are supplied as well as those in Eastern Cape. For the Western Cape, 30 to 40 e-mails are received per day, one from every store routed through the RetailerY Head Office. There is no consolidated order which means that each store requires its own invoice, hence 200 invoices

must be generated each week. For the Eastern Cape, orders are received by a consolidated facsimile, one purchase order per day. This results in one invoice per day, thus five invoices per week.

Orders are sent by facsimile from the stores of RetailerZ to Bakery Supplier Two. The managers responsible for perishables from some stores call Bakery Supplier Two by telephone using a purchase order number. They place orders up to 17h00.

Bakery Supplier Two creates an order sheet per store for every retailer they supply. Figure 13 shows the ordering process of Bakery Supplier Two.



**Figure 13.** Bakery Supplier Two's ordering process

#### 4.7.5 Processing orders

Bakery Supplier Two delivers directly to RetailerX and RetailerZ stores. Bakery Supplier Two delivers to RetailerY's DC and not directly to their stores. Bakery Supplier Two creates invoices using Pastel Accounting and gives them to the stores when delivering the stock. The invoice lists the products for the store and the order number. The store has to sign one copy as Proof Of Delivery (POD) which is for Bakery Supplier Two's records.

Bakery Supplier Two sends a monthly statement created in Microsoft Excel to RetailerX. The Microsoft Excel statement is in the format required by RetailerX. If

the format is different from the specifications, the RetailerX system will reject the statement, resulting in no payment until the statement is rectified. This delays payment for at least a month. A Pastel Accounting statement is sent to RetailerY and RetailerZ.

RetailerX pays electronically 30 days after statement date and RetailerY pays electronically 15 days after statement date. RetailerZ pays by cheque 30 days after statement date.

#### **4.7.6 The role of Information Technology**

There are three computers, of which two are linked to form a Local Area Network (LAN). The computers are used for e-mail (Microsoft Outlook), Pastel Accounting, Microsoft Office and software specific to the bakery sector. Four e-mail accounts are used to communicate with their customers. The company does not have a web site. This is because they do not want the various retailers that they supply to be aware of the range of products that are distributed to competitors.

#### **4.7.7 Business value of the Internet**

The Internet is accessed using a dialup Telkom line. The Internet is used for the following:

- To perform bakery research, example recipe searches.
- To access the SARS web site for tax related information.
- To look at web sites and catalogues of allied industries.
- To keep abreast of developments in competitor markets.
- To access and print orders from RetailerX's B2B web site.
- To receive orders as HTML e-mail attachments from RetailerY.

## **4.8 POULTRY SUPPLIER**

### **4.8.1 Company background**

Poultry Supplier is a poultry farm employing 70 people. They supply RetailerX, RetailerC, RetailerG, Foodworld, Saveworld, RetailerE and the informal sector. All customers are located in the Western Cape.

### **4.8.2 Technical capabilities**

Poultry Supplier does not have technical staff or expertise available in the business. They make use of a small company that assists them with hardware and software maintenance.

### **4.8.3 Retailer demands**

There are not specific retailer demands.

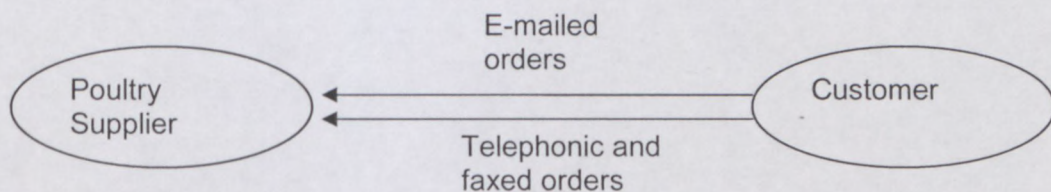
### **4.8.4 Receiving orders**

Poultry Supplier supplies 13 stores of RetailerX. They call the RetailerX stores on a Monday to obtain their orders. The clerk starts calling every store from 9h30 and the process takes about 90 minutes. The stores provide order numbers. They specify the egg size and quantities required and place orders twice a week. If stores need stock outside of the normal order cycle, they call Poultry Supplier.

RetailerC and RetailerG follow the same procedure as RetailerX. Some of the RetailerC stores call Poultry Supplier directly. RetailerG owns two stores that are supplied by Poultry Supplier, namely the Milnerton and Ottery stores. These two stores communicate their orders to Poultry Supplier through the RetailerG Head Office. The Head Office places the order by telephone and confirms it by sending an e-mail to Poultry Supplier's head manager. The manager prints the e-mail and gives it to the order clerk. RetailerG also sends their orders by facsimile from time

to time. Poultry Supplier then compares the facsimiled product details with the telephone order to ensure that they match.

All stores provide an order number. Only the RetailerE stores provide a person's name as order reference. Poultry Supplier would prefer an order number, because the personnel at the store sometimes use the name of another person to place the orders, resulting in disputes. The Poultry Supplier ordering process is shown in Figure 14.



**Figure 14.** Poultry Supplier's ordering process

#### 4.8.5 Processing orders

The clerk writes the order details into a book which makes provision for the date, store name, name of the person that placed the order, order number, product size, quantities and the date by which the eggs are required. They accumulate a couple of orders before physically taking a batch of orders to the egg-room manager who is located in a different building.

After the stock has been packed for delivery, the egg-room manager fills out a dispatch note, containing the dispatch number, for the order clerk who captures the details into the system. The egg-room manager does not have a computer and uses a book containing pre-printed dispatch notes. The egg-room manager completes the dispatch note, writing in the date, the driver's name and the quantities that will be delivered.

When the order clerk receives the dispatch note, she captures the order detail and the dispatch detail into the system and the invoice is generated. The selling

price per type of product is preloaded and is automatically inserted onto the invoice when the product number is captured. There is an option to override the price, which happens when the eggs are on promotion. The clerk prints three copies of the invoice. The dispatch note is attached to one copy of the invoice and they keep it for their records. Invoices are also kept for auditing purposes. The other two invoices go to the retailer. The retailer keeps one copy and sends the other copy back with a GRV stamped on it, indicating that the stock has been received. The returned invoices are filed and at the end of the month they are attached to the statement that is sent to the retailer.

Deliveries are made directly to the stores a day before the requested date. RetailerG e-mails the POD note and the claims on short deliveries and breakages to Poultry Supplier. Another copy of the delivery note is also printed by RetailerG and attached to the invoice as proof of delivery.

If there are breakages or short deliveries, the retailer sends a claims statement with the invoice back to Poultry Supplier. At the end of the month, the order clerk takes all of the claims statements to the head manager to approve and sign off. A credit is then created in the software application for the retailer, printed and attached to the invoice. The credit is shown on the retailer's statement. The invoice, credit note and statement go to the retailer.

Poultry Supplier prints statements at the end of the month and attaches them to the invoices. Statements are posted to the retailers by mail. The RetailerX statements are hand delivered to their Head Office. RetailerX has to sign for them to indicate that invoices and statements have been received. If the retailers have not received their statements before a specific date, they call Poultry Supplier who then sends the statements by facsimile.

If stock availability is low, then the large retailers are supplied rather than the less significant customers. This is done because payment is better from the retailers. Promotions launched by the retailers tend to make the demand erratic; this complicates the order fulfilment process.

#### **4.8.6 The role of Information Technology**

The business has seven computers. The computers are not linked to each other, thus no LAN exists. There is a plan to address this issue next year. No technical staff or expertise is available on the premises. The computers are used for production and sales, debtors and creditors, ordering and statements. The software was custom written for Poultry Supplier for their ordering and receiving. Creditors and debtors are recorded in a Microsoft Excel spreadsheet. Internet access is available only on the laptop of the head manager.

There is no web site. The priorities at present in the company are the need to address the hardware and to set up a network. After that has been achieved, the time may be right to establish a web site.

#### **4.8.7 Business value of the Internet**

Poultry Supplier only uses the Internet for e-mail.

### **4.9 PLANTS SUPPLIER**

#### **4.9.1 Company background**

Plants Supplier supplies indoor plants to the stores of RetailerX, which are their only customers. The business consists of four people. The stores that are supplied are located in the Western Cape.

#### **4.9.2 Technical capabilities**

A computer vendor was used for the hardware setup. A person from RetailerX assisted with the software setup.

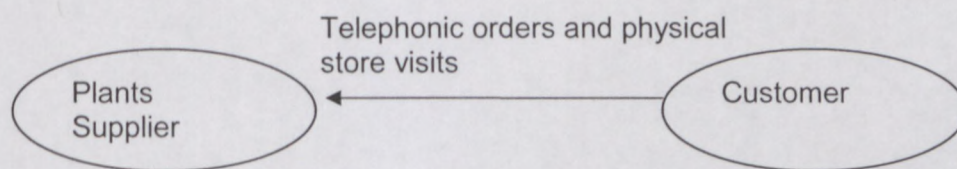
### 4.9.3 Retailer demands

RetailerX requires the Plants Supplier statement to be in a prescribed format, otherwise it is not accepted.

