

EFFECTIVE INVENTORY MANAGEMENT IN SMALL TO MEDIUM-SIZED ENTERPRISES

by

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PREFACE

I want to acknowledge the following persons for assisting me during the writing of this mini-dissertation:

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ABSTRACT

We live in the age of the informed consumer creating a business climate of increasing competition, which implies that all companies need to be as efficient as possible at every level, and this includes inventory management. For many businesses, inventory is the largest asset on the balance sheet at any given time and therefore needs to be efficiently managed. A large amount of a company's costs can be attributed to the amount it invests in inventory and associated holding, transportation, and management costs; management of inventory is thus critical to an SME's profitability. Therefore, it is important to investigate the models for effective inventory management in SMEs. Inventory management entails more than simply the forecasting and replenishment of inventory; it also demands the management of inventory to optimise services and profit. The main objective of the study was to investigate the standard inventory theories and models used to help management in small to medium-sized enterprises in keeping costs down while still meeting customer service requirements.

Organisational effectiveness was defined in terms of the effectiveness of the internal processes of an organisation. While accountants and senior managers tend to measure results of most, if not all, organisational activities in monetary terms, so it is no surprise that many organisations rely on financial measures such as ROI or ROA to measure effectiveness. However, effectiveness was defined as the ability to achieve stated inventory levels, judged in terms of financial measures like inventory turnover for this study. This study posits that the effectiveness of a given SME may be ascertained from the effectiveness of the inventory management decisions made by its management.

Modern inventory management systems are based on well-recognised inventory models and even though the methods were developed many years ago they still perform well from a theoretical point of view. Inventory models like economic order quantity (EOQ), activity-based costing (ABC), analysis for

inventory and just-in-time (JIT) that form the bases of modern inventory systems are still commonly used in the industry today. Modern inventory management systems like MRP/MRP II and ERP systems offer a complete inventory management system to SMEs, but despite the rapid development of ERP systems, little research can be found in evaluating the extent to which ERP could create a competitive advantage for SMEs. Safety inventory protects against inventory uncertainty by ensuring there are enough products available to maintain desired service levels. Based on this, safety inventory can be expressed as the quantity of inventory that has to be reserved in order to protect the system from random variables such as inventory-outs, which may occur as a result of either forecast errors or deviations from normal demand during average lead times. Supply chain management (SCM) is a set of approaches utilized to effectively incorporate suppliers, manufacturers, logistics, and consumers to place the right amount of inventory at the right places at the right time.

Since inventories represent a significant investment by many businesses, the challenge, however, is to determine the lowest amount of inventory required to accomplish all of the service-level targets. Inventory costs are relevant to most liquidity, asset management and liability management ratios and only once a balance is found between service levels, costs of holding inventory and cost of manufacture, which, once achieved, will it lead to increased profitability. Inventory is a measure of both liquidity and in-service efficiency just like receivable turnover. These methods produce an overall level of inventory that senior management typically judges in terms of an inventory turnover ratio (annual sales / average inventory) or a total asset level.

A literature study was conducted with the aid of a computer-based search, using the keywords identified, databases and search engines such as Google Search, Google Scholar, Business Source Premier, Emerald and EBSCO Host. The empirical research describes a process whereby data or facts on a specific issue were gathered and analysed. Both qualitative and quantitative research methods were employed to gather information from the defined population for this study. This study used a structured questionnaire as well

as an open-ended and semi-structured interview with some of the population sample to collect empirical data. The sample tested consisted of 60 managers, owners or responsible persons for inventory management in small to medium enterprises in Gauteng, South Africa. The results of the questionnaires were submitted for statistical analyses at the Statistical Department of the North-West University. The results of the statistical analysis were interpreted by closer investigation of the correlations, cross tabulations and frequency analysis done with the aid of SPSS.

After the statistical analysis the conclusion could be drawn that more than half of all questioned SMEs in the study were not effective in their inventory management and this is most probably the result of most respondents' lack of theoretical knowledge about inventory management theories. Furthermore, it was concluded that most small and medium businesses have experienced inventory shortages as a result of JIT ordering, but still chose not to hold safety inventories because of the cost associated with holding inventories. This also made them and their customers reliant on their suppliers' supply chain management for efficient service delivery. Furthermore, it was also found that ERP systems like SAP were too expensive to implement in small and very small businesses. Therefore, many small and medium businesses adopt the Pastel solution at a fraction of the price of the standard ERP systems to manage their inventories.

Keywords: Inventory, inventory turnover, inventory management systems, effectiveness, safety inventory, supply chain.

OPSOMMING

Ons lewe in 'n era van verbruikersbewustheid wat 'n besigheidsklimaat van groter mededinging veroorsaak. Ondernemings moet dus so effektief as moontlik wees op elke besigheidsvlak, en dit sluit die bestuur van hulle voorraad in. Vir baie maatskappye is voorraad op enige gegewe tyd die grootste bate op die balansstaat en daarom moet dit doeltreffend bestuur word. 'n Groot deel van 'n onderneming se kostes kan toegeskryf word aan die kapitaal wat belê word in voorraad en geassosieerde berging, vervoer en bestuurskoste. Die bestuur van voorraadvlakke is dus van besondere belang vir klein- en medium ondernemings se winsgewendheid. Voorraadbeheer behels meer as net die voorspelling en aanvulling van voorraad; dit vereis ook die beheer van voorraadvlakke om dienslewering en winsgewendheid te optimiseer.

Die vernaamste doel van hierdie studie is om die standaardteorie en modelle vir voorraadbeheer te ondersoek om sodoende die bestuur van klein- en medium maatskappye te help om kostes te besnoei, maar terselfdertyd hulle nog in staat te stel om kliënte se diensverwagtinge te vervul. Die studie is gebaseer op 'n omvattende literatuurstudie oor voorraadbestuur om sodoende belangrike inligting oor die beheer van voorraad te bekom. Vraelyste is gebruik om kwantitatiewe inligting in te win van 'n geïdentifiseerde toetsgroep. Die toetsgroep het bestaan uit bestuurders, eienaars en persone wat verantwoordelik is vir voorraadbeheer in klein- en medium ondernemings in Gauteng, Suid-Afrika.

Die effektiwiteit van 'n organisasie kan gedefinieer word in terme van die effektiwiteit van die interne prosesse van die organisasie. Rekenmeesters en senior bestuurders meet resultate van die meeste, indien nie al die aktiwiteite van 'n onderneming in geldwaarde en dit is dus geen verrassing dat baie organisasies vertrou op finansiële maatstawwe om hulle effektiwiteit te meet nie. In hierdie studie sal effektiwiteit gedefinieer word as die vermoë om verklaarde voorraadvlakke te bereik, gemeet in finansiële terme soos

voorraadomset. Hierdie studie stel dit dat die effektiwiteit van enige aangewese klein- tot medium onderneming vasgestel word vanuit die effektiwiteit van die voorraadbestuursbesluite wat deur die onderneming se bestuur gemaak word.

Moderne voorraadbestuurstelsels word gebaseer op welbekende voorraad-beheermodelle wat jare gelede ontwikkel is. Voorraadbeheermodelle soos ekonomiese bestel hoeveelhede, aktiwiteitsgebaseerde prysanalise vir voorraad en netbetydsbestelling word deesdae meestal in industrieë gebruik. Hoewel moderne voorraadbestuurstelsels soos MRP/MRP II en ERP-stelsels 'n volledige voorraadbestuurstelsel aan klein- en medium ondernemings bied, is daar min navorsing wat die omvang bepaal van die voordeel wat hierdie stelsels vir klein- en medium ondernemings inhou. Buffervoorraad beskerm teen voorraad onsekerheid deur te verseker dat voldoende voorraad beskikbaar sal wees vir verlangde dienslewering. Buffervoorraad is die hoeveelheid voorraad wat aangehou word om ondernemings teen voorraadtekorte te beskerm wat mag ontstaan as gevolg van voorraad-beplanningsfoute en -afwykings, en voorraadaanvraag tendense. Verskaffingsnetwerkbestuur is 'n stel beginsels wat gebruik word om verskaffers, vervaardigers, logistiek en verbruikers effektief te inkorporeer om te verseker dat die regte getal voorraad op die regte plek is.

Voorraad verteenwoordig 'n groot belegging in die meeste besighede; die uitdaging is dus om te bepaal wat die laagste hoeveelheid voorraadvlak is wat nodig word om alle diensvlakmikpunte te behaal. Voorraadkoste is relevant ten opsigte van die meeste winsgewendheids-, batebestuur- en skuldbestuursvergelykings. Verhoogde winsgewendheid sal dus slegs bereik word wanneer daar 'n balans gevind word tussen verlangde diensvlakke, voorraadkoste, berging en vervaardigingskoste. Voorraad is 'n maatstaf van beide winsgewendheid en diensverskaffingseffektiwiteit, net soos wat omset ontvang 'n maatstaf is. Hierdie metodes gee 'n totale vlak van voorraad wat senior bestuur tipies sal beoordeel in terme van 'n voorraadomset (jaarlikse verkope / gemiddelde voorraad) of 'n totale batevlak.

'n Literatuurstudie is gedoen met behulp van 'n rekenaargebaseerde soektog wat vooraf-geïdentifiseerde sleutelwoorde in databasisse en soekenjins soos Google Search, Google Scholar, Business Source Premier, Emerald and EBSCO Host gesoek het. Empiriese navorsing beskryf 'n proses waardeur data of feite oor 'n spesifieke onderwerp ingesamel en geanaliseer word. Beide kwalitatiewe en kwantitatiewe navorsingsmetodes is gebruik om inligting in te vorder vanuit die gedefinieerde groep vir hierdie studie. 'n Gestruktureerde vraelys sowel as 'n semi-gestruktureerde onderhoud met sommige van die studiegroeplede is gebruik om empiriese data in te samel vir hierdie studie. Die toetsgroep vir hierdie studie het bestaan uit 60 bestuurders, eienaars of verantwoordelike persone vir voorraadbestuur in klein- tot medium ondernemings in Gauteng, Suid Afrika. Die resultate van die vraelys is by die Statistiese Departement van die Noordwes-Universiteit ingedien vir statistiese ontleding. Die resultate is geïnterpreteer deur 'n nadere ondersoek van die korrelasies, kruistabulasies en frekwensie-analises wat gevind is met behulp van die SSPS-statistiese rekenaarprogram.

Nadat die statistiese analise gedoen is, kon die gevolgtrekking gemaak word dat meer as die helfte van al die genaderde klein- tot medium ondernemings vir die studie oneffektiewe voorraadbestuur toegepas het. Hierdie resultaat kan toegeskryf word aan die moontlike gebrek aan teoretiese kennis oor voorraadbestuursteorieë onder deelnemende respondente. Voorts is bevind dat die meeste klein- tot medium ondernemings voorraadtekorte ondervind het as gevolg van netbetyds-voorraadbestedings, maar steeds verkies om nie buffervoorraad aan te hou nie as gevolg van die hoë kostes daaraan verbonde. Dit het ook veroorsaak dat hulle en hul kliënte afhanklik is van hulle verskaffers se verskaffingsnetwerk vir effektiewe dienslewering. Daar is ook gevind dat ERP-stelsels soos SAP te duur is om te implementeer in ondernemings en daarom gebruik baie klein- en medium ondernemings die Pastel-oplossing, wat 'n fraksie van die prys van die standaard ERP-stelsel kos, om hulle voorrade te bestuur.

Sleutelwoorde: Voorraad, voorraadomset, voorraadbestuurstelsels, effektiwiteit, buffervoorraad, verskaffingsnetwerk

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LIST OF ABBREVIATIONS

ABC	:	Activity-based costing
APS	:	Advanced production scheduling
EOQ	:	Economic order quantities
ERP	:	Enterprise resource planning
IT	:	Information technology
JIT	:	Just-in-time
MPS	:	Master production schedules
MRP	:	Material requirement planning
OPT	:	Optimised production schedules
ROA	:	Return on total assets
ROI	:	Return on total investment
SCM	:	Supply chain management
SME	:	Small to medium-sized enterprise

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

We live in the age of the informed consumer, meaning that a retailer should be able to offer first class service in terms of the availability of its products, as consumers can very easily take their business elsewhere. The current business climate of increasing competition implies that all companies need to be as efficient as possible at every level, which includes inventory management. The primary goal of inventory management, therefore, is to have adequate quantities of high quality inventory available to serve customer needs, while also minimising the costs of carrying inventory (Brigham & Ehrhard, 2005:756).

According to Chow, Dubelaar & Larson (2000:97), inventory management is critical to retail financial performance, since inventory tops the list of valuable physical assets on nearly every merchant's balance sheet. For many businesses, inventory is the largest asset on the balance sheet at any given time. Thus, purchasing too many units of a slow-selling item will increase storage costs and interest costs on the short-term borrowings that financed the purchases, which may also lead to losses if the merchandise cannot be sold at the normal price (Libby, Libby & Short, 2004:358).

Inventory management entails more than simply the forecasting and replenishment of inventory; it also demands the management of inventory to optimise services and profit. Quite often inventory management is merely regarded as an accountancy function, which concerns itself more with inventory valuation than with effective logistics. Many limitations of financial-only performance measures are overcome by using the balanced scorecard system, forcing the organisation to recognise those activities that contribute to the company's success (Lea, 2007:1189).

The purpose of inventory monitoring and measurement should be to provide management with the necessary information to improve operations and to reduce errors. If the monitoring and measurement process is disregarded or given less than its due consideration, the feedback information on which management depends to determine the effects of its dissensions will be unreliable, and will give no indication of the actual quality of the inventory management (Bessant, Jones & Lamming, 2005:206). In the area of inventory management, a choice between many existing forecasting and stock control packages is given, all of which rely on traditional mathematical, statistical and operational research theories.

A large number of inventory theories offer optimal order quantities, safety inventory levels and inventory control procedures, as well as given assumptions about demand, lead-time and cost structures. Some researchers have modeled specific inventory management factors or situations, such as centralization of inventories, re-order points, net present value and management of spare parts (Chase, Jacobs & Aquilano, 2006:610; Bessant et al., 2005:206; Heizer & Render, 2006:558). In practice, it is common to apply replenishment methods to manage each item in the inventory. These generally used methods are:

- economic order quantity-based methods (EOQ);
- just-in-time methods (JIT), such as material requirement planning (MRP); and
- variants of push-and-pull procedures.

The effectiveness of an inventory management system depends on the quality of information it takes in and the capacity of the company's information technology (IT) (Chaffy & Wood, 2005:16). Improvements in information systems over recent years mean that feedback can be much more frequent and in some cases can be almost instant, thus providing real-time control capabilities. Several operating systems are available for monitoring inventory levels and triggering fresh orders. Medium to small enterprises commonly use

enterprise resources planning (ERP) systems based on JIT principles such as MRP to precisely manage inventory levels within the enterprises. The application of these methods produce an overall inventory level which can be measured in terms of an inventory turnover ratio (annual sales/ average inventory), as reported by Ballou (2000:72).

According to Nachtmann, Waller & Hunter (2006:355), much of a company's costs can be attributed to the amount it invests in inventory and associated holding, transportation, and management costs. Effective management of inventory is thus critical to an SME's profitability. Therefore, it is important to investigate the models for effective inventory management in SMEs.

1.2 PROBLEM STATEMENT

A large number of small to medium businesses operate in dynamic environments, which are influenced by various economical factors. The need for rapid and accurate measurement of inventory is thus seen as a vital part of the process of remaining competitive. Vast amounts of a company's costs can be attributed to the amount it invests in inventory and associated holding, transportation, and management. The primary goal of inventory management, therefore, is to have adequate quantities inventory available to serve customer needs, while also minimising the costs of carrying inventory. Companies adopted inventory policies based on the various inventory control theories to achieve the perfect equilibrium between inventory costs and inventory availability. Continuous improvements in IT and information systems offer complex inventory systems to companies capable of providing instant information to users. The effectiveness of inventory management systems depends on the quality of its information and its users; as a result of this it is necessary to investigate the effectiveness of inventory management in medium to small enterprises with ERP inventory management systems.

1.3 OBJECTIVES OF THE STUDY

The main objective of the study is to investigate the standard inventory theories and models used to help management in medium to small-sized enterprises in keeping costs down while still meeting customer service requirements. Therefore, a need is identified in this study to measure the effectiveness of inventory management in SMEs.

The sub-objectives of this study are to:

- investigate diverse inventory management theories;
- establish the effects of these practices on small to medium-sized enterprises; and
- assess effective inventory management practices in small to medium-sized enterprises.

1.4 RESEARCH METHODOLOGY

1.4.1 Overview of the literature

This study was based on a comprehensive study of literature relevant to the objectives posed above, with the aim to gather vital information regarding inventory management, in order to determine the sufficiency of various inventory management theories and models. Literature on the following topics regarded as important were: relationships between inventory, sales and services; evaluation of inventory management performance; methods of inventory monitoring and measurement; models for improving inventory management; and the relationship between inventory management and the profitability of enterprises. Relevant information was gathered from various publications such as textbooks, journals and computer-based searches on databases such as EBSCOhost, Emerald and the Ferdinand Postma library's various other databases.

1.4.2 Empirical study

Quantitative information was gathered by using a questionnaire, which was e-mailed to managers, owners or the person responsible for inventory management in small to medium enterprises in Gauteng. Each questionnaire had 43 Likert-scale questions, which counted five points each, formulated to test the information gathered in the literature study. The statistical analyses were performed by the SPSS program (SPSS, 2006). Descriptive statistics (such as means, standard deviations, skewness and kurtosis) were used to explore the data.

1.5 CONSTRAINTS

The literature study was limited to literature available in the Republic of South Africa up to 1 October 2008. The target population consisted only of managers or owners responsible for inventory management in small to medium enterprises in Gauteng.

1.6 CHAPTER DIVISION

Chapter 1: Consists of the problem statement, the objectives, methodology of the empirical study and the introduction to the study

Chapter 2: Consists of a literature study of inventory management theories applied in medium to small enterprises with the emphasis falling on optimum inventory availability at the lowest cost to the company

Chapter 3: Methodology of empirical study

Chapter 4: Analysis of questionnaires

1.7 SUMMARY

We live in the age of the informed consumer, creating a business climate of increasing competition, which implies that all companies need to be as efficient as possible at every level, and this includes inventory management (Brigham & Ehrhard, 2005:756). For many businesses, inventory is the largest asset on the balance sheet at any given time and therefore needs to be efficiently managed (Chow et al., 2000:97). According to Nachtmann et al. (2006:355), much of a company's costs can be attributed to the amount it invests in inventory and associated holding, transportation, and management costs; management of inventory is thus critical to an SME's profitability. Therefore, it is important to investigate the models for effective inventory management in SMEs. Inventory management entails more than simply the forecasting and replenishment of inventory; it also demands the management of inventory to optimise services and profit. A large number of inventory theories offer optimal order quantities, safety inventory levels and inventory control procedures, as well as given assumptions about demand, lead-time and cost structures.

The main objective of the study is to investigate the standard inventory theories and models used to help management in medium to small-sized enterprises in keeping costs down while still meeting customer service requirements. This study is based on a comprehensive study of literature relevant to the objectives posed above, with the aim to gather vital information regarding inventory management. Quantitative information was gathered by using a questionnaire. The target population for this study consisted only of managers or owners responsible for inventory management in small to medium enterprises in Gauteng.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In the current business climate of increasing competition, pressure is on the small to medium-sized enterprise (SME) to reduce cost and improve effectiveness in its supply chains. Organisational effectiveness can be defined in terms of the effectiveness of the internal processes of an organisation (Redshaw, 2000:247). This puts pressure on managers to look for areas where they can improve and reduce inventories without hurting the level of service provided. Through the years a number of inventory management methods were developed to assist the effective management of inventories. The application of these methods produces an overall inventory level which can be measured in terms of an inventory turnover ratio (Libby et al., 2004:717).

The model for economic order quantity (EOQ) for a single commodity was first introduced several decades ago and it is the simplest and most fundamental of all inventory models and is used to determine the optimum order size for individual inventory items. Activity-based costing (ABC) analysis divides inventory into three classifications on the basis of yearly cost volume and therefore is based on the reality of components within the organisation's total inventory (Chase et al., 2006:610). Just-in-time (JIT) was adopted by Toyota and some other Japanese companies in the 1950s; it is part of a fundamentally different approach to inventory management and will reduce inventory to the minimum in an organisation (Bessant et al., 2005:206).

In the 1960s and 1970s the material requirement planning (MRP) systems were developed to help business determine exactly when and how much material to purchase (Heizer & Render, 2006:558). MRP evolved into MRPII, which is made up of a range of functions integrated with financial reports to

form an integrated management system. Nachtmann et al. (2006:355) highlighted the fact that much of a company's costs can be attributed to the amount it invests in inventory and associated holding, transportation, and management costs.

Effective management of inventory is thus critical to an SME's profitability. Therefore, it is important to investigate the classification of SMEs in South Africa as well as the models for effective inventory management.

2.2 SMALL TO MEDIUM BUSINESS

Small and medium-sized enterprises (SMEs) are defined in numerous ways around the world. The National Small Business Amendment Bill as published in Government Gazette of the Republic of South African no. 24628 of 27 March 2003 (SA, 2003) defines a small business enterprise as a separate and distinct business entity managed by one owner or more, with business activities in any sector or sub-sector of the economy.

Furthermore, a small business means any entity, whether or not incorporated or registered under any law, consisting mainly of persons carrying on small enterprise concerns in any economic sector and established for the purpose of promoting the interests of, or representing small business concerns, and includes any federation consisting wholly or partly of such association, and any branch of such organisation. Table 2.1 shows the criteria for the classification of micro-, very small, small and medium-sized enterprises as published in the Government Gazette of the Republic of South African no. 24628.

Table 2.1 Classification of micro-, very small, small and medium-sized enterprises

Column 1	Column 2	Column 3	Column 4	Column 5
Sector or sub sector in accordance with the Standard Industrial Classification	Size of class	The total full-time equivalent of paid employees	Total turnover	Total gross asset value (fixed property excluded)
Wholesale Trade, Commercial Agents and Allied Services	Medium	200	R64m	R10m
	Small	50	R32m	R5m
	Very Small	20	R6m	R0.60m
	Micro	5	R0.20m	R0.10m

Source: Adapted from the National Small Business Amendment Bill no. 24628 of 27 March 2003 (SA, 2003)

As previously mentioned, Table 2.1 can be used to classify an organisation as a micro-, very small, small or a medium enterprise by satisfying the criteria mentioned in columns 3, 4 and 5 of the Table. This study will only focus on the SMEs in the retail sector as defined in Table 2.1. These enterprises typically have a yearly turnover of between R200 000 to R64 m across the micro- to medium-sized enterprise spectrum.

According to Dickinson (2008:138), small to medium-sized enterprises are considered as engines of growth in both developed and developing countries. Jutla, Bodorik and Dhaliwal (2002:139) point out that SMEs are contributing significantly to the economy and the economic growth of a country, thus many countries recognise the need to study as well as support SMEs. An SME's success can be examined by comparing the SME's performance with hard financial expression of business operations, such as growth in terms of an increase in the number of employees and increase in turnover (Walker &

Brown, 2004:578). Inventories are a significant portion of the current assets of any business enterprise and effective inventory policies in a supply chain should ensure that the right inventory levels are held in the right place at the right time, at the lowest costs possible (Brigham & Ehrhard, 2005:756).

However, taking into consideration global competitiveness, it is important that small businesses regard it seriously to be able to restructure their processes, manufacture quality products and stay in competition. The redesign of business processes will create efficiency and reduce waste and costs (Fening, Pesakovic & Amaria, 2008:700).

2.3 EFFECTIVENESS

The word effectiveness is defined by various sources and the most common definitions of effectiveness on the Web are as follow:

"Ability to achieve stated goals or objectives, judged in terms of both output and impact. " (www.epa.gov/evaluate/glossary/e-esd.htm)

"The extent to which actual outcomes are achieved, in terms of the planned outcomes, via relevant outputs, programs or administered expenses. The effectiveness of an output or program should be distinguished from its efficiency, which concerns the adequacy of its administration."
(www.facs.gov.au/annualreport/2004/glossary.htm)

"Degree to which an activity or initiative is successful in achieving a specified goal; (b) degree to which activities of a unit achieve the unit's mission or goal."
(www.balancedscorecard.org/LinkClick.aspx)

The Oxford English Dictionary (OED, 1987) defines effectiveness as:

"The quality of being effective (in various senses)"

Effectiveness can also be defined as “the ability to identify and do the things that contribute to the organisation”. According to Redshaw (2000:247), organisational effectiveness can be defined in terms of the effectiveness of the internal processes of an organisation. Consequently, effectiveness can also be defined as the degree to which targets are achieved within an organisation (Al-Khalil, Assaf, Al-Faraj & Al-Darweesh, 2004:82). Accountants and senior managers tend to want to measure results of most, if not all, organisational activities in monetary terms (Redshaw, 2000:245), so it is no surprise that many organisations rely on financial measures of effectiveness such as ROI or ROA (Walker & Brown, 2004:578).

