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**WORKING CAPITAL MANAGEMENT:  
THEORY AND EVIDENCE  
FROM  
NEW ZEALAND  
LISTED LIMITED LIABILITY COMPANIES**

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**A thesis  
submitted in partial fulfilment  
of the requirements for the Degree  
of  
Master of Commerce and Management  
at  
Lincoln University  
by  
Angelique Nadia Sweetman McInnes**

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**Lincoln University**

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Abstract of a thesis submitted in partial fulfilment of the  
requirements for the Degree of Master of Commerce and Management

**Working Capital Management:**

**Theory and Evidence**

**From New Zealand Listed Limited Liability Companies**

By Angelique Nadia Sweetman McInnes

The theory of working capital management contends that if working capital is managed according to prescriptive theory then it would be expected that businesses would invest in working capital, finance working capital, monitor factors that influence working capital, manage cash, accounts receivable, inventory, accounts payable, the cash conversion cycle (aggregative approach), and measure and analyze performance to ensure that the long term (fixed) assets are utilized effectively and efficiently. This thesis seeks to shed light on the problem, how working capital is managed by New Zealand listed limited liability companies. This is achieved by applying New Zealand data collected by means of a postal questionnaire to an empirical working capital management model. The main findings indicate that businesses in New Zealand consider working capital management an important issue, yet a large group of respondents ignored the survey. It is evident that the respondents placed greater emphasis or importance on the financing decision, with the investment decision largely taken for granted. Some effort is made *prima facie* to manage cash, accounts receivable, inventory and accounts payable independently of each other, however given the theory of working capital management, there may be room for improvement regarding the strategies, tactics and techniques used to manage these components. Furthermore, the findings suggest that working capital management is also strategic as it impact on the liquidity, solvency/bankruptcy, efficiency, profitability and shareholder wealth maximization of the business. In light of the findings, it was recommended that an in-depth case study research approach can enhance the survey questionnaire to further investigate the findings. Further research should focus on the levels, composition, structure, and performance of working capital and introduce financial data for this purpose. It is evident from the results of the study that the purpose and function of working capital are not clearly and sufficiently recognized, and that it is quite likely that deficiencies and insufficiencies in the management of working capital in New Zealand may be revealed by further empirical research.

*Keywords:* Working capital, working capital management, investment decision, financing decision, cash, accounts receivable, inventory, accounts payable, cash conversion cycle, performance, long term assets, fixed assets, New Zealand

# TABLE OF CONTENTS

	Page
<b>ACKNOWLEDGEMENTS</b>	<b>i</b>
<b>ABSTRACT</b>	<b>ii</b>
<b>TABLE OF CONTENTS</b>	<b>iii</b>
<b>LIST OF TABLES</b>	<b>vii</b>
<b>CHAPTER ONE: INTRODUCTION, RESEARCH OBJECTIVES AND METHODOLOGY, PRIOR RESEARCH, AND PLAN OF THE THESIS</b>	<b>1</b>
1.1 INTRODUCTION	1
1.2 RESEARCH OBJECTIVES AND METHODOLOGY	8
1.2.1 Research Objectives	8
1.2.2 Research Methodology	9
1.3 PRIOR RESEARCH	10
1.3 PLAN OF THE STUDY	10
<b>CHAPTER TWO: AN OVERVIEW OF WORKING CAPITAL</b>	<b>11</b>
2.1 INTRODUCTION	11
2.2 PURPOSE AND FUNCTION OF WORKING CAPITAL	11
2.3 INVESTMENT IN WORKING CAPITAL	13
2.4 FINANCING OF WORKING CAPITAL	17
2.4.1 Long-term Sources	17
2.4.2 Short-term Sources	19
2.5 FACTORS THAT INFLUENCE WORKING CAPITAL	22
2.5.1 Monetary Policy	22
2.5.2 Term Structure of Interest Rates	24
2.5.3 Business Cycles	24
2.5.4 Fiscal Policy	26
2.6 SUMMARY	26

<b>CHAPTER THREE: THE MANAGEMENT OF WORKING CAPITAL</b>	<b>27</b>
3.1 INTRODUCTION	27
3.2 THE IMPORTANCE OF WORKING CAPITAL MANAGEMENT	27
3.2.1 Liquidity	28
3.2.2 Solvency/Bankruptcy	28
3.2.3 Efficiency	29
3.2.4 Profitability	30
3.2.5 Economic Value Added® (EVA)®	31
3.3 CASH MANAGEMENT	33
3.4 ACCOUNTS RECEIVABLE MANAGEMENT	36
3.5 INVENTORY MANAGEMENT	39
3.6 ACCOUNTS PAYABLE MANAGEMENT	41
3.7 AN AGGREGATIVE APPROACH TO WORKING CAPITAL MANAGEMENT: THE CASH CONVERSION CYCLE	43
3.7.1 The Basic Cash Conversion Cycle (CCC)	44
3.7.2 The Weighted Cash Conversion Cycle (WCCC)	49
3.8 CONSERVATIVE, AGGRESSIVE AND MODERATE APPROACHES	53
3.9 SUMMARY	54
<b>CHAPTER FOUR: THE EMPIRICAL SURVEY</b>	<b>55</b>
4.1 INTRODUCTION	55
4.2 RESEARCH METHODOLOGY	55
4.2.1 The Research Design and Sample	55
4.2.2 The Questionnaire	56
4.2.3 Variables and Measures	58
4.2.4 Data Analysis	63
4.3 CONCLUDING REMARKS	64

## **CHAPTER FIVE: SCOPE, DIFFICULTIES ENCOUNTERED AND EMPIRICAL SURVEY**

<b>RESULTS OF THE STUDY</b>	<b>65</b>
5.1 INTRODUCTION	65
5.2 SCOPE AND DIFFICULTIES ENCOUNTERED	65
5.3 THE RESPONSE TO THE QUESTIONNAIRE	67
5.3.1 Reasons for Not Completing the Questionnaire	67
5.3.2 Nomenclature and Biographical Details of Respondents	71
5.4 RESULTS	72
5.4.1 Investment in Working Capital	72
5.4.2 Financing of Working Capital	74
5.4.3 Factors that Influence Working Capital	75
5.4.4 Cash Management	77
5.4.5 Accounts Receivable Management	78
5.4.6 Inventory Management	80
5.4.7 Accounts Payable Management	81
5.4.8 Cash Conversion Cycle (Aggregative Approach)	83
5.4.9 Performance Measurement and Analysis	84
5.4.10 Working Capital Management	87
5.4.11 Purpose and Function of Working Capital	91
5.5 CONCLUDING REMARKS	92

## **CHAPTER SIX: SUMMARY OF FINDINGS, RECOMMENDATIONS FOR FURTHER RESEARCH, AND CONCLUSION**

6.1 INTRODUCTION	93
6.2 MAIN FINDINGS	93
6.2.1 Response to the Questionnaire	93
6.2.2 Working Capital Management: Summary of Findings	95
6.3 RECOMMENDATIONS FOR FURTHER RESEARCH	107
6.4 CONCLUSION	109

**BIBLIOGRAPHY**

**111**

**APPENDICES**

**118**



## LIST OF TABLES

Table 5.1	Distribution of Responses.....	68
Table 5.2	Reasons for Not Completing Questionnaires.....	68
Table 5.3	Non-Response, Return To Sender Responses, Incomplete Responses, and Complete Responses For The Market Sectors Of The New Zealand Stock Exchange.....	69
Table 5.4	Position of Respondents.....	72
Table 5.5	Frequency with which Target Levels of Cash, Accounts Receivable, and Inventory are set.....	73
Table 5.6	Frequency with which Target Levels of Accounts Payable, Equity, Long Term Debt and Secured Short Term Debt are set.....	74
Table 5.7	Frequency of Revision of Target Levels set for Cash, Accounts Receivable, Inventory and Accounts Payable.....	75
Table 5.8	Frequency with which Respondents Prepare Cash Forecasts and Budgets.....	77
Table 5.9	Frequency with which Respondents Prepare Accounts Receivable Forecasts and Budgets.....	79
Table 5.10	Frequency with which Respondents Prepare Inventory Forecasts and Budgets.....	80
Table 5.11A	Frequency with which Respondents Prepare Accounts Payable Forecasts and Budgets.....	81
Table 5.11B	Ranking by the Respondents of the Components of Working Capital.....	82
Table 5.12	Responses to the Management of the Components of Working Capital in Aggregate.....	84
Table 5.13	The Frequency with which Performance is Measured and Analyzed as part of The Working Capital Management Process.....	85
Table 5.14	Working Capital Management Score Card.....	89
Table 5.15	Cross-Tabulation Showing the Frequency of the Facets of Working Capital Management that are and are not Managed in Accordance with the Theory of Working Capital Management.....	90
Table 5.16	Summary of the Main Purpose of Working Capital Reported by Respondents.....	92
Table 6.1	Investment in Working Capital, Cash, Accounts Receivable and Inventory Management.....	95
Table 6.2	Financing of Working Capital, Accounts Payable Management.....	96
Table 6.3	Aggregative Approach to Working Capital Management.....	98
Table 6.4	Working Capital Targets, Forecasts, Budgets and Reports.....	99
Table 6.5	Summary of Persons Responsible for Managing Working Capital.....	100
Table 6.6	Techniques used to set Target Levels of Working Capital.....	102
Table 6.7	Factors that Influence Working Capital Management.....	103
Table 6.8	Criteria in terms of which Working Capital's Performance is Measured and Analyzed.....	104
Table 6.9	Criteria used to assess attainment of Working Capital Performance Goals.....	105
Table 6.10	Main Purpose of Working Capital as reported by Respondents.....	106

# **CHAPTER 1: INTRODUCTION, PURPOSE AND RESEARCH OBJECTIVE**

## **1.1 INTRODUCTION**

The theory of working capital management describes how working capital should be managed and demonstrates the benefits in terms of liquidity, solvency, efficiency, profitability, and shareholder wealth maximization which accrue to the company from appropriately managing working capital (Brigham, et al. 1999, Gitman, 1997).

Liquidity is affected by cash, credit, inventory, and accounts payable that form part of the overall cash flow of a business (Maness, 1994). A business that considers decreasing its levels of cash by carrying too many inventories or providing too much credit endangers its liquidity (Cooper, et al. 1998, Gitman, 1997, Dierks and Patel, 1997, Peel and Wilson, 1996, Moss and Stine, 1993, Hill and Sartoris, 1992, Martin, et al. 1991, Asch and Kaye, 1989, Kamath, 1989, Madura and Veit, 1988). Declining levels of liquidity, unless remedied, may result in insolvency and eventually bankruptcy as the business's liabilities exceed its assets (Cooper, et al. 1998, Gitman, 1997, Dierks and Patel, 1997, Moss and Stine, 1993, Hill and Sartoris, 1992, Martin, et al. 1991, Asch and Kaye, 1989, Madura and Veit, 1988, Altman, 1983).

From the perspective of efficiency, the business that demonstrate the least working capital per dollar of sales can be considered as managing their working capital efficiently (Tully, 1994). To satisfy the requirement of efficiency, working capital management seeks to ensure that the investment in working capital components is neither too little nor too great. The former could give rise to illiquidity, stock outs, and lost sales, whereas the latter amounts to waste (Tully, 1994). With regards to profitability, the level of investment in working capital and the financing of this investment, at any particular level of output, involve a risk-return tradeoff (Madura and Veit, 1988). Generally, the higher the risk the higher the return will be demanded by management and shareholders in order

to finance any investment in working capital (Cooper, et al. 1998, Gitman, 1997). Reducing the amount of working capital or fixed assets required by reducing the amount of cash tied up in accounts receivable and inventory while running the business contributes to improving the business's internal performance encapsulated in increases in EVA<sup>®</sup>, and thus shareholder wealth maximization (Stephens and Bartunek, 1997, Dierks and Patel, 1997).

For example, American companies, General Electric decreased working capital by producing to order, and Campbell Soup and Quaker Oats conserved working capital by changing their production and sales strategies (Tully, 1994). These efficiencies in turn improved their liquidity, solvency, profitability and shareholder wealth maximization.

From the above discussion it is evident that working capital is closely related to a business's performance, and because of its close relationship with production and output it has been argued that the purpose of working capital is to ensure the effective and efficient utilization of the investment in fixed assets (Paulo, 1992, Bierman and Smidt, 1988).

At the very minimum, working capital supports the capital budgeting decision and working capital cash flows are incorporated into the cash flows of the business, which are generated to calculate net present value, internal rate of return, and other criteria of financial acceptability (Peel and Wilson, 1996). However, capital investments need to reach their full potential, and integral to this process is the provision of working capital. This requires that sufficient levels of working capital be available, that the composition of working capital be appropriate, and that the investment and financing of working capital satisfy the business's performance criteria.

In this regard consider a situation where a business wants to increase its existing capacity utilization. The increase in output will have an effect on inventory and receivables. In order to ensure that the increased production contributes to shareholder wealth, the return

from the additional investment in current assets must earn a rate of return in excess of the required rate of return. Since all investments have to be financed, the financing of these current assets also must be taken into account. A decision to increase credit sales may enable market share to be expanded, and may reduce inventory levels, but unless the returns generated exceed the required rate of return, this would be a wasteful course of action that would erode shareholder wealth. Moving inventory from the business's warehouse to the business's customers may increase doubtful and bad debts, it may be more costly to finance and administer accounts receivable than inventory, and it increases the amount of capital needed to operate the business. All of these outcomes have an impact on the return on equity (Brigham, et al. 1999, Gitman, 1997, Hill and Sartoris, 1992).

As a result of expansions and contractions in the business cycle the investment in working capital will fluctuate in aggregate, and the composition of the constituent components of the investment in working capital can be subject to a considerable degree of volatility (Richards and Laughlin, 1980). The needs for working capital increase during periods of economic growth, and should decrease as economic growth contracts (Weston and Brigham, 1992). For example when the economy is robust and in an expansionary phase, debtors and inventory may increase notably, whereas with the onset of a recession a prudent business may apply more restrictive credit policies thereby reducing credit sales, and hence debtors. Moreover production may be reduced because of a slackening in consumer demand. This will in all probability result in a reduction of inventory. Some businesses tend to build up working capital when the economy is strong, but then sell off inventories and have net reductions of receivables when the economy slacks off (Brigham, et al. 1999).

Just as changes in business conditions have an impact on debtors and inventory, so too will they have an impact on the level of cash and on the forms and sources of financing of working capital. During an expansionary period, the increase in sales and hence production needs to be paid for, which in the normal course of business leads to an

increased demand for cash. With the slowing of the cash conversion cycle (henceforth CCC) during an economic slowdown, the level of working capital is likely to rise temporarily and with it will be an increase in the need for cash to finance a longer CCC (Asch and Kaye, 1989, Richards and Laughlin, 1980).

The cost differentials of the various forms and sources of finance, as well as the chronologic structure of the business's assets affect the financing of working capital. This chronologic structure is typically presented and discussed in terms of the "permanent" and or "temporary" or "fluctuating" asset requirement (Brigham, et al. 1999).

The business cycle has a considerable impact on the structure of time denominated assets (namely short-term and long-term assets). During a recession consumption may decline, which may result in debtors declining, doubtful and bad debts may increase, and stocks of unsold or unprocessed inventory may rise as production contracts. Whereas during an expansion consumption may increase, and debtors may increase as sales increases (Nawrocki, 1997, Begg, et al. 1994, Beardshaw and Ross, 1993). Since the direction and the duration of the business cycle cannot be forecast with any degree of certainty, and since the term structure of interest rate, which has a considerable impact on the costs of various forms and sources of finance as well as their associated yield spreads, cannot be forecast with any degree of accuracy, the management of the financing of current assets is an ongoing challenge. The literature provides guidelines in this respect (Peel and Wilson, 1996, Scherr, 1989).

These changes both in the aggregate level of working capital as well as in the composition of working capital have to be financed appropriately in order to ensure the business's financial performance in terms of liquidity, solvency, efficiency and profitability.

From the foregoing it is evident that the management of working capital is a process that takes considerable time and effort on the part of the financial manager (Brigham, et al.