### 4.9.4 Receiving orders

Plants Supplier deals with 17 RetailerX stores on a regular basis. Four times a year they supply an additional 50 stores. This happens during the spring period, Valentine's Day, Mother's day and Christmas.

The merchandising of the store is left totally in the hands of Plants Supplier and there is thus no real ordering process. The owner visits the stores every second week. She visits the distant stores only every third week. The merchandiser goes to the stores every week. Plants Supplier decides on the number of plants and the varieties to be sold in each store. They determine from the available shelf space what is needed and replenish accordingly. From experience, they know how much stock is needed on a weekly basis in each store. They also know which plants sell in stores with certain profiles. The stores call occasionally to request more stock. Figure 15 shows the ordering process of Plants Supplier.



**Figure 15.** *Plants Supplier's ordering process*

### 4.9.5 Processing orders

There are about 24 deliveries per week from Monday to Friday and sometimes on Saturdays. The 50 stores that are supplied four times a year are not visited at all. For these stores, RetailerX sends the quantities required by each store to Plants

Supplier. Plants Supplier delivers the plants to an affiliate of RetailerX, who delivers on behalf of Plants Supplier to the 50 stores.

The invoices are created in Microsoft Excel and accompany the delivery to the store. If the quantity on the invoice is different from the actual quantity delivered, because for example of a plant that has broken, Plants Supplier creates a paper invoice in the store reflecting only what was delivered to prevent claims.

Plants Supplier e-mails the Microsoft Excel statements to RetailerX. If a statement that is sent to RetailerX is incorrect, it is rejected and Plants Supplier has to create another statement. This results in payment being made after 60 days instead of 30 days. RetailerX pays Plants Supplier electronically.

#### **4.9.6 The role of Information Technology**

Plants Supplier has one computer. The hardware setup was configured by a computer company and the software setup by a staff member from RetailerX. The owner has Microsoft Word and Microsoft Excel expertise. Plants Supplier does not have a web site and does not perceive it as necessary because they have only one customer. The computer is used for invoices, label printing, Internet and stock control. Everything is done in Microsoft Word and Microsoft Excel.

#### **4.9.7 Business value of the Internet**

Plants Supplier uses the Internet to view claims on the RetailerX B2B site and for banking. Plants Supplier does not see any other need for the Internet in their environment.

## **4.10 STAINLESS STEEL ACCESSORIES SUPPLIER**

### **4.10.1 Company background**

Stainless Steel Accessories Supplier creates stainless steel accessories for bathrooms and kitchens and employs 70 people. They supply RetailerX, RetailerD, RetailerZ, De La Rey and McTyre.

### **4.10.2 Technical capabilities**

The network, hardware and Internet setup was implemented by an external company. There is no in-house technical capability to perform these tasks.

### **4.10.3 Retailer demands**

Stainless Steel Accessories Supplier does not create the RetailerX statement using Pastel Accounting because RetailerX requested it to be in a format unique to their needs.

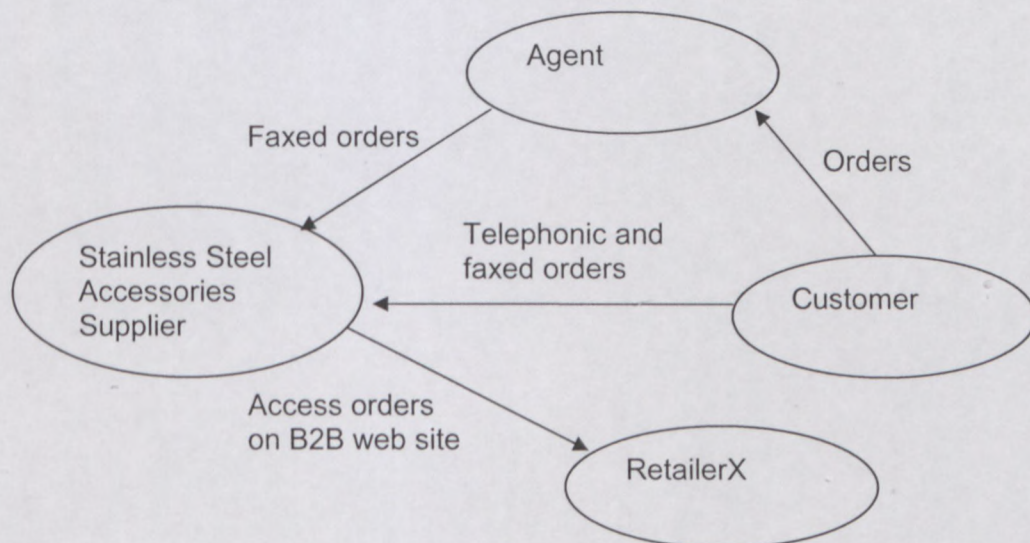
### **4.10.4 Receiving orders**

Agents visit the stores twice a week and are responsible for collecting the retailer orders. The agents are not employees of Stainless Steel Accessories Supplier but the work is outsourced to them. Stainless Steel Accessories Supplier also out-sourced deliveries that are direct to the stores. The sales agents receive commission based on the orders they bring in. The agents visit the stores, determine the stock needs and create orders accordingly.

RetailerX publishes their orders on their B2B web site. The web site contains the orders of the 25 stores sorted in-store sequence. Before this web site was used, training was provided by RetailerX at their offices on how to use the application. Although the orders are printed from the B2B web site, the agents still visit these stores.

RetailerD creates a consolidated order fortnightly at their Head Office. The agent receives the order from RetailerD and sends it by facsimile to Stainless Steel Accessories Supplier. De La Rey sends orders by facsimile from every store. RetailerZ also sends their orders by facsimile but one of the stores occasionally places their orders using the telephone.

If customers need stock outside the normal order cycle, they place the orders directly with Stainless Steel Accessories Supplier, not using the agent. If the orders received via facsimile from the agents are not clear, Stainless Steel Accessories Supplier calls the agents to confirm the quantities. Figure 16 shows the ordering process of Stainless Steel Accessories Supplier.



**Figure 16.** *Stainless Steel Accessories Supplier's ordering process*

#### 4.10.5 Processing orders

When the order is received, Stainless Steel Accessories Supplier creates a sales order using Pastel Accounting, retyping the information that was received on paper. The sales orders are attached to the received orders. Once a couple of these orders have accumulated, they are taken to the production area where the products are packed. If stock is short, it is indicated on the sales order. The sales order is physically taken back to the order clerk who creates an invoice using Pastel Accounting and links it within Pastel Accounting to the sales order. The

invoice automatically picks up the quantities on the sales order. The clerk manually changes the quantities on the sales order to correspond with the quantities indicated on the paper copy received from production.

If there is not enough stock, the available stock is delivered and the invoice is made out accordingly. Three invoices are printed. One copy is kept for their records and two copies are sent with the courier company. One copy is kept by the retailer and the other copy is returned to Stainless Steel Accessories Supplier with a stamp from the retailer showing that the goods were received.

The production area requests a report manually from Pastel Accounting to show the quantities of stock available. This report is printed on an ad hoc basis because three months' stock is kept, making it unnecessary to print a report daily. Historic sales figures are used to determine what the minimum stock levels of each product should be. If the stock level for a specific product is below the minimum, then enough stock will be manufactured to reach the maximum level. Production of the "below stock" products is started as soon as a workstation becomes available.

#### **4.10.6 The role of Information Technology**

There are three PCs that are linked to each other to form a LAN. The stock reports are printed in the Production area. Pastel Accounting is loaded on the computer in the production area from where it is accessed by the other computers. A web site was under construction but the company creating it for them went bankrupt.

#### **4.10.7 Business value of the Internet**

The Internet is used for e-mail, banking and the RetailerX B2B orders. No real value is seen in having a web site. It would only be valuable for letting users see what the products look like.

#### 4.11 SUMMARY OF CASES

The businesses interviewed represent SMMEs as defined by the National Small Business Act (South Africa, 2003). There is one micro supplier, three very small suppliers, two small suppliers and three medium suppliers. The technical capabilities of all of the suppliers are very limited. Except for one supplier, none have IT staff. All of the suppliers outsource their hardware and software maintenance to small technology firms. Because all the suppliers have RetailerX in common, the same demands in terms of the creation of payment statements are required of all the suppliers.

All the suppliers have different processes for conducting business with the different retailers. It is clear from the feedback that the suppliers are dependent on the orders from the retailers and that is why they make such an effort to ensure that the retailers place their orders. The ordering processes of all of the suppliers are very labour intensive and automation of processes are non-existent.

Simpson and Docherty (2004:315) found that B2B solutions help to increase the support between businesses while reducing the need for telephone calls and facsimiles. However, very little evidence of using the Internet as the enabling technology in the online ordering process was found in this research. The suppliers use the Internet mainly for e-mail and in some cases orders are sent to the suppliers by e-mail attachments. The suppliers also do not have an Intranet for internal collaboration and physically take paper copies to the production line for action. Some of the suppliers indicated that promotional campaigns from the retailers make demand erratic. Again there is no electronic integration between the suppliers and the retailers to manage this demand.