Most of the studies regarding the theory of effectiveness deal with theories which cover the total organisation and differentiated theories which conceive of effectiveness in terms of a particular aspect of management such as human resource management, levels of management or leadership.

Effectiveness will be defined for this study as the ability to achieve stated inventory levels, judged in terms of financial measures like inventory turnover. This study posits that the effectiveness of a given SME may be ascertained from the effectiveness of the inventory management decisions made by its management. Inventory management is critical to financial performance of organisations and therefore should be managed efficiently with effective inventory management practices.

2.4 INVENTORY MANAGEMENT THEORY

Modern inventory management systems are based on well-recognised inventory models and even though the methods were developed many years ago they still perform well from a theoretical point of view. Inventory models like economic order quantity (EOQ), activity-based costing (ABC) analysis for inventory and just-in-time (JIT) are used in conjunction with MRP/MRP II systems to improve the efficiency of these systems. These models and theories will be investigated in the section below.

➤ **Economical Order Quantities**

The economic order quantity (EOQ) model for a single commodity was first introduced several decades ago and it is the simplest and most fundamental of all inventory models (Chiu & Chiu, 2006:157). The EOQ model determines the optimum order size for individual inventory items (Langfield-Smith, Thorne & Hilton, 2006:754), which minimizes both total stock holding and ordering costs (Bessant et al., 2005:192). The complexity of a resulting EPQ model depends on the assumptions one makes about various parameters of the inventory system (Chiu & Chiu, 2006:157). A benefit of the EOQ model is that it is robust; by robust is meant that it gives satisfactory answers even with substantial variation in its parameters (Heizer & Render, 2006:481). According to Langfield-Smith et al. (2006:754), the model is based on a number of simplifying assumptions, including:

- Demand is constant and known.
- Acquisition cost per unit is constant.
- Ordering costs are known and constant.
- The entire order is delivered at one time.
- Carrying costs are constant and known.
- On average, one-half of inventory is in stock at any time.

In constructing any inventory model, the first step is to develop a functional relationship between the variables of interests and the measure of effectiveness. In this case, because we concerned with cost, as illustrated by the following equation:

Total Annual Cost = Annual purchase cost + Annual ordering cost + Annual holding cost

or

$$TC = DC + \frac{D}{Q}S + \frac{Q}{2}H$$

where:

TC = Total Annual Cost

D = Demand (annual)

C = Cost per unit

Q = Quantity to be ordered

S = Set-up cost or cost of placing an order

R = Reorder point

L = Lead time

H = Annual holding and storage cost

The second step in model development is to find the order quantity (Q) at which total cost is a minimum. Using the formula $TC = DC + \frac{D}{Q}S + \frac{Q}{2}H$ we can derive that the formula for (Q) is:

$$Q = \sqrt{\frac{2DS}{H}}$$

A stock keeping unit's EOQ is the right quantity (Q) to reorder. The corresponding holding cost per annum (H) is a (rising) function of the annual usage value unit order or set-up cost (S) x annual demand (D) (Buxey, 2006:997). This can be illustrated by way of the following example assuming that:

D = 5400 units

S = R 21.00

H = R 18.00

$$Q = \sqrt{\frac{2DS}{H}}$$

$$Q = \sqrt{\frac{2(5400)(21.00)}{18.00}}$$

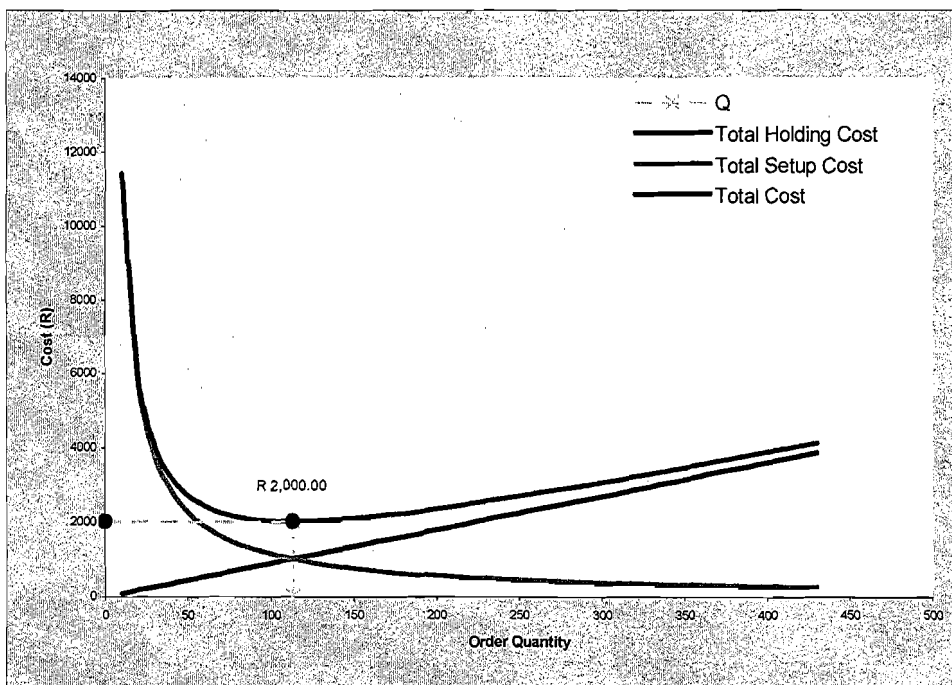
$$Q = \sqrt{\frac{226800}{18.00}}$$

$$Q = \sqrt{12600}$$

$$Q = 112.24972$$

Another way of solving the EOQ problem is the graphical method as presented in Figure 2.1 as an example.

Figure 2.1 Graphical representation of EOQ



Source: Adapted from annual product cost based on size of the order (Chase et al., 2006:598).

Looking at the graph in Figure 2.1, the total cost line indicates a decline in the total order costs as the order size increases and the order frequency decreases. The average inventory on hand increases as the order size

increases resulting in an increase in total carrying costs, as indicated by the rising slope of the holding cost line. The EOQ (Q) is where the best balance is struck between these two costs. An optimum order size is one that minimises both the ordering costs and carrying costs (Langfield-Smith et al., 2006:754).

The EOQ (Q) value can be determined by assuming that:

Annual demand (D) = 5 400 units

Order cost per unit (S) = R 21.00

Holding cost per unit (H) = R 18.00

The Q value can be interpreted from the graphic by drawing a vertical line from the total cost line through the centre of the spot where holding and set-up costs intercept each other. The cost associated with Q value is determined by drawing a horizontal line from the spot where the Q value line crosses the total cost line.

The result for this example would thus be:

Q= 122 units at a total cost of R 2 000.00

According to Chiu and Chiu (2006:157), the EOQ model is still accepted and applied industry-wide today regardless of its simplicity, but Langfield-Smith et al. (2006:757) report that many organisations do not use EOQ models to manage inventory, as there are more effective systems available, including the just-in-time approaches investigated further on in the study. While the concepts of EOQ in inventory management policies promise savings in the process of acquiring inventory, materials are rarely consumed and replenished with the regularity predicted by these concepts, so inventory levels have often grown and had an unfavourable impact on costs and profitability of companies (Lee & Bowhill, 2004:44). Therefore, an alternative will have to be found for the EOQ model and the activity-based costing (ABC) analysis for inventory planning will be investigated.

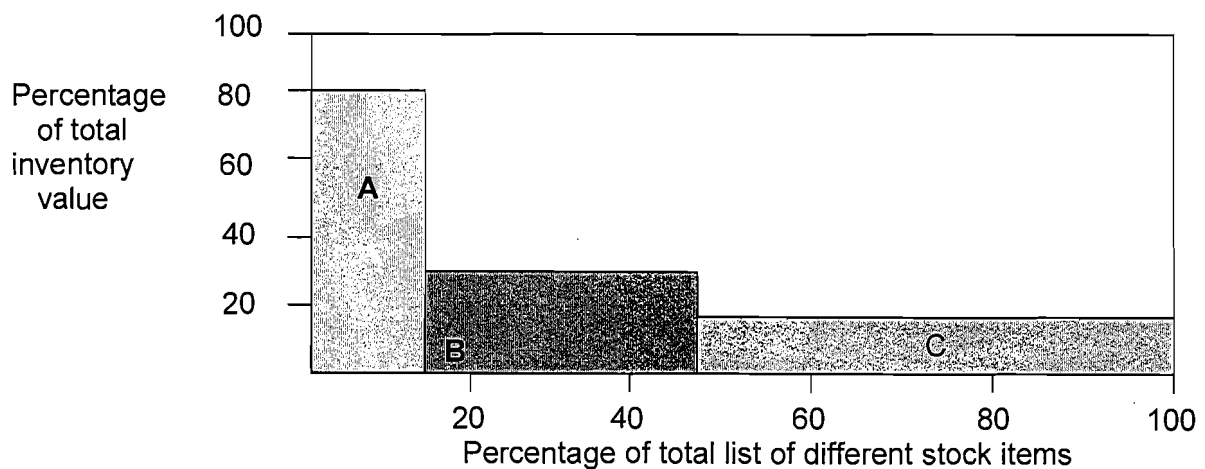
➤ **Activity-based costing analysis for inventory planning**

An activity-based costing (ABC) analysis for inventory is a surprisingly accurate, although basic, approach to managing inventory (Bessant et al 2005:195). Chase et al. (2006:610) point out that an ABC analysis divides inventory into three classifications on the basis of yearly cost volume and therefore it is based on the reality that components within the organisation's total inventory range have various values or costs and can be calculated in the following manner:

$$\text{Annual cost usage} = \text{Annual usage rate} \times \text{value per unit}$$

Consequently, according to Heizer and Render (2006:477), three distinct groups are formed according to descending annual usage value costs. The conventional ABC analysis adopted by businesses classifies plant components into three classes of criticality: very important [A-class]; important [B-class]; and less important [C-class] (Braglia, Grassi & Montanari, 2004:56). This is clearly illustrated by Figure.2.2.

Figure 2.2 Graphical illustration of ABC inventory analysis



Source: Adapted from a graphic representation of ABC analysis of stock (Heizer & Render, 2006:477)

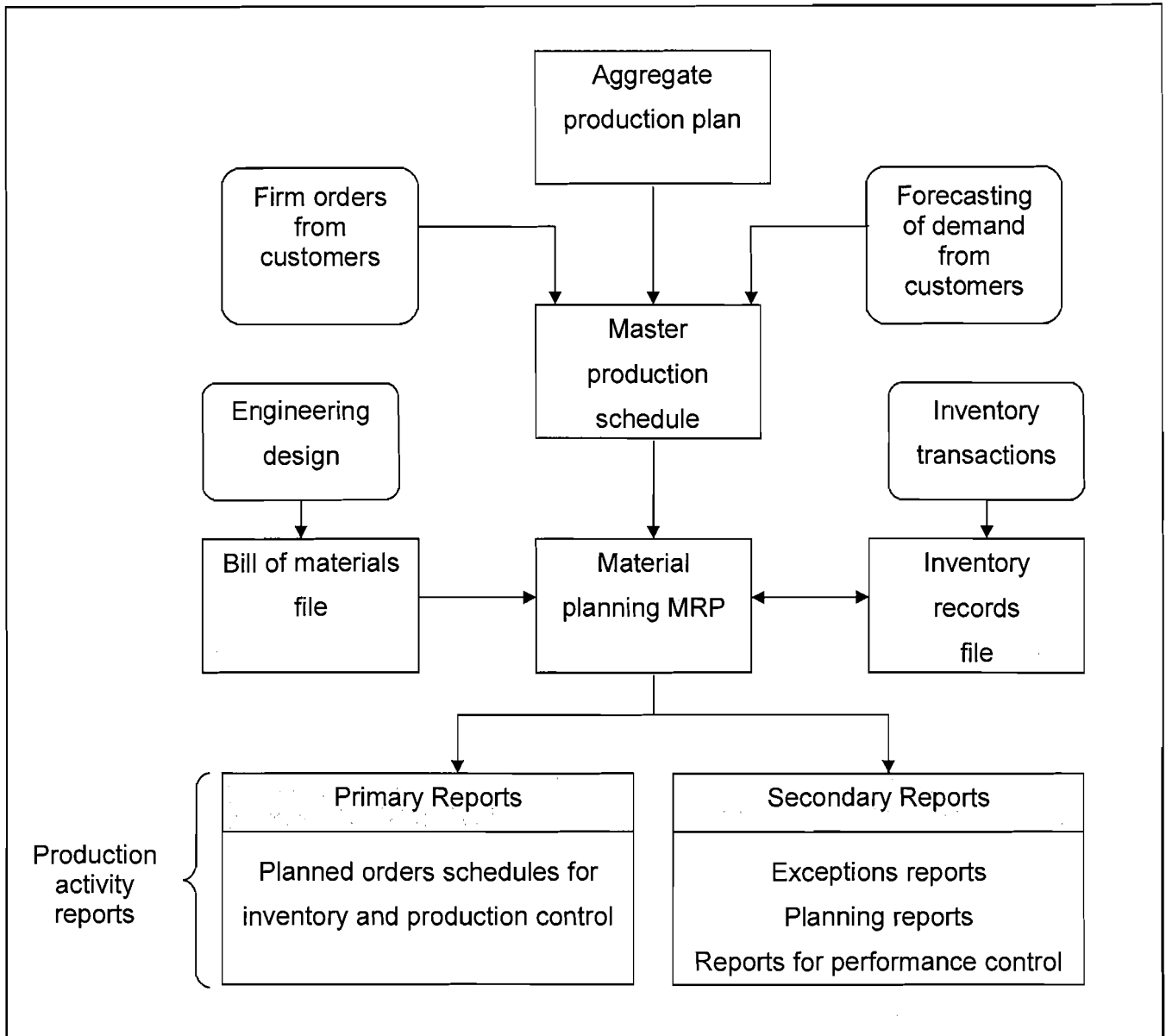
Class A items are those of which the annual cost value are the highest; although these items represent about 15% of the total inventory items, they represent 70% to 80%, of the total value used (Chase et al., 2006:610). Class B items are those inventory items of medium annual total value; these items represent 15% to 25% of the total value used. Class C may only represent 5% of the annual cost value; it represents about 55% of the total inventory (Heizer & Render, 2006:477). Buxey (2006:1001) suggests that a class A status implies high usage value and that an accurate inventory record is needed for this class, but not for class C items which are usually low usage items. A careful revision of the safety inventory, reorder points and order quantities is normally required in an effort to reduce inventory levels, and therefore a large class C should never be ignored because excess inventory of slow moving goods presents a long-term burden on an organisation (Buxey, 2006:1002). Chase et al. (2006:611) points out that the purpose of classifying items into groups is to establish the proper degree of control over each item. According to Lea (2007:1190), all activities that support the production, sale and delivery of goods and services are identified in the ABC analysis and therefore, are considered as product costs when cost drivers are determined, which in turn influence the profitability of an organisation. ABC is considered to be particularly appropriate for longer-term decisions, because classification is based solely on annual rand usage. This is particularly important to SMEs, because it does not matter if the company is very small or big – the same principles will assist the management team to make crucial decisions regarding their approach to keeping inventory.

➤ **Material requirement planning**

According to Bessant et al. (2005:196), material requirement planning (MRP) was developed and refined by Joseph Orlicky at IBM and by Oliver Wright, a consultant, in the 1960s and 1970s. MRP systems help businesses determine exactly when and how much material to purchase, while it takes the guesswork out of purchasing. MRP will ensure that SMEs have sufficient inventory to meet production demands in a normal operating environment, but not more than necessary at any given time. Although MRP systems are often in the form of commercial software, the MRP procedure is straightforward and can be done by hand (Heizer & Render, 2006:558).

Bessant et al. (2005:196) explain that the MRP system requires dependable and accurate data, which is derived from the master production schedules (MPS), bill of materials, lead times for each item, inventory and purchase records, as illustrated in Figure 2.3.

Figure 2.3 Overall view of inputs to an MRP program and the reports generated by the program



(Source: Chase et al., 2006:636)

Because MRP determines requirements based upon a master production schedule (MPS), the MRP modules offer several ways to help keep the schedule current (Petroni & Rizzi, 2001:144); it replaces re-order point systems by deriving dependent demand for parts and raw materials from production schedules and calculating order points based on delivery lead times and production needs (Bessant et al., 2005:196). Once these

ingredients are available and accurate, the next step is to construct a material requirements plan (Heizer & Render, 2006:558).

MRP evolved into MRP II, which contains a range of functions consisting of business planning, sales and operations planning, production planning, master production scheduling, material requirements planning, capacity requirements planning; all connected together. The output from these functions is integrated with financial reports such as the business plan, purchase commitment reports, shipping budgets, and inventory projections to form powerful management tools (Bessant et al., 2005:200; Koh & Simpson, 2007:60). According to Heizer and Render (2006:562), MRP II utilizes MRP alongside JIT, providing improvements in delivery performance as well as a reduction in work-in-process inventories in enterprises. Petroni & Rizzi (2001:145) point out that MRP/MRP II, however, is not a magic solution for SMEs: there are still many problems involved with the effective running of MRP/MRP II. Given that inventory level data is usually poor and quoted lead times from suppliers even poorer, the general failure of MRP should not surprise business owners (Bessant et al., 2005:200). MRP/MRP II is not an instant solution for poor inventory management, but with proper management MRP/MRP II can enhance competitive positions and improved customer service levels. Furthermore, MRP/MRP II will lead to more efficient production scheduling with reduced inventory levels, resulting in reduced manufacturing costs, reduced lead times and improvements in inventory turnover (Humphreys, McCurry & McAleer, 2001:49). It is clear that MRP/MRP II has advantages for SMEs, but the main disadvantage is the cost of implementing an MRP system and this alone can discourage smaller businesses from implementing MRP/MRP II.

➤ **Enterprise resource planning systems**

Thakkar, Kanda and Deshmukh (2008:74) point out that small and medium enterprises (SMEs) are exposed to the consequences of the developments in information, computing and communication technologies, which will debatably provide competitive opportunities as well as threats. Information is used to make business processes more

efficient; therefore, the effectiveness of an inventory management system depends on the quality of the information it takes in and the ability of the company's information technology (IT) (Nachtmann et al., 2006:355; Chaffy & Wood, 2005:16). As Koh and Simpson (2007:60) bring to our attention, this requires the review of the practicality of the existing production planning and control systems, which usually include material requirements planning (MRP), manufacturing resources planning (MRP II) and enterprise resource planning (ERP) systems.

The large ERP system vendors are SAP, Baan, ORACLE, JD EDWARDS, and PeopleSoft, but the implementation cost of such systems is very high, and therefore it is difficult to justify to SMEs the costs and benefits of these systems (Koh & Simpson, 2007:60). To cater for the needs of SMEs, many midrange and less complex systems have been developed, such as Alliance Manufacturing (Exact Software), MFG/PRO (QAD), WinMan (TTW) and all-in-one (SAP). In conjunction with using such systems as a planning and control tool, many SMEs combine this with other execution concepts, such as just-in-time (JIT), optimised production technology (OPT) and advanced production scheduling (APS). Despite the rapid development of the mid-range ERP systems for SMEs, little research can be found in evaluating the extent to which ERP could create a competitive advantage for SMEs, particularly on how change and uncertainty could be managed in such an environment (Koh & Simpson, 2007:60).

➤ **Just-in-time ordering**

Just-in-time (JIT) is more holistic than earlier systems of inventory management and an alternative approach to traditional Western approaches to inventory management. Just-in-time (JIT) was adopted by Toyota and some other Japanese companies in the 1950s; it forms part of a fundamentally different approach to management, which when fully developed will help to create a total new industrial culture (Bessant et al., 2005:206).

The JIT approach to inventory management will reduce inventory to the minimum and in some cases to zero (Garrison, Noreen & Brewer, 2006:13). According to Biggart and Gargeya (2002:197), the overall goal of JIT is the elimination of waste by reducing investment in inventory not needed in the process. With the JIT policy exact quantities of goods arrive at the moment that it is needed, driving down inventory investment and other associated costs (Heizer & Render, 2006:633). As materials are purchased and goods produced only as required, batch sizes tend to be small and inventory levels are low (Langfield-Smith et al., 2006:759).

When medium to small businesses use the JIT inventory system they only purchase inventory to meet actual customer demand. Garrison et al. (2006:15) report that although JIT has many advantages such as the savings in inventory carrying, handling and storage costs, it can put a business in a vulnerable position when unexpected disruptions occur in its supply chain.

It is clear that JIT has comprehensive advantages for businesses, but that strong relationships with suppliers are needed to ensure the effectiveness of the system.

2.5 SAFETY INVENTORY

According to Hadley (2004:26), safety inventory protects against inventory uncertainty by ensuring there is enough products available to maintain desired service levels. Based on this safety, inventory can be expressed as the quantity of inventory that has to be reserved in order to protect the system from random variables such as stock-outs, which may occur as a result of either forecast errors or deviations from normal demand during average lead times (Bertolini & Rizzi, 2002:281; Zizka, 2005:120). The challenge, however, is to determine the lowest amount of safety inventory required to accomplish all of the service-level targets. Safety inventory is calculated in basically exactly the same way as reorder points; the only difference is that the safety

inventory in cover-time planning (and sometimes in material-requirements planning) is expressed as a safety time and calculated by dividing the safety inventory by demand per period. The reorder point of an item is calculated using the following formula:

$$R = \bar{d}L + z\sigma_L$$

A fixed order quantity system continuously monitors the inventory levels and places a new order when inventory reaches the reorder point (R). During the lead time (L) deviations (\square) occur; these deviations (σ_L) are calculated using the given formula:

$$\sigma_L = \sqrt{\sigma_1^2 + \sigma_2^2 + \dots + \sigma_L^2}$$

The number of standard deviations of safety stock (z) is associated with the probability of not running out of inventory in the lead time. Hadley (2004:30), however, suggests that safety inventory level calculations should be based on the following service-level question:

"How much inventory is required so that at least z% of the demand is met in y% of the time periods? For instance, how much inventory is required to meet 95% of monthly demand 99% of the time?"

Computing the amount of inventory required to close the gap between the demand coverage and the desired service level, coverage (z) can be expressed mathematically as:

$$\text{Coverage (z)} = \frac{\text{Actual Inventory}}{\text{Actual Demand}}$$

Given all this the safety inventory is calculated with the next formula as described by Chase et al. (2006:602).

$$SS = z \sigma_L$$

We can calculate the safety inventory value; see example 1.1, by assuming the following data:

Lead time in days (L)	=	7
Forecast average daily demand (d)	=	112
Standard deviation of demand (σ_L)	=	3
Current inventory level (I)	=	184

Example 1.1

Step 1

$$\sigma_L = \sqrt{\sigma_1^2 + \sigma_2^2 + \dots + \sigma_L^2}$$

$$\sigma_L = \sqrt{(3)_1^2 + (3)_2^2 + (3)_3^2 + (3)_4^2 + (3)_5^2 + (3)_6^2 + (3)_7^2}$$

$$\sigma_L = \sqrt{63}$$

$$\sigma_L = 7.93$$

Step 2

$$\text{Coverage } (z) = \frac{\text{Actual Inventory}}{\text{Actual Demand}}$$

$$\text{Coverage } (z) = \frac{184}{112}$$

$$\text{Coverage } (z) = 1.64$$

Step 3

$$SS = z \sigma_L$$

$$SS = (1.64)(7.93)$$

$$SS = 13$$

The safety inventory value for this example is 13 units.

Safety inventory will increase inventory-carrying costs, although it will minimise the potential costs caused by shortages (Langfield-Smith et al., 2006:757). Hadley (2004:33) points out that improving the business's safety inventory policy will increase revenue through improved service levels while simultaneously reducing inventory carrying costs. Therefore, placing the right amount of safety inventory at the right places in the supply chain is an important part of effective inventory management.