1999, Gitman, 1997, Scherr, 1989). This process involves managing the appropriate investment in current assets (namely cash, short-term securities, inventory, debtors and prepayments) and the financing of the current assets by means of equity, long-term debt and current liabilities (such as overdraft, accruals, trade creditors and other creditors) (Schilling, 1996, Chang, et al. Brigham, Gapenski, 1994, Weston and Brigham, 1992, Madura and Veit, 1988, Shulman and Cox, 1985). Working capital guides the efficient management of these cash flows of the business entity by answering two basic questions (Brigham and Gapenski, 1994, Weston and Brigham, 1992) namely:

1. What should the appropriate investment in current assets be, both in aggregate and by composition, and,
2. How should this level of current assets be financed.

When working capital management is able to appropriately guide the investment and financing of current assets, it will contribute to the value of the business and its shareholders by enabling the business to attain its specific goals and objectives (Schilling 1996, Chambers and Lacey, 1994, Tully, 1994, Maness, 1994, Paulo, 1992, Hill and Sartoris, 1992, Bierman and Smidt, 1988).

The relationship between the investment, financing and working capital decision has been considered from the perspective of the cash conversion cycle (henceforth CCC) which is an aggregative approach (Gitman, 1997, Gallinger, 1997, Schilling, 1996, Brigham and Gapenski, 1994, Maness, 1994, Kargar and Blumenthal, 1994, Moss and Stine, 1993, Soenen, 1993, Payne, 1993, Miller, 1991, Gentry, et al. 1990, Ross, et al. 1990, Kamath, 1989, Cheatham, 1989, Scherr, 1989, Richards and Laughlin, 1980). The working capital decision integrates the investment and financing of working capital by explicitly examining the CCC in conjunction with the inventory production cycle (Brigham, et al. 1999, Gitman, 1997, Moss and Stine, 1993, Cheatham, 1989). Furthermore the CCC enables the evaluation and assessment of working capital management performance (Ross, 1997, Gitman, 1997, Gallinger, 1997, Schilling, 1996, Maness, 1994, Brigham and

Gapenski, 1994, Moss and Stine, 1993, Payne, 1993, Ross, et al. 1990, Gentry, et al. 1990, Kamath, 1989, Cheatham, 1989, Gallinger and Healey, 1987, Richards and Laughlin, 1980).

In order to ensure the business's financial performance, it has been argued that the CCC should be reduced to the point where the business's operations are not hurt (Moss and Stine, 1993, Cheatham, 1989). It is argued that the shorter the CCC, the more efficient the internal operations of the business (Gentry, et al. 1990). By management streamlining and wringing cash out of the operating or working capital cycle, profitability increases, the need for external financing is reduced, and a cash crunch that may result in illiquidity and eventual bankruptcy is precluded (Chang, et al. 1995, Maness, 1994). Decreasing the CCC improves the cash flow position of the business (Moss and Stine, 1993, Gentry, et al. 1990, Cheatham, 1989) providing the business with financial flexibility to adjust to changes in business activity (Schilling, 1996, Chang, et al. 1995). The business also operates more economically (Moss and Stine, 1993, Cheatham, 1989). The shorter the CCC, the more efficient the internal operations of the business (Gentry, et al. 1990).

The investment in working capital and financing of working capital may subscribe to strategies, which include a moderate approach, an aggressive approach and a conservative approach (Brigham, et al. 1999, Brigham and Gapenski, 1994, Martin, et al. 1991, Asch and Kaye, 1989).

An aggressive investment approach, which entails the management of smaller holdings of cash, marketable securities and inventories, should provide a better performance by way of a higher rate of return, but it is more risky than the moderate and relaxed strategies, because these latter approaches maintain larger holdings of inventory, debtors, cash and marketable securities (Brigham, et al. 1999, Chang, et al. 1995, Maness, 1994, Weston and Brigham, 1992, Martin, et al. 1991, Asch and Kaye, 1989). The cash conversion cycle assesses working capital in terms of cash outflows and cash inflows by focussing on both the level and composition of working capital. In terms of CCC the aggressive

investment strategy would mean that accounts payable would be increased and investments in inventory and accounts receivable decreased. This should lead to a reduction in the CCC. In contrast, a conservative investment approach to working capital management would result in an increase in the CCC as accounts receivable and inventory increases, and accounts payable decreases (Brigham, et al. 1999, Weston and Brigham, 1992, Martin, et al. 1991, Asch and Kaye, 1989).

The longer the cash conversion cycle the longer the reliance the business has on external financing (Maness, 1994). External financing can be in the form of short-term debt financing, long term debt financing or equity financing (Gallinger, 1997). The financing of working capital strategy includes an aggressive approach, a maturity matching (moderate) approach and a conservative approach (Gitman, 1997, Paulo, 1997, Brigham and Gapenski, 1994). A risky financing approach to finance the CCC would be an aggressive financing policy, which entails using short-term funding exclusively. However during tough economic conditions it may be difficult to obtain finance. A conservative financing approach would be using long-term funding exclusively. The result is there will be times when finance surplus to what the business may need will be idle. This is wasteful. The solution is to develop an optimum ratio of short-term and long-term funding to secure the advantages and simultaneously control the disadvantages of short-term and long-term funding (Gitman, 1997, Paulo, 1997, Brigham and Gapenski, 1994).

More recently, it has been argued that the management of working capital should strive to enhance economic value added (henceforth EVA<sup>®</sup>) (Gallinger, 1997, Gitman, 1997, Schilling, 1996, Brigham and Gapenski, 1994, Maness, 1994, Moss and Stine, 1993, Payne, 1993, Ross, et al. 1990, Gentry, et al. 1990, Kamath, 1989, Cheatham, 1989). It is not sufficient to consider the CCC on its own. The CCC should be combined with EVA<sup>®</sup> so that management has an economic incentive to do the right thing for the business entity and its shareholders (Stephens and Bartunek, 1997). As a performance metric, EVA<sup>®</sup> could, of necessity, have a moderating impact on the cash conversion cycle



(Reilly and Brown, 1997) or aggregative approach to working capital management. If managers are going to be sensitive to adding to shareholder value, then they will need to be aware of the impact that inefficient working capital decisions have on financial performance and credit ratings (Cooper, et al. 1998, Chang, et al. 1995, Van Auken and Holman, 1995, Maness, 1994, Madura and Veit, 1988, Gallinger and Healey, 1987, Richards and Laughlin, 1980).

Furthermore, from the literature it is evident that many writers highlight the importance of working capital management, yet there is a scarcity of both theoretical and empirical research and theoretical perspective relating to these issues (Peel and Wilson, 1996, Kamath, 1989, Madura and McCarty, 1989). Working capital is of particular relevance and importance in New Zealand, because in an open deregulated and small economy, businesses need to continually strive to improve their sustainable competitive advantage and sustainable growth (Schilling, 1996) in order to survive. Recent empirical research (Peel and Wilson, 1996) reinforces the perception that working capital management is problematic and constitutes a notable challenge.

## **1.2 RESEARCH OBJECTIVES AND METHODOLOGY**

### **1.2.1 Research Objectives**

As indicated in the previous section, working capital is intertwined with key areas of financial management, such as the capital investment and financing decisions, as well as liquidity, solvency, efficiency, profitability, and shareholder wealth maximization.

Therefore an investigation into the management of working capital in New Zealand is the fundamental objective of this thesis. Specifically, this thesis seeks to report and describe how working capital is managed in New Zealand. Normative theories which provide guidance as to what New Zealand financial managers ought to be doing will be presented as well as positive theories which will reveal what a sample of New Zealand managers

are actually doing in this regard. From the above, the title of this thesis, "Working Capital Management: Theory and Evidence from New Zealand Listed Limited Liability Companies", is derived.

### **1.2.2 Research Methodology**

The study and collection of data inputs for this thesis took place in two stages, namely an in-depth survey of secondary literary sources followed by an empirical survey that captured the opinions of a sample of respondents.

#### **a) Secondary Sources**

The purpose of investigating the secondary sources was to establish which normative guidelines were available with respect to the management of working capital. In so far as the secondary sources are concerned, no documented evidence concerning working capital management in New Zealand could be found, despite an intensive literary search of textbooks, journals, research reports, and New Zealand theses, dissertations, and treatises. From the international literature, it is apparent that a very limited amount of research has been undertaken into this topic.

#### **b) Primary Sources**

With regard to the positive aspects of working capital management, an empirical survey of 125 limited liability companies listed on all sectors of the New Zealand Stock Exchange (henceforth NZSE), excluding companies listed on the NZSE with overseas addresses, in particular Australia and, non-limited liability companies, was undertaken. The empirical survey is fully discussed in chapter four. The purpose of the empirical survey was to establish how working capital is managed.

### **1.3 PRIOR RESEARCH**

As already noted working capital management occupies much effort and time on the part of financial managers, and this is well documented by *inter alia* Gallinger, 1997, Schilling, 1996, Chang, et al. 1995, Chambers and Lacey, 1994, Maness, 1994, Moss and Stine, 1993, Hill and Sartoris, 1992, Weston and Brigham, 1992, Miller, 1991, Ross, et al. 1990, Gentry, et al. 1990, Scherr 1989, and Gallinger and Healey, 1987. Yet it does not receive the attention it merits in research (Peel and Wilson, 1996, Chang, et al. 1995, Weston and Brigham, 1992, Kamath, 1989, Madura and McCarty, 1989, Richards and Laughlin, 1980). Furthermore there is no documented publicly available evidence to suggest that research has been done into the topic of this thesis, or any substantially similar area. In this regard, the literature search included the Union List of Higher Degree Theses in New Zealand Libraries and The Dissertation Abstracts Online Catalogue.

### **1.4 PLAN OF THE STUDY**

This thesis comprises six chapters. Chapter one will provide the introduction, research objectives, methodology, prior research and the plan of the thesis. This will be followed in chapters two and three, by the secondary study. More specifically chapter two will provide an overview of working capital, and chapter three will review the management of working capital. Chapter four will present the empirical survey and will be followed in chapter five by the scope and difficulties encountered and the results of the study. In chapter six a discussion of the research findings, and recommendations for further research, and conclusion will be presented.

## **CHAPTER 2      AN OVERVIEW OF WORKING CAPITAL**

### **2.1      INTRODUCTION**

In this chapter an overview of the theory of working capital is presented. This overview serves as a basis for chapters three and four in which the management of working capital, and the impact of working capital management on financial performance, are presented and discussed. The chapter commences with the purpose and function of working capital, and is followed by the investment and financing of working capital, as well as the factors that influence these decisions.

### **2.2      PURPOSE AND FUNCTION OF WORKING CAPITAL**

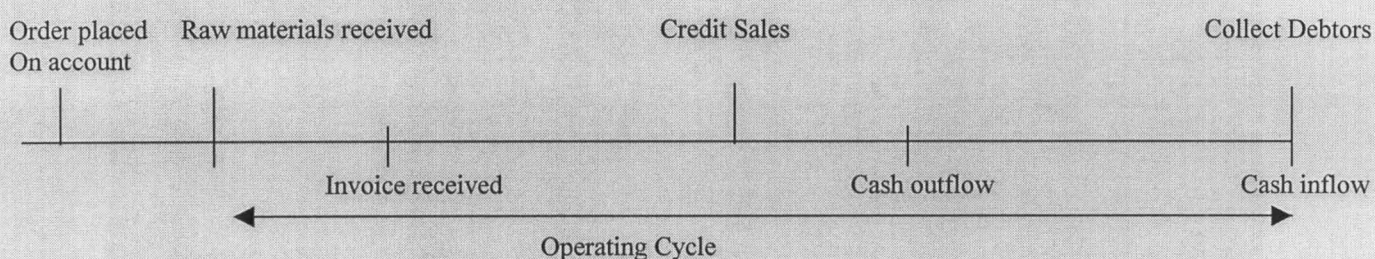
The purpose of working capital is to ensure that the investment in fixed assets is utilized effectively and efficiently (Paulo, 1992, Bierman and Smidt, 1988, Gallinger and Healey, 1987). If sales are increasing and capacity utilization is being increased, additional investment in current assets will be required (Cheatham, 1989). A possible exception may be a fixed asset such as computers where technology may decrease the need because of the impact of technology on efficiency and productivity (Bierman and Smidt, 1988).

The function of working capital may be illustrated by considering a business's operating cycle. Working capital finances the day to day (short-term) operations of the business from a cash pool or reservoir of liquidity (Cooper, et al. 1998). There are cash *outflows* when a business orders and receives inventory or any other input to the manufacturing process. If the inventory is purchased on credit then accounts payable or creditors are created. Expenses such as operating and manufacturing expenses, purchases or additions to long-term assets, payroll, income and other taxes, scheduled debt and interest, dividends to incorporate shareholders and marketable securities, that are found in the manufacturing process to produce the output also need to be accommodated. If these expenses are not paid immediately as they are incurred or paid during the manufacturing

process an accrual is created (Cooper, et al. 1998, Kallberg and Parkinson, 1984). Cash *inflows* in the form of cash sales, collection of accounts receivable, short term borrowings from banks or other external sources as required, internal company transfers, subsidiary dividends or loan repayments, proceeds from long-term financial transactions or equity issues and the liquidation of marketable securities, partially or entirely offset the cash outflows. If the output is sold on credit then accounts receivable or debtors are created (Cooper, et al. 1998, Kallberg and Parkinson, 1984). Besides the cash outflows and inflows there are also clogs and leaks in this system (Kallberg and Parkinson, 1984). One example is the case of over-trading that occurs when a company absorbs working capital faster than customers pay their invoices. In this type of situation an otherwise successful company can become illiquid (Anonymous 1995).

In other words, working capital is “the grease” (Tully, 1994) that keeps the operations of the business entity running. From the literature it is apparent that working capital circulates through a business entity concurrent with the business’s operating cycle (Gitman, 1997, Schilling, 1996). A typical operating cycle, as illustrated in Figure 1, shows that cash inflows and outflows are neither instantaneous nor synchronized (Weston and Brigham, 1992, Ross, et al. 1990, Richards and Laughlin, 1980). In general this is the case because disbursements for factor inputs do not coincide with their delivery, and, payment for factor outputs coincides neither with the completion of factor outputs nor with their sale and delivery. At best, payments and receipts are partial to the extent that payments and receipts are incomplete as funding requirement is created (Ross, et al. 1990).

Figure 1 A TYPICAL OPERATING CYCLE



(Adapted from Ross, Westerfield, Jaffe, 1990, p700, Brigham, Gapenski, 1997, p700, Maness, 1994, p10)

From this illustration of a typical operating cycle, it is evident that working capital is critical to the success of a business in achieving objectives such as shareholder wealth, profit motive, survival, sustainable competitive advantage and growth (Payne, 1993, Asch and Kaye, 1989). Its impact on liquidity, solvency, efficiency and profitability (Cooper, et al. 1998, Chang, et al. 1995, Van Auken and Holman, 1995, Madura and Veit, 1988, Gallinger and Healey, 1987, Richards and Laughlin, 1980) is direct and unambiguous through its main elements, namely, cash, marketable securities, accounts receivable, inventory and prepayments (Cooper, et al. 1998, Gitman, 1997, Maness, 1994, Cheatham, 1989).

### **2.3 INVESTMENT IN WORKING CAPITAL**

Unlike investments in fixed assets which generate cash inflows over long periods of time, current assets have a cash-to-cash conversion cycle of less than twelve months (Cheatham, 1989). Nonetheless, an investment has to be made in current assets, and as with all investments the returns should exceed the required rate of return, otherwise the business's success will be jeopardized. Moreover, in the interests of efficiency and productivity, this investment needs to be carefully managed. The investment in current assets should comprise the best possible combinations of cash, debtors, inventory, and prepayments, which enable the effective and efficient utilization of the investment in fixed assets. Thus the composition and structure of current assets is an important issue and is worthy of consideration (Cooper, et al. 1998, Gitman, 1997, Maness, 1994, Cheatham, 1989).

*Cash and marketable securities* is the most liquid of all the current assets. Unless cash is invested, it does not earn an explicit rate of return (Weston and Brigham, 1992, Gallinger and Healey, 1987). Marketable securities which are highly liquid, short term interest bearing government and non-government money market investments enable a return to be earned on temporarily idle money (Gitman, 1997). Even if most of the business's cash is invested in marketable securities, the rate of return will be less than the business's

required rate of return because of risk and term structure considerations. The characteristics of the cash and marketable securities of a business are described by (Ellis and Williams, 1993, Ross, et al. 1990):

- a) the nature of the demand for cash,
- b) working capital requirements, and
- c) the investment in fixed assets.