Only one of the suppliers has a web site although most of them indicated that a web site would add value to their business. This was however not a priority for them. Table 5 and Table 6 summarise the findings of each of the case studies. The headings used correlate with the themes of the interviews and, as described in the introduction, assist to answer the investigative research questions.

**Table 5. Case study summary of capabilities and demands**

<b>SMMEs</b>	<b>Technical capability</b>	<b>Retailer demands</b>	<b>Role of IT</b>
<b>Smoked Products Supplier</b>	None. Use technology vendor.	Statements to be created in a prescribed format.	Two computers, no web site, use QuickBooks Pro.
<b>Manufacturer Representative Supplier</b>	Only business that has a dedicated IT person, no technical capabilities to create web site. Computer support outsourced.	None.	Seventeen computers used mainly for invoicing. Use AccPac Accounting for Windows.
<b>Bakery Supplier One</b>	Production supervisor assists with computer hardware and general manager trains staff to use the software.	Were forced to accept electronic payments.	One computer loaded with Pastel Accounting.
<b>Abrasives Supplier</b>	None. Software and hardware maintenance outsourced.	Statements to be created in a prescribed format.	Twenty computers linked to the Internet through ADSL. SysPro ERP is loaded on the main server.
<b>Gifts Supplier</b>	None. Internet setup done by independent company.	Retailer introduced web portal to be used to capture order quantities and print labels.	Eight computers using Pastel Accounting.
<b>Bakery Supplier Two</b>	None. Hardware maintenance is outsourced.	Statements to be created in a prescribed format.	Three computers of which two are linked in a LAN. They use Pastel Accounting.
<b>Poultry Supplier</b>	Software and hardware maintenance outsourced.	No specific retailer demands.	Seven computers not linked, used for production and sales, debtors and creditors, ordering and statements. Software was custom written for ordering and receiving. Debtors and creditors are done in Microsoft Excel.
<b>Plants Supplier</b>	None, dependant on retailer for technical support.	Statements to be created in a prescribed format.	One computer. Use Microsoft Word and Microsoft Excel for invoices, label printing, Internet and stock control.
<b>Stainless Steel Accessories Supplier</b>	The network, hardware and Internet setup was done by an external company. They do not have the technical capability to perform it themselves.	Statements to be created in a prescribed format.	Three PCs linked to each other. Pastel Accounting is used for stock control and invoicing.

**Table 6. Case study summary of the ordering process**

<b>SMMes</b>	<b>Order receiving medium</b>	<b>Problem areas in ordering process</b>	<b>Value of Internet</b>
<b>Smoked Products Supplier</b>	Facsimile, telephone, e-mail, sales representative and SMS.	Telephone calls time consuming and costly, recapture orders, no automated system to follow up with stores not placing orders, resend order confirmation sheets when orders changed.	E-mail and printing claims from retailer's B2B web site.
<b>Manufacturer Representative Supplier</b>	Facsimile, telephone, e-mail, sales representative, B2B and EDI.	No system integration, telephone orders error prone and slow, retailer product numbers different from the supplier product numbers complicating the process.	E-mail and printing orders from retailer's B2B web site.
<b>Bakery Supplier One</b>	Facsimile and telephone.	No automated system to follow up with stores not placing orders, order quality depends on store disciplines, orders from same retailer not consolidated, no time to get more involved with the B2B process.	Product research, print claims from retailer's B2B web site, Internet banking.
<b>Abrasives Supplier</b>	Facsimile, telephone, e-mail, sales representative and B2B web site.	No automated system to follow up with stores not placing orders, no system in place to automatically receive and acknowledge orders.	Created web site for marketing purposes. Internet is used to perform product research and to submit tenders.
<b>Gifts Supplier</b>	Facsimile, telephone and RetailerW web portal (B2B site).	Manual comparison of order details against negotiation sheet thus no system integration.	E-mail, product research and to access the retailer's B2B web portal.
<b>Bakery Supplier Two</b>	Facsimile, telephone, e-mail and B2B web site.	Orders from the same retailer are not consolidated and they thus have to recapture orders.	Product research, tax lookups, visit competitor web sites and catalogues and print B2B orders from the retailer.
<b>Poultry Supplier</b>	Facsimile, telephone and e-mail.	No system integration.	Only used for e-mail.
<b>Plants Supplier</b>	Telephonic and store visits (almost same as sales representatives).	Need to physically visit a store to make an assessment of the stock status	Print claims from retailer's B2B web site and conduct Internet banking.
<b>Stainless Steel Accessories Supplier</b>	Facsimile, telephone, sales representatives and B2B.	If orders via facsimile are not clear, they have to call the sales representative to confirm the quantities.	E-mail, Internet banking and printing B2B orders from the retailer.

#### **4.12 CONCLUSION**

This chapter investigated and reported on nine case studies selected by the author. The findings of each case study was reported under seven distinct headings: background of the company, technical capabilities, retailer demands,

receiving orders, processing orders, the role of information technology and the business value of the Internet. Paragraph 4.11 summarises the findings in a table format for easy viewing. The findings confirm that information technology and specifically the use of the Internet is not really high on the agenda of these small suppliers. They are much more concerned about the day to day operations. This correlates with findings from Zheng *et al.* (2004:34) that owner-managers of SMEs are driven by operational rather than strategic issues and therefore have not considered the potential strategic benefits of e-commerce. The author perceives that there is the potential for a lot of time saving and improved accuracy in the ordering process by the use of proper electronic integration between the supplier and the retailer, utilizing the Internet. In Chapter 5, a detailed analysis is done of the research findings and suggestions provided to address the short-comings identified.

## 5. CHAPTER 5: COMPARATIVE ANALYSIS

In this chapter the data collected and reported in Chapter 4, are analysed and interpreted in terms of the primary theme of the dissertation, that is *electronic order processing*. In addition, the data gathered from the case studies are analysed in the context of the key problem areas identified by the pilot case study. The three investigative questions and the research question are answered using the results from the data analysis. Furthermore, guidelines are proposed to assist the SMME supplier to adopt order processing for B2B e-commerce.

Chapter 4 provided a summary of the pilot case study results and described the process that was followed to conduct the subsequent case studies. The data gathered from each case study were reported under themes that are common to all of the case studies: *technical capabilities, retailer demands, receiving orders, processing orders, the role of Information Technology and the business value of the Internet*. Chapter 4 concluded with a summary of the results of all of the case studies in Table 5 and Table 6.

### 5.1 INTRODUCTION

Discussed in Chapter 1, explanation building is used to analyse the case study evidence. According to Yin (2003b:120), the goal of explanation building "... is to analyse the case study data by building an explanation about the case".

Two interviews were conducted with each of the companies (except for the Plant supplier) to obtain information. After the interview with the Plant supplier (a micro enterprise) was conducted, the required information was obtained which made a second interview unnecessary. The first interview with each business (usually the owner/manager) was documented and notes were kept during the interview. According to Saunders *et al.* (1997:339), it is necessary to classify the data into categories in order to analyse it meaningfully. This enables the researcher to identify key themes or patterns in the information. Therefore, after each interview, the information gathered was analysed and the main themes identified. The information gathered from the Internet about the suppliers was also analysed.

Where possible, interviews were tape recorded and documented. The tape recording was later transcribed keeping note of the corresponding documented information. The main themes were identified, as stated before, and the interviews summarised and key lessons noted. The data from both interviews were combined to create a case study report on each business.

When analysing the data, it is important to identify the categories according to the research question and objectives (Saunders *et al.*, 1997:341). Therefore the categories of data were grouped according to the investigative questions and analysed accordingly. The units of data from each of the case studies were linked to the appropriate category as per Saunders *et al.* (1997:341), defining the “unitising of data” as linking “chunks” of data to the appropriate category.

## **5.2 PILOT STUDY KEY PROBLEM AREAS**

The pilot case study conducted in Chapter 3 revealed the following five problem areas:

- Inefficiencies in the ordering process.
- Order quantity disputes.
- Lack of funding for technology.
- Lack of technical expertise.
- Retailer demands.

The pilot study findings were confirmed by the evidence found in the literature described in Chapter 3. In paragraphs 5.2.1 to 5.2.5, the evidence collected from each of the case studies are analysed and reported on. This is accomplished by using the key problem areas identified in the pilot case study as the framework for reporting.

### **5.2.1 Inefficiencies in the ordering process (first key problem)**

Various inefficiencies were identified in the process of receiving and executing orders from the retailers. These inefficiencies will be described next under five headings.

#### 5.2.1.1 Availability of staff in the store

Four of the suppliers make use of sales representatives. When the sales representative visits the store, the order clerk at the store is not always available or the order is not ready. In such a situation, the supplier has to either call the store at a later stage to confirm the order quantities or rely on the store to call or send the required order quantities via facsimile. One of the bakery suppliers stated that multiple calls have to be made to the same stores if the staff responsible for placing the orders are not available. This results in a high telephone bill. Poultry Supplier experiences a similar problem; the person responsible for placing the order is not always available when the supplier calls the store. Although the clerk at the supplier leaves a message asking the store to return the call, this rarely happens. The clerk has to call the store repeatedly until the order is placed.