2.6 SUPPLY CHAIN MANAGEMENT

Supply chain management (SCM) is a set of approaches utilized to effectively incorporate suppliers, manufacturers, logistics and consumers for improving the long-term performance of the individual companies and the supply chain as a whole (Hong & Jeong, 2006:292; Chase et al., 2006:18; Heizer & Render, 2006:432). These activities include purchasing and outsourcing activities, plus numerous other functions that are vital to the relationship between suppliers and distributors (Heizer & Render, 2006:432). Supply chain competitiveness between supplier and customer relies on how effective and proficient the order and information are being handled between the parties in the supply chain (Koh & Simpson, 2007:60). In practice, several organisations that use SCM consider only linkages and activities that involve their direct suppliers and consumers, and focus on optimising the value chain across those linkages only (Langfield-Smith et al., 2006:746). Successful supply chain management requires the integration of these value chain entities to create mutual and shared environments that facilitate information exchanges, materials and cash flows (Hong & Jeong, 2006:293).

According to Hong and Jeong (2006:293) SMEs play key roles in supply chain management as they need be able to provide a level of service that is compatible with their commercial customers (Koh & Simpson, 2007:60). They increasingly partake in value-creating actions although the longer-term and mutually beneficial relationships demanded by the supply chain philosophy

are contradictory to the short-term focus of SMEs, where the immediacy of cash flow and limited resources can restrict the adoption of the supply chain approach (Towers & Burnes, 2008:350). By optimising core activities to maximize the tempo of response to changes in customer demands, many companies are achieving considerable competitive advantage by the way they configure and manage their supply chain operations. Because the inventory at each point ties up money, the efficiency of the supply chain can be measured based on the size of the inventory investment in the supply chain (Chase et al., 2006:18). Two common measures to evaluate supply chain efficiency are inventory turnover and weeks-of-supply.

Inventory turnover is calculated as follows:

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average aggregate inventory value}}$$

Cost of goods sold is the yearly cost for a company to produce the goods or services provided to customers; this does not include the selling and administrative expenses of the company. Average aggregate inventory value is the total value of all items held in inventory for the firm valued at cost. It includes the raw material, work-in-process, finished goods, and distribution inventory considered owned by the company.

In several situations, predominantly when distribution inventory is dominant, weeks of supply is the preferred measure. This is a measure of how many weeks' worth of inventory is in the system at a particular point in time. The calculation is as follows:

$$\text{Weeks of supply} = \frac{\text{Average aggregate inventory value}}{\text{Cost of good sold}} \times 52 \text{ weeks}$$

A firm considers inventory an investment, but inventory ties up funds that could be used for other purposes. The objective is to have the proper amount of inventory and to have it in the correct locations in the supply chain.

Determining the correct amount of inventory to have in each position requires a systematic assessment of the supply chain together with the competitive priorities that characterise the market for the company's products (Chase et al., 2006:409). This may include the adoption of e-commerce technologies, cost management and process analysis techniques to improve efficiency, customer value and competitiveness (Langfield-Smith et al., 2006:746).

2.7 THE EFFECTS OF INVENTORY LEVELS ON PROFITABILITY

For many companies, inventory management represents a key success factor; a company's fate depends on how it manages its inventory. Much of a company's costs can be attributed to the amount it invests in inventory and associated holding, transportation, and management costs (Nachtmann et al., 2006:355). Inventory management is critical to financial performance on nearly every businesses balance sheet; inventory tops the list of valuable physical assets (Chow et al., 2000:97).

Since inventories represent a significant investment by many businesses, managing them well is a top-management priority. In practice, it is common to apply replenishment rules to manage each item in inventory. Familiar procedures are economic order quantity (EOQ) based methods, just-in-time methods such as materials requirements planning (MRP), or variants of push and pull procedures (Ballou, 2000:72). Brigham and Ehrhard (2005:756) suggest that an effective inventory policy in a supply chain should ensure that the right stock levels are held in the right place at the right time, at the lowest costs possible.

Inventory-outs occur when too few units of fast selling items are bought or manufactured, leading to lost sales revenue and customer satisfaction. The opposite of this is too many of slow selling items that will increase storage costs as well as interest costs on short-term borrowings that financed the purchases. That may lead to losses when the items are sold at lower prices than normal (Libby et al., 2004:358). A business's financial statements reports

a business's position at a point of time and on its performance over a past period, but can also be used to predict its future. Financial ratios are designed to evaluate financial statements and measure how effective a firm is managing its assets (Brigham & Ehrhard, 2005:443).

Inventory costs are relevant to most liquidity, asset management and liability management ratios and only once a balance is found between service levels, costs of holding stock and cost of manufacture which, once achieved, will lead to increased profitability. The sole reason for a company's existence is to provide goods and services to the marketplace. If those goods and services see decreasing demand, declines in profit and revenue and stock price are often not far behind.

2.7.1 Inventory turnover ratio

According to Libby et al. (2004:717), inventory is a measure of both liquidity and in-service efficiency, just like receivable turnover. These methods produce an overall level of inventory that senior management typically judges in terms of an inventory turnover ratio (annual sales / average inventory) or a total asset level (Ballou, 2000:72). The inventory turnover ratio measures how many times a company's inventory has been sold and replaced during the year; it is computed by dividing the cost of goods sold by the average level of inventory on hand (Garrison et al., 2006:800).

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

Another way to look at the inventory turnover ratio is to convert it to a "days to sell inventory" value. This value is calculated by dividing 365 by the inventory turnover ratio.

$$\text{Days to sell inventory} = \frac{365}{\text{Inventory Turnover Ratio}}$$

The inventory turnover ratio can be determined by assuming that:

Cost of goods sold = R 365 000.00

Average level of inventory = R 100 000.00

$$\begin{aligned}\text{Inventory Turnover Ratio} &= \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} \\ &= \frac{\text{R } 365\,000.00}{\text{R } 100\,000.00} \\ &= 3.65\end{aligned}$$

$$\begin{aligned}\text{Days to sell inventory} &= \frac{365}{\text{Inventory Turnover Ratio}} \\ &= \frac{365}{3.65} \\ &= 100\end{aligned}$$

Because a company normally realizes profit each time inventory is sold, an increase in this ratio is usually favourable. If a company's turnover ratio is 3.65, as seen in the example, it sells inventory every 100 days (365 days divided by 3.65). A falling inventory turnover ratio (i.e. an increase in the "days to sell" number) means a company is taking longer to sell its inventory. A slowdown in inventory turnover could be a warning sign for a variety of problems like pricing or obsolescence of inventory. However, if the ratio is too high, it may be an indication that sales were lost because desired items were not in stock (Libby et al., 2004:717). Inventory turnover should increase in companies that adopt just-in-time (JIT) methods. If properly implemented, JIT should result in both a decrease in inventories and an increase in sales due to better customer service (Garrison et al., 2006:801). Investors can analyse demand for a company's goods and services by examining the inventory turnover ratio. An improving inventory turnover ratio may be a confirming indicator that an SME's products are in demand and less slow moving stock

are stocked. A falling inventory turnover ratio (an increase in the “days to sell” number) means a company is taking longer to sell its inventory. Inventory turns also consider a company’s gross profit margins (gross profit divided by revenue) and, to a lesser extent, its receivable turnover ratio (sales divided by accounts receivable).

2.8 CONCLUSION

Even though small and medium-sized enterprises (SMEs) are defined in numerous ways around the world, their effectiveness can be defined as their ability to achieve stated inventory levels, judged in terms of financial measures like the inventory turnover ratio. Inventory costs have a direct influence on profitability of an SME and therefore need to be effectively managed. Modern inventory management systems like MRP/MRP II and ERP systems are based on well-recognised inventory models from the past. Often inventory models like EOQ, JIT and ABC analysis for inventory are used in conjunction with MRP/MRP II and ERP systems to increase effectiveness of these systems. Although MRP/MRP II and ERP systems pose a clear advantage over the more traditional methods of inventory management like EOQ, JIT and ABC analysis, most SMEs cannot enjoy the benefits of these systems because of the high implementation costs. SMEs enjoy more benefit from basic inventory principles like JIT as it allows them to purchase inventory only to meet actual customer demand. The drawback to this is that SMEs are left in a vulnerable position where unexpected disruptions in its supply chain can leave the company without inventory to serve its customers. This problem can be managed by combining safety inventory levels with supply chain management in order to maintain an acceptable level of inventory to satisfy customer needs. SMEs can use the inventory turnover ratio to evaluate the effectiveness of their inventory management.

2.9 SUMMARY

According to Redshaw (2000:247), organisational effectiveness can be defined in terms of the effectiveness of the internal processes of an organisation. On the other hand, accountants and senior managers tend to measure results of most, if not all, organisational activities in monetary terms, so it is no surprise that many organisations rely on financial measures as ROI or ROA to measure effectiveness (Walker & Brown, 2004:578). However, effectiveness will be defined as the ability to achieve stated inventory levels, judged in terms of financial measures like inventory turnover for this study. This study posits that the effectiveness of a given SME may be ascertained from the effectiveness of the inventory management decisions made by its management.

Modern inventory management systems are based on well-recognised inventory models and even though the methods were developed many years ago they still perform well from a theoretical point of view. Inventory models like economic order quantity (EOQ), activity-based costing (ABC) analysis for inventory and just-in-time (JIT) that form the bases of modern inventory systems are still commonly used in the industry today. The EOQ model determines the optimum order size for individual inventory items, which minimizes both total inventory holding and ordering costs ((Langfield-Smith et al., 2006:75; Bessant et al., 2005:192). Chase et al. (2006:610) report that an ABC inventory analysis divides inventory into three classifications on the basis of yearly cost volume of items. With the JIT policy exact quantities of goods arrives at the moment that it is needed, driving down inventory investment and other associated costs (Heizer & Render, 2006:633). Modern inventory management systems like MRP/MRP II and ERP systems offer a complete inventory management system to SMEs, but despite the rapid development of ERP systems, little research can be found in evaluating the extent to which ERP could create a competitive advantage for SMEs (Koh & Simpson, 2007:60).

Safety inventory protects against inventory uncertainty by ensuring there are enough inventory available to maintain desired service levels (Hadley, 2004:26). Based on this safety, inventory can be expressed as the quantity of inventory that has to be reserved in order to protect the system from random variables such as inventory-outs, which may occur as a result of either forecast errors or deviations from normal demand during average lead times (Bertolini & Rizzi, 2002:281; Zizka, 2005:120). Hadley (2004:33) points out that improving a business's safety inventory policy will increase revenue through improved service levels while simultaneously reducing inventory carrying costs. Therefore, placing the right amount of safety inventory at the right places in the supply chain is an important part of effective inventory management.

Supply chain management (SCM) is a set of approaches utilized to effectively incorporate suppliers, manufacturers, logistics, and consumers for improving the long-term performance of the individual companies and the supply chain as a whole (Hong & Jeong, 2006:292; Chase et al., 2006:18; Heizer & Render, 2006:432).

Since inventories represent a significant investment by many businesses, the challenge, however, is to determine the lowest amount of inventory required to accomplish all of the service-level targets. Inventory costs are relevant to most liquidity, asset management and debt management ratios and only once a balance is found between service levels, costs of holding inventory and cost of manufacture which, once achieved, will lead to increased profitability. According to Libby et al. (2004:717), inventory is a measure of both liquidity and in-service efficiency, just like receivable turnover. These methods produce an overall level of inventory that senior management typically judges in terms of an inventory turnover ratio (annual sales / average inventory) or a total asset level (Ballou, 2000:72).

CHAPTER 3

EMPIRICAL STUDY

3.1 INTRODUCTION

The Oxford English Dictionary defines research as:

“an investigation to discover new facts and reach new conclusions by the critical study of a subject”.

Research therefore can be defined as methodical, careful inquiry or inspection to discover new information or relationships to expand or prove existing knowledge as explained by Struwig and Stead (2001:5).

This study will use qualitative and quantitative research methods to investigate the findings of the literature review on effective inventory management.

3.2 LITERATURE REVIEW

A literature review was conducted to gain insight into the subject, to incorporate what is already known in this particular field and to review accumulated knowledge of other researchers. With the aid of a computer-based search, using the keywords identified previously, databases and search engines such as Google Search, Google Scholar, Business Source Premier, Emerald and EBSCO Host were consulted. The purpose of the literature review was mainly to provide a scientific basis for the theory, with recognition of previous research done on this topic and to do a logical analysis on effective inventory management.

3.3 EMPIRICAL RESEARCH

The empirical research describes a process whereby data or facts on the specific issue were gathered and analysed. Respondents provided information so that the researcher could develop a better understanding of aspects relating to the specific research objectives and characteristics (Struwig & Stead, 2001:6). Both qualitative and quantitative research methods were employed to gather information from the divined population for this study. The research design, research methodology and the limitations of the study will be defined in the following paragraphs.

3.3.1 Research design

There are many possible designs that can be used in research. Hofstee (2006:120) suggests that the more popular designs used by researchers are extended literature reviews, comparative analysis, content analysis, survey-based research, evaluative research (appraisals), case studies, action research and theory development. This study used a survey-based research design. In a survey-based research design, information is collected from individuals who are presumed to have the information that are required, who are willing to communicate this information to a researcher, while being considered as representing a larger group (Hofstee, 2006:122). Surveys conducted for research purposes have three distinct characteristics:

- to produce quantitative descriptions of certain aspects of the studied population;
- a method of collecting information is by asking structured and predefined questions; and
- information is collected from a fraction of the population; it is collected in such a way as to be able to generalise the findings to the population as a whole.

In view of the size of the population and the geographical area to be covered, a survey-based research design is deemed to be the best suitable for this study.

3.3.1.1 Method of research

The method of research included various elements, namely the research instrument, the population, pre-testing and sampling, qualitative and quantitative research techniques as well as various statistical analyses techniques.

3.3.1.2 Research instrument

This study used a structured questionnaire as well as an open-ended and semi-structured interview with some of the population sample. Some of the motivations for the use of questionnaires included cost, because it is more affordable and convenient and respondents can complete it in their own time. The fact that the researcher was absent, lead to the respondents feeling unrestricted and free to answer honestly and without any pressure. According to Salkind (2007:138), a questionnaire sent by e-mail is well suited to survey a broad geographical area and people are more willing to be truthful because their anonymity is virtually guaranteed. The survey questionnaire was used to obtain information regarding current inventory management practices and related factors influencing inventory levels.

A questionnaire was developed using 5-point Likert scale in which specific questions were asked regarding inventory management policies. A Likert scale uses a number of specific techniques to first generate items and then to select from them those that are valid (Struwig & Stead, 2001:94). Participants were informed about the purpose of the questionnaire so that voluntary responses could be gathered about their experience in inventory management.

3.3.1.3 Population

The target population consisted of 60 managers, owners or responsible persons for inventory management in small to medium enterprises in Gauteng.

3.3.1.4 Pre-test

The questionnaire was pre-tested on an individual basis with a sample of business associates. The main purpose of this pre-test was to establish the suitability of the questions and whether there were some questions that needed to be included in the questionnaire.

3.3.1.5 Sampling

Simple random sampling involves the drawing of a sample from a population so that every possible sample has an equal probability of being selected (Trochim & Donnelly, 2008:43). The sample of 60 individuals for this study was drawn from a population of instrumentation and industrial equipment retailers in Gauteng.

3.4 DATA ANALYSIS

The statistical analyses were carried out using the SPSS program (SPSS, 2006). Descriptive statistics (such as means, standard deviations, correlations, cross tabulations and frequencies) were used to explore the data.

3.5 LIMITATIONS OF THE STUDY

The sample population was restricted to SMEs in the Gauteng province of the Republic of South Africa.

3.6 ANALYSIS OF RESEARCH QUESTIONNAIRE RESULTS

The results of the research questionnaire can be interpreted by investigating the correlations, cross tabulations and frequency analysis of the research questionnaire. SPSS was used by the Statistical Department of North-West University to analyse the results for the research questionnaire. The following discussion will interpret the research questionnaire by analyzing correlation and cross tabulation data pertaining to research questions A1 to C12 of the research questionnaire.

3.6.1 Cross tabulation A1 and A3

A1 – Please state your job title.

A3 – Which age category do you fall into?

The cross tabulation between A1 with A3 as described by Table C1.1.1 of Appendix C, evaluates the respondents' age against their current job title. The aim of question A1 was to establish who is responsible for inventory management in the population tested in this study. The result is illustrated in the frequency table below.

Table 3.1 **Frequency table question A1**

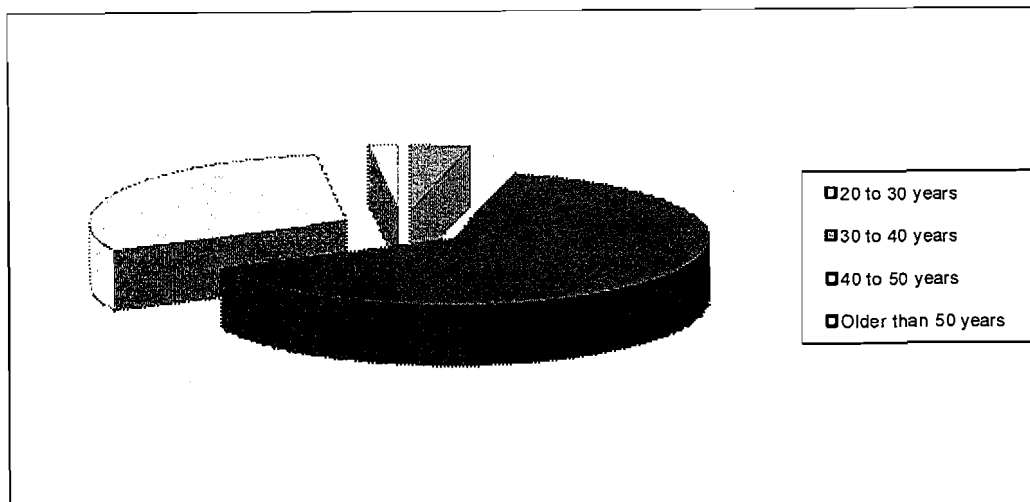
A1		Please state your job title.			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owner	16	30.2	30.2	30.2
	Buyer	6	11.3	11.3	41.5
	Senior Buyer	2	3.8	3.8	45.3
	Stock Controller	6	11.3	11.3	56.6
	Senior Stock Controller	4	7.5	7.5	64.2
	Store Manager	12	22.6	22.6	86.8
	Service & Operations Manager	3	5.7	5.7	92.5
	Logistics Manager	4	7.5	7.5	100.0
	Total	53	100.0	100.0	

Source: Table C1.3.1. (Appendix C)

This table reveals that owners account for 30,2 percent (16 of 33) of the respondents and store managers for 22,6 percent of the total response of 53 questionnaires. The rest of the respondents are distributed between an array of positions ranging from buyers to logistic managers.

According to Table C1.1.1 of Appendix C, 34 or 64,2 percent of the respondents were aged between 20 and 40 years of age, while 30,2 percent of respondents were aged between 40 to 50 years. This leaves only 3 respondents outside the 30 - 50 year age group. Cross tabulation Table C1.1.1 reveals that two respondents, an owner and a buyer are aged between 20 - 30 years of age, while one store manager is older than 50 years of age.

Figure 3.1 Graphical representation of respondents' age



We can assume, according to the results of the frequency table C1.3.1. and C1.3.2 as well as this cross tabulation between question A1 and A3 that inventory is managed by senior positions in a company who are on average between 30 - 50 years of age.

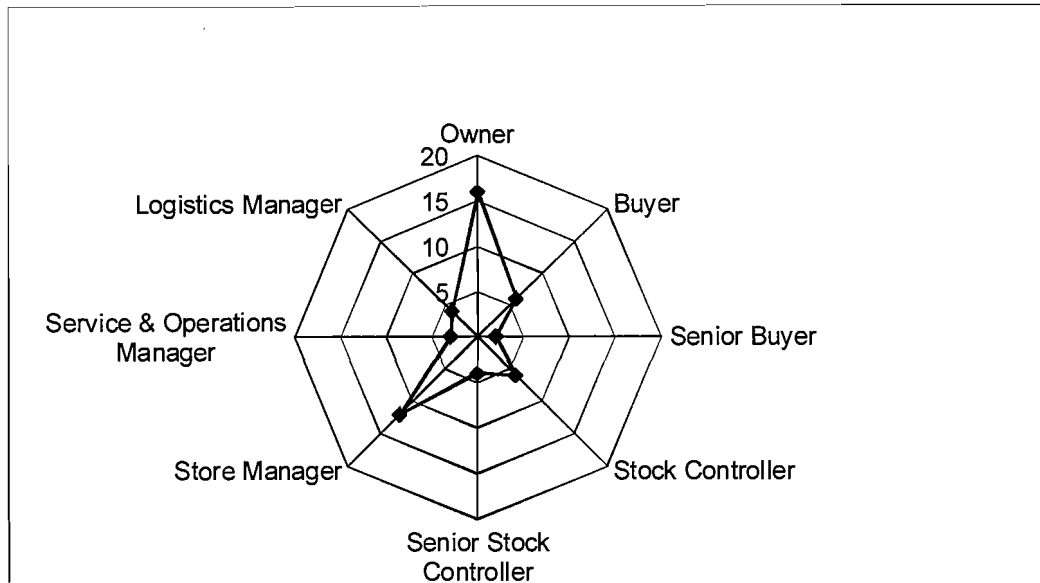
3.6.2 Cross tabulation A1 and B1

A1 – Please state your job title.

B1 – Inventory control is seen as the management function.

According to the literature study conducted on inventory management, in the industry it is considered a management function. Therefore we need to test if this is the case in SMEs in South Africa. Question B1 states inventory management as a management function. The result of the statement was that 31 of the 53 respondents answered agree or strongly agree, and 41,5 percent responded with a neither disagree or agree. This result is illustrated in Table C 1.3.7 of Appendix C. Cross tabulation Table C1.1.2 (Appendix C) tabulates question A1 and B1 against each other revealing the response from the specific job title of the respondents; this is illustrated in figure 3.2 below.

Figure 3.2 Graphical representation of the job titles of respondents



All the logistic managers, service and operations managers and senior stock controllers answered either agree or strongly agree. But only nine of the 16 owners, eight out of 12 store managers and two of the six senior stock controllers agreed with the statement. There is 83,5 percent of buyers, 100 percent of senior buyers, 66,7 percent of stock controllers and 33,3 percent of store managers that neither agrees nor disagrees with the statement.

The conclusion to this result is that most managers and owners see inventory management as a management function, whereas respondents in non-management positions do not agree nor disagree to the statement.

3.6.3 Cross tabulation A1 and C7

A1 – Inventory control is seen as the management function.

C7 – Which analysis do you use to evaluate if inventory is managed effectively?

This cross tabulation investigates the relationship between the job title of the respondent and the method used to evaluate the effectiveness of their

inventory management approach. The analysis in Table C1.1.3 (Appendix C) reveals that 43,4 percent of respondents use sales reports to evaluate their inventory, whereas 39,6 percent uses the inventory turnover ratio. The other 16,8 percent uses either inventory reports or slow moving inventory reports. Table B1 and B3 (Appendix B) reveals that 10 out of 21 of the respondents using the turnover ratio are part of a medium-sized enterprise and the rest are either small or very small businesses. Only three of the 23 respondents answering sales reports were from medium-sized enterprises. Thus one can assume that most medium-sized businesses use the inventory turnover ratio to evaluate their inventory performance, whereas small and very small businesses (30 percent) use mostly sales reports to monitor their inventory.

3.6.4 Correlation A3 and B4

A3 – Which age category do you fall into?

B4 – Effective inventory management is critical to retailing success.

A1 correlation of .285 is drawn between research question A3 and B4 as shown in Table C1.2.1 of Appendix C. This correlation evaluates the measurement of the importance of inventory management for retailing success to the age of the respondents. As already discussed in the previous points, 74,4 percent of all respondents are in the age group 30 - 50 years. Question B4 deals with the importance of inventory for retail success and 49 percent of respondents agreed or strongly agreed with the statement. Frequency Table C1.3.10 of Appendix C shows that 23 of the 53 respondents neither agreed nor disagreed with this statement. The concern though is the 5,7 percent that disagreed with the statement. Table B2 (Appendix B) reveals that respondents 26 and 49 are both respondents from small businesses. However, respondent 36 was a buyer from a medium enterprise; this could be an error in the marking of the question.