Nonetheless, businesses are obliged to hold cash and marketable securities because of the need to satisfy financial agreements (the contractual motive), make planned expenditure (the transactions motive), protect the business against unexpected short term cash demands (the safety motive), and, invest in unexpected short-term opportunities that may arise (the speculative motive). The consequences of having inadequate liquid resources can be severe, primarily by impacting on liquidity, but also by dislocating business decisions towards short payback low profit operations in order to survive (Gitman, 1997, Hill and Sartoris, 1992, Brigham and Gapenski, 1994).

The classic traditional approach to cash management stresses that idle cash is necessary to prevent liquidity problems. However, idle cash carries with it an opportunity cost in either lost income revenue or excess interest payments on the lines of credit (Phillips, 1997). In contrast, the contemporary approach contends that the investment in cash should be subject to the same criteria as investments in other types of assets, namely, the required rate of return (Gitman, 1997, Hill and Sartoris, 1992).

**Inventory** comprises goods held for resale, goods in the process of production, or goods used as raw materials in the production process (Cooper, et al. 1998). A variety of motives are argued to exist for the holding of inventory, viz. contractual, speculative, precautionary and transactions motives (Hill and Sartoris, 1992). However, with the advent of just-in-time (henceforth JIT) the emphasis has changed substantially. Instead of focussing on holding inventory, the focus is on developing good supplier relations,

logistics and delivery systems so as to minimize the investment in inventory (Corbett and Bayly, 1991, Dougherty, 1988). It is argued that businesses will generally maintain a high raw material level when the benefits exceed the costs, bulk discounts for large order quantities, low storage costs, high order placing costs, no available substitutes and uncertain delivery and delivery time (Cooper, et al. 1998, White, et al. 1994, Madura and Veit, 1988, Richards and Laughlin, 1980).

A key determinant of work in progress is the length of the production process. A slow process means either a large work in progress and/or a complex production process. Large work in progresses are usually carried when the cost of inventory items is low, production equipment is difficult to replace quickly should it break down, production equipment is subject to frequent and lengthy downtime and the cost of storing inventory items is low (White, et al. 1994, Madura and Veit, 1988). Yet again, these decisions are based on costs, risks, and returns.

In the case of finished goods inventory relatively high levels may be held, because the production process is subject to lengthy slowdowns or stoppages, the demand for the business's product is volatile, and the cost of finished goods is low, as well as their holding costs are low (Madura and Veit, 1988).

In short, the decision to hold a target level of inventory will be determined by a range of factors such as the pattern of sales, type of business (manufacturing, wholesaling or retailing), length of the production process, dependability of supply sources, seasonality of sales, predictability of sales, (Madura and Veit, 1988) economic, political, and other macroeconomic factors, the opportunity costs of finance, ordering, transport, storage, insurance, obsolescence, spoilage, theft and the opportunity cost of tying up funds in inventory (Kamath 1989, Kallberg and Parkinson, 1984).

*Accounts Receivables* result from inventory that has been sold but for which payment has not been received (Cheatham, 1989), and must be financed by the business (Gitman,



1997). The accounts receivable balances are a function of the level of sales and the credit policy of the business (Richards and Laughlin, 1980). Where credit sales rather than cash sales are the norm, accounts receivable can form a large portion of current assets of a business, and have a notable impact on the its cash flow and level of working capital (Gitman, 1997, Richards and Laughlin, 1980). Credit sales may constitute an attempt at stimulating sales and hence market share, which will have an impact on capacity utilization, and may entail an attempt to restructure the ratio of inventory to accounts receivable. Whatever the motive, it should be consistent with value creation (Chambers and Lacey, 1994, Gallinger and Healey, 1987).

Given the nature of accounts receivable, namely that it forms the longest segment of the cash inflow timeline, it has been argued that it has the potential to generate more savings than in any other area of the cash flow timeline (Schmidt, 1996, Hill and Sartoris, 1992). In addition, it has been shown that debtor delinquency is functionally related to time (Cooper, et al. 1998, Gitman, 1997, Chang, et al. 1995, Richards and Laughlin, 1980).

As with accounts receivable, the cash flow of *prepayments* is not synchronized with delivery of goods and services, and has to be financed by the business (Cooper, et al. 1998, Gitman, 1997). Prepayments mean that the business has to increase the level of working capital required.

Since working capital has to be financed, from debt, equity, or spontaneously generated sources of finance, it is appropriate to briefly consider the forms and sources of working capital finance.

## 2.4 FINANCING OF WORKING CAPITAL

As a result of the unsynchronized nature of business activities and cash flows, already discussed (Weston and Brigham, 1992, Ross, et al. 1990, Richards and Laughlin, 1980), and the effluxion of time in converting assets into cash, a financing requirement is created. The financing of working capital contributes to the composition and structure of long-term and short-term financing of a business (Gitman, 1997, Asch and Kaye, 1989). The forms of finance, which can be used to fund working capital, namely long-term finance and short-term finance, are presented and discussed.

### 2.4.1 Long-term Sources

There are four main sources of long-term funds, which may be used to fund working capital, namely equity, long term debt, off-balance sheet financing and asset-based financing.

*Equity Finance* can be used as a source of finance for working capital, however, the cost of equity finance tends to be higher than debt (Coopers, et al. 1998, Gitman, 1997). If the cash conversion cycle is protracted and risky, an argument can be made for relying on this form of finance (Gitman, 1997).

The decision to use *long-term debt* depends on the explicit and implicit costs of this form of finance. This in turn necessitates a careful consideration of the interest rate, maturity or payment dates, loan size, borrower risk, collateral, restrictive covenants, purpose of the loan, and standard terms and conditions (Gitman, 1997, Ross, et al. 1990). For example restrictive covenants place certain operating and financial constraints on the borrower, such as the borrower may be required to maintain a minimum level of working capital (Gitman, 1997, Ross, et al. 1990). While long-term debt may not provide much financial flexibility, it ensures that a pre-determined level of finance will be available for a pre-

determined period of time. This attribute minimizes the risk of an abrupt shortage of finance which in turn could have serious implications for liquidity (Gitman, 1997).

Some businesses use *off-balance sheet financing* to keep financial statements clean and not distort financial ratios (Hill and Sartoris, 1992, Gallinger and Healey, 1987). Types of off-balance sheet financing include unfunded pension liabilities, leases, and unconsolidated subsidiary debt, in-substance defeasance of debt and project financing with unconditional commitment arrangements, and the sales of accounts receivable and inventory (Hill and Sartoris, 1992, Gallinger and Healey, 1987). The sale of accounts receivable and inventory, as collateral is commonly known as factoring. Once the account receivable or inventory is purchased by the factor it is the property and responsibility of the owner or factor. Factors need to be aware that if businesses sell accounts receivable to generate cash, then this could lead to a long-run cash shortage as they use the proceeds to meet current obligations (Gitman, 1997, Gallinger and Healey, 1987) .

*Asset-based financing* is a secured long-term loan that uses such assets as marketable securities, accounts receivable, inventories, fixed assets (plant, equipment and real estate) as collateral for loans. Asset-based financing may involve a number of options such as pledging assets, selling assets, and leases, mortgaging, loan-option-agreements, pensions and factoring assets (Hill and Sartoris, 1992, Gallinger and Healey, 1987).

When it comes to the primary source of repayment for an asset-based loan then the value of the asset that represents the security for the loan becomes an important consideration. Some researchers (Van Auken and Holman, 1995, Gallinger and Healey, 1987, Kallberg and Parkinson, 1984) argue that businesses that use this form of financing have a higher probability of failure than those that do not. Funding of working capital from asset-based finance is used by businesses that do not have access to lower cost debt, or during inflationary times, or when the risk of insolvency is high. A primary consideration for this loan is whether assets secured by the loan have the liquidation value necessary to support the loan. Asset-based lenders are mainly interested in the asset valuation and the

present financial performance of the business. Historical results will certainly be reviewed, but current trends and business projection tend to receive greater attention (Croskell and Witkin, 1996, Gallinger and Healey, 1987).

The advantages for the borrower of asset-based financing include improved liquidity and working capital and the ability to increase leverage when additional borrowing would not otherwise be available. If a business factors its accounts receivable it will eliminate the need for credit and collection departments (Gitman, 1997, Gallinger and Healey, 1987). However, costs of factoring may be substantial.

#### **2.4.2 Short-term Sources**

The short-term decisions are the operational decisions because once implemented they are easier to change than is the case with long term decisions as was made evident above (Hill and Sartoris, 1992). The literature identifies two main sources of short-term funds, spontaneously generated sources such as accounts payable, provisions and accruals, and non-spontaneously generated sources such as unsecured and secured short-term borrowings and financing instruments.

*Accounts payable*, which arise directly from the business's operations, represents a valuable source of internal spontaneous unsecured short term financing and cash flows (Maness, 1994, Scherr, 1989). Accounts payable is the largest single conduit for cash outflow in most businesses (Gallinger and Healey, 1987). They are also a notable source of interest free financing (Fraser, 1996). Accounts payable arises as a result of the unsynchronized timing of disbursements for goods and services, to the extent that disbursement occurs after the receipt of goods and services, credit, which is a source of funds, has been created (Asch and Kaye, 1989, Van Horne, et al. 1985). Accounts payable is likely to fluctuate with changes in operating activities (Hill and Sartoris, 1992, Ross, et al. 1990, Richards and Laughlin, 1980).

To the extent that accounts payable do not have an explicit cost of finance, an incentive may exist to rely heavily on this source of finance. However, once the implicit costs, such as higher pricing by suppliers, and foregoing cash discounts, is taken into consideration, this ostensibly “free” source of financing may prove to be rather costly (Payne, 1993). As a source of funding, accounts payable is constrained by the amount of purchases on credit and the credit period negotiated. The size of accounts payable depends on trade credit terms offered by suppliers to their customers and the volume of goods and services acquired under these terms (Richards and Laughlin, 1980). Payment of suppliers depends on the bargaining strength of the business, which is often determined by its credit rating.

There are normally no costs such as interest and financing charges associated with this form of financing, provided payment is made within the stipulated period (Soenen, 1993, Weston and Brigham, 1992, Asch and Kaye, 1989, Van Horne, et a. 1985, Richards and Laughlin, 1980).

*Accruals* are another discretionary source of spontaneous funding. These comprise expenses that are incurred before payment is made. The most common forms of accruals are expenses for interest payments, taxes or dividends, wages and salaries. Accruals arise as a result of the periodic payment for goods and services, such as on a weekly, monthly or annual basis (Asch and Kaye, 1989, Van Horne, et al. 1985). Accruals generally are unsecured as no assets are pledged as collateral (Gitman, 1997) and attract no explicit costs providing payment is made on due date (Gallinger 1997).

*Unsecured financing* is short-term financing obtained from the money market without pledging any specific assets as collateral (Gitman, 1997). It is often referred to as financial statement lending as the loan is generally based on the strength of the income statement and balance sheets of the business. Unsecured loans can be based on the financial strength of a business, the cash flow generating potential, the potential of operations to assist in repaying the loan. Unsecured loans can be made if the

creditworthiness of the customer is adequate and the creditor is capable of repaying (Hill and Sartoris, 1992, Gallinger and Healey, 1987).

Understanding of the banking system is crucial to those who manage working capital (Hill and Sartoris, 1992). Banks lend through single payment notes, bank advances, loans, overdrafts, zero balance account, lines of credit or revolving credit agreements. They charge the prime overdraft rate, fixed or floating rate of interest. Banks or businesses also issue a number of marketable securities that include treasury bills and treasury notes. The main non-government money market instruments are negotiable certificates of deposit, commercial paper, banker's acceptances, eurodollar deposits, money market funds and repurchase agreements, and international loans. They tend to have a higher return than government issues with similar maturities due to the slightly higher risks associated with them. The yield on the securities is a function of the marketability, maturity, default risk and the taxability of the security (Gitman, 1997, Hill and Sartoris, 1992, Asch and Kaye, 1989, Kallberg and Parkinson, 1984).

*Secured financing* includes bank advances, overdrafts and loans, and can be a major source of secured short-term loans if banks require collateral in proportion to the amount it will advance. Businesses generally borrow on a secured basis after they have exhausted unsecured sources of funds as there is a higher cost of secured borrowing attributable to the greater risk of default and increased administration costs (Gitman, 1997). Two high cost approaches of obtaining secured short-term financing are by means of pledging and factoring assets such as inventory and accounts receivable (Gitman, 1997, Gallinger and Healey, 1987).

Pledging accounts receivable as collateral may result in a cost above the prime rate of interest offered by banks and an administration service charge. Factoring involves the sale at a discount to a factor or other financial institution the account receivables with its related credit risks. The factoring costs include commissions, interest levied on advances and interest earned on surpluses. Although it is a costly means of obtaining short-term

financing, the business is able to benefit from the conversion of accounts receivable into cash and this helps improve the synchronization of cash inflow with cash outflow (Gitman, 1997, Gallinger and Healey, 1987).

Inventory is attractive as collateral because it normally has a market value greater than its book value. It is important that the lender considers the marketability, price stability and physical properties of the inventory when evaluating the inventory as collateral. There are three main types of inventory collateral: (Gitman, 1997, Brigham and Gapenski, 1994, Gallinger and Healey, 1987) floating inventories liens, trust receipt inventory loans and warehouse receipt loans.

## **2.5 FACTORS THAT INFLUENCE WORKING CAPITAL**

There are a wide range of factors that can affect the investment in and financing of working capital, such as monetary policy, the term structure of interest rates, business cycles, and fiscal policy, and these should be taken into account because of their potential impact on the business's performance. These factors include monetary policy and the manner in which it is implemented, because of its impact on price levels and exchange rates (Gitman, 1997, Brigham and Gapenski, 1994, Back, 1988), the term structure of interest rates because of its impact on the cost of finance of different maturities (Gitman, 1997, Brigham and Gapenski, 1994, Weston and Brigham, 1992, Asch and Kaye, 1989, Back, 1988), the business cycle, (Brigham, et al. 1999, Begg, et al. 1994, Beardshaw and Ross, 1993) and fiscal policy because of the impact of taxation (Beardshaw and Ross, 1993).

### **2.5.1 Monetary Policy**

Monetary policy is embodied in the investment and financing of working capital (Gitman, 1997, Back, 1988). The Reserve Bank controls the money supply in a country by means of monetary policy to control the rate of inflation and the level of economic

activity. Increasing the money supply growth rate causes interest rates to decline, which in turn may cause the expected inflation rate to increase, which may decrease the demand for a country's currency, *ceteris paribus*, thus stimulating the economy. The investment in working capital should increase as interest rates decline when the economy is stimulated by means of monetary policy, and should decrease if the economy is contracted by a decrease in money supply, an increase in interest rates and a contracting economy (Weston and Brigham, 1992).

When the economy contracts, debtors and inventory may decrease notably, whereas with a stimulated economy more liberal credit policies may result in an increase in credit sales, and hence debtors. Production may be increased because of an increase in consumer demand as they have more money to spend and this will generally result in an increase of inventory (Brigham, et al. 1999). In a similar manner change in economic conditions as a result of changes in monetary policy, so too will have an impact on the level of cash and on the forms and sources of financing of working capital. When there is more money available in the economy, the increase in sales and hence production needs to be paid for, which in the normal course of business leads to an increased demand for cash. With the slowing of the cash conversion cycle during an economic slowdown, the level of working capital is likely to rise temporarily and with it will be an increase in the need for cash to finance a longer cash conversion cycle (Nawrocki, 1997, Begg, et al. 1994, Beardshaw and Ross, 1993, Asch and Kaye, 1989, Richards and Laughlin, 1980).

Monetary policy has a considerable impact on the costs of various forms and sources of finance as well as their associated yield spreads, thus the management of the investment and financing of current assets should be performed carefully (Peel and Wilson, 1996, Scherr, 1989).