#### 5.2.1.2 Time spent confirming orders

According to Simpson and Docherty (2004:315), B2B solutions increase the support between businesses while reducing the need for telephone calls and facsimiles. In this research, it is evident that the suppliers do not have proper B2B solutions because they spend a lot of time on telephone calls and facsimiles to confirm orders from the retailer stores. All of the suppliers employ order clerks to receive and administer orders from the retailers. The number of order clerks employed by the suppliers range from one to seven. Smoked Products Supplier has to make up to a 100 calls to one of the retail chains every week to confirm order quantities. One of the Bakery suppliers make between 25 and 30 calls every day to all of the retailer stores to confirm order quantities. Poultry Supplier spends about an hour and a half every day confirming order quantities. The process is very time consuming, repetitive and manual.

### 5.2.1.3 Minimal electronic integration

According to Kim and Umanath (2005:814), Electronic Integration (EI) allows partnering firms to integrate their decisions and operations. Not one of the suppliers in this research has an automated or integrated application for receiving orders. The suppliers have to type the product detail and order quantities manually into their systems. Smoked Products Supplier enters all order information received into their system in this way. Manufacturer Representative Supplier complained that product numbers from every retailer are different and that the product description for the same product is different from retailer to retailer. It is thus not easy to match products that are ordered to the products that they sell. Manufacturer Representative Supplier prefers an electronic order such as the one RetailerX makes available on the RetailerX B2B web portal. The supplier product reference code that RetailerX shows on the electronic order makes it easy for the clerk to determine what product is referred to on the order. If an order is received over the telephone, errors may creep in which slows down the ordering process. Gifts Supplier manually compares order prices and pack sizes on orders received, with what was negotiated. Bakery Supplier Two prints all orders from the retailer B2B web portal and manually enters them into their system. Poultry Supplier indicated that promotions launched by the retailers tend to make the demand erratic and this situation complicates the order fulfilment process. Stainless Steel Accessories Supplier also captures the order information from the paper orders received. They call the agents to confirm quantities if the facsimiles from the agents are not clear.

Smoked Products Supplier, Bakery Supplier One and Abrasives Supplier indicated that they do not have an automated mechanism for tracking stores that did not place their orders. When the suppliers realise that they have not received the orders, they call the stores to ensure that the orders are placed. Abrasives Supplier admitted that it might take a while for them to realise that a particular retailer had not placed an order.

The suppliers receive orders from some of the retailers on a store by store basis. Because there is not a consolidated order, the supplier has to create an invoice per store which is time consuming and costly. The bakery suppliers indicated that

they prefer consolidated orders to reduce processing effort, to save time and to reduce the number of invoices that have to be generated.

#### 5.2.1.4 No automated order confirmation

Some of the retailers expect the suppliers to confirm the orders they have received. This process is not automated and the supplier has to confirm the order manually. Smoked Products Supplier e-mails confirmation of orders to RetailerY. Gifts Supplier e-mails confirmation of order quantities to RetailerB and uses the B2B web portal that RetailerW provides to confirm the availability of stock.

#### 5.2.1.5 No internal electronic integration

Internal electronic integration is non-existent in most of the suppliers. Smoked Products Supplier sends the paper orders to the production area. Manufacturer Representative Supplier prints the stock picking slip in the warehouse as soon as the order is captured by the ordering clerk. If certain products are not in stock, the warehouse indicates this on the printed stock picking slip. The order clerk then has to remove the products from the order manually. This process is thus not automated. Abrasives Supplier has a computer in the production area, but it is not in use. The order clerk therefore has to physically take the paper order to the production area. In the case of Gifts Supplier, the order is manually sent from the product manager via the supervisor and the despatch clerk to the technical manager. No automation is in place. Poultry Supplier physically takes a batch of paper orders to the egg room manager when a certain number of orders have been accumulated. Their computers are not linked to each other, thus no local area network exists. Stainless Steel Accessories Supplier physically takes the sales orders to the production area. The production area requests a report manually from Pastel Accounting to find out what levels of stock are available. If sufficient stock is not available, the order clerk manually changes the quantities on the sales order to correspond with the quantities indicated on the paper copy received from production.

### 5.2.2 Order quantity disputes (second key problem)

There are occasional disputes between the suppliers and the retailers about the quantities that the retailers perceive were ordered and what quantities the suppliers understand were requested. Smoked Products Supplier has to resend order confirmation sheets to RetailerY when stores call in to change ordered quantities. This necessitates extra work for the supplier. In some cases, the RetailerY stores indicate that they do not need stock and then come back two days later claiming that they did place the order. This happens because of poor communication in the store. RetailerY takes the complaint straight to the owner of Smoked Products Supplier. In such a case, Smoked Products Supplier does not have proof that the store did not place the order, because the order was received verbally and not confirmed in writing.

Bakery Supplier One states that the quality of the orders depends largely on the Bakery Manager at the store. There is a huge human factor in the process. Bakery Supplier One is of the opinion that electronic orders will serve as proof of the quantities ordered by the branches. There are occasional disputes about quantities when orders are placed using the telephone.

Poultry Supplier receives order numbers from the stores when orders are placed. Only stores from RetailerE provide the name of a person as the order reference. Poultry Supplier is not in favour of this practise because the personnel at the retail store sometimes use the name of another person to place the order which results in disputes. At times, disputes arise between Poultry Supplier and the retailers on quantities and products ordered. There is no proof of who is right. Poultry Supplier indicated that RetailerD confirms their orders by e-mail which eliminates any disputes on order quantities.

The biggest problem for Stainless Steel Accessories Supplier is that facsimiles are sometimes not clearly printed. When this happens, they have to call the retailers to confirm the order quantities.

### **5.2.3 Lack of funding for technology (third key problem)**

According to Chan and Swatman (2000:80), financial barriers are difficult to overcome when dealing with small and medium trading partners, due to high costs associated with the start-up and ongoing activities of an electronic trading gateway (ETG). In this research however, funding was not really mentioned as a major issue. A reason for this may be the fact that there is no real pressure on any of the suppliers to integrate electronically with the retailers. There is thus no fear that costs may arise because of future integration requirements.

Smoked Products Supplier did indicate that their business has constraints on the funds available to expand operations. They are of the opinion that it would be possible to grow the business if the necessary funds are raised. However they struggle to get such funding approved by the bank.

Bakery Supplier One indicated that RetailerX switched from paying by cheque to electronic payments. This resulted in receiving payments a day later, as opposed to collecting a cheque directly from the retailer, which made funds available on the same day.

According to Plants Supplier, RetailerX mentioned that there will come a time when the stores will dictate what varieties are to be stocked, based on the sales history. Plants Supplier is of the opinion that the integration required to do this will be costly.

### **5.2.4 Lack of technical expertise (fourth key problem)**

Except for Manufacturer Representative Supplier, not one of the companies interviewed has an IT department or personnel that are dedicated to technical operations. There are no real technical skills in their businesses. Smoked Products Supplier does not have any technical skills. They make use of a technology vendor for their software and hardware installations. The Internet was setup by the same company. Manufacturer Representative Supplier has a person in the role of IT manager although this person is primarily responsible for the day to day operations and internal administration. The business makes use of a

computer company for their hardware, software and network setup. Bakery Supplier One uses the production supervisor to assist with the computer hardware. Abrasives Supplier used an external company for their Internet setup. Gifts Supplier has outsourced the hardware and software support to a small computer company. Bakery Supplier Two uses a small computer company to maintain their hardware. Poultry Supplier uses a small company to assist with the hardware and software maintenance. Plants Supplier used a computer company for their hardware setup and the retailer assisted with the software setup. The network, hardware and Internet setup of Stainless Steel Accessories Supplier was performed by an external company.

Rahman (2003:499) indicates that the cost saving introduced by the Internet in order processing can largely be attributed to the reduction in paperwork involved in a traditional order processing system. This is clearly not the case in the companies investigated. Although all of the suppliers have Internet access, usage of the Internet as the enabling technology in the ordering process is minimal. The computer systems of the companies are not fully integrated. Paper is physically moved between departments. Bakery Supplier One and Plants Supplier have only one PC each. The suppliers that have more than one PC, link the PCs together in a LAN, but do not integrate them with the production line. However Stainless Steel Accessories Supplier has a computer in the production area that is the main server. Thus, at any time stock status reports can be printed from this computer, because the orders received automatically adjust the stock levels in the system.

The majority of the suppliers have basic accounting applications installed, which include Pastel Accounting, AccPac Accounting, QuickBooks Accounting and SysPro ERP. The Plant supplier only uses Microsoft Excel and Microsoft Word. From this it is clear that these suppliers do not have the necessary technology infrastructure to integrate with the supply chain, similar to findings from Croom (2005:61). Preuss (2002), Simpson and Docherty (2004:320) and Chapman *et al.* (2000:354) indicate that one of the reasons why small businesses do not adopt e-commerce is a lack of technological competence. Simpson & Docherty (2004:326) confirm that the lack of skills prohibit e-commerce adoption. O'Gorman (2000:298) is also of the opinion that technological competence is a strategic weakness in the small firm.