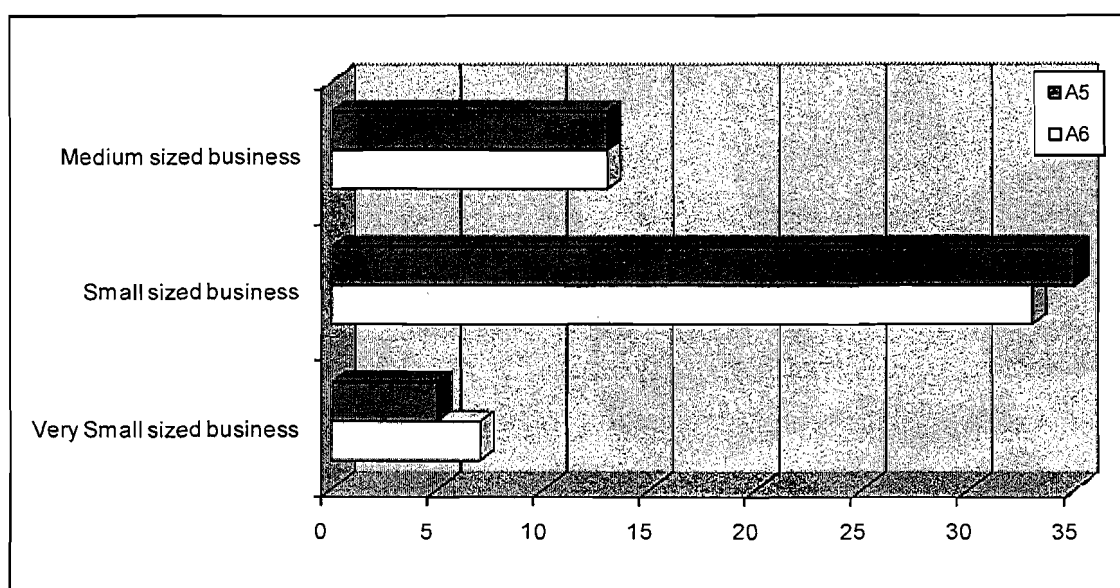
3.6.5 Correlation A5 and A6

A5 - How would you classify your organisation?

A6 - What is your organisation's turnover a year?

Table C1.2.1 (Appendix C) shows a strong negative correlation of -0.861 between question A5 and A6. In this study, question A6 is used to validate question A5. The same answer is obtained as in A5; the only difference would be that A6 would be in monetary terms. The results are shown in figure 3.3.

Figure 3.3 Graphical representation of respondents' answers of question A6 and A5



According to Table C1.3.5 (Appendix C), 13 respondents are from medium-sized businesses, 35 respondents are from small-sized businesses and five from very small businesses. However, when analyzing the data in Table C 1.3.6 (Appendix C) it is found that 13 of the 53 are medium-sized businesses, 19 are small businesses and seven are very small businesses.

The difference of two very small businesses in A5 and A6 can be explained by the fact that the two respondents either do not know how small businesses

are classified in the South African context or they deliberately responded to be from small businesses not knowing that A6 would correlate A5.

3.6.6 Correlation A5 and B8

A5 – How would you classify your organisation?

B8 – ERP systems could create a competitive advantage for small and medium-sized enterprises (SMEs).

In this correlation, the linear relationship between the business classification and a statement that ERP systems can create a competitive advantage for a small and medium-sized enterprise is measured. The correlation factor of - 0.564 is measured according to Table C.1.2.2. (Appendix C). Frequency table C.1.3.5. and C1.3.14 (Appendix C) are used to get a better understanding of the relationship between these two questions. According to frequency table C 1.3.14 (Appendix C), 45,3 percent of respondents answered that they neither disagree or agree, while 52,8 percent responded with, agree or strongly agree. Medium-sized businesses are 24,5 percent of the study population, according to Table C1.3.5 (Appendix C).

Table 3.2 The relationship between question A5 and B8

		A5				
		Very Small	Small	Medium	Total	%
B8	Disagree	0	1	0	1	1.9
	Neither disagree nor agree	5	18	1	24	45.3
	Agree	2	13	5	20	37.7
	Strongly agree	0	1	7	8	15.1
	Total	7	33	13	53	100

Table 3.2 was constructed using the combination of the results in frequency table C.1.3.5 and C1.3.14 (Appendix C) as well as taking into account the error discovered in the previous discussion. According to Table 3.2, 12 out of 13 medium-sized enterprise respondents agree or strongly agreed with the statement in B8. Only 14 out of 33 small enterprise respondents agreed or strongly agreed with the statement, and 23 out of the 24 respondents that answered neither disagree nor agree were representing small or very small businesses.

3.6.7 Cross tabulation A5 and B9

A5 – How would you classify your organisation?

B9 – Companies will obtain cost improvements by enhancing the efficiency of their inventory management systems.

Table C 1.1.4 (Appendix C) highlights that 58,5 percent of respondents answered neither disagree or agree, meaning that half of all respondents answered question B9 with neither disagree nor agree. This poses the question whether respondents understood question B7 correctly.

3.6.8 Correlation A5 and B17

A5 – How would you classify your organisation?

B17 – Just-in-time ordering will cause inventory-out situations in organisations.

According to Table C1.5.23 (Appendix C), 43,4 percent of respondents agreed or strongly agree to the statement in B17. We can construct a table showing the correlation between the answers for question A5 and B17 using Table B2 of Appendix B.

Table 3.4 Correlation between question A5 and B17

		A5				
		Very Small	Small	Medium	Total	%
B17	Disagree	0	1	0	1	1.89
	Neither disagree nor agree	5	20	4	29	54.72
	Agree	2	9	5	16	30.19
	Strongly agree	0	3	4	7	13.21
	Total	7	33	13	53	100

The newly constructed table reveals the real significance of this correlation. According to Table 3.4, 69,3 percent of medium enterprise respondents agreed or strongly agreed with the statement in B17. A total of 60,6 percent of small business respondents were undecided about the answer of the question. The assumption can thus be that a large number of medium and small businesses have experienced inventory shortages as a result of JIT ordering.

3.6.9 Correlation A5 and B24

A5 – How would you classify your organisation?

B24 – ERP systems inherited a number of shortcomings associated with the MRP system, including unrealistic lead time determination for items.

A negative correlation -0.613 was calculated for the linear relation between A5 and B24. The statement in B24 is related to ERP and MRP systems and therefore it is no surprise that 67,9 percent of the respondents responded to neither disagree nor agree, taking into account that 75,4 percent of the population are represented by small and very small businesses. By referring back to Table B2, (Appendix B) one can determine how many of the medium enterprises agreed with the statement as they are usually using ERP and

MRP systems. According to Table B2 (Appendix B), nine of the 13 medium enterprise respondents agreed with the statement, but four responded with neither disagree nor agree. The result of the correlation is that businesses that do not use ERP and MRP systems do not know the shortcomings of these systems.

3.6.10 Correlation A6 and B6

A6 – What is your organisation's turnover a year?

B6 – Inventory valuation methods can have significant effects on financial statements.

Question B6 states that inventory valuation methods can have a significant effect on financial statements. The correlation tests the relationship between the statement in B6 and the respondent's actual turnover a year. Using Table B2 (Appendix B) and the combination of frequency tables C1.3.6 and C.1.3.12 of Appendix C, a new table can be drawn illustrating the correlation.

Table 3.5 Correlation between question A6 and B6

		A6				
		R 0.2m - R6m	R 6m - R15m	R 15m - R 32m	R 32m - R64m	Total
B6	Strongly disagree	1	0	0	0	1
	Disagree	0	3	0	0	3
	Neither disagree nor agree	4	10	8	5	27
	Agree	2	4	6	7	19
	Strongly agree	0	1	1	1	3
	Total	7	19	14	13	53

Now it is evident that only five of the 27 respondents that answered neither disagree nor agree are from medium enterprises, while 18 are from small

enterprises and four from very small enterprises. On the other hand, 61,5 percent of medium respondents, 36,36 percent of small and 28,57 percent of very small business respondents agreed or strongly agreed with the statement. A concern is that 58 percent of all respondents did not have an opinion or disagreed with this statement. The answer to this result could be hidden in the respondent's job title. Another table can now be drawn from Table B1 of Appendix B, assigning the answers of B6 to the respondent's job title.

Table 3.6 Relationship between job title and question B6 answers

	B6					
	Strongly disagree	Disagree	Neither	Agree	Strongly agree	Totals
Owner	0	0	10	4	2	16
Buyer	1	1	1	3	0	6
Senior Buyer	0	0	2	0	0	2
Stock Controller	0	1	3	2	0	6
Senior Stock Controller	0	0	1	3	0	4
Store Manager	0	1	5	5	1	12
S & Operations Manager	0	0	3	0	0	3
Logistics Manager	0	0	2	2	0	4
	1	3	27	19	3	53

Table 3.6 clearly shows that the management positions only represent 35,48 percent of the total response for neither disagree nor agree, disagree and strongly disagree, while owners and non-management positions account for 64,52 percent of the total response. This suggests that there is another reason for the response to Question A6. We can conclude that a lack of knowledge of accounting practices and the effects of inventory valuation on financial statements are a major reason for 58 percent of respondents' answers.

3.6.11 Cross tabulation A5 and C3

A5 – How would you classify your organisation?

C3 – Which of the following inventory principles does your organisation use?

This cross tabulation concerns itself with the inventory principles used in enterprises (C3) and its relation to the size of the business (A5).

Table 3.7 Cross tabulation for question A5 & C3

A5 * C3 Cross tabulation				
		C3		
		(JIT)	(MRP)	Total
A5	Medium sized business	6 46.2%	7 53.8%	13 100.0%
	Small sized business	35 100.0%	.0%	35 100.0%
	Very Small sized business	5 100.0%	.0%	5 100.0%
	Tot Count	46	7	53
	al % within A5	86.8%	13.2%	100.0%

Source: Table C1.1.5 (Appendix C)

From this table we can see that 53,8 percent of medium businesses use MRP systems, while the rest use JIT systems. More interesting is the fact that all small and very small businesses in this study use a JIT system. The question can be asked why 86,8 percent of the study population uses JIT.

3.6.12 Cross tabulation A5 and C1

A5 – How would you classify your organisation?

C1 – Which of the following ERP systems vendors is the manufacturer of your ERP system?

Table C1.1.6 (Appendix C) tables the ERP vendors against the business size. It is evident that only 15,1 percent of respondents used ERP systems from the well-known vendors in the ERP system industry. While 81,1 percent of respondents indicated that they use others, 3,8 percent responded with none as an answer. All respondents that used an ERP system from a major vendor were represented by the medium business sector of the study and represented 61,1 percent of all medium businesses. There was only 38,5 percent of medium business that used other systems than the major ERP systems in this study. This leaves the question of what other systems are used to monitor and control their inventory.

3.6.13 Relationship between A5 and C2

A5 – How would you classify your organisation?

C2 – If your answer was 'other' on question C1, please state the system / method your company uses for inventory control.

The answer to the open question in 3.6.11 is locked up in the relationship between A5 and C2. Using Table B3 (Appendix B) and the combination of frequency tables C1.3.5 and C.1.3.33 of Appendix C; a new table illustrates the relationship between these two questions.

Table 3.8 Relationship between A5 and C2

		A5				
		Very Small	Small	Medium	Total	%
C2	Pastel	5	26	3	34	79.07
	Syspro	0	3	2	5	11.63
	Cove	0	2	0	2	4.65
	Exact software	0	2	0	2	4.65
	Total	5	33	5	43	100

Table 3.8 reveals that 79,07 percent of all users of other systems are indeed using Pastel software as an alternative for an ERP system. The total five of the seven very small businesses and 100 percent of small businesses in the study indicated that they use Pastel for inventory control. The remaining 20,9 percent of the total other system users are divided between systems like Syspro, Cove and Exact software.

3.6.14 Correlation A5 and B25

A5 – How would you classify your organisation?

B25 – An ERP system is just as reliable as the inventory information it receives.

The reason for discussing this correlation after the cross tabulation of A5 and C1 is that one will get a better understanding of the results of this correlation, after discussing the cross tabulation of A5 and C1.

The total responses of 52,8 percent of the respondents were agreeing or strongly agreeing, whereas 47,2 percent of respondents neither agreed nor disagreed to the statement in B25. As discussed in the cross tabulation of A5 and C1 it can be seen that only 15,1 percent of the respondents used ERP systems, while 81,1 percent of the total respondents used something else.

Table B2 (Appendix B) reveals that three of the ERP users actually answered neither agree nor disagree. The conclusion can be made that the 52,8 percent of agree or strongly agree answers are made up of 76,92 percent of the medium businesses and a part of the small and very small businesses.

3.6.15 Correlation A5 and C10

A5 – How would you classify your organisation?

C10 – Which of the following can be considered as standard lead time for receiving inventory from your suppliers?

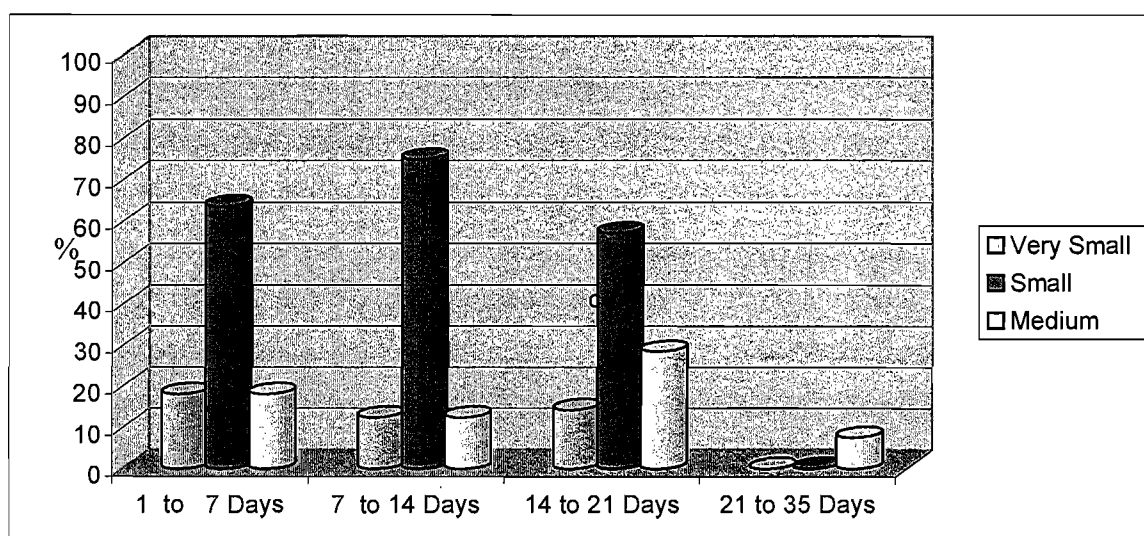
A negative correlation is drawn between the two questions. Using frequency tables C1.3.5 and C 1.3.41 of Appendix C, a new table would explain the correlation better.

Table 3.9 Correlation between questions A5 and C10

		A5				
		Very Small	Small	Medium	Total	%
C10	1 to 7 days	2	7	2	11	20.75
	7 to 14 days	3	18	3	24	45.28
	14 to 21 days	2	8	4	14	26.42
	21 to 35 days	0	0	4	4	7.55
	Total	7	33	13	53	100

According to table 3.9, 61,53 percent of medium businesses have an average lead-time of 14 to 35 days, while 75,75 percent of small businesses have an average lead-time of one to 14 days. The assumption can be drawn that the group that have a lead time of one to seven days sells local produced inventory or resell inventory held by importers or manufacturers. The two groups (7 to 14) and (14 to 21) are companies that have a combination of local and imported inventory. The last group is purely importers that receive inventory from abroad. The average lead time per business size is illustrated by figure 3.4.

Figure 3.4 Average lead-times



3.6.16**Correlation A5 and C11**

A5 – How would you classify your organisation?

C11 – How long on average is inventory stored before it is sold?

Table 3.10 Correlation between A5 and C11

		A5				
		Very Small	Small	Medium	Total	%
C11	0 to 1 days	3	13	2	18	33.96
	1 to 7 days	4	20	6	30	56.6
	7 to 14 days	0	0	5	5	9.43
	Total	7	33	13	53	100

***The values in this table are adjusted to compensate for the error in as discussed in 3.6.5.*

Table 3.10 was constructed by combining frequency tables C1.3.5 and C1.3.42 (Appendix C) with the questionnaire results in Table B3 (Appendix B). According to Table 3.10, 90,6 percent of the sample reported to sell inventory within nil to seven days of receiving it. Furthermore, 9,4 percent, which are solely represented by medium-sized businesses, sell inventory seven to 14 days from receiving it. According to the previously discussed correlation, four medium businesses had an average lead time of 21 to 35 days. The conclusion can thus be made that the five medium businesses that sell their inventory seven to 14 days from receiving it are the suppliers to some of the small businesses that sell their inventory in nil to seven days from receiving it. The assumption can be made that the 90,6 percent of businesses that sell their inventory within nil to seven days of receiving it do not carry any inventory of their own and are reliant on the supply chains of their suppliers for efficient service delivery to their customers .

3.6.17 Cross tabulation B3 and C9

B3 – Stock turnover is an important measure of inventory policy efficiency.

C9 – In which of the following ranges does your company's inventory ratio fall?

Table 3.11 Cross tabulation for question B3 and C9

B3 * C9 Cross tabulation						
		C9				
		0 to 1	1 to 3	3 to 5	5 to 10	Total
B3	2	Count				
		B3				
				1		1
			.0%	.0%	100.0%	.0%
						100.0%
	3	Count	8	6	2	1
		B3	47.1%	35.3%	11.8%	5.9%
						100.0%
	4	Count	2	3	1	3
		% within B3	22.2%	33.3%	11.1%	33.3%
						100.0%
	5	Count	15	3	8	
		% within B3	57.7%	11.5%	30.8%	.0%
						100.0%
	Total	Count	25	12	12	4
		% within B3	47.2%	22.6%	22.6%	7.5%
						100.0%

Source: Table C1.1.9 (Appendix C)

In this cross tabulation the statement that inventory turnover is an important measure of inventory policy efficiency are tabled against the actual inventory turnover ratio of the respondents.

The cross tabulating of B3 and C9 show that 35 of the 53 respondents agreed or strongly agreed with the statement. Furthermore it is relevant that 47.2% of respondents have an inventory turnover of between 0 and 1 and 52.8% have an inventory turnover of between 1 and 10.

Table 3.11 was drawn using Table B3 of Appendix. B. The table illustrates the respondent's inventory turnover ratio against the business size of the respondent. The literature review states the faster inventory is turned in a business the higher the inventory ratio would be. Using Table 3.11 we

observe that 30.18% of the 53 respondents have an inventory turnover ratio of 3 and higher. However it is important to note that the Table 3.11 reveals that this group only consists out of small and very small businesses. This suggests once again that these small and very small businesses do not carry inventory of their own.

3.6.18 Correlation B6 and C11

B6 – Inventory valuation methods can have a significant effect on financial statements.

C11 – How long on average is inventory stored before it is sold?

The correlation between B6 and C11 can be discussed based on previous discussions. Out of previous discussions we saw that 61,53 percent of medium, 9,9 percent small and 28,57 percent very small business agreed or strongly agreed with this statement. It was found that 7,4 percent of medium enterprises sell their inventory seven to 14 days after receiving it. As much as 90,56 percent of respondents sold their inventory within one to seven days of receiving it. This hints that these businesses do not carry their own inventories and are only re-sellers of inventory.

In the previous discussions, the 58,5 percent of respondents that did not have an opinion or disagreed, was a concern to the researcher, but if B6 is analysed against C11 the conclusion is that the 58,5 percent that were uncertain about the answer lies within the 90,56 percent of businesses that do not carry actual inventory of their own.

3.6.19 Cross tabulation B7 and C10

B7 – The supply chain competitiveness between supplier and customer relies on how effective and efficient inventory is managed.

C10 – Which of the following can be considered as standard lead time for receiving inventory from your suppliers?

This cross tabulation evaluates the actual lead times of the respondent's supply chain to the statement of question B7.

Table 3.12 Cross tabulation for question B7 and C10

B7 * C10 Cross tabulation						
		C10				
		1 to 7	7 to 14	14 to 21	21 to 35	Total
B7	Neither disagree nor agree	6 26.1%	11 47.8%	3 13.0%	3 13.0%	23 100.0%
	Agree	3 13.0%	9 39.1%	10 43.5%	1 4.3%	23 100.0%
	Strongly agree	2 28.6%	4 57.1%	1 14.3%	.0%	7 100.0%
	% within B7	11 20.8%	24 45.3%	14 26.4%	4 7.5%	53 100.0%

Source: Table C1.1.10 (Appendix C)

Evidently, 66,11 percent of respondents have a lead time of between one and 14 days for receiving inventory from their suppliers. This implies that their supply chain have either inventory readily available or manufactured locally. The second group represents 33,1 percent with lead times of 14 and more days; these we can assume are supporters of inventory or manufacturers with imported components as part of their final product. It is prominent that the 17 of 73,91 percent of the neither agree nor disagree falls into the first group with lead times of one to 14 days, while only 27,09 percent of these respondents fall in the second group of 14 – 35 days. Although respondents reacted differently to their answers to B7, it is evident that all respondents are dependent on their supply chain for the service delivery of their customers.

3.6.20 Cross tabulation B7 and C12

B7 – The supply chain competitiveness between supplier and customer relies on how effective and efficient inventory is managed.

C12 – In your opinion is there efficient control over your inventories?

Question B7 states that supply chain competitiveness between supplier and customer relies on how effective and efficient inventory is managed. According to the cross tabulation in Table C1.1.11 (Appendix C), 43,4 percent of respondents have answered yes to question C12, of which nine of the 23 respondents replied indecisively on whether they agree or not with question B7. However, 56,6 percent said they do not have efficient control over their inventories, 53,33 percent of them agreed with the statement in C12. A total of 30 of the sample 53 agreed or strongly disagreed with C12. Conclusively 56,6 percent of respondents feel that the supply chain competitiveness between supplier and customer relies on effective and efficient inventory management although they have mixed opinions on whether their inventory is managed effectively.

3.6.21 Cross tabulation B6 and C1

B8 – ERP systems could create a competitive advantage for small and medium-sized enterprises (SMEs).

C1 – Which of the following ERP system vendors is the manufacturer of your ERP system?

The results of this cross tabulation are found in Table C1.1.12 of Appendix C. The ERP users make up 15,09 percent of the total sample while the respondents using something other than an ERP system accounts for 84,91 percent. In response to question B8, 15,1 percent strongly agreed, 37,7 percent agreed, 45,3 percent neither agreed nor disagreed and 1,9 percent disagreed. The strong similarity between the number of ERP users and the quantity of strongly agree responses are to be investigated. A closer look at the actual questionnaire results affirmed that only three of the strongly agree

answers were not users of a major ERP system. The three major ERP users that did not answer strongly agree did in actual fact answer on agreement with the statement in B8. Conclusively, users of ERP systems experience the benefits and advantages of an ERP system, while the non-users of ERP systems have mixed feelings about whether an ERP system could give them a competitive advantage.

3.6.21 Cross tabulation B11 and C5

B11 – Although a safety inventory will increase inventory-carrying costs, it will minimise the potential costs caused by shortages.

C5 – Which of the following problems to holding inventories does your organisation experience?

The relationship between questions B11 and C5 are investigated by the cross tabulation as illustrated by Table C1.1.14 in Appendix C. The cross tabulation reveals that 79,2 percent of the research questionnaires gave inventory out as the problem most often experienced, while high storage cost, damaged inventory and obsolete inventory are experienced by 20,8 percent of respondents. With regard to question B11, 45,28 percent of answers were neither disagree nor agree, but the interesting thing is that 87,5 percent of these respondents, cited inventory as the problem most frequently experienced. Obsolete inventory was cited by 11,3 percent of respondents. Conclusively, only the six respondents that stated obsolete inventory as a problem are the only respondents that had large inventories. The rest of the respondents carry very little or no inventory.

3.6.22 Cross tabulation B16 and C1

B 16 – The implementation cost of ERP systems like SAP is very high, and thus it is difficult to justify the costs and benefits of these systems to SMEs.