### **2.5.2 Term Structure of Interest Rates**

Changes in monetary policy frequently give rise to changes in the shape and position of the yield curve (Gitman, 1997, Back, 1988). An upward sloping yield curve (normal) may become downward sloping (inverse yield curve), and as a result of changes in inflationary expectations the yield curve may shift upwards or downwards (Gitman, 1997, Brigham and Gapenski, 1994, Weston and Brigham, 1992, Asch and Kaye, 1989, Back, 1988). These changes in the yield curve have implications for the costs of financing working capital, and for the levels of sales (Gitman, 1997, Brigham and Gapenski, 1994, Asch and Kaye, 1989) as a result of the impact on economic growth and gross domestic product.

If the change in the term structure is aimed at slowing economic growth, businesses that do not make appropriate adjustments to their production levels will accumulate excessive levels of inventory. This will enlarge the level of working capital at a time when interest rates are rising and consumer confidence is declining. The net effect will be unfavorable to the business's financial performance.

### **2.5.3 Business Cycles**

If the change in the term structure of interest rates is aimed at providing a stimulus to the economy, then there is the impact on business cycles that needs to be considered when investing and financing current assets. The phases of the business cycle, recession, slump, recovery and boom, all have implications for working capital.

In a recession the level of consumption contracts. The result is lower sales and decreasing profits, and with rising stocks of unsold or unprocessed inventory unless production levels are reduced, the level of working capital is likely to rise temporarily and with it will be an increase in the need for cash (Asch and Kaye, 1989, Richards and Laughlin, 1980). With the onset of a recession a business may apply more restrictive credit policies

thereby reducing credit sales, and hence debtors. Inflation will be falling while unemployment and interest rates usually rises. Unprofitable businesses may also go into liquidation during this phase. This phase is followed by a slump when unemployment is high and economic growth is declining. There is a low level of capital utilization. The Reserve Bank is trying to cool the economy and thus interest rates rise while business profits and confidence will be low. The need for working capital should decrease as economic growth contracts (Weston and Brigham, 1992). But as the economy bottoms out the recovery of the economy is characterized by expanding production, as interest rates once they have peaked will start declining. The replacement of old machinery, rising consumption expenditure, increasing profits and buoyant business expectations, means there is economic growth, lower inflation and lower interest rates. Thus as a result of the economic growth the need for working capital increases and thus (Weston and Brigham, 1992) debtors and inventory may increase notably. During an expansionary period, the increase in sales and hence production needs to be paid for, which generally leads to an increased demand for cash (Asch and Kaye, 1989, Richards and Laughlin, 1980). However as the acceleration in the economy occurs towards the upper turning point of this phase an overheated economy may result in increased prices, high expectations, increased investments, increased profits, labour shortages and production bottlenecks. Then the boom turns into a recession and the above cycle starts again (Nawrocki, 1997, Begg, et al. 1994, Beardshaw and Ross, 1993).

Thus expansions and contractions in the business cycle influence the investment in working capital in aggregate, and the composition of the constituent components of the investment in working capital, and the sources and costs of financing working capital (Richards and Laughlin, 1980). Some businesses tend to build up working capital when the economy is strong, but then sell off inventories and have net reductions of receivables when the economy slacks off (Brigham, et al. 1999). Since the direction and the duration of the business cycle cannot be forecast with any degree of certainty the management of the financing and investment in working capital is an ongoing challenge, and needs to be carefully managed (Peel and Wilson, 1996, Scherr, 1989).

#### **2.5.4 Fiscal Policy**

Fiscal policy affects working capital through taxation, and the government determines the tax policy of a country, which changes over time with the Fiscal Budget each year (Beardshaw and Ross, 1993). Changes in the level, composition and structure of working capital and fixed assets will change a business's taxable income depending on the taxation laws in force at the time.

For example if sales are stimulated by means of liberal credit policies, this may represent cash inflows, which may be taxable. Whereas cash outflows which represent expenses can be deductible for taxation purposes. In most cases depreciation is an allowable deduction for taxation purposes. It is important to mention taxation and some of its impact on working capital briefly, but as it can be a complicated matter (Institute of Chartered Accountants of New Zealand, 1997, Van Horne, et al. 1985), further discussion is beyond the scope of this thesis.

#### **2.6 SUMMARY**

In this chapter an overview of working capital was presented. Attention was focussed on the purpose and functioning of working capital, as well as on the investment in, and financing of working capital. Having done this, it is now possible to proceed to the management of working capital.

## **CHAPTER 3 THE MANAGEMENT OF WORKING CAPITAL**

### **3.1 INTRODUCTION**

In the previous chapter an overview of working capital was provided as a basis for this chapter which focuses on the management of working capital. The chapter begins by expounding the importance for managing working capital, and then reviews the management of cash, accounts receivable, inventory and accounts payable. Thereafter an aggregative approach to the management of working capital by means of the cash conversion cycle is presented and briefly discussed. In terms of this approach the various components of working capital, cash, accounts receivable, inventory and accounts payable are managed as an integrated entity.

### **3.2 THE IMPORTANCE OF WORKING CAPITAL MANAGEMENT**

Working capital management is the management of the investment in current assets and the financing of the current assets, and involves setting working capital management policy and carrying out that policy in a business's daily operations (Brigham, et al. 1999), to it achieves its goals and objectives, such as shareholder wealth maximization, competitive advantage, and growth (Cooper, et al. 1998, Chang, et al. 1995, Asch and Kaye, 1989). As already discussed, the purpose of working capital is to ensure the effective and efficient utilization of the business's investment in fixed assets (Paulo, 1992, Bierman and Smidt, 1988). More specifically, if performance criteria such as liquidity, solvency/ bankruptcy, efficiency, profitability and Economic Value Added<sup>®</sup> (henceforth EVA<sup>®</sup>) are considered, it will be clearly apparent that the business must hold and manage the different levels of working capital which are appropriate to its performance criteria (Brigham, et al. 1999, Cooper, et al. 1998, Gitman, 1997, Paulo, 1997, Brigham and Gapenski, 1994, Weston and Brigham, 1992, Ross, et al. 1990,

Scherr, 1989, Cheatham 1989, Gallinger and Healey, 1987, Richards and Laughlin, 1980).

### **3.2.1 Liquidity**

Liquidity is particularly important to shareholders, long-term lenders and creditors, as it provides information about a particular business's safety margins afforded to creditors and its ability to repay loans. The levels of inventory, credit, accounts payable and cash that form part of the overall cash flow of a business affect the liquidity of the firm (Maness, 1994). A business that considers decreasing its levels of cash by for example carrying too much inventory endangers its liquidity, which if not rectified will lead to bankruptcy. On the other hand increasing levels of cash may result in poor resource utilization and the business may not earn a satisfactory return on assets (Cooper, et al. 1998, Gitman, 1997, Dierks and Patel, 1997, Peel and Wilson, 1996, Moss and Stine, 1993, Hill and Sartoris, 1992, Martin, et al. 1991, Asch and Kaye, 1989, Kamath, 1989, Madura and Veit, 1988). By maintaining an appropriate level of liquidity a business should be in a position to survive down turns and moreover, it may be able to exploit profitable opportunities as they arise (Gitman, 1997, Schilling, 1996, Maness, 1994, Brigham and Gapenski, 1994, Moss and Stine, 1993, Payne, 1993, Kamath, 1989, Cheatham, 1989, Gentry, et al. 1990, Ross, et al. 1990, Madura and Veit, 1988, Gallinger and Healey, 1987, Richards and Laughlin, 1980).

### **3.2.2 Solvency/Bankruptcy**

Illiquidity, unless remedied, will give rise to insolvency and eventually bankruptcy as the business's liabilities exceed its assets (Cooper, et al. 1998, Gitman, 1997, Dierks and Patel, 1997, Moss and Stine, 1993, Hill and Sartoris, 1992, Martin, et al. 1991, Asch and Kaye, 1989, Madura and Veit, 1988). Excessive debt exposes the business to potentially large interest costs and the risk of potential bankruptcy (Gitman, 1997, Martin, et al. 1991, Asch and Kaye, 1989, Madura and Veit, 1988, Gallinger and Healey, 1987).

Shareholders, long term lenders and creditors evaluate the level of risk they bear, and require compensation for the risks, which arise from a business's capital structure. The proportion of assets financed by creditors are of particular importance to shareholders, since creditors have a prior claim on the assets in the case of liquidation (Gitman, 1997). High levels of debt, declining levels of liquidity, and declining levels of profitability coupled with poor cash flow, have been shown by Edward Altman (1983) to be correlated with bankruptcy. In Altman's public domain model, defined:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.99X_5, \text{ where}$$

$Z$  = Z-score

$X_1$  = working capital/total assets

$X_2$  = retained earnings/total assets

$X_3$  = earnings before interest and taxes/total assets

$X_4$  = market value of preference and common stock/total liabilities

$X_5$  = sales/total assets

The ratio of working capital to total assets,  $X_1$ , is used to reflect liquidity, and  $X_4$  measures the extent to which the value of the business can decline before it becomes insolvent.  $X_3$ , the ratio of earnings before interest and taxes to total assets measures the business's productivity or earning power which is the main safeguard against financial failure.

### 3.2.3 Efficiency

Management should be particularly concerned about determining how effective and efficient a business is in utilizing assets to generate revenues through, generating cash sales and credit sales, and comparing this to the amount invested in net assets, and the average length of time inventory spends in the business before it is sold or used in the production process, and the average time between buying inventory on credit and settling the creditors (Gitman, 1997, Kamath, 1989, Richards and Laughlin, 1980).

Market share may be constrained unnecessarily, if the levels of accounts receivable are decreased by restrictive credit policies. On the other hand, if the investment in accounts receivable is not appropriately controlled then debtor delinquency, the cost of debt recovery, and bad debts could exceed the benefits from the increase in credit sales (Brigham, et al. 1999, Gallinger and Healey, 1987). Stock-outs could lead to temporary shutdowns, unnecessary delays in the production process, increasing overhead expenses during periods of idleness, increasing labour costs, which may increase the cost of sales, which in turn may decrease margins. Seasonality, unreliable suppliers, and the possibility of strikes may cause companies to carry larger inventories needed for normal production in the form of safety stocks. This may be wasteful, as it may result in the misuse of facilities, shrinkage, spoilage, theft and obsolescence. Conversely, if there are not sufficient finished goods inventory to meet the market demand the business could lose sales (Brigham, et al. 1999, Gitman, 1997, Tully, 1994, Kamath, 1989, Scherr, 1989, Gallinger and Healey, 1987, Kallberg and Parkinson, 1984, Richards and Laughlin, 1980).

According to Tully (1994) the businesses that demonstrate the least working capital per dollar of sales can be considered as managing their working capital efficiently and are well-managed businesses. To satisfy the requirement of efficiency, working capital management seeks to ensure that the investment in working capital components, the speed, efficiency differences and problems of working capital management, is neither too little nor too great (Schilling, 1996, Maness 1994, Soenen, 1993, Gallinger and Healey, 1987).

#### **3.2.4 Profitability**

Management considers profitability as an important input when planning the operations of the business, whereas creditors and shareholders look at profitability to determine the returns on their investment in the business and assess the risks of their investments,

which may be affected by the industry structure and the nature of the competitive environment (Gitman, 1997).

Management has some discretion over the level of investment in working capital and the financing of this investment, at any particular level of output, however this decision involves a risk-return tradeoff (Madura and Veit, 1988). Generally, the higher the risk the higher the return will be demanded by management and shareholders in order to finance any investment in working capital (Cooper, et al. 1998, Gitman, 1997). For example a decrease in the current asset level increases the risk of stock-outs or cash-outs if the demand in sales increases unexpectedly. If the level of current assets decreases then profitability improves as the asset turnover increases. Alternatively, high levels of working capital decreases risks and thus returns because higher financing costs are associated with maintaining high levels of current assets using external sources of funds. If the level of current assets decreases then the asset turnover increases, but at the cost of profitability (Gitman, 1997, Martin, et al. 1991, Asch and Kaye, 1989, Madura and Veit, 1988, Gallinger and Healey, 1987). In the quest for profitability managers have to eliminate uneconomic investments (Uyemura and Kantor, 1997) and costly financing options to ensure value is created for the shareholders.

### **3.2.5 Economic Value Added<sup>®</sup> (EVA<sup>®</sup>)**

The concept of EVA<sup>®</sup> reinforces a business's focus on value creation for customers, employees, suppliers, investors, analysts, regulators and shareholders (Uyemura and Kantor, 1997, Blair, 1997, Dierks and Patel, 1997, Stewart III, 1994). Shareholders demand continuous improvements financially (Dierks and Patel, 1997), and the management of working capital and operating staff often require incentives to improve their internal operating performance (Stephens and Bartunek, 1997, Reilly and Brown, 1997). Combining EVA<sup>®</sup> with the management of working capital provides management with the incentive to focus on value creation (Grinblatt and Titman, 1998, Blair, 1997, Uyemura and Kantor, 1997, Dierks and Patel, 1997, Appleby, 1997,



Klinkerman, 1997, Stephens and Bartunek, 1997, Pallarito, 1997, Spero, 1997, Reilly and Brown, 1997, Jones, 1996, Jackson, et al. 1996, Sullivan, 1994/1995, Stewart III, 1994).

With regard to working capital, improving receivables turnover and increasing inventory turnover may reduce the amount of cash tied up in less liquid forms of working capital. This may result in reducing the amount of working capital or fixed assets required while running the business and contributing to improving the business's internal performance. These improvements would be encapsulated in increases in EVA<sup>®</sup> (Stephens and Bartunek, 1997, Dierks and Patel, 1997), which is a measure of operating performance (Adler and McClelland, 1995). The effect of changing inventory turnovers can be evaluated against the costs of running out of materials, shipping products, and late deliveries or failing to satisfy customers (Dierks and Patel, 1997). If management use trade creditors to provide costless or low cost funding to finance working capital to generate positive returns, then economic value is being created for that business (Best, 1995). If a business is receiving cash fast while paying suppliers close to the due date then the higher the present value of net cash flows generated by the asset and thus the higher the economic value of the firm or *vice versa* (Maness, 1994, Soenen, 1993, Gentry, et al. 1990).

As a performance metric, EVA<sup>®</sup> will focus management's attention on the management of working capital (Grinblatt and Titman, 1998, Spero, 1997, Reilly and Brown, 1997, Cates, 1997, Teitelbaum, 1997, Dierks and Patel, 1997). If EVA<sup>®</sup> is negative, the business has not earned enough during the year to cover its cost of capital, and as a consequence shareholder value is reduced (Cooper, et al. 1998, Kroll, 1997, Uyemura and Kantor, 1997, Pallarito, 1997, Reilly and Brown, 1997, Gitman, 1997, Sullivan, 1994/95). Value creation requires that the internal rate of return exceed the cost of capital (Grinblatt and Titman, 1998, Kroll, 1997, Appleby, 1997, Reilly and Brown, 1997, Pallarito, 1997, Stewart III, 1994, Clarke, et al. 1988). Common strategies to improve EVA<sup>®</sup> typically include speeding up cash flows, slowing cash outflows, minimizing idle cash, transaction costs and administration costs connected with the cash flows,

minimizing the cost of providing back up liquidity and optimizing the information flow to management (Grinblatt and Titman, 1998). These strategies are constrained by legal and ethical considerations, as well as customer and supplier relations (Hill and Sartoris, 1992).

In the absence of the purposeful management of working capital, given its relationship to liquidity, solvency, efficiency, profitability, and shareholder wealth maximization, it is unlikely that the business will be able to achieve its goals and objectives unless working capital is carefully and competently managed (Cooper, et al. 1998, Dierks and Patel, 1997, Gitman, 1997, Hill and Sartoris, 1992, Clarke, et al. 1988, Gallinger and Healey, 1987).

### **3.3 CASH MANAGEMENT**

The purpose of cash management is to determine and achieve the appropriate level and structure of cash, and marketable securities, consistent with the nature of the business's operations and objectives (Brigham, et al. 1999, Gitman, 1997, Schilling, 1996, Scherr, 1989, Cheatham, 1989). Cash and marketable securities should be managed so as to achieve a balance between the risk of insufficient liquid or near liquid resources, and the cost of holding excessively high levels of these resources. In order to achieve and maintain this balance, which is subject to continual dynamic processes, both the motive and the appropriate level of cash needs to be established and monitored (Brigham, et al. 1999, Gitman, 1997, Phillips, 1997, Chambers and Lacey, 1994, Brigham and Gapenski, 1994, Moss and Stine, 1993, Miller, 1991, Scherr, 1989, Cheatham, 1989, Richards and Laughlin, 1980). In order to do this a variety of activities need to be undertaken, because of the integrative nature of cash to the operation of the business. For example, since all the business's assets are paid for with cash and are converted through time back into cash activities by means of improving cash forecasts, synchronizing cash flows, using float, investing excess cash, speeding up cash receipts, and delaying cash payments. this will

have a considerable impact on the minimum level of cash necessary to maintain a particular level of liquidity.