The factory/general manager of Bakery Supplier One indicated that he wants to be more involved in the B2B process but that the factory consumes most of his time. He stated that it would be luxurious if a person could be dedicated to the B2B process full time, but at present this is impossible. Chapman *et al.* (2000:354) confirm that small businesses lack the willingness to dedicate time and resources to compensate for their lack of understanding and skills that are needed for the Internet. Wagner *et al.* (2003:348) also indicate that small businesses do not have sufficient managerial time to invest in change management.

#### **5.2.5 Retailer demands (fifth key problem)**

The suppliers have adapted their order fulfilment processes to accommodate the needs of the retailers. The suppliers that conduct business with RetailerX have the option to print their orders from a B2B web portal developed by RetailerX or to call the stores by telephone to confirm the order quantities. This confirmation is done per store. Bakery supplier One indicated that RetailerX told them that they are first addressing their big suppliers in terms of B2B orders. The suppliers that conduct business with RetailerY receive their orders from RetailerY's Head Office in a consolidated format that includes the required quantities from all the stores. RetailerB sends their orders in a Microsoft Excel spreadsheet format using e-mail. RetailerC submits their orders using EDI. This agrees with the findings from O'Toole (2003:118) that small businesses often become focused in order to maintain the specialised needs of a few customers. This may result in forced adoption of information technologies.

When invoicing the retailers, the invoice amount for RetailerX has to be printed as an inclusive price whereas the other retailers want to see an exclusive price. All the suppliers conducting business with RetailerX have to create the Microsoft Excel statement for RetailerX in a pre-specified format in store number sequence (date, invoice number, store number, account code per store and amount). If this format is incorrect, no payment will be received until the statement is rectified. To construct the statement is very time consuming. This confirms the view of Sparks and Wagner (2003:203) that retailers are large enough to force drastic changes along the supply channel. RetailerZ wants a statement per store and thus there is no consolidated statement, because every store trades as a franchise. RetailerY

receives a consolidated statement for all the stores because the order is done from their Head Office. RetailerW developed a B2B web portal that Gifts Supplier has to use to capture the availability of stock and from which to print despatch labels.

### **5.3 RESEARCH QUESTION DISCUSSION**

In this section, the data analysis conducted is applied to provide answers to the three investigative questions.

#### **5.3.1 Investigative question 1**

To understand the demands that retailers put on small companies it is also important to consider their technical capabilities. As stated by Croom (2005:62), small suppliers find it difficult to integrate properly with the supply chain due to technology constraints. From the research it is clear that every retailer follows their own process when conducting business with their suppliers. The small suppliers in this study followed the prescribed way of conducting business of each retailer.

The demands of the retailers are not very complex or unrealistic at this stage and the suppliers are able to adapt their processes to conduct business in the way prescribed by the retailers. It is clear that small suppliers lack the technical capabilities to integrate electronically with the processes of the retailers. It is therefore envisaged that these SMMEs will be very dependant on assistance from the retailers if any future electronic integration is required.

#### **5.3.2 Investigative question 2**

The suppliers in the research use a combination of media to receive their retailer orders. These media include the telephone, facsimile, e-mail, sales representatives, B2B web portal, SMS and EDI. All of the suppliers use a mixture of ordering mechanisms depending on the retailer they conduct business with. All the suppliers are dependant on the telephone for receiving their orders. All but

one of the suppliers, receive their orders using a facsimile. As stated by Porter (2001:67), in the late 1990s companies started to establish web portals to place and confirm orders with their small suppliers instead of using telephones or facsimiles. This was evident for only RetailerX and RetailerW. Five of the suppliers investigated are making use of RetailerX's B2B web portal to receive their orders and claims on short deliveries.

Five of the suppliers receive their orders by e-mail and six make use of either sales representatives or do physical store visits. One supplier receives orders by SMS messages and another receives orders using EDI.

Bakery Supplier One is of the opinion that a computer would be too slow to confirm orders from the stores and therefore they confirm order quantities telephonically with the stores. They prefer personal contact in order to ensure that the bakery managers place their orders. According to Zheng *et al.* (2004:35), small businesses fear losing the personal touch and knowledge of their customers and they lack confidence utilising Internet transactions.

Bakery Supplier One is afraid that the additional stock needed by the retailer for promotions might not be reflected on an electronic order. They prefer personal contact which allows them to maintain a close liaison with the bakery managers to ensure that the orders are placed. Bakery Supplier Two had a similar argument, stating that with electronic order processing, the store might fall into the trap of not adjusting order quantities as demand changes. Dealing directly with the stores allows them to query the required quantities and to remind the stores to adjust quantities where necessary.

Poultry Supplier manager visits the stores occasionally to keep the relationship with the store managers intact. Manufacturer Representative Supplier also uses sales representatives to ensure that the stores place their orders and to manage the relationship. The owner of Plants Supplier visits the stores every second week to assess the stock status and to replenish where needed. Stainless Steel Supplier makes use of agents to get the required order quantities from the stores. Although RetailerX orders are printed from the B2B web portal, the agents still visit the stores of the retailer to ensure that the orders are placed.

Stainless Steel Accessories Supplier mentioned that it happened in the past that one retailer ordered all of the "three-month-stock", causing an out-of-stock situation for other retailers. When stock is limited, only available stock is delivered and the invoice is adjusted accordingly.

The research answered the second investigative question, explaining the process that the small suppliers follow to receive and process orders from retailers. The research results clearly indicate that the way orders are received from retailers is not adequate and that the use of B2B e-commerce in this process is very limited. The ordering process has to be addressed by process redesign, electronic integration and automation.

### **5.3.3 Investigative question 3**

Lefebvre *et al.* (2005:1446) identified six possible stages for small business e-commerce adoption, discussed in Chapter 2. All the cases, except for Abrasives Supplier, are in the second stage of adoption, that is, non-adopters with an interest in e-commerce. Abrasives Supplier is in stage three, because they have a web site where product searches can be performed and people can register to access their news letter.

The suppliers were at different stages of applying the web tools made available by the retailers. Smoked Products Supplier, Bakery Supplier One and Plants Supplier print their shortage claims from RetailerX's B2B web portal. Manufacturer Representative Supplier, Abrasives Supplier, Bakery Supplier Two and Stainless Steel Accessories Supplier use the web portal from RetailerX to print their orders. According to Manufacturer Representative Supplier, the B2B web portal has the advantage of confirming the agreed cost prices of the products. This ensures that stock is delivered at the right price, reducing the possibility of later claims from the retailer. The orders received using the B2B web portal are available when the business day starts, allowing the order clerks to start processing the orders without having to wait for the sales representatives to bring in the paper orders. Gifts Supplier uses the web portal of RetailerW to create the retailer's invoices.

Investigative question three was answered by explaining what small suppliers perceive as determinants for e-commerce adoption for order processing. The research also confirmed the negative perceptions on electronic integration and the reasons for not establishing a web site. The determinants for adopting e-commerce for order processing are:

- Confirmation of order quantities.
- Accuracy of orders.
- Time saving.
- Visibility of stock levels.

The suppliers mentioned advantages that they perceive electronic integration will offer them. Smoked Products Supplier would prefer to receive orders through e-mail because it will serve as a confirmation of the quantities required. Manufacturer Representative Supplier indicated that they would prefer that the sales representatives obtain the orders from the Internet rather than from the stores because this should be more accurate. Bakery Supplier One is of the opinion that electronic orders will save them time and will be more accurate. Poultry Supplier prefers delivery confirmation through e-mail, similar to what they receive from RetailerD, because the drivers sometimes lose the documentation that they receive from the stores. This supplier needs to have visibility of the stock levels in the stores in order to serve the retailers better. According to Poultry Supplier, the stores have no idea what the stock levels are, and are thus not sure how much new stock is needed.

The suppliers also had some negative perceptions on electronic integration. Gifts Supplier does not believe that electronic orders will be of any benefit to them because their orders are seasonal and are not received in a continuous flow. Bakery Supplier Two is of the opinion that electronic order processing might result in stores accepting suggested electronic orders without ensuring that the suggested orders are fulfilling their specific stock demands. Their perception is that technology is changing too fast to keep up with. Furthermore to this, Bakery Supplier Two is of the opinion that the retailers can make their Internet applications more user-friendly. Bakery Supplier One is of the opinion that a computer would be too slow to confirm orders from the stores and therefore they prefer to confirm order quantities telephonically with the stores.

All the suppliers use the Internet to access their e-mail. Four suppliers use the Internet to perform product related research. Seven suppliers use the Internet to access the B2B web portals of the retailers. Three suppliers conduct Internet banking. These findings agree with the findings from Teo and Pian (2004:458) that smaller firms tend to restrict their Web adoption to either e-mail or web sites that provide information and brochures and functionality such as product information, news, events, interactive content, personalised content and e-mail support.