C1 – Which of the following ERP systems vendors is the manufacturer of your ERP system?

Table 3.13 Cross tabulation for question B16 and C1

			B16 * C1 Cross tabulation						
			C1						
			SAP	BaaN	ORACLE	JD EDWARDS	Other	None	Total
B16	2	Count	1				1		2
		Disagree	50.0%	.0%	.0%	.0%	50.0%	.0%	100.0%
	3	Count	1			1	23	1	26
		Neither disagree nor agree	3.8%	.0%	.0%	3.8%	88.5%	3.8%	100.0%
	4	Count	1				18		19
		Agree	5.3%	.0%	.0%	.0%	94.7%	.0%	100.0%
	5	Count	2	1	1		1	1	6
		Strongly agree	33.3%	16.7%	16.7%	.0%	16.7%	16.7%	100.0%
	Total	Count	5	1	1	1	43	2	53
			9.4%	1.9%	1.9%	1.9%	81.1%	3.8%	100.0%

Source: Table C1.1.16 (Appendix C)

This cross tabulation tests the relationship between ERP users and the statement that ERP systems are too expensive for SMEs. According to cross tabulation C1.1.16 (Appendix C) all but two ERP users agreed with the statement. A total of 49,1 percent was indecisive. The importance of all this to this study is that 47,1 percent of respondents prove what was found in the literature study. The 49,1 percent that did not know what to answer can be attributed to the fact that the respondents use something less expensive than ERP systems for inventory control. The other reason could be that they could

have the perception that ERP systems are too expensive for them and therefore do not have information regarding implementation cost of such a system.

3.6.23 Cross tabulation C2 and C5

C2 – If your answer was 'other' on question 1 please state the system / method your company uses for inventory control.

C5 – Which of the following problems with regard to holding inventories do your organisation experience?

The cross tabulation between C2 and C5 investigates the problem regarding the holding of inventory against the system other than the major ERP systems. Table C1.1.17 (Appendix C) tabulates the results of this statistic. As with the previous discussion, 88,4 percent of users of other systems than the major ERP systems experienced inventory-outs as the major problem in inventory management. The frequency Table C1.3.33 (Appendix C) reveals that 34 of 53 respondents use Pastel for inventory management. Of the 34, only four did not report inventory-outs as a problem regarding the holding of inventory.

3.7 CONCLUSION

This study used qualitative and quantitative research methods to investigate literature findings on effective inventory management. A sample population of SMEs was successfully questioned regarding their inventory management practices, using a 5-point Likert scale questionnaire. A total of 53 out of 60 questionnaires were received back for analysis of the data. The results of the research questionnaires were then sent to the Statistical Department of the North-West University for statistical analysis. Subsequently, the results of the statistical analysis were interpreted by closer investigating of the correlations, cross tabulations and frequency analysis done with the aid of SSPS. The most significant finding of the empirical study was that 79,07 percent of the

sample used Pastel accounting software for managing their inventories. Furthermore, it was evident that most of the small and very small businesses were only resellers, using a JIT policy to order inventory as they needed it and subsequently carry very little or no inventory of their own.

3.8 SUMMARY

The Oxford English Dictionary (OED, 1987) defines research as an 'investigation to discover new facts and reach new conclusions by the critical study of a subject'. A literature study was conducted with the aid of a computer-based search, using the keywords identified previously; databases and search engines such as Google Search, Google Scholar, Business Source Premier, Emerald and EBSCO Host were consulted. The purpose of the literature review was mainly to provide a scientific basis for the theory, with recognition to previous research done on this topic and to do a logical analysis on effective inventory management.

The empirical research described a process whereby data or facts on a specific issue were gathered and analysed. According to Struwig and Stead (2001:6), selected respondents provide information so that the researcher can develop a better understanding of aspects relating to the specific research objectives. Both qualitative and quantitative research methods were employed to gather information from the defined population for this study. Hofstee (2006:120) suggests that the more popular designs used by researchers are extended literature reviews, comparative analysis, and content analysis. This study used a structured questionnaire as well as an open-ended and semi-structured interview with some of the population sample to collect empirical data. The questionnaire was developed using 5-point Likert scale in which specific questions were asked regarding inventory management policies and practices. The sample tested consisted of 60 managers, owners or responsible persons for inventory management in small to medium enterprises in Gauteng, South Africa.

The results of the questionnaires were submitted for statistical analyses at the Statistical Department of the North-West University. The results of the statistical analysis were interpreted by closer investigating of the correlations, cross tabulations and frequency analysis done with the aid of SSPS.

CHAPTER 4

CONCLUSION AND RECOMMENDATIONS

4.1 INTRODUCTION

The main objective of the study was to investigate the standard inventory theories and models used to help management in small to medium-sized enterprises in keeping costs down while still meeting customer service requirements. This study was based on a comprehensive study of literature relevant to the objectives posed; quantitative information was also gathered by using a questionnaire that was sent to persons responsible for inventory management in SMEs. The following discussion will express the views and results of previous studies as previously mentioned. This study will conclude with recommendations on the findings of this study.

4.2 FINDINGS AND CONCLUSIONS

According to the literature study, small and medium-sized enterprises (SMEs) are defined in numerous ways around the world. The National Small Business Amendment Bill as published in the Government Gazette of the Republic of South African no. 24628 of 27 March 2003, defines a small business enterprise as a separate and distinct business entity managed by one owner or more, with business activities in any sector or sub-sector of the economy. This study focused on a sample of SMEs in the retail sector, with a typical yearly turnover of between R200 000 to R 64 m across the micro to medium-sized enterprise spectrum. Research questions A5 and A6 of the empirical study were used to determine the business size of each of the respondents in the sample population. Question A6 was based on yearly turnover of a business as specified by the National Small Business Amendment Bill as published in the Government Gazette of the Republic of South African no. 24628 of 27 March 2003. The result was that 13 respondents classified

themselves as medium-sized businesses, 35 as small-sized businesses and five as very small businesses, according to question A5. However, data analysed for question A6 revealed that 13 of the 53 respondents were from medium-sized businesses, 33 from small businesses and seven from very small businesses. The difference between the answers in question A5 and A6 suggests that the two respondents either do not know how businesses are classified in the South African context or they deliberately responded this way to hide the fact that they are actually only a very small business.

Redshaw (2000:247) points out that organisational effectiveness can be defined in terms of the effectiveness of the internal processes of an organisation. Al-Khalil et al. (2004:82) define effectiveness as the degree to which targets is achieved within an organisation. This study defined effectiveness as the ability to achieve stated inventory levels, judged in terms of financial measures like inventory turnover. Furthermore, this study posits that the effectiveness of a given SME may be ascertained from the effectiveness of the inventory management decisions made by its management. The empirical results confirm that 49 percent of the questioned sample agreed that effective inventory management are critical to retailing success. However 56,6 percent of all respondents answered that they do not have efficient control over their inventories. The conclusion was that more than half of all questioned SMEs are not effective in their inventory management.

Modern inventory management systems are based on well-recognised inventory models and even though the methods were developed many years ago they still perform well from a theoretical point of view. The EOQ model determines the optimum order size for individual inventory items, which minimises both total stock holding and ordering costs (Bessant et al., 2005:192). According to Chase et al. (2006:610), an ABC analysis divides inventory into three classifications on the basis of yearly cost volume and therefore is based on the reality that components within the organisation's total inventory range have various values or costs. These theories were tested by research questions B15, B21, B23 and C3, although there were mixed

views regarding questions B15, B21 and B23. The most important finding was that none of the respondents indicated that they used EOQ or ABC analysis as an inventory management principle in question C3. This is most probably caused by respondents' lack of theoretical knowledge about inventory management theories.

MRP systems help businesses determine exactly when and how much material to purchase, while it takes the guesswork out of purchasing. Bessant et al. (2005:196) explain that the MRP system requires dependable and accurate data, which is derived from the master production schedules (MPS), bill of materials, lead times for each item, inventory and purchase records. According to Heizer and Render (2006:562), MRPII utilizes MRP alongside JIT, providing improvements in delivery performance as well as a reduction in work-in-process inventories in enterprises. It is clear that MRP/MRPII has advantages for SMEs, but the main disadvantage is the cost of implementing an MRP system and this alone can discourage smaller businesses from implementing MRP/MRPII. Research results indicate that only 13,2 percent of all respondents used an MRP system. Furthermore, research also showed that 53,8 percent of medium businesses use MRP systems, while none of the small and very small business used MRP systems. The fact that 47,1 percent of respondents agreed with the statement that the implementation cost of ERP systems like SAP is too high, confirms the researcher's suspicions that MRP systems are too expensive to implement in small and very small businesses.

The large ERP system vendors are SAP, BaaN, ORACLE, JDEDWARDS, and PeopleSoft, but the implementation cost of such systems is very high, and therefore it is difficult to justify to SMEs the costs and benefit of these systems (Koh & Simpson, 2007:60). To cater for the needs of SMEs, many midrange and less complex systems have been developed, e.g. Alliance Manufacturing (Exact Software), MFG/PRO (QAD), WinMan (TTW) and all-in-one (SAP). Research shows that 49 percent of respondents agreed with the statement that ERP systems could create a competitive advantage for small and medium-sized enterprises. When tested, only 15,1 percent of

respondents indicated that they use ERP systems from the well-known vendors in the ERP system industry, while 81,1 percent of respondents indicated that they use other systems to manage their inventories. All the respondents that used an ERP system from a major vendor were represented by the medium business sector of the study and represented 61,1 percent of all medium businesses. Closer investigation into the alternatives for the standard ERP systems revealed that 79,07 percent of all users of other systems in the study were indeed using Pastel software as an alternative for an ERP system. The reason for this phenomenon is the fact that Pastel accounting software is widely used by auditing firms and businesses for the financial management of small and medium businesses. Pastel offers a module to the standard software that is used to manage inventory in businesses. Therefore, in a bid to only implement one system in the business, many small and medium businesses adopt the Pastel solution at a fraction of the price of the standard ERP systems.

Garrison et al. (2006:13) report that the JIT approach to inventory management will reduce inventory to the minimum and in some cases to nil. With the JIT policy exact quantities of goods, arrive at the moment that it is needed, driving down inventory investment and other associated costs (Heizer & Render, 2006:633). When small to medium businesses use the JIT inventory system they only purchase inventory to meet actual customer demand. Garrison et al. (2006:15) report that JIT has many advantages such as the savings in inventory carrying, handling and storage costs. The study population revealed that 86,8 percent of the sample was using JIT ordering to manage their inventories. A large number, 79,2 percent, of the respondents indicated that they have experienced inventory-outs as a result of JIT ordering, while only 5,7 percent of the group studied, reported high storage costs for their inventories. According to the results of the research, 90,6 percent of all respondents reported that their inventories are only stored for between nil to seven days from receipt; however, 34 percent reported that their inventory are sold within one day of receipt. Conclusively, most small and medium businesses have experienced inventory shortages as a result of

JIT ordering, but they keep on using the method because of the significant cost advantages of not carrying a large inventory.

Hadley (2004:26) points out that safety inventory protects against inventory uncertainty by ensuring there is enough products available to maintain desired service levels. Based on this safety, inventory can be expressed as the quantity of inventory that has to be reserved in order to protect the system from inventory-outs, which may occur as a result of either forecast errors or deviations from normal demand during average lead times (Bertolini & Rizzi, 2002:281; Zizka, 2005:120). Inventory-outs were the most common problem experienced, according to the research questionnaire, with 79,2 percent of respondents acknowledging that they have experienced it. The results of the research questionnaire revealed that 49 percent of the respondents agreed that safety inventory will increase inventory-carrying costs, but will minimize the potential costs caused by shortages. The conclusion can thus be drawn that most of the studied sample do know the advantages and disadvantages of holding safety inventories, but choose not to hold safety inventories because of the cost associated with holding inventories.

Supply chain management (SCM) is a set of approaches utilized to effectively incorporate suppliers, manufacturers, logistics, and consumers for improving the long-term performance of the individual companies and the supply chain as a whole (Hong & Jeong, 2006:292; Chase et al., 2006:18; Heizer & Render, 2006:432). The results of question B7 indicate that 56,6 percent of respondents are of the view that supply chain competitiveness between supplier and customer relies on how effective and efficient inventory is managed. As previously discussed, most of the studied businesses did not carry inventories, thus making them and their customers reliant on their suppliers' supply chain management.

Libby et al. (2004:717) state that inventory is a measure of both liquidity and in-service efficiency just like receivable turnover. These methods produce an overall level of inventory that senior management typically judges in terms of an inventory turnover ratio (annual sales / average inventory) or a total asset

level (Ballou, 2000:72). The inventory turnover ratio measures how many times a company's inventory has been sold and replaced during the year; it is computed by dividing the cost of goods sold by the average level of inventory on hand (Garrison et al., 2006:800). According to the results of the questionnaire, 39,6 percent of respondents used the inventory turnover ratio to evaluate their inventory. The observation was made that 30,18 percent of the 53 respondents have an inventory turnover ratio of three and higher according to the research questionnaire; however, it is important to note that this group only consists of small and very small businesses. This suggests once again that these small and very small businesses do not carry inventory of their own thus turning their inventory faster and creating a higher overall inventory turnover ratio than their medium sized counterparts that carries inventory.

4.3 RECOMMEDATIONS

The conclusion can be drawn that more than half of all questioned SMEs in the study are not effective in their inventory management and this is most probably the result of most respondents' lack of theoretical knowledge about inventory management theories. It is therefore recommended that training should be provided to persons responsible for managing inventories in businesses, giving them the theoretical background to the tools that they are using to manage their inventories. Furthermore, it can be concluded that most small and medium businesses have experienced inventory shortages as a result of JIT ordering, but still choose not to hold safety inventories because of the cost associated with holding inventories. This also makes them and their customers reliant on their suppliers' supply chain management. The recommendation would be that businesses should identify inventory that are most often sold and start with small quantities of safety inventory to minimise the instances of inventory-out situations. When cost becomes a big issue, there is usually a cash flow problem and therefore an investigation into financial management practices in the business should be done. It was also found that ERP systems like SAP were too expensive to implement in small

and very small businesses. Therefore, many small and medium businesses adopt the Pastel solution at a fraction of the price of the standard ERP systems to manage their inventories. The recommendation for both ERP and Pastel system users would be to ensure that extensive training on these systems are provided to system users to ensure effective management inventory

4.4 RECOMMENDATIONS FOR FUTURE STUDIES

This study was conducted on a very small population of 60 businesses residing in the Gauteng province of South Africa. It is therefore recommended that the study should be broadened to cover SMEs in more sectors of the South African economy. It is also suggested that a study is done to investigate inventory management using Pastel accounting software.

4.5 SUMMARY

The conclusion can be drawn that more than half of all questioned SMEs in the study are not effective in their inventory management and this is most probably the result of most respondents' lack of theoretical knowledge about inventory management theories. Furthermore, the conclusion is that most small and medium businesses have experienced inventory shortages as a result of JIT ordering, but still choose not to hold safety inventories because of the cost associated with holding inventories. This also makes them and their customers reliant on their suppliers' supply chain management for efficient service delivery. It was also found that ERP systems like SAP were too expensive to implement in small and very small businesses. Therefore, many small and medium businesses adopt the Pastel solution at a fraction of the price of the standard ERP systems to manage their inventories.

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Research Questionnaire

This questionnaire consists of three sections, by clicking on it with your mouse please mark the check box closest to your opinion of the questions and statements contained in Section A ,B & C of this questionnaire.

Section A

1. Please state your job title.

2. How long have you worked in this position?

- | | |
|---------------------|--------------------------|
| Under 12 months | <input type="checkbox"/> |
| 1 to 2 years | <input type="checkbox"/> |
| 2 to 3 years | <input type="checkbox"/> |
| 3 to 4 years | <input type="checkbox"/> |
| 4 to 5 years | <input type="checkbox"/> |
| Longer that 5 years | <input type="checkbox"/> |

3. Which age category do you fall into?

- | | |
|---------------------|--------------------------|
| Under 20 years | <input type="checkbox"/> |
| 20 to 30 years | <input type="checkbox"/> |
| 30 to 40 years | <input type="checkbox"/> |
| 40 to 50 years | <input type="checkbox"/> |
| Older than 50 years | <input type="checkbox"/> |

4. What is your gender?

- | | |
|--------|--------------------------|
| Male | <input type="checkbox"/> |
| Female | <input type="checkbox"/> |

5. How would you classify your organisation?

- | | |
|---------------------------|--------------------------|
| Large-sized business | <input type="checkbox"/> |
| Medium-sized business | <input type="checkbox"/> |
| Small-sized business | <input type="checkbox"/> |
| Very Small-sized business | <input type="checkbox"/> |
| Micro-sized business | <input type="checkbox"/> |

6. What is your organisation's turnover a year?

- | | | | | |
|---------|--|----|-------|--------------------------|
| R 0.2 m | | to | R 6 m | <input type="checkbox"/> |
| | | | | <input type="checkbox"/> |
| | | | | <input type="checkbox"/> |
| | | | 74 | <input type="checkbox"/> |
| | | | | <input type="checkbox"/> |

R 6 m	to R 15 m
R 15 m	to R 32 m
R 32 m	to R 64 m
R 64 m	and more

Section B

All statements in this section should be evaluated according to the following criteria:

- 1 Strongly disagree
- 2 Disagree
- 3 Neither disagree nor agree
- 4 Agree
- 5 Strongly agree

		1	2	3	4	5
1.	Inventory control is seen as a management function.					
2.	Organisations manage inventory to optimise service and profit.					
3.	Stock turnover is an important measure of inventory policy efficiency.					
4.	Effective inventory management is critical to retailing success.					
5.	The primary goals of inventory management are to have sufficient quantities.					
6.	Inventory valuation methods can have a significant effects on financial statements.					
7.	The supply chain competitiveness between supplier and customer relies on how effective and efficient inventory is managed.					
8.	ERP systems could create a competitive advantage for small and medium-sized enterprises (SMEs).					
9.	Companies will obtain cost improvements by enhancing the efficiency of their inventory management systems.					
10.	Just-in-time ordering has many advantages such as the savings in inventory carrying, handling and storage costs.					
11.	Although a safety inventory will increase inventory-carrying costs, it will minimise the potential costs caused by shortages.					
12.	The current business climate of increasing competition means that all companies need to be as efficient as possible.					
13.	One of the highest cost centres is that of inventory, warehousing and distribution.					
14.	Despite technological advances, problems remain with the accuracy of inventory information.					
15.	An ABC inventory analysis is a surprisingly accurate, although simplistic, approach to managing inventory.					

16.	The implementation cost of ERP systems like SAP is very high, and thus it is difficult to justify the costs and benefits of these systems to SMEs.					
17.	Just-in-time ordering will cause inventory-out situations in organisations.					
18.	Small and medium enterprises contribute significantly to our economy.					
19.	The application of inventory control methods produces an overall inventory level that is measured with the turnover ratio (annual sales/average stock)					
20.	The turnover ratio is a good representation of how inventories are being managed in general.					
21.	Retail inventory management is often based on economic order quantity (EOQ) principles.					
22.	Spares, which have not been used for a pre-defined given period, are referred to as slow moving inventory.					
23.	EOQ only identifies how much to order and not when to order it.					
24.	ERP system inherited a number of shortcomings associated with the MRP system, including unrealistic lead-time determination for items.					
25.	An ERP system is just as reliable as the inventory information it receives.					

Section C

In this section all relevant answers must be marked; questions may have two or more answers.

1. Which of the following ERP systems vendors is the manufacturer of your ERP system?

- | | |
|-----------|--------------------------|
| SAP | <input type="checkbox"/> |
| BaaN | <input type="checkbox"/> |
| ORACLE | <input type="checkbox"/> |
| JDEDWARDS | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |
| None | <input type="checkbox"/> |

2. If your answer was **other** on question 1 please state the system / method your company uses for inventory control.

3. Which of the following inventory principles do your organisation use?

- | | |
|-------------------------------------|--------------------------|
| ABC inventory analysis | <input type="checkbox"/> |
| Economic Order Quantity (EOQ) | <input type="checkbox"/> |
| Just-in-time ordering (JIT) | <input type="checkbox"/> |
| Material requirement planning (MRP) | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |
| None | <input type="checkbox"/> |

4. If your answer was **other/ none** on question 3 please state the principles your company uses for inventory control.

5. Which of the following problems with regard to holding inventories do your organisation experience?

- | | |
|--------------------|--------------------------|
| High storage costs | <input type="checkbox"/> |
| Theft, damage | <input type="checkbox"/> |
| Obsolete inventory | <input type="checkbox"/> |
| Inventory-outs | <input type="checkbox"/> |
| Mismanagement | <input type="checkbox"/> |

6. How often do these problems occur in your inventory?

- | | |
|--------------|--------------------------|
| Never | <input type="checkbox"/> |
| Once a day | <input type="checkbox"/> |
| Once a week | <input type="checkbox"/> |
| Once a month | <input type="checkbox"/> |
| Once a year | <input type="checkbox"/> |

7. Which analysis do you use to evaluate if inventory is managed effectively?

- | | |
|-------------------------------|--------------------------|
| Sales reports | <input type="checkbox"/> |
| Inventory turnover ratio | <input type="checkbox"/> |
| Over inventory reports | <input type="checkbox"/> |
| Inventory- out reports | <input type="checkbox"/> |
| Slow moving inventory reports | <input type="checkbox"/> |
| None | <input type="checkbox"/> |

8. How often do you evaluate the inventory performance?

- | | |
|--------------|--------------------------|
| Never | <input type="checkbox"/> |
| Once a day | <input type="checkbox"/> |
| Once a week | <input type="checkbox"/> |
| Once a month | <input type="checkbox"/> |
| Once a year | <input type="checkbox"/> |

9. In which of the following ranges does your company's inventory ratio fall?

- | | |
|---------------|--------------------------|
| 0 to 1 | <input type="checkbox"/> |
| 1 to 3 | <input type="checkbox"/> |
| 3 to 5 | <input type="checkbox"/> |
| 5 to 10 | <input type="checkbox"/> |
| 10 and higher | <input type="checkbox"/> |

10. Which of the following can be considered as standard lead time for receiving inventory from your suppliers?

- | | |
|------------------|--------------------------|
| 1 to 7 Days | <input type="checkbox"/> |
| 7 to 14 Days | <input type="checkbox"/> |
| 14 to 21 Days | <input type="checkbox"/> |
| 21 to 35 Days | <input type="checkbox"/> |
| 35 days and more | <input type="checkbox"/> |

11. How long on average is inventory stored before it is sold?

- | | |
|------------------|--------------------------|
| 0 to 1 Days | <input type="checkbox"/> |
| 1 to 7 Days | <input type="checkbox"/> |
| 7 to 14 Days | <input type="checkbox"/> |
| 14 to 21 Days | <input type="checkbox"/> |
| 21 Days and more | <input type="checkbox"/> |

12. In your opinion is there efficient control over your inventories?

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

APPENDIX B

RESEARCH QUESTIONNAIRE RESULTS

Table B1. Results of Section A of research questionnaire

	1	2	3	4	5	6
1	1	3	3	1	3	2
2	6	3	3	1	3	2
3	2	4	3	1	3	2
4	1	2	2	1	3	2
5	6	3	3	1	3	2
6	6	5	4	1	3	3
7	4	4	3	1	2	4
8	1	3	3	2	3	3
9	1	4	4	2	3	2
10	5	4	3	1	3	3
11	6	3	3	1	2	4
12	1	3	4	1	3	2
13	2	1	2	1	4	1
14	8	4	4	1	2	4
15	2	3	3	1	3	2
16	6	6	3	1	2	4
17	1	4	3	1	3	3
18	4	3	4	1	3	2
19	7	5	4	1	3	3
20	2	4	3	1	4	1

Question 1

- Owner
- Buyer
- Senior Buyer
- Stock Controller
- Senior Stock Controller
- Store Manager
- Service & Operations Manager
- Logistics Manager

Question 2

- Under 12 months
- 1 to 2 years
- 2 to 3 years
- 3 to 4 years
- 4 to 5 years
- Longer than 5 years