If a business improves its forecasts and arranges its affairs so that cash inflows are synchronized with cash outflows, and transaction balances can be reduced, the level of working capital can also be reduced. If working capital is financed from debt, the reduction in the magnitude of working capital will result in lower interest payments which in turn will give rise to improved profit, greater efficiency and productivity, and enhanced return on assets and return on equity (Brigham, et al. 1999, Miller, 1991, Cheatham, 1989).

There are several approaches to assist with the management of cash. The cash budget ratio approach, cash budget, (Brigham, et al. 1999, Gitman, 1997, Gallinger and Healey, 1987), cash forecasting (Barney, 1991, Scherr, 1989), Baumol, Miller Orr, and Stone models (Brigham, et al. 1999, Gitman, 1997, Hill and Sartoris, 1992, Scherr, 1989, Gallinger and Healey, 1987) are some of the more popular approaches.

The *cash budget ratio approach* sets a performance target in terms of the ratio of cash to the number of days worth of payables or, the ratio of cash as a percentage of sales. These target ratios are compared to the industry average. This approach is subject to the well-documented limitations of ratio analysis (Gallinger and Healey, 1987).

*Cash budgeting* or a receipts/disbursements approach focuses on the management of cash flows and balances. This approach is based on the assumption that both the magnitude and the timing of cash receipts and disbursements are known with a high degree of accuracy. By means of sensitivity and scenario analysis, accuracy in the magnitude and timing of the cash flows can be factored into the analysis. The cash budget remains one of the most important tools for the financial manager in maintaining liquidity, and obtaining an indication of the impact of liquidity on profitability (Gitman, 1997, Gallinger and Healey, 1987).

*Cash forecasting* is an estimate and projection of the business's cash needs on a daily, weekly, monthly, and annual basis by considering factors such as sales, fixed assets, inventory requirements, times when payments are made, and collections received. The cash forecast can be combined with the daily, weekly and monthly actual bank balances (Barney, 1991), and forms part of the business's cash control system and cash budget enabling firms to plan for unexpected surpluses or deficits (Scherr, 1989).

Apart from the above approaches, which may assist with the management of cash, models such as the *Baumol, Miller–Orr, and Stone models* are available (Brigham, et al. 1999, Gitman, 1997, Hill and Sartoris, 1992, Scherr, 1989, Gallinger and Healey, 1987, Baumol, 1952).

The economic order quantity model which was developed to manage the ordering of inventory, was modified by *Baumol* in order to be able to set a target cash balance (Baumol, 1952). Baumol's model is based on restrictive assumptions concerning the behaviour of cash flows. Specifically, cash outflows, cash inflows, and the net need for cash occur at a steady and predictable rate. Using cash flows with these restrictive characteristics, the target cash balance is set. The target cash balance minimizes the total cost of holding cash by taking transactions and opportunity costs into account. Unlike Baumol's model which is based on the assumptions of steady and predictable cash flows, the Miller-Orr model makes provision for cash flow volatility (Brigham, et al. 1999, Gitman, 1997, Hill and Sartoris, 1992, Scherr, 1989, Gallinger and Healey, 1987, Miller and Orr, 1966, Baumol, 1952).

Whereas the Baumol model is based on assumptions of steady and predictable cash flows, the *Miller-Orr* model for determining the target cash balance has greater operational content because it assumes that cash flows are subject to volatility, and that the distribution of daily net cash flows follow a trendless random walk. With this model, management sets the lower cash limit, and the model generates the target cash balance, as

well as the upper cash limit. The Miller-Orr model has been empirically tested and has been found to perform reasonably well. The assumption that the distribution of net cash flows follows a trendless random walk can be relaxed without dislocating this model. Whereas the Miller–Orr model focuses on setting the target balance, the Stone model is focussed on the management of cash balances (Brigham, et al. 1999, Gitman, 1997, Hill and Sartoris, 1992, Scherr, 1989, Gallinger and Healey, 1987, Miller and Orr, 1966).

The *Stone* model is a refinement of the Miller-Orr model. When the cash position reaches a predetermined level, which is less than the upper limit and greater than the lower limit, management examines the cash flow forecast to ascertain whether the actual cash flow balance is likely to breach the upper and lower limits. Unless these limits are likely to be breached, no action, by way of purchase or sale of marketable securities is taken. By incorporating expectations about cash flows in the immediate future, say five days, the number of transactions is minimized. The control limits and target level of cash can be set using the Miller-Orr model (Brigham, et al. 1999, Gitman, 1997, Hill and Sartoris, 1992, Scherr, 1989, Gallinger and Healey, 1987).

### **3.4 ACCOUNTS RECEIVABLE MANAGEMENT**

Accounts receivable management results from credit sales. The purpose of credit sales is to stimulate sales in order to expand market share and if possible enhance production capacity efficiency. If the benefits exceed the costs of credit sales, the business's performance should be enhanced, and should be reflected in key performance criteria such as efficiency, productivity, and return on equity (Brigham, et al. 1999, Gitman, 1997, Hampton and Wagner, 1989, Scherr, 1989, Gallinger and Healey, 1987, Kallberg and Parkinson, 1984).

The management of accounts receivable is largely determined by the business's credit policy. The investment in accounts receivable, debtors, as with all investment decisions, must earn a rate of return in excess of the required rate of return. Major risks that arise

from granting credit include bad debts and debtor delinquency, because they reduce the returns from the investment in accounts receivable, and if inadequately monitored can impact severely on the business's financial performance (Brigham, et al. 1999, Gitman, 1997, Hampton and Wagner, 1989, Scherr, 1989, Gallinger and Healey, 1987, Kallberg and Parkinson, 1984).

Credit policy and collection policy have to be actively managed because they affect the timing of cash inflows, sales, profits and accounts receivable risks (Gitman, 1997, Schmidt, 1996, Chambers and Lacey, 1994, Moss and Stine, 1993, Hill and Sartoris, 1992, Gallinger and Healey, 1987, Richards and Laughlin, 1980). Any changes in credit and collection policy have a direct impact on the average outstanding accounts receivable balance maintained relative to a business's annual sales (Moss and Stine, 1993, Richards and Laughlin, 1980). Thus a business should take special efforts to monitor both credit granting and credit collection processes (Chang, et al. 1995, Back, 1988).

*Credit policy* involves three factors: the credit selection, credit standards, and credit terms. Credit selection concerns the decision of whether or not to grant credit and if so, how much credit to extend. This is done by means of categorizing customers by both risk factors, common attributes, establishing standards, evaluating risks and selecting appropriate responsibilities (Schmidt, 1996, Gallinger and Healey, 1987). As credit decisions have an impact on cash flows the first stage is to establish credit control to assess creditworthiness of customers, prior to making a credit sale (Back, 1988). To determine who should receive credit, granting credit requires consideration of the debtor's creditworthiness (Gitman, 1997, Scherr, 1989, Kalleberg and Parkinson, 1984).

Credit standards are the minimum level of creditworthiness which a potential debtor would need to score in order to qualify for the granting of credit (Gitman, 1997). In the normal course of business credit standards are periodically modified. Key variables that need to be considered when tightening or relaxing credit standards include the impact on sales volume, the investment in account receivable, the cost of recovering monies due,

and bad debts. A relaxation of credit standards would be expected to stimulate sales volumes, and *vice versa* if credit standards are tightened (Gitman, 1997). The granting of more liberal terms has the potential to create a larger and less liquid investment in receivables (Moss and, Stine, 1993, Richards and Laughlin, 1980). Unless sales increase at least proportionally to the increase in receivables, deterioration in liquidity will be reflected in lower receivables turnover and a more extended collection period (Richards and Laughlin, 1980).

Tightening credit standards or introducing policies to determine which customers receive credit leads to the dilemma which are classified as Type 1 and Type 2 errors. Type 1 errors result when credit is issued to a customer that does not repay the debt. Type 2 errors occur when credit is denied a good customer who then buys on credit from a competitor and pays all the bills on schedule. The tightening of credit acceptances should aim to reduce Type 1 errors and not increase Type 2 errors (Cheatham 1989).

Credit terms specify the debtor's repayment schedule and comprise issues such as the cash discount, the cash discount period, and the credit period. Any changes in these three variables may affect sales, the investment in account receivable, bad debts and profits. For example a decision to increase the cash discount should be evaluated by comparing the profit increases attributable to the added sales, the reduction in accounts receivable investment and the reduction in bad debts to the cost of the discount. On the other hand a decision to decrease the cash discount should be evaluated by comparing the profit decreases attributable to the added sales, the increase in accounts receivable investment and the increase in bad debts to the cost of the discount (Gitman, 1997).

Once credit has been granted, and credit sales have been made, accounts receivable has to be collected. The goal of *collection management's* goal is to ensure that payments are received according to schedule, otherwise a greater investment in accounts receivable will be needed. If receipts from accounts receivable can be speeded up, without prejudicing sales or customer goodwill, less capital will be needed to fund accounts

receivable, and less money will be spent on recovery, because of administration, investigation, collection and bad debt costs (Gitman, 1997, Chang, et al. 1995, Miller, 1991, Kamath 1989, Cheatham, 1989, Hill and Sartoris, 1992, Gallinger and Healey, 1987).

In order to achieve satisfactory performance by debtors, several tactics have been suggested. These include adding finance charges for late payment (Cheatham, 1989), providing incentives for early payment (Gitman, 1997, Moss and Stine, 1993, Cheatham, 1989, Back, 1988), shortening the credit period contractually (Moss and Stine, 1993, Cheatham, 1989), or trading only for cash, discounting or factoring accounts receivable to speed up the cash inflows (Cheatham, 1989), outsourcing accounts receivable (Herridge, 1996, Williams, 1995, Berry, 1995), analyzing payment patterns (Mooney and Pittman, 1996, Scherr, 1989, Gallinger and Healey, 1987), using the Markov Chain Analysis, ad hoc scoring, simple probability, linear discriminant and sequential decision system (Gallinger and Healey, 1987, Kallinger and Parkinson, 1984), monitoring days sales outstanding and aging schedules, using balance fractions, payment proportions and variance analysis (Kallinger and Parkinson, 1984). These tactics need to be implemented carefully otherwise sales volumes could be negatively affected (Gitman, 1997, Back, 1988).

It is important to note that accounts receivable management and inventory management is closely linked in that account receivable are inventories that have been sold yet have not generated cash inflows.

### **3.5 INVENTORY MANAGEMENT**

Inventory management for purchasing, production and marketing purposes, should minimize the total costs of handling, carrying and financing inventory (Brigham, et al. 1999, Hampton and Wagner, 1989, Kallberg and Parkinson, 1984). The manner in which inventory is managed affects the level and structure of raw materials, work in progress,



and finished goods needed to sustain efficient operations and sales (Brigham, et al. 1999, Scherr, 1989). Any changes introduced by management to alter the absolute levels of inventory held or the manner in which it is ordered will have a direct impact on how working capital should be managed (Back, 1988).

Within a business, four conflicting management views concerning the appropriate investment in inventory ~~is~~<sup>are</sup> apparent (Kallberg and Parkinson, 1984). The marketing manager desires plenty of finished goods on hand so that no customer is ever turned away or forced to wait because of lack of inventory. Large quantities of both raw materials and work in process are preferred by production managers to ensure employees can concentrate on continuous production runs so that they can spread set up, changeover, spoilage and learning costs over longer production runs. The purchasing agent often prefers to buy in large quantities in order to take advantage of quantity discounts, lower freight costs and other economies of scale. The finance manager has to take the above wants and needs into consideration in conjunction with the risks and benefits when making any decisions regarding the investment in working capital and the financing of the working capital. It is thus important to draw up these conflicting functional objectives with inventory policy to improve EVA<sup>®</sup>. This can be achieved by adopting appropriate purchasing, production, scheduling and distribution strategies (Madura and Veit, 1988, Richards and Laughlin, 1980) to speed up the inventory turnover (Scanlan, 1995, Maness, 1994, Moss and Stine, 1993, Madura and Veit, 1988, Kallberg and Parkinson, 1984, Richards and Laughlin, 1980) without depleting inventory levels to the extent that it might reduce future sales (Maness, 1994, Moss and Stine, 1993, Cheatham, 1989) and slowdown production runs (Brigham, et al. 1999).

A variety of approaches exist for the management of inventory to reduce the investment in inventory. These include outsourcing inventory (Cheatham, 1989), accurate inventory forecasting (Maness 1994, Cheatham, 1989), incentive schemes (Maness. 1994, Cheatham, 1989), budgeting (Gitman, 1997), the ABC system (Gitman, 1997), Economic Order Quantity (Gitman, 1997, Scherr, 1989, Kallberg and Parkinson, 1984), MRP

(Materials Requirements Planning), MRPII (Manufacturing Resources Planning) (Cheatham 1989), and JIT (Just-in-time) (Gitman, 1997, Chang, et al. 1995, Maness, 1994, Moss and Stine, 1993, Corbett and Bayly, 1991, Cheatham, 1989, Dougherty, 1988) are some of the approaches that can reduce the inventory turnover, reduce the level of inventory and improve cash flows (Gitman, 1997, Weston and Brigham, 1992, Kamath, 1989, Asch and Kaye, 1989).

To the extent that inventory management adds value and helps reduce the investment in inventory, progress toward the business's efficiency and profitability will have been made. From the above it is evident that inventory management is closely linked to accounts payable management, as inventory is purchased on credit more often than not.

### **3.6 ACCOUNTS PAYABLE MANAGEMENT**

Accounts payable, a current liability, refers to the credit, which has been extended to a business by its suppliers (Gallinger and Healey, 1987). The decision to make use of supplier credit needs should be carefully assessed in terms of alternative sources of finance, discounts (Winkler, 1996, Back 1988, Gallinger and Healey, 1987, Richards and Laughlin, 1980), credit limits, public image with respect to its credit rating, transaction costs, administrative costs, information costs, control costs, the value of the relationship with creditors, buying power of the purchasers, the credit terms, stability and general practices of suppliers, and risk factors (Brigham, et al. 1999, Payne 1993, Hill and Sartoris, 1992, Gentry, et al. 1990, Back 1988, Gallinger and Healey, 1987). If the availability and cost of supplier credit are better than other forms and sources of finance, then supplier credit should be used. Once this decision has been taken accounts payable management will probably investigate the extent to which it can stretch accounts payable without jeopardizing its credit status with suppliers (Cheatham, 1989).

The motive for stretching accounts payable is to finance the investment in current assets from trade creditors and hence reduce the need for a level of working capital (Brigham, et

al. 1999, Gitman, 1997, Back, 1988, Gallinger and Healey, 1987). Creditors may tolerate this practice as long as the business abides by the rules the creditor has established (Payne 1993). The decision to stretch accounts payable is a function of ethical, legal and economic considerations (Brigham, et al. 1999, Hill and Sartoris, 1992). If management decides to stretch accounts payable, it must make an attempt to quantify the costs so as to determine the maximum stretching period consistent with value maximization (Gallinger and Healey, 1987). If delaying the payments is impossible, because there is the possibility of damaging the firm's future, reputation and credit standing, (Gitman, 1997) then the cash outflows need to be carefully managed.

There are numerous approaches discussed in the literature that management can consider when managing accounts payable. Some of these include outsourcing accounts payable (Williams, 1995, Berry, 1995), using purchasing cards (Entenman, 1995), setting up disbursement systems (Hill and Sartoris, 1992), scheduling accounts payable (Richards and Laughlin, 1980), aging accounts payable (Richards and Laughlin, 1980), forecasting accounts payable, budgeting, monitoring accounts payable-to-purchases ratio, evaluating the number of days purchases outstanding in payables, monitoring the aging schedule (Scherr, 1989, Gallinger and Healey, 1987), analyzing payment patterns and variances (Gallinger and Healey, 1987), and sequential approach and the integer-programming approach of structuring current liabilities (Scherr, 1989).