Only Abrasives Supplier has a web site. The web site provides functionality for product information searches and news. According to Sadowski, Maitland and Dongen (2002:86), companies with a web site are more motivated to reach new customers than companies without a web site. Three suppliers indicated that they want a web site for marketing purposes. Five of the suppliers do not plan to establish a web site. The reasons they provided were:

- A web site is not necessary because business is only conducted locally. A web site would only be appropriate for dealing with international markets.
- Money is only spent on revenue generating projects.
- The priority is to rectify problems with hardware and networks before considering a web site.
- When only one retailer is dealt with, a web site is not needed.
- A web site is not wanted because it would enable all the retailers they conduct business with to be aware of products supplied to other retailers.

Smoked Products Supplier is in the process of creating a web site. Abrasives Supplier uses their web site only to publish information to prospective customers. No electronic transactions are in place. Not one of the suppliers indicated that a web site will assist with order receiving and processing. Other uses of the Internet included tax lookups and research on what competitors are doing.

#### **5.4 B2B E-COMMERCE ORDER PROCESSING GUIDELINES**

According to Moodley (2002:39), small businesses without e-commerce activities may become locked out of the supply chain. From the case study research conducted, it is evident that the suppliers need guidelines to enable them to use

technology, and specifically the Internet, more effectively in their operations with the retailers. According to Kaynak *et al.* (2005:638), small businesses are more open to e-commerce adoption if they perceive benefits in using Internet-based e-commerce. The small suppliers used in this research do perceive benefits in the adoption of e-commerce activities. Three of the suppliers stated that they would prefer to receive their orders using e-mail or facsimile or another electronic medium to serve as proof of the products and quantities ordered. Bakery Supplier One is of the opinion that electronic orders will contribute to a reduction in telephone costs. Poultry Supplier believes that visibility of the stock levels in the retailer stores will allow them to respond better to fluctuating demands.

From this research, the following factors have been established as essential ingredients to support B2B e-commerce order processing:

- Establish a “packaged” Internet deal.
- Adopt the tools made available by the retailers.
- Establish generic business processes with all retailers.
- Automate manual processes.
- Electronically integrate the front office to the production area.
- Confirm orders by e-mail.
- Standardise the format of the electronic documents received from the retailers.
- Create electronic integration on product codes from the retailers.
- Make time available for staff to skill themselves up.

#### **5.4.1 Identifying a framework to map the established factors**

In research conducted by Pant *et al.* (2003:203), discussed in Chapter 2, they established that the reasons for an e-supply chain were mainly to improve inventory and order fulfilment. The framework created by Pant *et al.* (2003:218) was used in this research to map the established factors found for order processing for B2B e-commerce. This author therefore identified the criteria to be considered when adopting order processing for B2B e-commerce.

From the research conducted by Pant *et al.* (2003:218), they indicated that a business has to consider the following factors when embracing e-supply chains:

- Establish if integration to business partners is high or low.
- Determine the level of internal integration.
- Assess the IT infrastructure.
- Consider redesign of business processes.

In paragraph 5.4.2, the established factors from this research are mapped to a framework provided by Pant *et al.* (2003:218) to form guidelines for adopting order processing for B2B e-commerce.

#### **5.4.2 Guidelines for adopting order processing for B2B e-commerce**

Based on the order processing improvement areas identified by the research as well as the framework created by Pant *et al.* (2003:218), the following guidelines were established to assist small suppliers in adopting B2B e-commerce for order processing.

##### **5.4.2.1 Business partner integration**

Not one of the small suppliers in the research shows a high level of integration with the retailers. As stated by Pant *et al.* (2003:214), "... complicated off-the-shelf packages for supply chain planning, execution, and logistics for integration with external partners will not be cost effective for such a firm". The small suppliers therefore do not need to invest in external systems that will enable collaborative planning, forecasting, and replenishment, and integrated CRM. Instead of this they can share the information on their ERP system with external partners over a Web-based link (Pant *et al.*, 2003:214). Seven of the suppliers in the research use accounting based ERP systems to manage their stock, orders and invoicing. The suppliers have to work with the retailers to determine how they can share their product and inventory information to streamline their operations. Kim and Umanath (2005:815) propose that firms integrate electronically by creating a product code translation table that allows employees to place/receive orders using internal product codes. In cases where it is not possible to receive electronic information from the retailers, it is important that the suppliers use e-mail to confirm the order quantities and order information before sending the

stock to the retailers. This will minimise disputes on order quantities, as was evident in the research.

Small suppliers can also make use of retail exchanges. Sparks and Wagner (2003:202) recommend the use of retail exchanges because they are easily accessible through the Internet and assist distributors, suppliers and retailers to conduct either one-to-one or multiple transactions with each other. Levinson (2006:70) indicates that mid-market companies should outsource their B2B trading platforms to vendors that operate trading hubs. B2B trading platforms remove the complexity from the supplier and automate the transactions between the buyers and suppliers.

#### 5.4.2.2 Internal integration

The suppliers show very poor internal integration of their systems. In most cases, there is no electronic link between the area where orders are received and processed and the production area. Paper is physically carried between departments and a lot of manual work is conducted. It is thus advisable that suppliers focus on internal process redesigns and allocate resources to this (Pant *et al.*, 2003:216). Chapman *et al.* (2000:358) recommend that small businesses map and analyse their business processes in order to determine opportunities available through using ICTs. Power (2005:99) also indicates that businesses have to build a logical model of the business processes before embarking on technology and e-commerce. According to Moodley (2002:37), it is necessary for a business to integrate its front-office systems (sales, marketing and customer support services) with its back-office systems (databases, order processing, inventory and accounting). Only when internal business processes are properly integrated, will the business have a platform from which to establish optimal collaborative supply chain management with other businesses (Moodley, 2002:37).

#### 5.4.2.3 IT infrastructure

According to Simpson and Docherty (2004:326), one of the barriers to e-commerce adoption is an inadequate telecommunications infrastructure. Moodley

(2002:37) however is of the opinion that South Africa has a well-established telecommunications infrastructure which is deeply integrated into global economic networks. South Africa is therefore "... better positioned than any other African nation to take advantage of growth opportunities in B2B e-commerce". It is therefore important that the small suppliers assess the way that they link to the Internet. Abrasives Supplier uses ADSL to link to the Internet. The other suppliers have analogue dial up Telkom lines. Bakery Supplier One has a "pay per call" link. The suppliers should determine what infrastructure is needed to enable them to keep up with the requirements of the supply chain. This will determine what technology to use to link to the Internet.

The suppliers do not necessarily make use of the tools made available by the retailers. Smoked Products Supplier indicated that RetailerX introduced a B2B web portal to them for the printing of orders, but they do not use this application. They could not indicate why not. Poultry Supplier reported that RetailerX introduced their B2B web portal to them but that RetailerX then postponed the implementation. RetailerZ has also supplied documentation associated with a new ordering process they are going to introduce, but it has not been initiated yet. Bakery Supplier One and Plants Supplier use limited functionality made available by RetailerX on their B2B web portal. It is important that the small suppliers use the tools made available by the retailers to their advantage in order to streamline the interaction with the retailers. They also have to trust the electronic information from the retailer. As stated by Kao and Decou (2003:242), the parties to the e-commerce transactions have to trust each other.

#### 5.4.2.4 Business processes

According to Pant *et al.* (2003:218), processes have to be redesigned jointly with business partners. The business as a whole has to be aware that current practices and organisational structures may be affected by this. Because every retailer follows a different process to communicate stock requirements to the suppliers, the suppliers have to take it on themselves to establish a standard way of interacting with all the retailers. As Schlenker and Crocker (2003:10) indicate, employees have to be trained for e-business to assist them to coordinate information flows to improve business processes, to apply Internet technologies

to address business challenges and to enrich information to meet the needs and objectives of clients.

Lack of time to re-assess processes, was identified as a problem. As stated by Bakery Supplier One, the personnel do not have sufficient time to spend understanding the B2B process of RetailerX. According to Chapman *et al.* (2000:354), small businesses lack the willingness to dedicate time and resources to improve their understanding and skills. It is very important in the e-commerce planning process to ensure that sufficient skilled staff is available to operate the e-commerce venture (Kao & Decou, 2003:242).

Manual repetitive tasks should be automated. All the suppliers have to capture the order quantities and product detail either from orders received via facsimile or as the information is communicated using the telephone. Rahman (2003:499) indicates that using the Internet in order processing can reduce paperwork. There are retailers that e-mail the orders but there was no indication from the research that the suppliers load these electronic data into their systems. Instead they print the data and then capture it into their systems. The suppliers that use the B2B web portal of RetailerX also print the orders. Suppliers should come to an agreement with retailers to make the order data available in a format that can be automatically loaded into the suppliers' applications. This supports the view of Gibson and Edwards (2004:66) that Internet-enabled B2B will assist in communicating large amounts of information at a great speed between supply chain partners.

Table 7 provides a summarised view of the guidelines discussed.