21	5	2	3	1	2	4
22	8	4	3	1	3	2
23	7	2	3	2	2	4
24	1	3	4	1	3	1
25	4	3	3	1	3	3
26	6	4	3	1	4	1
27	1	4	3	1	3	2
28	3	3	4	1	2	4
29	6	4	3	1	3	3
30	8	3	3	1	3	2
31	1	4	4	1	4	1
32	1	3	3	1	3	2
33	4	6	4	1	2	4
34	1	4	3	2	3	3
35	6	2	4	1	2	4
36	2	3	3	1	2	4
37	5	4	4	1	3	2
38	1	4	3	1	3	1
39	2	3	3	1	3	3
40	1	2	3	1	2	4
41	3	6	3	1	3	3
42	1	4	4	1	3	2
43	4	3	3	1	4	1
44	6	3	3	1	3	2
45	1	4	4	1	3	3
46	8	4	3	1	2	4
47	6	4	3	1	2	4

Question 3

- 2 20 to 30 years
- 3 30 to 40 years
- 4 40 to 50 years
- 5 Older than 50 years

Question 4

- 1 Male
- 2 Female

Question 5

- 2 Medium-sized business
- 3 Small-sized business
- 4 Very small-sized business

Question 6

- R 0.2 m to R 6 m
- 1 R 6 m to R 15 m
- 2 R 15 m to R 32 m
- 3 R 32 m to R 64 m

48	6	4	5	1	3	3
49	6	4	3	1	3	2
50	1	2	4	1	3	2
51	5	6	4	1	3	3
52	7	4	3	1	3	2
53	4	4	3	1	3	3

Table B2. Results of Section B of research questionnaire

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	3	4	3	4	5	3	3	3	3	3	4	5	4	3	3	4	2	4	3	3	3	4	3	3	4
2	4	3	3	3	4	3	4	3	3	5	3	3	4	3	4	3	4	3	3	3	4	3	5	3	4
3	3	3	2	3	4	2	3	3	4	3	5	5	4	3	3	3	3	3	3	3	3	5	3	3	3
4	3	5	4	4	5	3	4	2	3	3	3	4	3	4	4	2	3	4	3	2	3	4	3	3	3
5	5	4	3	3	4	2	3	3	3	5	3	3	3	3	3	4	3	5	4	3	4	5	4	3	4
6	3	5	3	4	5	4	5	3	4	4	4	5	4	3	4	4	4	3	3	3	4	3	5	4	3
7	4	3	5	3	4	3	3	5	3	4	5	4	4	4	4	2	4	3	3	3	4	4	3	4	3
8	3	4	4	3	4	3	4	4	2	3	3	4	3	3	3	3	3	4	3	4	5	4	3	3	3
9	4	3	5	4	4	3	4	3	3	2	4	3	3	4	3	3	3	4	4	3	3	3	4	3	3
10	4	3	5	3	5	3	3	4	3	4	4	4	4	3	4	3	3	3	3	3	5	3	4	3	4
11	5	5	3	4	4	4	3	4	5	3	3	3	5	3	4	4	5	5	3	4	4	3	4	4	4
12	3	3	5	4	5	3	3	4	3	2	2	3	3	4	3	3	4	5	3	3	3	3	3	3	3
13	3	3	4	3	4	1	4	3	3	3	4	4	3	3	5	3	3	4	4	5	4	3	3	2	4
14	5	4	3	3	4	4	3	5	3	4	3	5	4	3	4	3	4	3	3	3	3	4	4	5	5
15	3	4	5	3	3	4	4	4	3	3	3	3	4	4	4	3	3	4	3	4	3	3	3	3	3
16	4	3	4	4	3	3	3	5	5	5	3	3	5	4	5	4	3	3	3	4	3	3	4	3	4
17	3	3	5	3	4	4	4	3	4	3	2	4	4	4	3	3	3	4	3	3	3	3	3	3	4
18	3	5	5	4	5	2	3	3	3	2	3	4	4	5	5	3	3	3	3	3	4	3	3	3	4

19	4	5	4	3	4	4	3	4	3	3	3	3	5	4	4	3	3	4	3	5	3	4	3	3
20	4	3	5	4	4	3	4	4	3	3	4	5	4	4	4	3	4	3	3	3	3	3	3	3
21	5	4	3	4	4	4	3	5	5	3	4	4	3	4	3	4	4	3	3	3	3	3	4	4
22	5	5	3	3	4	3	4	4	3	3	5	3	4	3	3	5	3	3	4	5	3	4	3	4
23	4	4	5	3	4	3	4	4	3	4	4	4	3	3	4	3	5	4	3	4	3	4	4	4
24	5	5	5	4	4	3	3	4	4	3	5	3	1	3	3	3	4	3	3	3	3	2	3	3
25	3	5	5	3	5	4	5	3	4	4	3	4	4	3	3	4	3	3	4	3	3	3	1	3
26	4	3	3	2	4	4	4	3	3	4	5	3	4	4	3	3	4	4	5	4	4	4	3	4
27	4	2	5	5	4	4	3	4	3	5	4	4	2	5	5	4	4	3	3	3	3	3	3	3
28	3	3	4	3	4	3	4	4	3	3	4	5	4	3	3	3	4	4	4	4	4	5	3	5
29	3	4	5	3	5	3	4	4	3	4	4	3	5	3	5	3	4	3	3	3	4	3	3	4
30	4	3	5	3	5	3	3	3	3	5	3	3	5	4	5	3	4	4	4	4	5	4	3	3
31	3	4	3	5	5	4	4	3	3	3	4	5	3	4	3	4	3	4	3	3	3	3	1	4
32	5	4	4	4	5	3	5	4	3	3	3	4	3	3	4	3	3	4	3	4	3	4	3	3
33	3	3	5	3	4	4	3	5	4	4	5	3	4	3	3	5	3	3	5	3	5	4	4	5
34	4	3	5	3	4	3	4	4	5	3	4	5	3	3	4	3	3	3	4	3	3	3	3	3
35	3	4	5	4	5	3	3	5	4	4	3	3	5	4	5	4	3	5	3	4	3	5	3	4
36	3	3	3	2	5	4	4	3	4	4	4	3	3	4	4	5	3	4	3	4	3	3	3	5
37	5	4	5	5	4	4	5	5	4	4	3	5	4	3	5	4	3	4	3	4	4	3	5	3
38	5	5	5	4	4	3	5	3	3	3	3	4	4	3	3	5	3	3	5	3	3	3	3	4
39	3	4	5	5	4	4	4	4	4	3	4	3	3	4	3	3	3	5	4	5	3	5	3	4
40	4	3	4	3	4	5	3	4	3	3	2	4	3	4	3	5	3	3	4	3	4	3	4	3
41	3	4	3	3	5	3	4	3	3	5	3	4	3	3	4	3	4	3	4	3	4	3	3	4
42	5	3	3	4	5	5	3	4	5	3	3	3	4	3	3	3	3	3	2	3	3	3	2	3
43	4	3	4	3	4	3	3	3	3	3	2	3	3	4	4	4	3	3	4	4	4	4	3	3
44	4	4	5	4	5	3	3	3	4	4	4	3	4	3	4	4	4	4	4	3	3	5	3	4
45	3	3	3	4	5	4	5	3	4	5	3	4	5	4	4	4	3	4	3	5	3	3	3	3
46	5	4	3	3	5	4	4	5	5	4	3	4	4	3	4	4	3	4	3	4	3	4	4	4
47	5	5	5	5	4	5	4	5	4	3	5	4	4	3	5	4	3	3	3	4	4	4	5	3

48	4	4	5	5	4	5	4	3	4	5	3	3	3	4	3	4	3	4	3	3
49	3	5	5	1	4	4	5	4	5	4	4	3	4	3	4	5	3	3	2	3
50	5	5	5	4	4	3	3	3	3	3	4	3	3	4	3	4	3	3	4	4
51	4	3	3	3	5	4	4	3	3	5	3	4	4	5	4	3	4	4	3	3
52	4	5	3	5	5	3	3	3	5	4	3	4	5	4	4	3	3	4	3	4
53	3	4	5	4	4	3	3	4	3	3	4	4	3	4	4	3	4	5	4	4

- 1 Strongly disagree
- 2 Disagree
- 3 Neither disagree nor agree
- 4 Agree
- 5 Strongly agree

Table B3. Results of section C of research questionnaire

	1	2	3	4	5	6	7	8	9	10	11	12
1	5	2	3		4	3	1	2	2	2	1	1
2	5	3	3		4	2	1	2	1	3	2	1
3	5	2	3		4	3	1	2	3	1	1	2
4	5	2	3		4	3	2	4	4	2	1	2
5	5	2	3		4	2	4	2	1	2	2	1
6	5	5	3		4	3	4	4	2	2	2	1
7	1		4		1	4	1	2	1	1	3	1
8	5	2	3		4	2	2	4	2	2	2	1
9	5	2	3		4	2	2	4	1	3	1	2
10	5	2	3		4	3	2	4	1	2	2	1
11	5	3	3		3	5	1	2	2	4	1	2

1. Which of the following ERP systems vendors is the manufacturer of your ERP system?

- 1 SAP
- 2 Baan
- 3 ORACLE
- 4 JDEDEWARDS
- 5 Other
- 6 None

2. If your answer was **other** on question 1 please state the system / method your company uses for inventory control.

12	5	2	3		4	3	2	4	3	2	1	2
13	5	2	3		4	2	1	2	4	2	1	2
14	1		4		3	5	1	3	1	4	2	1
15	5	2	3		4	3	2	4	1	3	2	1
16	5	2	3		4	3	2	4	2	3	2	2
17	5	2	3		4	2	2	4	1	2	2	1
18	5	2	3		4	3	2	4	3	2	1	2
19	5	4	3		4	2	2	4	1	3	2	2
20	6		3		4	2	2	4	1	3	1	1
21	1		4		4	3	1	2	1	1	3	2
22	5	2	3		4	3	1	2	4	1	2	2
23	4		3		3	5	5	3	2	2	2	1
24	5	2	3		4	2	1	2	2	2	1	1
25	5	3	3		4	4	1	2	1	2	1	2
26	5	2	3		4	4	4	2	3	1	2	2
27	5	2	3		2	3	2	4	2	2	2	2
28	5	2	3		3	5	1	2	1	3	1	1
29	5	2	3		4	3	1	2	3	2	1	2
30	5	2	3		4	3	1	2	1	2	2	1
31	6		3		4	3	1	2	1	1	2	1
32	5	2	3		4	2	2	4	2	1	2	2
33	1		4		4	4	1	2	1	2	3	2
34	5	4	3		4	3	1	2	2	2	2	2
35	5	3	3		4	3	5	3	3	3	2	1
36	2		4		3	5	1	2	1	4	3	2
37	5	2	3		4	3	4	3	1	2	2	1
38	5	2	3		4	3	1	3	3	2	2	2

- 1 Excel Spread Sheet
- 2 Pastel
- 3 Syspro
- 4 Cove
- 5 Exact software

3. Which of the following inventory principles do your organisation use?

- 1 ABC inventory analysis
- 2 Economic Order Quantity (EOQ)
- 3 Just in time ordering (JIT)
- 4 Material requirement planning (MRP)
- 5 Other
- 6 None

5. Which of the following problems with regard to holding inventories do your organisation experience?

- 1 High storage costs
- 2 Theft, damage.
- 3 Obsolete inventory
- 4 Stock-outs
- 5 Mismanagement

6&8

How often?

- 1 Never
- 2 Once a day

39	5	2	3		2	4	1	2	1	2	1	1
40	1		4		1	4	1	2	3	4	3	2
41	5	2	3		4	4	4	3	3	3	2	2
42	5	2	3		4	3	2	4	2	1	1	1
43	5	2	3		4	3	2	4	4	3	2	2
44	5	2	3		4	4	4	4	1	1	1	2
45	5	2	3		4	3	1	2	1	1	2	2
46	3		4		3	5	1	2	2	3	2	2
47	5	2	3		1	3	2	4	3	2	2	1
48	5	2	3		4	3	2	4	3	3	2	1
49	5	5	3		4	3	2	4	1	3	1	2
50	5	3	3		4	3	2	4	1	2	2	2
51	5	2	3		4	3	4	4	1	3	2	1
52	5	2	3		4	3	2	4	2	1	2	2
53	5	2	3		4	3	2	4	1	2	1	2

7. Which analysis do you use to evaluate if inventory is managed effectively?

3 Once a week
4 Once a month
5 Once a year

1 Sales reports
2 Inventory turnover ratio
3 Over inventory reports
4 Inventory- out reports
5 Slow moving inventory reports
6 None

9. In which of the following ranges does your companies inventory ratio fall?

1 0 to 1
2 1 to 3
3 3 to 5
4 5 to 10
5 10 and higher

10. Which of the following can be considered as standard lead time for receiving inventory from your suppliers?

- 1 1 to 7 Days
- 2 7 to 14 Days
- 3 14 to 21 Days
- 4 21 to 35 Days
- 5 35 days and more

11. How long on average are inventory stored before it is sold?

- 1 0 to 1 Days
- 2 1 to 7 Days
- 3 7 to 14 Days
- 4 14 to 21 Days
- 5 21 Days and more

12. To your opinion is there efficient control over your inventories?

- 1 Yes
- 2 No

APPENDIX C:

STATISTICAL ANALYSIS RESULTS

1.1 Cross Tabulation Results

Table C1.1.1. Cross tabulation for question A1 & A3

A1 * A3 Cross tabulation						
		A3				
		20 to 30	30 to 40	40 to 50	Older than 50	Total
A1	1 Count	1	8	7		16
	Owner	6.3%	50.0%	43.8%	.0%	100.0%
	2 Count	1	5			6
	Buyer	16.7%	83.3%	.0%	.0%	100.0%
	3 Count		1	1		2
	Senior Buyer	.0%	50.0%	50.0%	.0%	100.0%
	4 Count		4	2		6
	Stock Controller	.0%	66.7%	33.3%	.0%	100.0%
	5 Senior Stock Controller	.0%	2	2		4
	6 Count		9	2	1	12
	Store Manager	.0%	75.0%	16.7%	8.3%	100.0%
	7 Count		2	1		3
	Service & Operations Manager	.0%	66.7%	33.3%	.0%	100.0%
	8 Count		3	1		4
	Logistics Manager	.0%	75.0%	25.0%	.0%	100.0%
Total Count		2	34	16	1	53
% within A1		3.8%	64.2%	30.2%	1.9%	100.0%

Table C1.1.2. Cross tabulation for question A1 & B1

A1 * B1 Cross tabulation					
		B1			Total
		Neither disagree nor agree	Agree	Strongly agree	
A1	1 Count	7	4	5	16
	Owner	43.8%	25.0%	31.3%	100.0%
	2 Count	5	1		6
	Buyer	83.3%	16.7%	.0%	100.0%
	3 Count	2			2
	Senior Buyer	100.0%	.0%	.0%	100.0%
	4 Count	4	2		6
	Stock Controller	66.7%	33.3%	.0%	100.0%
	5 Senior Stock Controller	.0%	2	2	4
	6 Count	4	5	3	12
	Store Manager	33.3%	41.7%	25.0%	100.0%

7	Count		3		3
	Service & Operations Manager	.0%	100.0%	.0%	100.0%
8	Count		1	3	4
	Logistics Manager	.0%	25.0%	75.0%	100.0%
Total Count		22	18	13	53
% within A1		41.5%	34.0%	24.5%	100.0%

Table C1.1.3. Cross tabulation for question A1 & C7

A1 * C7 Cross tabulation							
			C7				
			20 to 30	30 to 40	40 to 50	Older than 50	Total
A1 1	Count		7	9			16
	Owner		43.8%	56.3%	.0%	.0%	100.0%
2	Count		4	2			6
	Buyer		66.7%	33.3%	.0%	.0%	100.0%
3	Count		1		1		2
	Senior Buyer		50.0%	.0%	50.0%	.0%	100.0%
4	Count		3	3			6
	Stock Controller		50.0%	50.0%	.0%	.0%	100.0%
5	Count		1	1	2		4
	Senior Stock Controller		25.0%	25.0%	50.0%	.0%	100.0%
6	Count		3	4	4	1	12
	Store Manager		25.0%	33.3%	33.3%	8.3%	100.0%
7	Count			2		1	3
	Service & Operations Manager		.0%	66.7%	.0%	33.3%	100.0%
8	Count		4				4
	Logistics Manager		100.0%	.0%	.0%	.0%	100.0%
Total Count			23	21	7	2	53
% within A1			43.4%	39.6%	13.2%	3.8%	100.0%

Table C1.1.4. Cross tabulation for question A5 & B9

A5 * B9 Cross tabulation							
			B9				
			Disagree	Neither disagree nor agree	Agree	Strongly agree	Total
A5 2	Count			6	3	4	13
	Medium sized business		.0%	46.2%	23.1%	30.8%	100.0%
3	Count		1	20	9	5	35
	Small sized business		2.9%	57.1%	25.7%	14.3%	100.0%
4	Count			5			5
	Very Small sized business		.0%	100.0%	.0%	.0%	100.0%
Total Count			1	31	12	9	53
% within A5			1.9%	58.5%	22.6%	17.0%	100.0%

Table C1.1.5. Cross tabulation for question A5 & C3

A5 * C3 Cross tabulation					
			C3		
			(JIT)	(MRP)	Total
A5 2	Count		6	7	13
	Medium sized business		46.2%	53.8%	100.0%
3	Count		35		35
	Small sized business		100.0%	.0%	100.0%
4	Count		5		5
	Very Small sized business		100.0%	.0%	100.0%
Total Count			46	7	53
% within A5			86.8%	13.2%	100.0%

Table C1.1.6. Cross tabulation for question A5 & C1

A5 * C1 Cross tabulation									
			C1						
			SAP	BaaN	ORACLE	JDEDWARDS	Other	None	Total
A5	2	Count	5	1	1	1	5		13
		Medium sized business	38.5%	7.7%	7.7%	7.7%	38.5%	.0%	100.0%
	3	Count					35		35
		Small sized business	.0%	.0%	.0%	.0%	100.0%	.0%	100.0%
	4	Count					3	2	5
		Very Small sized business	.0%	.0%	.0%	.0%	60.0%	40.0%	100.0%
	Total	Count	5	1	1	1	43	2	53
		% within A5	9.4%	1.9%	1.9%	1.9%	81.1%	3.8%	100.0%

Table C1.1.7. Cross tabulation for question A5 & C9

A5 * C9 Cross tabulation							
			C9				
			1	2	3	4	Total
A5	2	Count	6	3	4		13
		Medium sized business	46.2%	23.1%	30.8%	.0%	100.0%
	3	Count	17	9	7	2	35
		Small sized business	48.6%	25.7%	20.0%	5.7%	100.0%
	4	Count	2		1	2	5
		Very Small	40.0%	.0%	20.0%	40.0%	100.0%
	Total	Count	25	12	12	4	53
		% within A5	47.2%	22.6%	22.6%	7.5%	100.0%

Table C1.1.8. Cross tabulation for question A5 & C12

A5 * C12 Cross tabulation				
		C12		
		Yes	No	Total
A5	2 Count	6	7	13
	Medium sized business	46.2%	53.8%	100.0%
	3 Count	15	20	35
	Small sized business	42.9%	57.1%	100.0%
	4 Count	2	3	5
	Very Small sized business	40.0%	60.0%	100.0%
	Total Count	23	30	53
	% within A5	43.4%	56.6%	100.0%

Table C1.1.9. Cross tabulation for question B3 & C9

B3 * C9 Cross tabulation						
		C9				
		0 to 1	1 to 3	3 to 5	5 to 10	Total
B3 2	Count			1		1
	Disagree	.0%	.0%	100.0%	.0%	100.0%
3	Count	8	6	2	1	17
		47.1%	35.3%	11.8%	5.9%	100.0%
4	Count	2	3	1	3	9
	% within B3	22.2%	33.3%	11.1%	33.3%	100.0%
5	Count	15	3	8		26
	% within B3	57.7%	11.5%	30.8%	.0%	100.0%
Total Count		25	12	12	4	53
	% within B3	47.2%	22.6%	22.6%	7.5%	100.0%

Table C1.1.10. Cross tabulation for question B7 & C10

B7 * C10 Cross tabulation							
			C10				
			1 to 7	7 to 14	14 to 21	21 to 35	Total
B7	3	Count	6	11	3	3	23
		Neither disagree nor agree	26.1%	47.8%	13.0%	13.0%	100.0%
	4	Count	3	9	10	1	23
		Agree	13.0%	39.1%	43.5%	4.3%	100.0%
	5	Count	2	4	1		7
		Strongly agree	28.6%	57.1%	14.3%	.0%	100.0%
	Total	Count	11	24	14	4	53
		% within B7	20.8%	45.3%	26.4%	7.5%	100.0%

Table C1.1.11. Cross tabulation for question B7 & C12

B7 * C12 Cross tabulation					
			C12		
			Yes	No	Total
B7	3	Count	9	14	23
		Neither disagree nor agree	39.1%	60.9%	100.0%
	4	Count	12	11	23
		Agree	52.2%	47.8%	100.0%
	5	Count	2	5	7
		Strongly agree	28.6%	71.4%	100.0%
	Total	Count	23	30	53
		% within B7	43.4%	56.6%	100.0%

Table C1.1.12. Cross tabulation for question B8 & C1

B8 * C1 Cross tabulation										
			C1							
			SAP	BaaN	ORACLE	JDE	EDWARDS		Other	Total
B8	2	Count						1		1
		Disagree	.0%	.0%	.0%	.0%	.0%	100.0%	.0%	100.0%
	3	Count		1				22	1	24
		Neither disagree nor agree	.0%	4.2%	.0%	.0%	.0%	91.7%	4.2%	100.0%
	4	Count	1				1	17	1	20
		Agree	5.0%	.0%	.0%	.0%	5.0%	85.0%	5.0%	100.0%
	5	Count	4		1			3		8
		Strongly agree	50.0%	.0%	12.5%	.0%	.0%	37.5%	.0%	100.0%
Total		Count	5	1	1	1	43	2	53	
		% within B8	9.4%	1.9%	1.9%	1.9%	81.1%	3.8%	100.0%	

Table C1.1.13. Cross tabulation for question B10 & C3

B10 * C3 Cross tabulation					
			C3		
			JIT	MRP	Total
B10	2	Count	4		4
		Disagree	100.0%	.0%	100.0%
	3	Count	22	2	24
		Neither disagree nor agree	91.7%	8.3%	100.0%
	4	Count	11	5	16
		Agree	68.8%	31.3%	100.0%
	5	Count	9		9
		Strongly agree	100.0%	.0%	100.0%
	Total	Count	46	7	53
		% within B10	86.8%	13.2%	100.0%

Table C1.1.14. Cross tabulation for question B11 & C5

B11 * C5 Cross tabulation							
			C5				
			High storage costs	Theft, damage.	Obsolete	Stock-outs	Total
B11	2	Count	1			2	3
		Disagree	33.3%	.0%	.0%	66.7%	100.0%
	3	Count			3	21	24
		Neither disagree nor agree	.0%	.0%	12.5%	87.5%	100.0%
	4	Count	1	2	3	14	20
		Agree	5.0%	10.0%	15.0%	70.0%	100.0%
	5	Count	1			5	6
		Strongly agree	16.7%	.0%	.0%	83.3%	100.0%
	Total	Count	3	2	6	42	53
		% within B11	5.7%	3.8%	11.3%	79.2%	100.0%

Table C1.1.15. Cross tabulation for question B15 & C3

B15 * C3 Cross tabulation					
			C3		
			JIT	MRP	Total
B15	3	Count	19	3	22
		Neither disagree nor agree	86.4%	13.6%	100.0%
	4	Count	17	4	21
		Agree	81.0%	19.0%	100.0%
	5	Count	10		10
		Strongly agree	100.0%	.0%	100.0%
	Total	Count	46	7	53
			86.8%	13.2%	100.0%

Table C1.1.16. Cross tabulation for question B11 & C5

B16 * C1 Cross tabulation									
		C1							
		SAP	BaaN	ORACLE	JDEDWARDS	Other	None	Total	
B16	2	Count	1				1	2	
		Disagree	50.0%	.0%	.0%	.0%	50.0%	.0%	100.0%
	3	Count	1			1	23	1	26
		Neither disagree nor agree	3.8%	.0%	.0%	3.8%	88.5%	3.8%	100.0%
	4	Count	1				18		19
		Agree	5.3%	.0%	.0%	.0%	94.7%	.0%	100.0%
	5	Count	2	1	1		1	1	6
		Strongly agree	33.3%	16.7%	16.7%	.0%	16.7%	16.7%	100.0%
	Total Count	5	1	1	1	43	2	53	
		9.4%	1.9%	1.9%	1.9%	81.1%	3.8%	100.0%	