From this discussion of accounts receivable, inventory, and accounts payable management of these components of working capital, the inter-related nature of these working capital components have been shown to be an inescapable reality. An approach to working capital management, which manages all the components of working capital as an aggregative whole with the emphasis on cash flow and the investment in working capital, is the cash conversion cycle. If cash flow performance can be improved by shortening the cash conversion cycle, *ceteris paribus*, it should be possible to reduce the level of investment in working capital.

### **3.7 AN AGGREGATIVE APPROACH TO WORKING CAPITAL MANAGEMENT: THE CASH CONVERSION CYCLE**

From the literature it is evident that the focus of working capital management is on the individual components of working capital (Kallberg and Parkinson, 1984). Schilling (1996) contends that these individual components of working capital are managed atomistically because they have different purposes and functions. This is reflected in the job titles, descriptions and qualifications required of finance, production, purchasing, treasury, marketing, credit and inventory supply managers. Despite the accepted practice and convenience of atomistically managing these components, it has been argued by Kallberg and Parkinson (1984), Barney (1991), Ellis and Williams (1993), and Birchard (1995) that they need to be managed in aggregate notwithstanding the complex linkages among them. Furthermore the nature of the business and the type of market or industry sector in which a business operates will affect its working capital requirements (Beaumont Smith, 1997) and thus the management of working capital.

As has already been shown working capital decisions made in one area impact on each of the other areas. The investment in inventory can be affected by accounts payable financing (Gentry, et al. 1995, Madura and Veit, 1988). The investment and management of accounts receivable and inventory is also closely related (Gitman, 1997, Madura and Veit, 1988). Some investment and financing decisions only affect the timing of the cash flows for one part of the operating cycle, while other decisions affect the amount and timing of the cash flows of several elements on the time line. Therefore all the components must be included to reduce the possibility of working capital decisions that do not meet expectations (Hill and Sartoris, 1992). The working capital components should not only be managed individually, but as a whole to improve the investment and financing decisions.

Managers need to manage cash, inventory, accounts receivable, prepayments, accruals and accounts payable which have different life expectancies for different businesses

which function in different market sectors or industries, in addition to having differing cash flow amounts, turnovers and timing (Beaumont Smith, 1997, Richards and Laughlin, 1980). In an attempt to manage working capital as an aggregate by taking the inter-relationships of individual components into account, the cash conversion cycle (Brigham, et al. 1999, Gitman, 1997, Gallinger, 1997, Schilling, 1996, Brigham and Gapenski, 1994, Maness, 1994, Moss and Stine, 1993, Payne, 1993, Hill and Sartoris, 1992, Gentry, et al. 1990, Ross, et al. 1990, Kamath, 1989, Cheatham, 1989, Gallinger and Healey, 1987, Richards, Laughlin, 1980), has been proposed.

### **3.7.1 The Basic Cash Conversion Cycle (CCC)**

The cash conversion cycle, proposed and developed by Richards and Laughlin (1980) integrates the management of all the components of working capital by focussing on the management of the ages of accounts receivable, inventories and payables as individual components, and as an aggregate by specifically managing the cash flow timeline as a whole rather than trying to optimize any one component of working capital at the expense of another (Maness, 1994, Shulman and Cox, 1985).

The CCC is defined as (Brigham, et al. 1999, Gitman, 1997, Gallinger, 1997, Schilling, 1996, Brigham and Gapenski, 1994, Maness, 1994, Moss and Stine, 1993, Payne, 1993, Hill and Sartoris, 1992, Gentry, et al. 1990, Ross, et al. 1990, Kamath, 1989, Cheatham, 1989, Van Horne, et al. 1988, Gallinger and Healey, 1987, Richards and Laughlin, 1980) the receivables conversion period, plus the inventory conversion period, minus the payables deferral period, and is illustrated by means of an example adapted from Gitman (1997).

### Example 1

*WCM Limited, a producer of compact disks, sells all its goods on credit. Customers are required to pay within 60 days of sale. WCM Limited has determined that it takes approximately 85 days to manufacture, warehouse and sell its compact disks, and it takes the business 70 days to collect its accounts receivable. The suppliers of WCM Limited's raw materials require payment within 35 days of purchase. WCM Limited manages to increase inventory turnover by reducing the inventory conversion period from the current level of 85 days to 70 days. Owing to changing economic conditions, WCM Limited changes its credit terms, and is able to reduce the accounts receivable conversion period from 70 days to 50 days. WCM Limited also arranges with their suppliers to delay payment for raw materials a further 10 days. The following effects are noted:*

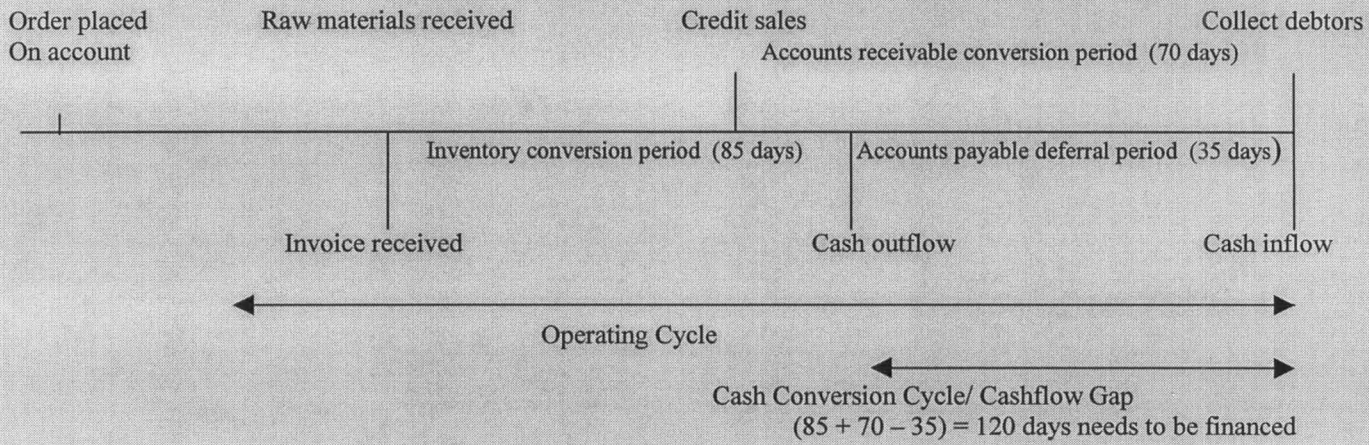
<i>Initial CCC</i>	$85 + 70 - 35 =$		120 days
<i>Reduction due to:</i>			
Increase in inventory turnover	85 days to 70 days	15 days	
Changing credit terms	70 days to 50 days	20 days	
Delaying payment to creditors	35 days to 45 days	10 days	
Less total reduction in the CCC			45 days
New cash conversion cycle			75 days

Integral to managing the CCC is the management of the current assets and current liabilities and the relationships that exist between them. In terms of the CCC approach the potential to improving working capital management becomes transparent as a result of the calculation and analysis of the CCC. If the length of the CCC can be optimized, efficiency and productivity benefits accrue to the business, as revealed in the illustration. (Gitman, 1997, Miller 1991)

The operating cycle fails to consider the liquidity requirements imposed on a business by the time dimensions of its current liability commitments or cash outflow requirements, effectively ignoring the financing of working capital. The CCC overcomes the operating

cycle's deficiency as a cash flow measure by integrating the investment in and financing of working capital (Richards and Laughlin, 1980).

Figure 2 THE CASH CONVERSION CYCLE



(Adapted from Ross, Westerfield, Jaffe, 1990, p700, Brigham, Gapenski, 1994, p700, Maness, 1994, p10, Gitman, 1997)

Changing and managing the lengths of any or all of the components of the CCC (Brigham, et al. 1999, Gitman, 1997, Brigham and Gapenski, 1994, White, et al. 1994, Soenen, 1993, Moss and Stine, 1993, Asch and Kaye, 1989, Cheatham, 1989, Richards and Laughlin, 1980) can change the length of the CCC. Any decision to change the CCC should be based on the costs and benefits likely to arise. Management needs to carefully assess the costs and benefits in relation to the business's goals and objectives, strategies and preferred tactics (Gitman, 1997, Schilling, 1996, Brigham and Gapenski, 1994, White, et al. 1994, Moss and Stine, 1993, Cheatham, 1989).

There is evidence of a growing number of companies pursuing to operate without working capital because this approach brings about efficiencies and savings that improves company performance. By aiming to achieve zero or negative working capital results in and necessitates speeding up production. In this case companies tends to tie production to orders. In turn these companies are then in a better position to produce and deliver faster than the competition. In this way they can gain new business and charge premium prices for filling rush orders (quality service delivery) and invest in new

equipment (Tully, 1994). If a firm speeds up orders, reduces lead time and moves inventory through the manufacturing process, this results in a shorter time cash is invested in materials and more accurate forecasting (Tully, 1994, Madura and Veit, 1988). It also results in decreasing the uncertainties and risk to the company that is more likely the more long-term the forecasting occurs. Furthermore as inventories decrease, there is less need for warehouse space (decreases storage and other costs), forklift drivers to move inventory around the factory or schedulers to plan production months in advance (decreases overtime costs or related expenses) (Tully, 1994). Empirical studies have shown that cash flow and CCC are inversely related because greater cash flows adds to the ability of a business to cover any unforeseen needs or take advantage of any unforeseen opportunities as they arise (Moss and Stine, 1993). By reducing the time that funds are tied up in working capital (idle assets), or decreasing the working capital requirements to sales or the shortening the cash cycle will increase financial efficiency, effectiveness and flexibility for the business (Schilling, 1996, Chang, et al. 1995, Tully, 1994, Maness, 1994, Moss and Stine, 1993, Shulman and Cox, 1985). Thus shortening the CCC yields a number of benefits (White, et al. 1994, Brigham and Gapenski, 1994, Soenen, 1993, Moss and Stine, 1993, Asch and Kaye, 1989, Cheatham, 1989, Richards and Laughlin, 1980). Consequently it is hardly surprising that a reduction of the CCC is presented as the main objective of this approach to the management of working capital. The shorter the CCC, the more efficient the internal operations of the business (Maness, 1994), the more liquid its operations (Moss and Stine, 1993, Gentry, et al. 1990) and the lower the investment in working capital (Schilling, 1996). As a result the returns to shareholders improve (Schilling, 1996, Maness, 1994, Soenen, 1993, Moss and Stine, 1993, Madura and Veit, 1988).

If the CCC lengthens, the investment in working capital increases and the business's liquid resources need to be increased (Moss and Stine, 1993). A long CCC has been shown to be an important explanatory variable of corporate bankruptcy, especially where profitability margins are low (Soenen, 1993).



There are benefits to using the CCC. Use of the CCC approach provides a framework within which management can analyze the impact of changes in the management of the components of working capital on working capital as a whole, and on the performance of the business (Schilling, 1996, Gallinger and Healey, 1987). Sensitivity analysis of key variables and the impact on performance criteria such as liquidity, efficiency, productivity, and profitability can be undertaken systematically (Gallinger 1997, Gitman, 1997, Schilling, 1996, Brigham and Gapenski, 1994, Maness, 1994, Moss and Stine, 1993, Soenen, 1993, Chang, et al. 1991, Cheatham, 1989, Shulman and Cox, 1985).

Measuring working capital in terms of the CCC provides an indication of the volume and speed with which cash is generated in the cycle of buying goods and services, creating inventories, selling for credit, collecting cash from customers (Maness, 1994, Cheatham, 1989), and paying trade creditors. Managing working capital by means of the CCC approach contributes toward maximization of share value (Back, 1988), decreases the need for external financing, preserves proportionate shareholder value, preserves unused debt capacity (Soenen, 1993) and enhances profitability (Chang, et al. 1995, Kamath, 1989, Madura and Veit, 1988 Gallinger and Healey, 1987).

Unfortunately the CCC focuses only on the length of time funds are tied up in the cycle. It does not take into consideration the amount of funds committed to a product as it moves through the operating cycle (Maness, 1994, Cooley and Roden, 1991, Gentry, et al. 1990). CCC utilizes days sales outstanding to determine the length of time funds are tied up in accounts receivable. The shortcoming in using days sales outstanding as a performance measure of receivable management is that it is dependent on sales pattern effect, a collection experience effect and a joint effect that causes accounts receivable to change (Gentry, et al. 1990). The CCC is based on standard accrual accounting information and procedures which is indirectly related to a business's valuation (Gentry, et al. 1990, Cheatham, 1989). This information needs to be transformed into economic information. Richards and Laughlin (1980) do not decompose inventories into its three component parts, raw materials, work in progress, and finished goods (Gentry, et al.

1990). The operating cycle as described by Richards and Laughlin (1980) assumes all the costs related to raw materials, production, distribution and collection start on the first day of the cycle and have the same amount as the final value of the product (Gentry, et al. 1990). In other words, the dollar costs are not uniform per day of CCC.

Given the fact that the length and reliability of the CCC depends on the industry or environment in which the business operates; the concept of float; the number of days a company get credit from suppliers; the length of the production process; and the number of days finished products remain in inventory before they are sold out (Maness 1994, Soenen, 1993, Cooley and Ryan, 1991, Madura and Veit, 1988) the possibility of increasing the CCC as an objective of working capital management rather than only shortening the CCC is ignored.

Various researchers (Maness, 1994, Gentry, et al. 1990, Cheatham, 1989) have addressed some of the limitations of the CCC. Cheatham (1989) takes the framework of Richards and Laughlin (1980) one step further by converting the number of days of the CCC to a dollar value to measure the performance of the business's operations (Cheatham, 1989). Maness (1994) takes the basic Richards and Laughlin's approach (1980) and inserts average values into the equation. The weighted cash conversion cycle approach of Gentry, Vaidyanathan and Lee (1990) enables some of the above limitations of the basic CCC approach to be addressed, and is presented and discussed in the next section.

### **3.7.2 The Weighted Cash Conversion Cycle (WCCC)**

Gentry, Vaidyanathan and Lee (1990) take the traditional cash flow line of Richards and Laughlin (1980) and expand on the basic CCC definition. In short, the weighted CCC measures the weighted number of days funds are tied up in receivables, inventories, and payables, less the weighted number of days cash payments are deferred to suppliers. The weight used is determined by dividing the amount of cash tied up in each component by

the final value of the product so that the performance of management at all levels of working capital can be evaluated, rather than at the aggregate level only.

Gentry, Vaidyanathan and Lee (1990) developed the WCCC as a two-stage process. The first phase determines the number of days funds are tied up in raw materials, work in progress, final goods, accounts receivable and gives the weighted operating costs. The weighted operating cost brings costs into the analyses and they are added at each phase of the operating cycle. These costs are adjusted for their respective weights namely their relative dollar contributions. The weighted operating cycle provides an aggregate current asset summary measure for short-run financial management.

The second phase subtracts from the weighted operating cost the weighted number of days the payment to suppliers is deferred, which is the weighted cash conversion cycle because payables are a deferral of payment to suppliers, they reduce the weighted operating cost.