**Table 7.** Proposed guideline for the adoption of Order Processing for B2B e-commerce.

<p><b>1. Business partner integration</b></p> <ul style="list-style-type: none"> <li>• Share ERP information with retailers</li> <li>• Confirm orders using e-mail</li> <li>• Subscribe to retail exchanges</li> <li>• Outsource the B2B trading platform</li> </ul>	<p><b>3. IT Infrastructure</b></p> <ul style="list-style-type: none"> <li>• Determine infrastructure needed to link to the Internet</li> <li>• Use the B2B tools made available by the retailers</li> </ul>
<p><b>2. Internal integration</b></p> <ul style="list-style-type: none"> <li>• Focus on internal process redesign</li> <li>• Integrate internal processes, linking the front-office and back-office systems</li> </ul>	<p><b>4. Business processes</b></p> <ul style="list-style-type: none"> <li>• Redesign processes jointly with business partners</li> <li>• Establish a standard communications channel with all the retailers</li> <li>• Train employees in e-business, making time available</li> <li>• Automate manual repetitive tasks</li> <li>• Agree on electronic data communication</li> </ul>

From the above discussion pertaining to business integration, SMMEs should first focus on integrating their internal business processes. In order to accomplish this, they have to analyse internal processes, identify opportunities for improvement and prioritise accordingly. Furthermore, SMMEs should engage with retailers in redesigning business processes between them (external) in order to establish a uniform, cost effective and automated way of conducting business. Internal processes may have to be revisited to adapt and support the re-designed external processes.

To minimise manual work and the use of excessive paper-based systems, suppliers should engage with retailers to determine how the exchange of information can be done electronically. This includes electronic confirmation of orders. It is advisable (and important) for suppliers to dedicate time and resources to Internet technology in an effort to understand its role within their business processes (Chapman *et al.*, 2000:354). However, it is critical to first educate owners/managers in the concept of e-relationships, if this is going to be exploited in future (O'Toole, 2003:118).

The South African Department of Trade and Industry (DTI) are able to assist SMMEs in establishing an e-commerce competency (Moodley, 2002:39), while business consultants and Internet Service Providers (ISPs) can assist with determining the most cost effective way of linking to the Internet. The external business process integration design has to be considered when this decision is made. The SMME can consider a *retail exchange* as a trading platform (Sparks &

Wagner, 2003:202), which removes the need for technical capabilities. SMMEs can also exploit Internet applications by preloading a PC with commercially available software for business integration and train their staff accordingly. For further technical assistance, use of business consultation should be considered (Chapman *et al.*, 2000:359). Furthermore, suppliers should familiarise themselves with the business tools made available by retailers and arrange training as required.

## **5.5 CONCLUSION**

In this chapter, the data obtained from conducting nine small supplier case studies was analysed and interpreted. The case study analysis results confirmed the key problem areas identified from the pilot case study. The data analysis specifically provided answers to the three investigative questions, stated in Chapter 1. This enabled the author to create guidelines for small suppliers to adopt order processing for B2B e-commerce, and in so doing, answering the research question. The guidelines established are a combination of factors identified by Pant *et al.* (2003:218), using their framework for embracing e-supply chains, and the improvement areas identified by the case study research. The chapter concludes with a summary, in Table 7, of the guidelines created for B2B e-commerce order processing adoption.

## **6. CHAPTER 6: CONCLUSION**

In Chapter 5 the data gathered from the case study research were analysed and used to answer the research question. From the research results, guidelines were created to assist the SMME to adopt order processing for B2B e-commerce. This chapter is the conclusion to the research and provides a holistic reflective overview of the research design and methodology, the research process, the research problem, the research question and the investigative questions. The research results are revisited and final conclusions are drawn.

### **6.1 INTRODUCTION**

According to Carter and Jones-Evans (2000:3), SMEs are important for the economy of countries for job creation. In 1995, 68 million jobs in the European Union were provided by SMEs as opposed to 35 million jobs that were provided by large companies. Large companies are also often dependent on small businesses for selling their products and for providing them with services and products that they require to run their companies (Carter & Jones-Evans, 2000:3).

SMMEs fulfil an important role in the South African economy because they provide employment for a large portion of the country's population. Soontiens (2002:712) indicate that South African small businesses make up a very large portion of the South African business sector and contribute to almost 50 per cent of the South African economic activity. Small businesses are important for increasing competitiveness, distribute economic power and address unemployment. According to Soontiens (2002:712), small businesses in developing countries are also becoming more important for job creation.

SMMEs are also part of supply chains. Redelinguys (2003:91) indicates that small businesses contribute to cost savings in the supply chain because they are just as important for integration, connectivity, synchronisation and collaboration as large companies. Further to this large companies focus on their supply chains, of which the small supplier is part, as a source of competitive advantage.

Therefore a small supplier has to show certain competences to qualify as a partner (Macpherson & Wilson, 2003:174).

The efficiency of the supply chain is important for the success of businesses. SCM improves the way enterprises find raw materials to produce products or services, manufacture products or services and deliver them to their customers (Koh & Maguire, 2004:340). If any component in the supply chain does not operate optimally, it has a negative impact on the end product. Sparks and Wagner (2003:203) indicate that "... the supply channel is only as strong as its weakest link" making it necessary for all members in the supply chain to develop at the same pace. It is therefore important that every member of the supply chain contribute as expected or face the possibility of being eliminated. According to Sharma and Bhagwat (2006:216) small suppliers will only survive if they are able to manufacture/supply more products at a competitive cost, with shorter delivery times, minimum defects and using fewer resources.

Information technology, and specifically the Internet, is becoming more important for ensuring an effective supply chain. The Internet facilitates online communications, online procurement and real-time data provision in the supply chain (Chou *et al.*, 2004:342). Although large companies benefited from EDI, they could not extend it to their smaller suppliers because these suppliers could not afford EDI (Levinson, 2006:72). On the other hand, the Internet is ideal for integration in the supply chain because it speeds up communication (Pant *et al.*, 2003:206; Lankford, 2004:303), reduces costs (Lankford, 2004:303) and is more affordable and accessible than proprietary networks like EDI.

B2B e-commerce, enabling electronic transactions between businesses over the Internet, is essential in the supply chain. It automates transactions between businesses and speeds up the supply chain process (Gibson & Edwards, 2004:63). Furthermore B2B e-commerce assists in communicating large amounts of information at a great speed between supply chain partners (Gibson & Edwards, 2004:66).

In this research, the focus was on the ordering process component of the supply chain that exists between suppliers and retailers. The suppliers in this research are small manufacturing companies that supply directly to the retailers. The retailer has to ensure appropriate stock levels in order to serve its customers and

therefore the retailers are dependant on their suppliers to ensure that the right products are available at the right time in the required quantities. According to Rosenbaum (2001:8), collaborative decision making between suppliers and retailers is necessary to align production to actual consumer demand. The suppliers therefore have to understand the demands from the retailers in order to provide an effective service. According to Sparks and Wagner (2003:202), up to 30 per cent of information in the supplier's catalogue is incorrect, resulting in 10 to 15 per cent of products not being available when the consumer requires them. B2B e-commerce can potentially fulfil an important role in the ordering process to ensure that the retailers' stock demands are satisfied. Gibson and Edwards (2004:66) indicate that Internet-enabled B2B not only assists in communicating large amounts of information at a great speed, but it is cost effective and allows asynchronous communication in supply chains.

The small suppliers however face challenges in adopting B2B e-commerce. They do not necessarily have the technical expertise and funding available to invest in the infrastructure and skills that are required. According to Croom (2005:61), small businesses often do not have the technology infrastructure and are not capable of properly integrating with the supply chain. It is therefore necessary to provide guidelines to the small businesses in order to assist them to keep up with technology requirements for effectively participating in the supply chain.

## **6.2 RESEARCH PROBLEM**

The research problem indicates that small suppliers are not necessarily equipped to receive orders electronically in the way expected by retailers which may result in them being excluded as possible business partners. The research confirmed that the retailers follow different processes when ordering merchandise from the suppliers. Two retailers have developed B2B web portals to govern the placement of orders. The first retailer conducted business with only one of the suppliers researched. In that case study, the supplier had to use the web portal as part of the order fulfilment process. The second retailer introduced the B2B web portal to the suppliers in the research but did not enforce its use. Some suppliers did receive orders by e-mail. There was however little evidence that electronic business was enforced on any of the suppliers.

### 6.3 RESEARCH QUESTION

The stated research question, "What are the criteria for SMMEs supplying retailers to successfully adopt order processing for B2B e-commerce?" was addressed by the research. Key problem areas in the ordering process between the suppliers and the retailers were identified. The key problems identified were mapped to a framework for embracing e-supply chains provided by Pant *et al.* (2003:218) in order to establish guidelines for adopting order processing for B2B e-commerce.

### 6.4 INVESTIGATIVE QUESTIONS

Each of the three investigative questions was answered by the research, as documented in Chapter 5.

**Investigative question one "To what extent do retailers demand SMME suppliers to conduct business in a prescribed manner?"** Retailers follow different processes when conducting business with suppliers. Retailers use different mediums to communicate with suppliers including telephone, facsimile, e-mail, B2B web portals and supplier sales agents. Some retailers consolidate their orders where others send orders per store. Delivery to some retailers is directly to their stores where other retailers prefer delivery to their distribution centres. One of the retailers requires the payment statements in a prescribed format and non-compliance leads to delayed payments.