Table C1.1.17. Cross tabulation for question C2 & C5

C2 * C5 Cross tabulation							
			C5				
			storage	damage.	Obsolete	Stock-outs	Total
C2	2	Count	1	2	1	30	34
		Pastel	2.9%	5.9%	2.9%	88.2%	100.0%
	3	Count			1	4	5
		Syspro	.0%	.0%	20.0%	80.0%	100.0%
	4	Count				2	2
		Cove	.0%	.0%	.0%	100.0%	100.0%
	5	Count				2	2
		Exact software	.0%	.0%	.0%	100.0%	100.0%
	Total	Count	1	2	2	38	43
		% within C2	2.3%	4.7%	4.7%	88.4%	100.0%

Table C1.1.17. Cross tabulation for question C2 & C11

C2 * C11 Cross tabulation					
			C11		
			0 to 1	1 to 7	Total
C2	2	Count	14	20	34
		Pastel	41.2%	58.8%	100.0%
	3	Count	2	3	5
		Syspro	40.0%	60.0%	100.0%
	4	Count		2	2
		Cove	.0%	100.0%	100.0%
	5	Count	1	1	2
		Exact software	50.0%	50.0%	100.0%
Total		Count	17	26	43
		% within C2	39.5%	60.5%	100.0%

Table C1.1.18. Cross tabulation for question C2 & C12

C2 * C12 Cross tabulation					
			C12		
			Yes	No	Total
C2	2	Count	15	19	34
			44.1%	55.9%	100.0%
	3	Count	2	3	5
			40.0%	60.0%	100.0%
	4	Count		2	2
			.0%	100.0%	100.0%
	5	Count	1	1	2
			50.0%	50.0%	100.0%
Total		Count	18	25	43
		% within C2	41.9%	58.1%	100.0%

1.2 Correlation Results

Table C1.2.1. Correlation Table 1

		A2	A3	A5	A6	B1	B2	B3	B4	B5	B6	B7
Spearman's A2 rho	Correlation Coefficient	1.000	.265	.073	.092	.030	-.114	-.106	-.006	.026	.226	.197
	Sig. (2-tailed)		.055	.603	.512	.831	.418	.452	.968	.855	.103	.158
	N	53	53	53	53	53	53	53	53	53	53	53
	A3	Correlation Coefficient	.265	1.000	-.077	.046	.039	.057	.285*	.143	.250	-.070
		Sig. (2-tailed)	.055		.584	.564	.745	.685	.038	.308	.071	.617
		N	53	53	53	53	53	53	53	53	53	53
	A5	Correlation Coefficient	.073	-.077	1.000	-.861**	-.175	-.046	.015	.075	.061	-.234
		Sig. (2-tailed)	.603	.584		.000	.210	.742	.918	.594	.663	.092
		N	53	53	53	53	53	53	53	53	53	53
	A6	Correlation Coefficient	.092	.081	-.861**	1.000	-.049	-.038	-.031	-.162	-.009	.329*
		Sig. (2-tailed)	.512	.564	.000		.728	.787	.826	.246	.950	.016
		N	53	53	53	53	53	53	53	53	53	53
	B1	Correlation Coefficient	.030	.046	-.175	-.049	1.000	.150	-.089	.174	-.143	.087
		Sig. (2-tailed)	.831	.745	.210	.728		.284	.526	.212	.308	.533
		N	53	53	53	53	53	53	53	53	53	53
	B2	Correlation Coefficient	-.114	.039	-.046	-.038	.150	1.000	.037	.265	.155	-.038
		Sig. (2-tailed)	.418	.780	.742	.787	.284		.795	.056	.269	.789
		N	53	53	53	53	53	53	53	53	53	53
	B3	Correlation Coefficient	-.106	.057	.015	-.031	-.089	.037	1.000	.175	-.125	-.083
		Sig. (2-tailed)	.452	.685	.918	.826	.526	.795		.209	.373	.553
		N	53	53	53	53	53	53	53	53	53	53
	B4	Correlation Coefficient	-.006	.285*	.075	-.162	.174	.265	.175	1.000	.223	.107
		Sig. (2-tailed)	.968	.038	.594	.246	.212	.056	.209		.108	.448
		N	53	53	53	53	53	53	53	53	53	53
	B5	Correlation Coefficient	.026	.143	.061	-.009	-.143	.155	-.125	.223	1.000	.065
		Sig. (2-tailed)	.855	.308	.663	.950	.308	.269	.373	.108		.645
		N	53	53	53	53	53	53	53	53	53	53
	B6	Correlation Coefficient	.226	.250	-.234	.329*	.087	-.038	-.083	.107	.065	1.000
		Sig. (2-tailed)	.103	.071	.092	.016	.533	.789	.553	.448	.645	
		N	53	53	53	53	53	53	53	53	53	53
	B7	Correlation Coefficient	.197	-.070	.201	-.041	-.159	.222	.012	-.100	.124	.230
		Sig. (2-tailed)	.158	.617	.149	.772	.255	.110	.932	.474	.376	.097
		N	53	53	53	53	53	53	53	53	53	53

B8	Correlation Coefficient	.072	.068	-.564**	.485**	.261	-.098	.228	.032	-.225	.215	-.220
	Sig. (2-tailed)	.608	.626	.000	.000	.059	.487	.100	.822	.105	.121	.113
	N	53	53	53	53	53	53	53	53	53	53	53
B9	Correlation Coefficient	.166	.112	-.273*	.246	.098	.088	-.081	.188	.079	.389**	-.046
	Sig. (2-tailed)	.235	.426	.048	.076	.484	.533	.562	.177	.574	.004	.742
	N	53	53	53	53	53	53	53	53	53	53	53
B10	Correlation Coefficient	.322*	-.084	-.266	.309*	.143	-.057	-.041	-.128	.161	.209	.056
	Sig. (2-tailed)	.019	.549	.054	.024	.307	.683	.771	.360	.250	.132	.689
	N	53	53	53	53	53	53	53	53	53	53	53
B11	Correlation Coefficient	.157	-.026	.048	-.050	-.079	-.079	.014	-.074	-.195	-.095	.054
	Sig. (2-tailed)	.262	.851	.731	.722	.572	.573	.919	.598	.162	.497	.703
	N	53	53	53	53	53	53	53	53	53	53	53
B12	Correlation Coefficient	.174	-.019	.077	.022	-.165	-.054	-.134	.142	.272*	-.048	.216
	Sig. (2-tailed)	.212	.891	.584	.873	.236	.699	.337	.310	.049	.735	.120
	N	53	53	53	53	53	53	53	53	53	53	53
B13	Correlation Coefficient	.220	-.022	-.261	.218	-.004	.054	-.042	-.106	.193	.031	-.021
	Sig. (2-tailed)	.114	.874	.059	.117	.976	.699	.767	.452	.165	.826	.882
	N	53	53	53	53	53	53	53	53	53	53	53
B14	Correlation Coefficient	.075	.083	.131	-.038	-.234	-.201	.032	.113	.010	.018	-.187
	Sig. (2-tailed)	.594	.556	.348	.788	.092	.149	.821	.419	.946	.900	.180
	N	53	53	53	53	53	53	53	53	53	53	53
B15	Correlation Coefficient	.049	-.107	-.091	.094	.059	.002	.181	.134	.240	-.081	.033
	Sig. (2-tailed)	.726	.448	.517	.502	.674	.991	.194	.338	.083	.565	.816
	N	53	53	53	53	53	53	53	53	53	53	53

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table C1.2.2. Correlation Table 2

		B8	B9	B10	B11	B12	B13	B14	B15
Spearman's A2 rho	Correlation Coefficient	.072	.166	.322*	.157	.174	.220	.075	.049
	Sig. (2-tailed)	.608	.235	.019	.262	.212	.114	.594	.726
	N	53	53	53	53	53	53	53	53
	A3	Correlation Coefficient	.068	.112	-.084	-.026	-.019	-.022	.083
		Sig. (2-tailed)	.626	.426	.549	.851	.891	.874	.556
		N	53	53	53	53	53	53	53
	A5	Correlation Coefficient	-.564**	-.273*	-.266	.048	.077	-.261	.131
		Sig. (2-tailed)	.000	.048	.054	.731	.584	.059	.348
		N	53	53	53	53	53	53	53
	A6	Correlation Coefficient	.485**	.246	.309*	-.050	.022	.218	-.038
		Sig. (2-tailed)	.000	.076	.024	.722	.873	.117	.788
		N	53	53	53	53	53	53	53
	B1	Correlation Coefficient	.261	.098	.143	-.079	-.165	-.004	-.234
		Sig. (2-tailed)	.059	.484	.307	.572	.236	.976	.092
		N	53	53	53	53	53	53	53
	B2	Correlation Coefficient	-.098	.088	-.057	-.079	-.054	.054	-.201
		Sig. (2-tailed)	.487	.533	.683	.573	.699	.699	.149
		N	53	53	53	53	53	53	53
	B3	Correlation Coefficient	.228	-.081	-.041	.014	-.134	-.042	.032
		Sig. (2-tailed)	.100	.562	.771	.919	.337	.767	.821
		N	53	53	53	53	53	53	53
	B4	Correlation Coefficient	.032	.188	-.128	-.074	.142	-.106	.113
		Sig. (2-tailed)	.822	.177	.360	.598	.310	.452	.419
		N	53	53	53	53	53	53	53
	B5	Correlation Coefficient	-.225	.079	.161	-.195	.272*	.193	.010
		Sig. (2-tailed)	.105	.574	.250	.162	.049	.165	.946
		N	53	53	53	53	53	53	53
	B6	Correlation Coefficient	.215	.389**	.209	-.095	-.048	.031	.018
		Sig. (2-tailed)	.121	.004	.132	.497	.735	.826	.900
		N	53	53	53	53	53	53	53
	B7	Correlation Coefficient	-.220	-.046	.056	.054	.216	-.021	-.187
		Sig. (2-tailed)	.113	.742	.689	.703	.120	.882	.180
		N	53	53	53	53	53	53	53

B8	Correlation Coefficient	1.000	.238	.080	.128	-.060	.170	-.211	.112
	Sig. (2-tailed)		.086	.567	.360	.671	.224	.130	.426
	N	53	53	53	53	53	53	53	53

B9	Correlation Coefficient		.238	1.000	.128	-.012	-.083	.260	-.204	.117
	Sig. (2-tailed)		.086		.361	.931	.556	.061	.144	.402
	N		53	53	53	53	53	53	53	53
B10	Correlation Coefficient		.080	.128	1.000	-.033	-.061	.323*	-.115	.399**
	Sig. (2-tailed)		.567	.361		.817	.665	.018	.414	.003
	N		53	53	53	53	53	53	53	53
B11	Correlation Coefficient		.128	-.012	-.033	1.000	.072	-.078	-.161	-.156
	Sig. (2-tailed)		.360	.931	.817		.607	.581	.251	.265
	N		53	53	53	53	53	53	53	53
B12	Correlation Coefficient		-.060	-.083	-.061	.072	1.000	.055	-.139	.059
	Sig. (2-tailed)		.671	.556	.665	.607		.695	.322	.675
	N		53	53	53	53	53	53	53	53
B13	Correlation Coefficient		.170	.260	.323*	-.078	.055	1.000	-.207	.385**
	Sig. (2-tailed)		.224	.061	.018	.581	.695		.137	.004
	N		53	53	53	53	53	53	53	53
B14	Correlation Coefficient		-.211	-.204	-.115	-.161	-.139	-.207	1.000	.079
	Sig. (2-tailed)		.130	.144	.414	.251	.322	.137		.575
	N		53	53	53	53	53	53	53	53
B15	Correlation Coefficient		.112	.117	.399**	-.156	.059	.385**	.079	1.000
	Sig. (2-tailed)		.426	.402	.003	.265	.675	.004	.575	
	N		53	53	53	53	53	53	53	53

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table C1.2.3. Correlation Table 3

			A2	A3	A5	A6	B16	B17	B18	B19	B20
Spearman's rho	A2	Correlation Coefficient	1.000	.265	.073	.092	.077	.144	-.210	-.124	.049
		Sig. (2-tailed)	.	.055	.603	.512	.584	.304	.131	.377	.725
		N	53	53	53	53	53	53	53	53	53
	A3	Correlation Coefficient	.265	1.000	-.077	.081	.148	.065	-.166	.199	-.104
		Sig. (2-tailed)	.055	.	.584	.564	.289	.646	.234	.154	.459
		N	53	53	53	53	53	53	53	53	53
	A5	Correlation Coefficient	.073	-.077	1.000	-.861**	-.226	-.294*	.139	.100	.047

	Sig. (2-tailed)	.603	.584	.	.000	.104	.033	.320	.476	.740
	N	53	53	53	53	53	53	53	53	53
A6	Correlation Coefficient	.092	.081	-.861**	1.000	.219	.289*	-.171	-.076	.018
	Sig. (2-tailed)	.512	.564	.000	.	.116	.036	.220	.590	.900
	N	53	53	53	53	53	53	53	53	53
B16	Correlation Coefficient	.077	.148	-.226	.219	1.000	.023	-.157	.024	-.069
	Sig. (2-tailed)	.584	.289	.104	.116	.	.870	.261	.866	.622
	N	53	53	53	53	53	53	53	53	53
B17	Correlation Coefficient	.144	.065	-.294*	.289*	.023	1.000	-.143	.016	.055
	Sig. (2-tailed)	.304	.646	.033	.036	.870	.	.306	.912	.695
	N	53	53	53	53	53	53	53	53	53
B18	Correlation Coefficient	-.210	-.166	.139	-.171	-.157	-.143	1.000	.131	.062
	Sig. (2-tailed)	.131	.234	.320	.220	.261	.306	.	.350	.659
	N	53	53	53	53	53	53	53	53	53
B19	Correlation Coefficient	-.124	.199	.100	-.076	.024	.016	.131	1.000	.122
	Sig. (2-tailed)	.377	.154	.476	.590	.866	.912	.350	.	.385
	N	53	53	53	53	53	53	53	53	53
B20	Correlation Coefficient	.049	-.104	.047	.018	-.069	.055	.062	.122	1.000
	Sig. (2-tailed)	.725	.459	.740	.900	.622	.695	.659	.385	.
	N	53	53	53	53	53	53	53	53	53
B21	Correlation Coefficient	-.149	.018	-.026	.166	-.210	.058	.059	.176	.100
	Sig. (2-tailed)	.288	.896	.855	.235	.131	.678	.677	.207	.475
	N	53	53	53	53	53	53	53	53	53
B22	Correlation Coefficient	.158	-.032	-.075	.078	.023	.034	.056	.053	.065
	Sig. (2-tailed)	.259	.822	.591	.578	.869	.806	.692	.705	.643
	N	53	53	53	53	53	53	53	53	53
B23	Correlation Coefficient	.036	.070	-.166	.228	-.007	.289*	-.079	.187	.204
	Sig. (2-tailed)	.798	.620	.234	.101	.962	.036	.574	.179	.142
	N	53	53	53	53	53	53	53	53	53
B24	Correlation Coefficient	.088	.055	-.613**	.560**	.061	.301*	.040	-.043	-.107
	Sig. (2-tailed)	.532	.697	.000	.000	.663	.029	.775	.758	.445
	N	53	53	53	53	53	53	53	53	53
B25	Correlation Coefficient	-.084	-.071	-.301*	.259	.191	.199	-.072	.203	.191
	Sig. (2-tailed)	.548	.611	.029	.061	.170	.153	.608	.144	.170
	N	53	53	53	53	53	53	53	53	53

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table C1.2.4. Correlation Table 4

			B21	B22	B23	B24	B25
Spearman's rho	A2	Correlation Coefficient	-.149	.158	.036	.088	-.084
		Sig. (2-tailed)	.288	.259	.798	.532	.548
		N	53	53	53	53	53
	A3	Correlation Coefficient	.018	-.032	.070	.055	-.071
		Sig. (2-tailed)	.896	.822	.620	.697	.611
		N	53	53	53	53	53
	A5	Correlation Coefficient	-.026	-.075	-.166	-.613**	-.301*
		Sig. (2-tailed)	.855	.591	.234	.000	.029
		N	53	53	53	53	53
	A6	Correlation Coefficient	.166	.078	.228	.560**	.259
		Sig. (2-tailed)	.235	.578	.101	.000	.061
		N	53	53	53	53	53
	B16	Correlation Coefficient	-.210	.023	-.007	.061	.191
		Sig. (2-tailed)	.131	.869	.962	.663	.170
		N	53	53	53	53	53
	B17	Correlation Coefficient	.058	.034	.289*	.301*	.199
		Sig. (2-tailed)	.678	.806	.036	.029	.153
		N	53	53	53	53	53
	B18	Correlation Coefficient	.059	.056	-.079	.040	-.072
		Sig. (2-tailed)	.677	.692	.574	.775	.608
		N	53	53	53	53	53
	B19	Correlation Coefficient	.176	.053	.187	-.043	.203
		Sig. (2-tailed)	.207	.705	.179	.758	.144
		N	53	53	53	53	53
	B20	Correlation Coefficient	.100	.065	.204	-.107	.191
		Sig. (2-tailed)	.475	.643	.142	.445	.170
		N	53	53	53	53	53
	B21	Correlation Coefficient	1.000	-.062	.298*	.110	.027
		Sig. (2-tailed)	.	.658	.030	.432	.849
		N	53	53	53	53	53
	B22	Correlation Coefficient	-.062	1.000	.128	.305*	.025
		Sig. (2-tailed)	.658	.	.359	.026	.857
		N	53	53	53	53	53
	B23	Correlation Coefficient	.298*	.128	1.000	.240	.315*
		Sig. (2-tailed)	.030	.359	.	.084	.022
		N	53	53	53	53	53
	B24	Correlation Coefficient	.110	.305*	.240	1.000	.121
		Sig. (2-tailed)	.432	.026	.084	.	.390

	N	53	53	53	53	53
B25	Correlation Coefficient	.027	.025	.315*	.121	1.000
	Sig. (2-tailed)	.849	.857	.022	.390	.
	N	53	53	53	53	53

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table C1.2.5. Correlation Table 5

			B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	C9	C10	C11
Spearman's rho	B16	Correlation Coefficient	1.000	.023	-.157	.024	-.069	-.210	.023	-.007	.061	.191	.022	.186	.250
		Sig. (2-tailed)		.870	.261	.866	.622	.131	.869	.962	.663	.170	.874	.181	.071
		N	53	53	53	53	53	53	53	53	53	53	53	53	53
	B17	Correlation Coefficient	.023	1.000	-.143	.016	.055	.058	.034	.289*	.301*	.199	.019	.122	.128
		Sig. (2-tailed)	.870		.306	.912	.695	.678	.806	.036	.029	.153	.894	.385	.359
		N	53	53	53	53	53	53	53	53	53	53	53	53	53
	B18	Correlation Coefficient	-.157	-.143	1.000	.131	.062	.059	.056	-.079	.040	-.072	-.071	-.012	-.064
		Sig. (2-tailed)	.261	.306		.350	.659	.677	.692	.574	.775	.608	.612	.930	.650
		N	53	53	53	53	53	53	53	53	53	53	53	53	53
	B19	Correlation Coefficient	.024	.016	.131	1.000	.122	.176	.053	.187	-.043	.203	-.258	.003	-.086
		Sig. (2-tailed)	.866	.912	.350		.385	.207	.705	.179	.758	.144	.063	.986	.538
		N	53	53	53	53	53	53	53	53	53	53	53	53	53
	B20	Correlation Coefficient	-.069	.055	.062	.122	1.000	.100	.065	.204	-.107	.191	-.005	.044	.045
		Sig. (2-tailed)	.622	.695	.659	.385		.475	.643	.142	.445	.170	.973	.756	.748
		N	53	53	53	53	53	53	53	53	53	53	53	53	53
	B21	Correlation Coefficient	-.210	.058	.059	.176	.100	1.000	-.062	.298*	.110	.027	.021	.031	.277*
		Sig. (2-tailed)	.131	.678	.677	.207	.475		.658	.030	.432	.849	.880	.827	.045
		N	53	53	53	53	53	53	53	53	53	53	53	53	53
	B22	Correlation Coefficient	.023	.034	.056	.053	.065	-.062	1.000	.128	.305*	.025	.032	-.074	.076
		Sig. (2-tailed)	.869	.806	.692	.705	.643	.658		.359	.026	.857	.818	.601	.589
		N	53	53	53	53	53	53	53	53	53	53	53	53	53
	B23	Correlation Coefficient	-.007	.289*	-.079	.187	.204	.298*	.128	1.000	.240	.315*	-.092	.100	.031
		Sig. (2-tailed)	.962	.036	.574	.179	.142	.030	.359		.084	.022	.510	.476	.823
		N	53	53	53	53	53	53	53	53	53	53	53	53	53
	B24	Correlation Coefficient	.061	.301*	.040	-.043	-.107	.110	.305*	.240	1.000	.121	-.023	.146	.402**
		Sig. (2-tailed)	.663	.029	.775	.758	.445	.432	.026	.084		.390	.871	.296	.003
		N	53	53	53	53	53	53	53	53	53	53	53	53	53
	B25	Correlation Coefficient	.191	.199	-.072	.203	.191	.027	.025	.315*	.121	1.000	-.097	.070	.099
		Sig. (2-tailed)	.170	.153	.608	.144	.170	.849	.857	.022	.390		.490	.617	.480
		N	53	53	53	53	53	53	53	53	53	53	53	53	53

C9	Correlation Coefficient	.022	.019	-.071	-.258	-.005	.021	.032	-.092	-.023	-.097	1.000	-.070	-.117
	Sig. (2-tailed)	.874	.894	.612	.063	.973	.880	.818	.510	.871	.490		.616	.404
	N	53	53	53	53	53	53	53	53	53	53	53	53	53
C10	Correlation Coefficient	.186	.122	-.012	.003	.044	.031	-.074	.100	.146	.070	-.070	1.000	.033
	Sig. (2-tailed)	.181	.385	.930	.986	.756	.827	.601	.476	.296	.617	.616		.815
	N	53	53	53	53	53	53	53	53	53	53	53	53	53
C11	Correlation Coefficient	.250	.128	-.064	-.086	.045	.277*	.076	.031	.402**	.099	-.117	.033	1.000
	Sig. (2-tailed)	.071	.359	.650	.538	.748	.045	.589	.823	.003	.480	.404	.815	
	N	53	53	53	53	53	53	53	53	53	53	53	53	53

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table C1.2.6. Correlation Table 6

		C9	C10	C11	B1	B2	B3	B4	B5	B6
Spearman's C9 rho	Correlation Coefficient	1.000	-.070	-.117	.000	.144	-.107	.064	.076	-.232
	Sig. (2-tailed)		.616	.404	.997	.303	.447	.649	.587	.094
	N	53	53	53	53	53	53	53	53	53
C10	Correlation Coefficient	-.070	1.000	.033	-.046	-.061	.050	-.254	-.243	.158
	Sig. (2-tailed)	.616		.815	.745	.666	.720	.066	.080	.258
	N	53	53	53	53	53	53	53	53	53
C11	Correlation Coefficient	-.117	.033	1.000	.260	-.182	-.161	-.202	-.105	.303*
	Sig. (2-tailed)	.404	.815		.060	.193	.249	.148	.454	.027
	N	53	53	53	53	53	53	53	53	53
B1	Correlation Coefficient	.000	-.046	.260	1.000	.150	-.089	.174	-.143	.087
	Sig. (2-tailed)	.997	.745	.060		.284	.526	.212	.308	.533
	N	53	53	53	53	53	53	53	53	53
B2	Correlation Coefficient	.144	-.061	-.182	.150	1.000	.037	.265	.155	-.038
	Sig. (2-tailed)	.303	.666	.193	.284		.795	.056	.269	.789
	N	53	53	53	53	53	53	53	53	53
B3	Correlation Coefficient	-.107	.050	-.161	-.089	.037	1.000	.175	-.125	-.083
	Sig. (2-tailed)	.447	.720	.249	.526	.795		.209	.373	.553
	N	53	53	53	53	53	53	53	53	53
B4	Correlation Coefficient	.064	-.254	-.202	.174	.265	.175	1.000	.223	.107
	Sig. (2-tailed)	.649	.066	.148	.212	.056	.209		.108	.448
	N	53	53	53	53	53	53	53	53	53
B5	Correlation Coefficient	.076	-.243	-.105	-.143	.155	-.125	.223	1.000	.065
	Sig. (2-tailed)	.587	.080	.454	.308	.269	.373	.108		.645
	N	53	53	53	53	53	53	53	53	53
B6	Correlation Coefficient	-.232	.158	.303*	.087	-.038	-.083	.107	.065	1.000