The WCCC is defined by Gentry, Vaidyanathan and Lee (1990) as:

**(i) First Phase**

$$RMC_t = CGS_t - (l+m)(TLC_t) - ORC_t - ORE_t + (WIP_t - WIP_{t-1}) + (FG_t - FG_{t-1}), \text{ where}$$

$RMC_t$	=	Raw material consumed
$TLC_t$	=	Total labour cost
"l"	=	the percentage of total labour cost allocated to work in progress
"m"	=	the percentage of total labour cost (direct or indirect) allocated to finished goods
$CGS_t$	=	Cost of goods sold
$ORC_t$	=	Other related costs of production e.g. power, fuel and other consumable costs
$ORE_t$	=	Other related expenses in finished goods process
$WIP_t$	=	Work in progress
$FG_t$	=	Finished goods

$$RMCPD_t = RMC_t/t, \text{ where}$$

$RMCPD_t$  = Raw material consumed per day during the time interval t  
 "t" = Length of time determined by the information used in the analysis e.g. One year would be 360 days or one quarter would be 90 days

$DRM_t = RM_t / RMCPD_t$ , where

$DRM_t$  = Number of days funds are tied up in raw materials

$COP_t = WIP_{t-1} + [RMC_t + l(TLC_t) + ORC_t] - WIP_t$ , where

$COP_t$  = Cost of production

$COPPD_t = COP_t / t$ , where

$COPPD_t$  = Cost of production per day

$DWIP_t = WIP_t / COPPD_t$ , where

$DWIP_t$  = Days funds are committed to WIP

$CGS_t = FG_{t-1} + [COP_t + m(TLC_t) + ORE_t] - FG_t$

$CGSPD_t = CGS_t / t$ , where

$CGSPD_t$  = Cost of goods sold per day

$DFG_t = FG_t / CGSPD_t$ , where

$DFG_t$  = Number of days funds are committed to finished goods

$CSF_t = AR_{t-1} + [CGS_t + n(CGSPD_t)] - AR_t$ , where

$CSF_t$  = Credit sales financed

$CSFPD_t = CSF_t / t$ , where

$CSFPD_t$  = Credit sales financed per day

$DAR_t = AR_t / CSFPD_t$ , where

$DAR_t$  = Days sales in Accounts Receivable

$AR_t$  = Accounts Receivable

$S_t = CGS_t + n(CGSPD_t)$ , where

"*n*" = the percentage of total labour cost allocated to raw materials

$w_t = RMC_t/S_t$ , where

$w_t$  = weight for raw materials

$x_t = (COP_t - RMC_t)/S_t$ , where

$x_t$  = weight for work in progress

$y_t = (CGS_t - COP_t)/S_t$ , where

$y_t$  = weight for finished goods

$z_t = (S_t - CGS_t)/S_t$ , where

$z_t$  = weight for Accounts Receivable

$WOC_t = w_t(DRM_t + DWIP_t + DFG_t + DAR_t) + x_t(DWIP_t + DFG_t + DAR_t) + y_t(DFG_t + DAR_t) + z_t(DAR_t)$ , where

$WOC_t$  = Weighted Operating Cycle

**(ii) Second Phase**

$APC_t = [RM_t + RMC_t - RM_{t-1}(1-l-m)(TLC_t)] + AP_t - AP_{t-1}$ , where

$APC_t$  = Accounts payable committed

$APCPD_t = APC_t/t$ , where

$APCPD_t$  = Accounts payable committed per day

$DAP_t = AP_t/APCPD_t$ , where

$DAP_t$  = Days payment deferred to suppliers

$AP_t$  = Accounts Payable

$p_t = APC_t/S_t$ , where

$p_t$  = weight for accounts payable

$WCCC_t = WOC_t - p_t(DAP_t)$  or  $WCCC_t = WOC_t - WDAP_t$ , where

$WCCC_t$  = Weighted Cash Conversion Cycle  
 $WDAP_t$  = Weighted Accounts Payable

From this definition it is evident that Gentry, Vaidyanathan and Lee (1990) introduce their concept of the weighted cash conversion cycle by taking into account both the timing of the cash flows and the amount of funds used in each segment of the cash conversion cycle.

When managing working capital factors such as fluctuations in the level of economic activity (Brigham and Gapenski, 1994, Madura and Veit, 1988), the term structure of interest rates (Gitman, 1997, Brigham and Gapenski, 1994, Weston and Brigham, 1992, Asch and Kaye, 1989, Back, 1988), the monetary policy of the Reserve Bank (Gitman, 1997, Brigham and Gapenski, 1994, Back, 1988), the business cycle (Nawrocki, 1997, Begg, et al. 1994, Beardshaw and Ross, 1993), monetary and fiscal conditions, and exchange rates need to be included in the analysis upon which their decisions are based. Then they can proceed to manage working capital, so that when market conditions change, company investment and financing approaches and decisions can be adapted to the new conditions (Helfert, 1991) by using three main approaches are introduced in the next section.

### **3.8 CONSERVATIVE, AGGRESSIVE AND MODERATE APPROACHES**

Given that a business has to continually adapt to the changing external environment, and determine the appropriate level and mix of the investment in current assets and the financing of the current assets, the conservative, aggressive and moderate approaches are useful in the management of working capital.

The conservative approach to managing working capital is characterized by the management of large amounts of cash, marketable securities, accounts receivable, inventories, and uses permanent capital to finance all permanent asset requirements to meet some or all of the seasonal demands. Conversely, the aggressive approach to

managing working capital emphasizes the management of smaller holdings of cash, marketable securities, accounts receivable, inventories and financing all seasonal needs and part of permanent current assets with short-term credit. The balance, including fixed assets, is financed with long term funds. The moderate approach lies between the aggressive and conservative approaches where temporary short-term assets are financed with short-term loans, while fixed assets and the permanent level of current assets are financed with long-term loans (Brigham, et al. 1999, Gitman, 1997, Brigham and Gapenski, 1994, Weston and Brigham, 1992, Martin, et al. 1991, Asch and Kaye, 1989).

In terms of the CCC an aggressive approach may mean that accounts payable would be increased as a source of finance while investments in inventory and accounts receivable are decreased. With a conservative approach the CCC may be left to increase by means of increasing the investment in accounts receivable, inventory and decreasing the accounts payable (Weston and Brigham, 1992). The challenge is to invest enough resources in working capital necessary to provide the financial flexibility to adjust to changes in the level of business activity (Gitman, 1997, Schilling 1996, Weston and Brigham, 1992).

### **3.9 SUMMARY**

In this chapter attention was focussed on the management of working capital. The chapter began by outlining the importance of managing working capital, and then proceeded to a presentation and discussion of the management of the individual components, which comprise cash, accounts receivable, inventory and accounts payable. Apart from being managed at the components level, working capital can be managed as an integrated aggregate. Consequently, the cash conversion cycle and weighted cash conversion cycle related to the aggressive, moderate and conservative approaches were presented, illustrated, and discussed.

## **CHAPTER 4 THE EMPIRICAL SURVEY**

### **4.1 INTRODUCTION**

In the literature review the concept and management of working capital was presented and discussed. In order to try and establish how working capital is managed in New Zealand, an empirical survey needed to be undertaken. The purpose of this chapter is to present and describe the empirical survey. This chapter commences with the research methodology that was used, and then proceeds to the research design, sample, data collection, variables, as well as data analysis methods that were used.

### **4.2 RESEARCH METHODOLOGY**

#### **4.2.1 The Research Design and Sample**

To obtain a comprehensive quantitative picture regarding working capital management practices, a sample of 125 limited liability companies listed on the New Zealand Stock Exchange with registered addresses in New Zealand, was obtained from the New Zealand Investment Yearbook (1999). Companies listed on the New Zealand Stock Exchange with addresses overseas, in particular Australia and, non-limited liability companies were excluded from the sample, because the core problem is the management of working capital by New Zealand listed limited liability. Whereas the non-limited liability companies were excluded from the survey because they generally have low levels of working capital, such as some of the mining exploration companies.

#### **4.2.2 The Questionnaire**

The survey was undertaken by means of a structured questionnaire that was mailed to the potential respondents. This approach was considered the most efficient means of collecting data for this exploratory study. This approach is an efficient data collection



mechanism, because it is fairly simple to administer, cost effective and less time-consuming to reach the target group located in different geographical locations throughout New Zealand, deliberately ensures that data on working capital management is collected systematically, the measurement of the working capital variables in the study are known, and the respondents can complete the survey at their own convenience. However, there are limitations to postal questionnaires. Typically, return rates of questionnaires are low, and that may mean that it is difficult to determine the representativeness of the sample, because those responding to the survey may be different from the population they are suppose to represent. A response rate of 30% is regarded as acceptable for mail surveys (Sekaran, 2000). Other disadvantages of mail surveys are that doubts cannot be clarified, organizations may have a policy not to complete surveys as it is too time-consuming or the volumes of surveys are too large, the timing of the survey may be inappropriate, mail addresses may be incorrect or the companies have moved to other premises, and respondents may not be willing or interested in completing the survey. The consequence of these limitations is that follow-up procedures for non-responses are invariably necessary (Sekaran, 2000).

A pre-test and a pilot study were undertaken to test the appropriateness of the questions and to ensure that the respondents understood the questions and what was required of them. Moreover, the pre-test and pilot study served to test for language, wording, content and purpose, so that biases in questions did not occur, and also to ensure that the principles of wording were observed (Sekaran, 2000). This testing was of particular importance because the questionnaire design and content was based on the theory of working capital management found mainly in American literature. It was not known whether American language and wording would be compatible with the language and wording in New Zealand.

In the week of the 16<sup>th</sup> November 1998, the Financial Managers of five listed limited liability companies, LWR Industries Limited, Milburn New Zealand Limited, EBOS Group Limited, PDL Holdings Limited, and Dairy Brands New Zealand Limited, all of

which are domiciled in Christchurch, agreed telephonically to take part in the pre-test and pilot study. The pre-test and pilot study survey questionnaire and covering letter was mailed to these managers prior to the second telephone conversation during which arrangements were made to conduct a half hour face-to-face personal interview to establish rapport and motivate the respondents to discuss the documents sent to them. One of the pre-test/pilot study respondents, despite having initially agreed to participate, declined from participating after receiving the questionnaire for consideration.

As a result of undertaking the pre-test and pilot studies weaknesses in the survey questionnaire were identified. All the respondents indicated that they would happily complete the closed questions with the open-ended comments, but stated that they were put off by open-ended questions because they are too time consuming to complete. After discussion and careful consideration it was decided to retain open ended questions because the researcher wanted to invite comment rather than prompt the respondents to answer what they think is the theoretically acceptable answer. It is well known that closed ended questions are conducive to bias, and may be confining (Sekaran, 2000). Some of the other amendments suggested by the four respondents were adopted. These included changing the layout and presentation of the open-ended questions to decrease the length of the questionnaire. The terminology, language, and sequences of the questions in the questionnaire were familiar to all the respondents in the pilot study group and remained unaltered. No changes were made to the content and purpose of each question. Thus it would seem apparent that the use of American literature and language would make little difference to the understanding of the content and purpose to New Zealand respondents.

The amended questionnaire and introductory covering documentation were submitted to the Lincoln University Human Subjects Ethics Committee (henceforth, HSEC) for ethical approval for research involving human subjects. Suggestions made by the HSEC included shortening the questionnaire to increase the response rate, and deleting one of the biographical questions. The suggestions of the HSEC were implemented.

In March 1999 the revised questionnaire with introductory covering documents to notify respondents in advance about the survey (copies found in appendix A and B, respectively) was mailed to specific financial managers of the 125 listed limited liability companies. The financial managers were asked to complete and return the questionnaire by the 12<sup>th</sup> April 1999 in the stamped self-addressed envelopes, which had been provided to improve the response rate. Despite the deadline, a self-addressed stamped envelope and the undertaking to provide a summary of the main findings, the initial response rate at 13.6% (17/125) was disappointing. To increase this response rate, a follow-up covering letter (appendix C) and questionnaire was mailed in May 1999 to those who had not responded within the deadline period. In this follow-up, respondents were asked to furnish a reason if they were not going to respond. The follow-up resulted in additional 40 out of 125 (32%) companies responding by July 1999, which increased the total response rate to 45.6%.

#### **4.2.3 Variables and Measures**

A model, shown in Figure 3 was constructed, to illustrate how working capital should be managed in accordance with the theory. This model served as the framework for the analysis of the data collected by means of the survey.

The variables for analysis were based on the theoretical construct of working capital management as discussed in the literature review in chapters 2 and 3. The facets of the model are the investment in working capital, financing of working capital, cash management, accounts receivable management, inventory management, accounts payable management, cash conversion cycle (aggregative approach), factors that influence working capital, and performance measurement and analysis. Once the data for each of the above-mentioned facets had been collected, binomial variables to determine whether the respondents managed working capital according to prescriptive theory were created for these variables from the data. As there are no acceptable scales for measuring these

variables in the literature, scales were designed specifically for this study. This was achieved by denoting either “yes” or “no” indicators for each respondent to each of the above-mentioned facets based on the responses to the questions asked in the questionnaire. All the “yes” indicators were added up to form an overall score for each respondent. In this way it was possible to provide a scale for the underlying concept. The location of the respondents on the scale was determined by setting a benchmark score. All missing responses were ignored for the purposes of analysis.

The variable *investment in working capital* was measured on a 6-point Likert-style scale (always, often, sometimes, seldom, never, not applicable) and scored “yes” if their business “always” sets target levels for cash, accounts receivable, and inventory. Information as to who sets the target levels for cash accounts receivable and inventory adds further content to this variable.

The variable *financing of working capital* was measured on a 6-point Likert-style scale (always, often, sometimes, seldom, never, not applicable) and scored “yes” if their business “always” sets target levels for accounts payable, equity, long term debt, and secured short term debt. Data collected as to who sets the target levels for accounts payable, equity, long term debt, and secured short-term debt provides additional information concerning the role of the financial manager in the financing decision.

Figure 3 WORKING CAPITAL MANAGEMENT

**If**  
working capital is being managed according to prescriptive theory  
**then**  
it would be expected that respondents would

- manage the investment in working capital
- manage the financing of working capital
- monitor factors which influence working capital
- manage cash
- manage accounts receivable
- manage inventory
- manage accounts payable
- manage the cash conversion cycle (aggregative approach)
- measure and analyze performance

**because**  
they are clear as to the purpose and function of working capital

The opened ended question, “What are the main reasons for reviewing the target levels of the components of working capital?” in the questionnaire sought to obtain data to score whether the respondents *monitor factors that influence working capital*. If the respondents provided reasons for reviewing working capital, then this variable scored “yes”. The extent to which factors are monitored required input from the respondents, which they did by providing actual examples. The role of the financial manager was elaborated upon by responses concerning “who” revises the target levels.

The variable *cash management* was measured through two items on an 8-point Likert-style scale (daily, weekly, fortnightly, monthly, quarterly, half yearly, annually, never). The respondents scored “no” if they never prepared cash forecasts and cash budgets. The frequency with which the forecasts and budgets are set and the designation of the person responsible for managing the business’s cash augmented the extent to which cash is managed.

The variable *accounts receivable management* was measured through two items on an 8-point Likert-style scale (daily, weekly, fortnightly, monthly, quarterly, half yearly, annually, never). The respondents scored “no” if they never prepared accounts receivable forecasts and budgets. The extent that accounts receivable is managed was augmented with information by the frequency with which forecasts and budgets are set, and the designation of the person responsible for managing accounts receivable.

The variable *inventory management* was measured through two items on an 8-point Likert-style scale (daily, weekly, fortnightly, monthly, quarterly, half yearly, annually, never). The respondents scored “no” if they never prepared inventory forecasts and budgets. The extent to which inventory is managed was augmented by the frequency with which forecasts and budgets are set, and the designation of the person responsible for managing inventory.

The variable *accounts payable management* was measured through two items, namely the preparation of forecasts and budgets, on an 8-point Likert-style scale (daily, weekly, fortnightly, monthly, quarterly, half yearly, annually, never). The respondents scored “no” if they never prepared accounts payable forecasts and budgets. The extent to which accounts payable is managed was augmented by information relating to the frequency with which forecasts and budgets are set, and the position of the person responsible for managing accounts payable.

The variable *cash conversion cycle (aggregative approach)* was measured through three items on a 6-point Likert-style scale (strongly agree, agree, indifferent, disagree, strongly disagree, not applicable). The first item was: “In your firm the interrelationship between cash, inventory, accounts receivable, and accounts payable is strong”. The second item was: “In your firm inventory is best managed independently of accounts receivable”. The third item was: “In your firm inventory is best managed independently of accounts payable”. If the responses were “strongly agree” or “agree” for the first item, and “strongly disagree” or “disagree” for the second and third items then this variable value was coded “yes” they manage working capital in aggregate.

*Performance measurement and analysis* was measured through one question on an 8-point Likert-style scale (daily, weekly, fortnightly, monthly, quarterly, half yearly, annually, never) in order to determine whether reports were prepared. Open-ended questions were used specifically to obtain information concerning how they assessed liquidity, efficiency, solvency, profitability, and shareholder wealth. In addition tests were performed to determine:

- whether their business had adequate working capital,
- was able to meet current commitments,
- was overtrading,
- had an appropriate investment in inventory and accounts receivable, and
- was over reliant on accounts payable, short-term debt finance, long term debt finance and equity.