**Investigative question two, "What process does the SMME supplier follow to receive orders from the retailer?"** The order receiving process of each supplier was investigated and documented. This assisted in the identification of key problem areas and opportunities for implementing B2B e-commerce.

**Investigative question three, "What are the determinants for e-commerce adoption by the SMME?"** The research identified the determinants for e-commerce adoption from the literature in Chapter 2. In Chapter 5 guidelines were established for the implementation of B2B e-commerce by SMMEs.

## **6.5 RESEARCH DESIGN AND METHODOLOGY**

Qualitative research was conducted, using nine case studies. Semi-structured interviews were used to gather evidence and information. The information was triangulated by interviewing people in different roles in the organisations. Furthermore, information from different sources was triangulated. In addition, the activities in the manufacturing plant were observed and additional information gathered from the Internet and other documentation.

Explanation building was used to analyse the data. The main themes were identified and data was categorised accordingly. As the data analysis progressed, answers were established to the investigative questions which lead to answering the research question.

## **6.6 KEY RESEARCH OBJECTIVES**

The key research objectives have been met. The research identified the problems that SMMEs, in the role of suppliers, experience in the ordering process, which inhibit e-commerce adoption to a significant extent. Applying the research findings combined with the literature study, guidelines were produced to assist small suppliers to implement B2B e-commerce for order processing.

## **6.7 RESEARCH RESULTS**

In Chapter 4, the results of the case study research conducted are documented. Reporting is done under the following headings:

- Technical capabilities and retailer demands, which address the first investigative question.
- Receiving orders and processing orders, addressing the second investigative question.
- The role of information technology and the value of the Internet, addressing the third investigative question.

The results were very similar for every supplier included in the research. The suppliers were selected to participate in the research from the supplier database of RetailerX. It is thus possible that research on suppliers not supplying RetailerX might produce different results, but this is unlikely because the research included most of the big retailers in South Africa. The research is practical and feasible because it can easily be repeated on a different group of suppliers.

## **6.8 PERSONAL REFLECTION**

### **6.8.1 Key learnings**

The research confirmed that small businesses have limited Information technology skills. They are too small to maintain an Information technology department and therefore make use of small technology vendors that assist them with their software and hardware installations and maintenance. Only one supplier had a web site which is evidence that small suppliers do not perceive value in establishing a Web presence.

The suppliers are focussed on receiving their orders from the retailers and call the stores repeatedly to ensure that orders are placed. Very little automation was evident in their processes for conducting business with retailers. Their processes are largely paper based and administered by using accounting packages.

Internet usage is very limited; it is mainly used for e-mail communication. Some suppliers do receive orders by e-mail. RetailerX made a B2B web portal available from where suppliers can print RetailerX orders and claims. RetailerW also has a web portal for suppliers to confirm order quantities and to print dispatch labels that accompany order deliveries. The Internet is also used for limited research and for Internet banking.

### **6.8.2 Personal value**

The author was able to verify the theory found in the literature with respect to small business practise, specifically in the Western Cape. The problems identified

in this research are similar to those found in other countries. From this research, South Africa generally has an additional challenge, that being the high cost of Internet bandwidth.

### **6.8.3 Avenues identified for further research**

The research was based on suppliers included in the supply chain of RetailerX. It did not attempt to include all the large FMCG retailers in South Africa. The research was conducted only on suppliers located in the Western Cape. It can be expanded to include suppliers that do not conduct business with RetailerX at all or to include suppliers supplying all the large FMCG retailers in South Africa. Suppliers from different regions in South Africa can be included to verify that the results of the research apply to all South African SMMEs that supply FMCG retailers in South Africa.

This research focussed on the adoption of B2B in order processing and the strategy for adoption. Although the literature review included an investigation on the strategy for adopting B2B e-commerce in the wider supply chain (not only order processing), it was not the focus of this research. Further research can thus be conducted on the strategy for B2B e-commerce adoption in the supply chain by South African SMMEs supplying FMCG retailers.

## **6.9 CONCLUSION**

The research established guidelines for adopting order processing for B2B e-commerce. Key problem areas were identified in the ordering process including inefficiencies in the ordering process, disputes on order quantities, funding available for technology, availability of technical expertise and retailer demands.

Five inefficiencies were identified in the ordering process:

- The unavailability of retailer staff in the store to place orders,
- the number of calls that have to be made to the retailers to confirm the orders,
- the lack of electronic integration in the order receiving process,

- the lack of automation in the confirmation of orders to the retailers,
- and the lack of internal electronic integration.

From the research results, nine areas for improvement were identified that the small supplier should consider when conducting B2B order processing. This was considered together with factors identified by Pant *et al.* (2003:218) for embracing e-supply chains to establish guidelines for adopting B2B e-commerce for order processing. By considering the established guidelines, the author is of the opinion that small suppliers will be better equipped to keep up with the business demands from retailers which will enable them to fulfil their role in the supply chain and thus stay in business.

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## **GLOSSARY**

### **B2B**

Business-to-business (B2B) electronic commerce is conducting business by executing transactions between businesses via the Internet.

### **e-Business**

E-business is conducting business over an electronic network, exchanging data files, having a web site, using other companies' web sites or buying and selling goods and services online. Normally it excludes sending and receiving text-based e-mail messages.

Telecommunication networks, particularly the Internet, is used to conduct business transactions. E-business consists of business-to-employee Intranet-based applications, business-to-consumer Internet-based applications and business-to-business Extranet-based applications.

### **e-Commerce**

Transactions and interaction of information and data are primarily conducted between businesses and customers or between businesses and organisations, linking various partners in the supply chain, spanning from product design and demand forecasting to complex sourcing, financing, logistics, import/export and settlement.

### **e-Procurement systems**

Electronic procurement (e-procurement) systems mirror the procurement process by means of internal processing and external communication with the supply base. Goods and services can be ordered using a PC, placing the order through the Web.

### **EDI**

EDI (Electronic Data Interchange) is the exchange of information according to the standards defined by the ANSI ASC X12 committee using a commercial Value Added Network (VAN).

## **ERP**

An ERP (Enterprise Resource Planning) is an accounting-oriented information system for identifying and planning resources needed to take, manufacture, ship and account for customer orders.

## **Internet technology**

Internet technology extends and interconnects information technologies inside and outside an organisation using the public and private telecommunications networks.

## **SMME**

Small Medium and Micro Enterprises are separate and distinct business entities, including co-operative enterprises and non-governmental organisations, managed by one or more owners, including its branches or subsidiaries (South Africa, 2003). Business is predominantly carried out in any sector or sub sector of the economy which can be classified as a micro, small or medium enterprise satisfying the criteria of total full-time equivalent of paid employees, total annual turnover or total gross asset value. This is defined by the smallest relevant size or class in the National Small Business Act (South Africa, 2003).

The Manufacturing sector and the Wholesale Trade, Commercial Agents and other Trade sector categories of which the SMME Retail Supplier may be part (South Africa, 2003)

## **Supply Chain**

A linked set of resources and processes that initiates at the sourcing of raw material and extends to the delivery (supply) of end products to the final customer. This includes vendors, manufacturing facilities, logistics providers, internal distribution centres, distributors, wholesalers and all other entities that lead up to final fulfilment of consumer demand.

## **Web services**

Web services are reusable information system components that can be published, located and invoked over the Internet using standard protocols.

## APPENDICES

### Appendix A

#### Four-factor instrument to measure electronic information transfer

##### Decision and operation integration (DOI)

1. We share common product codes with the supplier either through the same product code tables or computerized code translation tables.
2. We transmit purchase orders to the supplier electronically.
3. We receive supplier's invoices electronically.
4. We make payments for the supplier's invoices electronically.

##### Mutual investment in relationship-specific assets (MIRSA)

5. Both the supplier and we have invested in communication network which we share with each other.
6. Both the supplier and we have invested in hardware devices which we share with each other.
7. We have invested time and/or money in providing Information technology training to ensure that the interface with the supplier is smoothly operated.
8. We have invested time and/or money in providing technical support to ensure that the interface with the supplier is smoothly operated.
9. We have invested time and/or money in providing customized support to ensure that the interface with the supplier is smoothly operated.

10. We have invested time and/or money in helping the supplier develop (or acquire) software to ensure that the interface with the supplier is smoothly operated.

Information sharing (IS)

11. We exchange our sales (or production) data with the supplier electronically.

12. The supplier determines the order quantity for each product (based on sales data provided by us) and notifies us electronically via a purchase order that the shipment is coming.

Monitoring and control (MAC).

13. We assess the supplier's production schedule electronically.

14. We assess the supplier's inventory levels of finished products electronically.

15. We assess the supplier's inventory levels of raw Materials electronically.

16. We provide *performance feedback* such as the quality of products delivered electronically.

17. We can monitor the supplier's production capacities electronically.

18. We can monitor the quality of products produced by the supplier electronically.

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