	Sig. (2-tailed)	.094	.258	.027	.533	.789	.553	.448	.645	.
	N	53	53	53	53	53	53	53	53	53
B7	Correlation Coefficient	.003	.039	-.012	-.159	.222	.012	-.100	.124	.230
	Sig. (2-tailed)	.982	.781	.933	.255	.110	.932	.474	.376	.097
	N	53	53	53	53	53	53	53	53	53
B8	Correlation Coefficient	-.095	.097	.193	.261	-.098	.228	.032	-.225	.215
	Sig. (2-tailed)	.497	.488	.167	.059	.487	.100	.822	.105	.121
	N	53	53	53	53	53	53	53	53	53
B9	Correlation Coefficient	-.137	-.051	-.013	.098	.088	-.081	.188	.079	.389**
	Sig. (2-tailed)	.329	.717	.926	.484	.533	.562	.177	.574	.004
	N	53	53	53	53	53	53	53	53	53

B10	Correlation Coefficient	-.135	.135	.367**	.143	-.057	-.041	-.128	.161	.209
	Sig. (2-tailed)	.337	.335	.007	.307	.683	.771	.360	.250	.132
	N	53	53	53	53	53	53	53	53	53
B11	Correlation Coefficient	-.069	-.357**	-.038	-.079	-.079	.014	-.074	-.195	-.095
	Sig. (2-tailed)	.623	.009	.785	.572	.573	.919	.598	.162	.497
	N	53	53	53	53	53	53	53	53	53
B12	Correlation Coefficient	-.038	-.183	-.067	-.165	-.054	-.134	.142	.272*	-.048
	Sig. (2-tailed)	.785	.191	.633	.236	.699	.337	.310	.049	.735
	N	53	53	53	53	53	53	53	53	53
B13	Correlation Coefficient	-.036	-.005	-.049	-.004	.054	-.042	-.106	.193	.031
	Sig. (2-tailed)	.796	.974	.728	.976	.699	.767	.452	.165	.826
	N	53	53	53	53	53	53	53	53	53
B14	Correlation Coefficient	-.100	.120	.185	-.234	-.201	.032	.113	.010	.018
	Sig. (2-tailed)	.476	.390	.185	.092	.149	.821	.419	.946	.900
	N	53	53	53	53	53	53	53	53	53
B15	Correlation Coefficient	.135	.173	.084	.059	.002	.181	.134	.240	-.081
	Sig. (2-tailed)	.336	.217	.552	.674	.991	.194	.338	.083	.565
	N	53	53	53	53	53	53	53	53	53

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table C1.2.7. Correlation Table 7

			B7	B8	B9	B10	B11	B12	B13	B14	B15
Spearman's rho	C9	Correlation Coefficient	.003	-.095	-.137	-.135	-.069	-.038	-.036	-.100	.135
		Sig. (2-tailed)	.982	.497	.329	.337	.623	.785	.796	.476	.336
		N	53	53	53	53	53	53	53	53	53
	C10	Correlation Coefficient	.039	.097	-.051	.135	-.357**	-.183	-.005	.120	.173
		Sig. (2-tailed)	.781	.488	.717	.335	.009	.191	.974	.390	.217
		N	53	53	53	53	53	53	53	53	53
	C11	Correlation Coefficient	-.012	.193	-.013	.367**	-.038	-.067	-.049	.185	.084
		Sig. (2-tailed)	.933	.167	.926	.007	.785	.633	.728	.185	.552
		N	53	53	53	53	53	53	53	53	53
	B1	Correlation Coefficient	-.159	.261	.098	.143	-.079	-.165	-.004	-.234	.059
		Sig. (2-tailed)	.255	.059	.484	.307	.572	.236	.976	.092	.674
		N	53	53	53	53	53	53	53	53	53
	B2	Correlation Coefficient	.222	-.098	.088	-.057	-.079	-.054	.054	-.201	.002
		Sig. (2-tailed)	.110	.487	.533	.683	.573	.699	.699	.149	.991
		N	53	53	53	53	53	53	53	53	53
	B3	Correlation Coefficient	.012	.228	-.081	-.041	.014	-.134	-.042	.032	.181
		Sig. (2-tailed)	.932	.100	.562	.771	.919	.337	.767	.821	.194
		N	53	53	53	53	53	53	53	53	53
	B4	Correlation Coefficient	-.100	.032	.188	-.128	-.074	.142	-.106	.113	.134
		Sig. (2-tailed)	.474	.822	.177	.360	.598	.310	.452	.419	.338
		N	53	53	53	53	53	53	53	53	53
	B5	Correlation Coefficient	.124	-.225	.079	.161	-.195	.272*	.193	.010	.240
		Sig. (2-tailed)	.376	.105	.574	.250	.162	.049	.165	.946	.083
		N	53	53	53	53	53	53	53	53	53
	B6	Correlation Coefficient	.230	.215	.389**	.209	-.095	-.048	.031	.018	-.081
		Sig. (2-tailed)	.097	.121	.004	.132	.497	.735	.826	.900	.565
		N	53	53	53	53	53	53	53	53	53
	B7	Correlation Coefficient	1.000	-.220	-.046	.056	.054	.216	-.021	-.187	.033
		Sig. (2-tailed)	.	.113	.742	.689	.703	.120	.882	.180	.816
		N	53	53	53	53	53	53	53	53	53
	B8	Correlation Coefficient	-.220	1.000	.238	.080	.128	-.060	.170	-.211	.112
		Sig. (2-tailed)	.113	.	.086	.567	.360	.671	.224	.130	.426
		N	53	53	53	53	53	53	53	53	53
	B9	Correlation Coefficient	-.046	.238	1.000	.128	-.012	-.083	.260	-.204	.117

	Sig. (2-tailed)	.742	.086	.	.361	.931	.556	.061	.144	.402
	N	53	53	53	53	53	53	53	53	53

B10	Correlation Coefficient	.056	.080	.128	1.000	-.033	-.061	.323*	-.115	.399**
	Sig. (2-tailed)	.689	.567	.361	.	.817	.665	.018	.414	.003
	N	53	53	53	53	53	53	53	53	53
B11	Correlation Coefficient	.054	.128	-.012	-.033	1.000	.072	-.078	-.161	-.156
	Sig. (2-tailed)	.703	.360	.931	.817	.	.607	.581	.251	.265
	N	53	53	53	53	53	53	53	53	53
B12	Correlation Coefficient	.216	-.060	-.083	-.061	.072	1.000	.055	-.139	.059
	Sig. (2-tailed)	.120	.671	.556	.665	.607	.	.695	.322	.675
	N	53	53	53	53	53	53	53	53	53
B13	Correlation Coefficient	-.021	.170	.260	.323*	-.078	.055	1.000	-.207	.385**
	Sig. (2-tailed)	.882	.224	.061	.018	.581	.695	.	.137	.004
	N	53	53	53	53	53	53	53	53	53
B14	Correlation Coefficient	-.187	-.211	-.204	-.115	-.161	-.139	-.207	1.000	.079
	Sig. (2-tailed)	.180	.130	.144	.414	.251	.322	.137	.	.575
	N	53	53	53	53	53	53	53	53	53
B15	Correlation Coefficient	.033	.112	.117	.399**	-.156	.059	.385**	.079	1.000
	Sig. (2-tailed)	.816	.426	.402	.003	.265	.675	.004	.575	.
	N	53	53	53	53	53	53	53	53	53

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table C1.2.8. Correlation Table 8

			C9	C10	C11	A2	A3	A5	A6
Spearman's rho	C9	Correlation Coefficient	1.000	-.070	-.117	-.148	-.231	.089	-.154
		Sig. (2-tailed)	.	.616	.404	.289	.096	.527	.272
		N	53	53	53	53	53	53	53
	C10	Correlation Coefficient	-.070	1.000	.033	-.007	.103	-.296*	.328*
		Sig. (2-tailed)	.616	.	.815	.959	.463	.032	.016
		N	53	53	53	53	53	53	53
	C11	Correlation Coefficient	-.117	.033	1.000	.159	.031	-.360**	.380**
		Sig. (2-tailed)	.404	.815	.	.256	.826	.008	.005
		N	53	53	53	53	53	53	53
	A2	Correlation Coefficient	-.148	-.007	.159	1.000	.265	.073	.092
		Sig. (2-tailed)	.289	.959	.256	.	.055	.603	.512
		N	53	53	53	53	53	53	53
	A3	Correlation Coefficient	-.231	.103	.031	.265	1.000	-.077	.081
		Sig. (2-tailed)	.096	.463	.826	.055	.	.584	.564
		N	53	53	53	53	53	53	53
	A5	Correlation Coefficient	.089	-.296*	-.360**	.073	-.077	1.000	-.861**
		Sig. (2-tailed)	.527	.032	.008	.603	.584	.	.000
		N	53	53	53	53	53	53	53
	A6	Correlation Coefficient	-.154	.328*	.380**	.092	.081	-.861**	1.000
		Sig. (2-tailed)	.272	.016	.005	.512	.564	.000	.
		N	53	53	53	53	53	53	53

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

1.3. Frequency Results

Table C1.3.1. Frequency table question A1

A1		Please state your job title.			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owner	16	30.2	30.2	30.2
	Buyer	6	11.3	11.3	41.5
	Senior Buyer	2	3.8	3.8	45.3
	Stock Controller	6	11.3	11.3	56.6
	Senior Stock Controller	4	7.5	7.5	64.2
	Store Manager	12	22.6	22.6	86.8
	Service & Operations Manager	3	5.7	5.7	92.5
	Logistics Manager	4	7.5	7.5	100.0
	Total	53	100.0	100.0	

Table C1.3.2. Frequency table question A2

A2 How long have you worked in this position?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 12 months		1.9	1.9	1.9
	1 to 2 years	6	11.3	11.3	13.2
	2 to 3 years	17	32.1	32.1	45.3
	3 to 4 years	23	43.4	43.4	88.7
	4 to 5 years	2	3.8	3.8	92.5
	Longer that 5 years	4	7.5	7.5	100.0
	Total	53	100.0	100.0	

Table C1.3.3. Frequency table question A3

A3 Which age category do you fall into?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 to 30 years	2	3.8	3.8	3.8
	30 to 40 years	34	64.2	64.2	67.9
	40 to 50 years	16	30.2	30.2	98.1
	Older than 50 years	1	1.9	1.9	100.0
	Total	53	100.0	100.0	

Table C1.3.4. Frequency table question A4

A4 What is your gender?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	49	92.5	92.5	92.5
	Female	4	7.5	7.5	100.0
	Total	53	100.0	100.0	

Table C1.3.5. Frequency table question A5

A5 How would you classify your organisation?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Medium-sized business	13	24.5	24.5	24.5
	Small-sized business	35	66.0	66.0	90.6
	Very small-sized business	5	9.4	9.4	100.0
	Total	53	100.0	100.0	

Table C1.3.6. Frequency table question A6

A6 What is your organisation's turnover a year?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	R 0.2 m to R 6m	7	13.2	13.2	13.2
	R 6 m to R 15 m	19	35.8	35.8	49.1
	R 15 m to R 32m	14	26.4	26.4	75.5
	R 32 m to 64 m	13	24.5	24.5	100.0
	Total	53	100.0	100.0	

Table C1.3.7. Frequency table question B1

B1 Inventory control is seen as the management function.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither disagree nor agree	22	41.5	41.5	41.5
	Agree	18	34.0	34.0	75.5
	Strongly agree	13	24.5	24.5	100.0
	Total	53	100.0	100.0	

Table C1.3.8. Frequency table question B2

B2 Organisations manage inventory to optimise service and profit.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.9	1.9	1.9
	Neither disagree nor agree	21	39.6	39.6	41.5
	Agree	18	34.0	34.0	75.5
	Strongly agree	13	24.5	24.5	100.0
	Total	53	100.0	100.0	

Table C1.3.9. Frequency table question B3

B3 Stock turnover is an important measure of stock policy efficiency.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.9	1.9	1.9
	Neither disagree nor agree	17	32.1	32.1	34.0
	Agree	9	17.0	17.0	50.9
	Strongly agree	26	49.1	49.1	100.0
	Total	53	100.0	100.0	

Table C1.3.10. Frequency table question B4

B4		Effective inventory management is critical to retailing success.			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.9	1.9	1.9
	Disagree	2	3.8	3.8	5.7
	Neither disagree nor agree	24	45.3	45.3	50.9
	Agree	19	35.8	35.8	86.8
	Strongly agree	7	13.2	13.2	100.0
	Total	53	100.0	100.0	

Table C1.3.11. Frequency table question B5

B5		The primary goals of inventory management are to have sufficient quantities of high quality inventory available to serve customers' needs.			
Valid	Neither disagree nor agree	2	3.8	3.8	3.8
	Agree	29	54.7	54.7	58.5
	Strongly agree	22	41.5	41.5	100.0
	Total	53	100.0	100.0	

Table C1.3.12. Frequency table question B6

B6		Inventory valuation methods can have a significant effect on financial statements			
Valid	Strongly disagree	1	1.9	1.9	1.9
	Disagree	3	5.7	5.7	7.5
	Neither disagree nor agree	27	50.9	50.9	58.5
	Agree	19	35.8	35.8	94.3
	Strongly agree	3	5.7	5.7	100.0
	Total	53	100.0	100.0	

Table C1.3.13. Frequency table question B7

B7		The supply chain competitiveness between supplier and customer relies on how effective and efficient inventory is managed.			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither disagree nor agree	23	43.4	43.4	43.4
	Agree	23	43.4	43.4	86.8
	Strongly agree	7	13.2	13.2	100.0
	Total	53	100.0	100.0	

Table C1.3.14. Frequency table question B8

B8		ERP systems could create a competitive advantage for small and medium-sized enterprises (SMEs).			
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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.9	1.9	1.9
	Neither disagree nor agree	24	45.3	45.3	47.2
	Agree	20	37.7	37.7	84.9
	Strongly agree	8	15.1	15.1	100.0
	Total	53	100.0	100.0	

Table C1.3.15. Frequency table question B9

B9	Companies will obtain cost improvements by enhancing the efficiency of their inventory management systems.				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.9	1.9	1.9
	Neither disagree nor agree	31	58.5	58.5	60.4
	Agree	12	22.6	22.6	83.0
	Strongly agree	9	17.0	17.0	100.0
	Total	53	100.0	100.0	

Table C1.3.16. Frequency table question B10

B10	Just-in-time ordering has many advantages such as the savings in inventory carrying, handling and storage costs.				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	7.5	7.5	7.5
	Neither disagree nor agree	24	45.3	45.3	52.8
	Agree	16	30.2	30.2	83.0
	Strongly agree	9	17.0	17.0	100.0
	Total	53	100.0	100.0	

Table C1.3.17. Frequency table question B11

B11	Although a safety stock will increase inventory-carrying costs, it will minimize the potential costs caused by shortages.				
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	5.7	5.7	5.7
	Neither disagree nor agree	24	45.3	45.3	50.9
	Agree	20	37.7	37.7	88.7
	Strongly agree	6	11.3	11.3	100.0
	Total	53	100.0	100.0	

Table C1.3.18. Frequency table question B12

B12	The current business climate of increasing competition means that all companies need to be as efficient as possible.			
		Frequency	Percent	Cumulative Percent
Valid	Neither disagree nor agree	23	43.4	43.4
	Agree	20	37.7	81.1
	Strongly agree	10	18.9	100.0
	Total	53	100.0	

Table C1.3.19. Frequency table question B13

B13	One of the highest cost centres is that of inventory, warehousing and distribution.			
		Frequency	Percent	Cumulative Percent
Valid	Strongly disagree	1	1.9	1.9
	Disagree	1	1.9	3.8
	Neither disagree nor agree	19	35.8	39.6
	Agree	26	49.1	88.7
	Strongly agree	6	11.3	100.0
	Total	53	100.0	

Table C1.3.20. Frequency table question B14

B14	Despite technological advances, problems remain with the accuracy of inventory information.			
		Frequency	Percent	Cumulative Percent
Valid	Neither disagree nor agree	27	50.9	50.9
	Agree	21	39.6	90.6
	Strongly agree	5	9.4	100.0
	Total	53	100.0	

Table C1.3.21. Frequency table question B15

B15	An ABC inventory analysis is a surprisingly accurate, although simplistic, approach to managing inventory.			
		Frequency	Percent	Cumulative Percent
Valid	Neither disagree nor agree	22	41.5	41.5
	Agree	21	39.6	81.1
	Strongly agree	10	18.9	100.0
	Total	53	100.0	

Table C1.3.22. Frequency table question B16

B16 The implementation cost of ERP systems like SAP is very high, and thus it is difficult to justify the costs and benefits of these systems to SMEs.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	3.8	3.8	3.8
	Neither disagree nor agree	26	49.1	49.1	52.8
	Agree	19	35.8	35.8	88.7
	Strongly agree	6	11.3	11.3	100.0
	Total	53	100.0	100.0	

Table C1.3.23. Frequency table question B17

B17 Just-in-time ordering will cause stock-out situations in organisations.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.9	1.9	1.9
	Neither disagree nor agree	29	54.7	54.7	56.6
	Agree	16	30.2	30.2	86.8
	Strongly agree	7	13.2	13.2	100.0
	Total	53	100.0	100.0	

Table C1.3.24. Frequency table question B18

B18 Small and medium enterprises contribute significantly to our economy.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither disagree nor agree	27	50.9	50.9	50.9
	Agree	19	35.8	35.8	86.8
	Strongly agree	7	13.2	13.2	100.0
	Total	53	100.0	100.0	

Table C1.3.25. Frequency table question B19

B19 The application of inventory control methods produces an overall inventory level that is measured with the turnover ratio (annual sales/average stock).					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither disagree nor agree	34	64.2	64.2	64.2
	Agree	17	32.1	32.1	96.2
	Strongly agree	2	3.8	3.8	100.0
	Total	53	100.0	100.0	

Table C1.3.26. Frequency table question B20

B20 The turnover ratio is a good representation of how inventories are being managed in general.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	3.8	3.8	3.8
	Neither disagree nor agree	34	64.2	64.2	67.9
	Agree	13	24.5	24.5	92.5
	Strongly agree	4	7.5	7.5	100.0
	Total	53	100.0	100.0	

Table C1.3.27. Frequency table question B21

B21 Retail inventory management is often based on economic order quantity principles (EOQ).					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither disagree nor agree	26	49.1	49.1	49.1
	Agree	21	39.6	39.6	88.7
	Strongly agree	6	11.3	11.3	100.0
	Total	53	100.0	100.0	

Table C1.3.28. Frequency table question B22

B22 Spares which have not been used for a pre-defined given period are referred to as slow-moving stock.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither disagree nor agree	33	62.3	62.3	62.3
	Agree	16	30.2	30.2	92.5
	Strongly agree	4	7.5	7.5	100.0
	Total	53	100.0	100.0	

Table C1.3.29. Frequency table question B23

B23 EOQ only identifies how much to order and not when to order it.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.9	1.9	1.9
	Neither disagree nor agree	28	52.8	52.8	54.7
	Agree	17	32.1	32.1	86.8
	Strongly agree	7	13.2	13.2	100.0
	Total	53	100.0	100.0	

Table C1.3.30. Frequency table question B24

B24 ERP systems inherited a number of shortcomings associated with the MRP system, including unrealistic lead time determination for items.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	3.8	3.8	3.8
	Disagree	3	5.7	5.7	9.4
	Neither disagree nor agree	36	67.9	67.9	77.4
	Agree	9	17.0	17.0	94.3
	Strongly agree	3	5.7	5.7	100.0
	Total	53	100.0	100.0	

Table C1.3.31. Frequency table question B25

B25 An ERP system is just as reliable as the inventory information it receives.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither disagree nor agree	25	47.2	47.2	47.2
	Agree	24	45.3	45.3	92.5
	Strongly agree	4	7.5	7.5	100.0
	Total	53	100.0	100.0	

Table C1.3.32. Frequency table question C1

C1 Which of the following ERP systems vendors is the manufacturer of your ERP system?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SAP	5	9.4	9.4	9.4
	BaaN	1	1.9	1.9	11.3
	ORACLE	1	1.9	1.9	13.2
	JDEDWARDS	1	1.9	1.9	15.1
	Other	43	81.1	81.1	96.2
	None	2	3.8	3.8	100.0
	Total	53	100.0	100.0	

Table C1.3.33. Frequency table question C2

C2		If your answer was 'other' on question 1 please state the system / method your company uses for inventory control.			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pastel	34	64.2	79.1	79.1
	Syspro	5	9.4	11.6	90.7
	Cove	2	3.8	4.7	95.3
	Exact software	2	3.8	4.7	100.0
	Total	43	81.1	100.0	
Missing	System	10	18.9		
Total		53	100.0		

Table C1.3.34. Frequency table question C3

C3		Which of the following inventory principles does your organisation use?			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Just-in-time ordering (JIT)	46	86.8	86.8	86.8
	Material requirement planning (MRP)	7	13.2	13.2	100.0
	Total	53	100.0	100.0	

Table C1.3.35. Frequency table question C4

C4		If your answer was other/ none on question 3 please state the principles your company use for inventory control.		
		Frequency	Percent	
Missing	System	53	100.0	

Table C1.3.36. Frequency table question C5

C5		Which of the following problems with regard to holding inventories does your organisation experience?			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High storage costs	3	5.7	5.7	5.7
	Theft, damage.	2	3.8	3.8	9.4
	Obsolete stock	6	11.3	11.3	20.8
	Stock-outs	42	79.2	79.2	100.0
	Total	53	100.0	100.0	

Table C1.3.37. Frequency table question C6

C6		How often do these problems occur in your inventory?			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once a day	10	18.9	18.9	18.9
	Once a week	29	54.7	54.7	73.6
	Once a month	8	15.1	15.1	88.7
	Once a year	6	11.3	11.3	100.0
	Total	53	100.0	100.0	

Table C1.3.38. Frequency table question C7

C7		Which analysis do you use to evaluate if inventory is managed effectively?			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sales reports	23	43.4	43.4	43.4
	Stock turnover ratio	21	39.6	39.6	83.0
	Stock- out reports	7	13.2	13.2	96.2
	Slow moving stock reports	2	3.8	3.8	100.0
	Total	53	100.0	100.0	

Table C1.3.39. Frequency table question C8

C8		How often do you evaluate the inventory performance?			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once a day	23	43.4	43.4	43.4
	Once a week	4	7.5	7.5	50.9
	Once a month	24	45.3	45.3	96.2
	Once a year	2	3.8	3.8	100.0
	Total	53	100.0	100.0	

Table C1.3.40. Frequency table question C9

C9		In which of the following ranges does your companies inventory ratio fall?			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 to 1	25	47.2	47.2	47.2
	1 to 3	12	22.6	22.6	69.8
	3 to 5	12	22.6	22.6	92.5
	5 to 10	4	7.5	7.5	100.0
	Total	53	100.0	100.0	

Table C1.3.41. Frequency table question C10

C10	Which of the following can be considered as standard lead time for receiving inventory from your suppliers?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 to 7 Days	11	20.8	20.8	20.8
	7 to 14 Days	24	45.3	45.3	66.0
	14 to 21 Days	14	26.4	26.4	92.5
	21 to 35 Days	4	7.5	7.5	100.0
	Total	53	100.0	100.0	

Table C1.3.42. Frequency table question C11

C11	How long on average is stock stored before it is sold?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 to 1 Days	18	34.0	34.0	34.0
	1 to 7 Days	30	56.6	56.6	90.6
	7 to 14 Days	5	9.4	9.4	100.0
	Total	53	100.0	100.0	

Table C1.3.43. Frequency table question C12

C12	To your opinion is there efficient control over your inventories?	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	23	43.4	43.4	43.4
	No	30	56.6	56.6	100.0
	Total	53	100.0	100.0	