If the respondents maintained that their businesses never prepared reports, did not give details as to how they measured or assess performance in terms of liquidity, efficiency, solvency, profitability and shareholder wealth, and did not perform the above-mentioned tests, then they scored “no” they do not assess or measure performance.

The *working capital management* variable was calculated by adding all the “yes” scores for the above variables, namely: investment in working capital, financing of working capital, cash management, accounts receivable management, inventory management, accounts payable management, cash conversion cycle (aggregative approach), factors that influence working capital, performance measurement and analysis. From these values if the respondents scored 6 out of 9 or more, then they scored “yes” they manage working capital according to prescriptive theory. The value 6 was chosen as the benchmark value because the companies in the sample came from a diverse background in terms of size, market sector and location, and thus have different working capital structures and rank each component of working capital in terms of liquidity and importance differently. Therefore it would have been unreasonable to expect them all to be in the same position to score a perfect nine. Although imperfect, this form of scoring to create scales is an approach that provides a measure of whether limited liability companies listed on the New Zealand Stock Exchange manage working capital, and this measure is based on the theoretical construct outlined in the literature review.

Binomial values were also developed for the variable, *purpose and function of working capital*, by scoring the responses as “clear” or “unclear” to the opened-ended question: “What is the main purpose of working capital in your business?” The purpose and function of working capital was specifically addressed in chapter 2 because of its importance. If the purpose and function of working capital are not clearly and sufficiently appreciated, it is quite likely that deficiencies and insufficiencies in the management of working capital will manifest.

#### **4.2.4 Data Analysis**

The survey questionnaire provided data for analysis from both open-ended and closed-ended questions. The data was edited, and this included the case of the open-ended questions. A number of blank responses or missing data were evident, specifically with regard to the open-ended questions. These blank responses were ignored for purposes of analysis. The statistical analysis was done using the computer package SPSS (Statistical



Package for the Social Sciences) version 8. As the sample size was relatively small all the coded questionnaires were checked for accuracy and all mistakes were rectified. Backup copies were made of the data onto disks and stored off site.

A preliminary exploration of data involved producing frequency distribution with visual displays through bar charts of the nominal values of the data, and descriptive statistics of the interval scale values with histograms as visual displays were obtained. In cases where little is known about a phenomena, such as working capital management practices in New Zealand, the research methodology literature contends that hypothesis do not have to emerge in a study (Cooper and Emory, 1995). In accordance with this contention, this study does not test any hypothesis. It is evident that it was not possible to answer the problem, “how is working capital managed in New Zealand?” by means of hypotheses which could be subjected to rigorous statistical analysis. Therefore, frequency distributions, cross tabulation and descriptive statistics described the characteristics of the sample respondents, the purpose and function of working capital, the investment in working capital, financing of working capital, cash management, accounts receivable management, inventory management, accounts payable management, cash conversion cycle (aggregative approach), factors that influence working capital, performance measurement and analysis variables, and the management of working capital.

## **4.2 CONCLUDING REMARKS**

The purpose of this chapter was to present and describe the empirical survey commencing with the research methodology that was used, and then proceeding to the research design, sample, data collection, variables, as well as data analysis methods. The scope, difficulties encountered, and results are discussed in chapter 5.

## **CHAPTER 5      SCOPE AND DIFFICULTIES, AND EMPIRICAL SURVEY RESULTS OF THE STUDY**

### **5.1      INTRODUCTION**

In the previous chapter, an empirical model was developed following the theoretical construct of the theory of working capital discussed in chapters 2 and 3. This model is used as the framework to discuss the results of this study on how working capital is managed in New Zealand. The purpose of this chapter is to set out the scope of the study, present some of the difficulties encountered when collecting the data and reporting the results from the survey.

### **5.2      SCOPE AND DIFFICULTIES ENCOUNTERED**

The study was designed carefully at each stage to provide valid results in order to report and describe how working capital is managed in New Zealand. However, a number of difficulties arose that had some impact on the results.

The sample size of 125 limits the generalizations the researcher can make about the findings. Furthermore the response rate of useable data was disappointingly low (20%), and although it covered a wide range of companies from all sectors of the market the representativeness of the sample was difficult to establish.

Although some respondents provided valid reasons for not completing the survey, it was evident that the respondents were not always forthcoming in sharing information, as evidenced by those who did not fully complete the survey and those respondents who did not respond at all. This is despite the fact that the respondents in the pre-test and pilot study were prepared and keen to attend a personal face-to-face interview as they felt this is an important, relevant topic that would provide useful information as to what other

companies are doing as regards their working capital management and perhaps provide ways they themselves could improve the management of their working capital.

The biographic information of the respondents indicated that the target people who were supposed to complete the survey, namely financial managers were not always responsible for completing the survey form. The questionnaire was often completed by respondents involved in accounting, general management and treasury functions as is evident in the biographical section of the survey, and this also impacts upon the results.

The survey questionnaire as an instrument may not have been adequate to distinguish the different companies operations within the different market sectors, which may explain the high non-response bias. Some companies may not necessarily have cash, or accounts receivable or inventory or accounts payable and these companies may have considered the study irrelevant.

The survey was sent out in March/April 1999, which is a busy time for many respondents as they finalize their year-end balance date results so that their annual reports can be released. The survey questionnaire was also fairly long, with a total of thirteen pages. The open-ended questions although specifically included to gain comment, not confine the respondents, and prevent bias, may have hindered respondents from completing the questions as it involved time they may not have been prepared to spend on the survey. Thus timing may have had a considerable impact on the response rate.

Despite having completed a pre-test and pilot study, some of the respondents may not have understood the questions or there was a lack of understanding of the terminology employed and thus were not motivated to respond. Furthermore the coding and editing of the open-ended questions, which is a difficult matter, may also have had some impact on the results, especially in light of the response rate.

The variables in the model as described in chapter 4 evolved from the theory of working capital management and no validated scales could be found in the literature to measure the variables. Thus scales were designed for the purposes of this study. However the scales were simple binomial values, and applied equally over all the respondents, and did not take into consideration that each variable may be different in importance and relevance, and thus may carry different weightings for each of the respondents and/or market sectors. Therefore more elaborate scales for the model may have produced different and perhaps more valid and reliable results. Furthermore, the model focused on nine variables and although this is based on the theory of working capital management, other variables that should have been included may have been overlooked.

Causality, relationships and strengths of the relationships between variables, and any financial data were not included within the scope of the study, because the survey questionnaire did not deal with these issues. However this is only an exploratory study, with the main objective to encourage and focus on further research.

### **5.3 THE RESPONSE TO THE QUESTIONNAIRE**

#### **5.3.1 Reasons for not Completing the Questionnaires**

Of the companies which satisfied the requirements of being listed on the New Zealand Stock Exchange, being registered in New Zealand, and being limited liability companies (which were the criteria used to select the sample) a total of 57 companies had responded by July 1999, giving a response rate of 45.6%. Unfortunately only 20% (25/125 respondents) of the responses on the management of working capital contained useful data for analysis. This information is presented in Table 5.1. Although 25.6% (32) (incomplete responses) could not be included in the analysed data, because the questionnaire was not completed by any of these respondents, reasons were obtained as to why these respondents were not in a position to complete the questionnaire.

Table 5.1 Distribution of Responses

Types of Responses	Frequency	Percent
Non-responses	63	50.4
Incomplete Responses	32	25.6
Complete Responses	25	20
Return to sender	5	4
TOTAL SAMPLE	125	100%

Table 5.2 Reasons for not Completing Questionnaires

Reasons for not completing questionnaires	Frequency	Percent N=32*	Percent N=125**
Company not trading	1	3.1	0.8
Company policy	5	15.6	4
No staff appropriate	2	6.3	1.6
No time	11	34.5	8.8
Not interested	4	12.5	3.2
Irrelevant	1	3.1	0.8
Restructuring	1	3.1	0.8
No reason	5	15.6	4
Survey too long	1	3.1	0.8
Too many surveys	1	3.1	0.8
TOTAL	32	100%	25.6%

\* as a percentage of all companies that did not complete the questionnaire and provided a reason for non-completion

\*\* as a percentage of the survey sample

It is worthy of note that of the 32 companies that did not complete yet returned the questionnaire documents: only one stated that working capital management was *not relevant to their business*; two companies stated that they had *no appropriate staff* to complete the questionnaire; and four companies stated that they had *no interest in completing a questionnaire on working capital management*. In other words, 7 (almost 22%) of the companies that did not complete, but returned the questionnaire documents,

can be constructively interpreted to regard working capital management *as being of insufficient importance.*

Some of the respondents who indicated that it was company policy not to complete surveys also explained that the reason for this was that they had to do something to deal with the ongoing and large volume of surveys that are addressed to them regularly. Table 5.2 also indicates that of the 32 companies that returned their incomplete questionnaires 5 did so without providing a reason.

**Table 5.3 Non-Response, Return To Sender Responses, Incomplete Responses, and Complete Responses for the Market Sectors of the New Zealand Stock Exchange**

Market Sector (Frequency N=125)	Non-responses		Return to sender responses		Incomplete responses		Total Non-complete responses		Complete responses	
	No.	%	No.	%	No.	%	No.	%	No.	%
Primary: Agriculture, Fishing (n=16)	8	50	0	0	2	12.5	10	62.5	6	37.5
Services: Transport (n=6)	2	33.3	0	0	1	16.7	3	50	3	50
Energy, Processing, Distribution, Utilities (n=10)	4	40	1	10	3	30	8	80	2	20
Goods: Intermediate, Durable (n=7)	4	42.8	0	0	1	14.3	5	57.1	2	28.6
Primary: Building Materials, Construction (n=5)	1	20	0	0	2	40	3	60	2	40
Property (n=8)	4	50	1	12.5	1	12.5	6	75	2	25
Services: Consumer (n=11)	6	54.5	0	0	3	27.3	9	81.8	2	18.2
Goods: Food, Beverages (n=7)	2	28.6	1	14.3	3	42.8	6	85.7	1	14.3
Goods: Textiles, Apparel (n=6)	4	66.7	0	0	1	16.6	5	83.3	1	16.7
Investment (n=8)	5	62.5	0	0	2	25	7	87.5	1	12.5
Services: Finance, Other Services (n=8)	7	87.5	0	0	0	0	7	87.5	1	12.5
Services: Media, Telecommunications (n=5)	2	40	0	0	2	40	4	80	1	20
Services: Ports (n=6)	4	66.7	0	0	1	16.6	5	83.3	1	16.7
Services: Leisure, Tourism (n=9)	4	44.4	0	0	5	55.6	9	100	0	0
Primary: Forestry, Forestry Products (n=6)	4	66.7	0	0	2	33.3	6	100	0	0
Primary: Mining (n=7)	2	28.6	2	28.6	3	42.8	7	100	0	0
<b>TOTAL</b>	<b>63</b>		<b>5</b>		<b>32</b>		<b>100</b>		<b>25</b>	

Table 5.3 reports a cross-tabulation of the non-responses, return to sender responses, incomplete responses, total non-complete responses and complete responses, by frequency and percentage for the sixteen market sectors of the New Zealand Stock Exchange. The poorest level of participation, with no complete responses returned, came from the Primary: Forestry and Forestry Products, Services: Leisure and Tourism, and Primary: Mining sectors. The highest response rate came from the Services: Transport sectors (50%), followed by Primary: Building and Construction sector (40%). The lowest response rate came from the Investment sector and Services: Finance and Other Services sector, both at 12.5% of the sector. The 63 companies that ignored the survey were concentrated in the Goods: Textiles and Apparel (66.7%), Investment (62.5%), Services: Finance and Other Services (87.5%), Services: Ports (66.7%), and Primary: Forestry and Forestry Products (66.7%) sectors.

When the responses of the questionnaires were cross tabulated against the 16 market sectors of the New Zealand Stock Exchange, reported in Table 5.3, it is evident that the sample of companies that *did not provide a reason* for not completing the questionnaire were prominent in the Energy, Processing, Distribution and Utilities sector, Primary: Building and Construction sector, Primary: Mining sector, and the Services: Media and Telecommunications sector. There were *no responses* to the questionnaire from the Goods: Textiles and Apparel, Services: Leisure and Tourism, Services: Consumer, and Primary: Mining sectors.

By grouping the market sector results into Primary, Services, and Goods sector classes, it is interesting to note the overall reasons each of these sector classes provided for not completing the survey. The main reasons that were cited by the Primary sector class included *not interested, company not trading, company policy* and *survey too long*. The respondents in the Services sector class cited *no interest, company policy, restructuring, no time, and no staff appropriate* as reasons for not completing the survey. Reasons for not completing the survey that was provided by respondents came from the Goods sector class included *not interested, company policy, no time, irrelevant, and no staff*

*appropriate*. The respondents from the Property sector responded that *they had no time and it is company policy* not to complete surveys, whereas the companies in the Investment sector maintained that they had *no interest and no time*. Given the foregoing results and grouping these results with the responses that totally ignored the survey it is clear that 95 out of 125 (76%) companies from all the sector classes could be described as being apathetic in completing a questionnaire which deals with such an important issue, namely the management of working capital.

### **5.3.2 Nomenclature and Biographical Details of Respondents**

Table 5.4 shows the position of the respondents who completed the questionnaire. Among the respondents, 32% (8) were Financial Controllers, 8% (2) were Financial Accountants, 8% were Chief Financial Officers and 8% (2) were Company Secretaries. Only 4% (1) was a Finance Manager, 4% (1) Finance Director, 4% (1) Head of Corporate Finance, 4% (1) Corporate Reporting Manager, 4% (1) Corporate Services Manager, 4% (1) Group Accountant, 4%(1) Group Treasurer, and 4% (1) Treasury and Investor Relations. All the respondents represent senior management levels of their respective companies.

The number of years working capital management work experience ranged from 2 years to 30 years with a mean of approximately 13 years. Apart from one respondent, all the respondents were university graduates, with the Bachelor of Commerce degree accounting for 60% (15) of the responses and, the Masters degree accounting for 8% (2) of the responses. Other degrees held by respondents included the Bachelor of Business Studies (4%), the Bachelor of Commerce and Accounting (4%), the Bachelor of Management Science (4%), and the Bachelor of Commerce Honours (4%). A total of 64% of the respondents held a Chartered Accountant qualification and the majority of respondents, 84%, were commerce graduates. The total number of staff responsible for managing working capital within the responding companies ranged from 1 to 400, with a mean of 37. The respondents were employed at the managerial levels of their respective



companies. Furthermore, working capital management in these firms are undertaken by qualified and experienced staff.

**Table 5.4 Position of Respondents**

Position	Frequency	Percent
Financial Controller	8	32
Chief Financial Officer	2	8
Company Secretary	2	8
Financial Accountant	2	8
General Manager	2	8
Corporate Finance	1	4
Corporate Financial Officer	1	4
Corporate Reporting Manager	1	4
Corporate Services Manager	1	4
Finance Director	1	4
Finance Manager	1	4
Group Accountant	1	4
Group Treasurer	1	4
Treasury and Investor Relations Manager	1	4
<b>TOTAL</b>	<b>25</b>	<b>100%</b>

## **5.4 RESULTS**

The model described in chapter 4 serves as the framework to present the main results, which are presented below.

### **5.4.1 Investment in Working Capital**

Table 5.5 presents the frequency and percentages with which cash, accounts receivable, and inventory target levels are set by 24 respondents, with 1 respondent not completing this part of the questionnaire. If “always” is interpreted to mean that target levels are set, with intent, probably because it is policy or practice to do so, then with regards to cash 58.3% set target levels. In the case of accounts receivable, a significant 75% of respondents “always” set accounts receivable target levels, whereas 50% “always” set

target levels for inventory. However, in terms of inventory, it should be noted that 20.8% (5) of the respondents reported that inventory was not applicable to their business.

**Table 5.5** Frequency with which Target Levels of Cash, Accounts Receivable, and Inventory are set

Frequency of setting target levels	Cash		Accounts receivable		Inventory	
	No.	%	No.	%	No.	%
Always	14	58.4	18	75	12	50
Often	2	8.3	3	12.5	3	12.5
Sometimes	3	12.5	2	8.3	3	12.5
Seldom	3	12.5	-	-	-	-
Never	-	-	-	-	1	4.2
N/A	2	8.3	1	4.2	5	20.8
<b>TOTAL</b>	<b>24</b>	<b>100%</b>	<b>24</b>	<b>100%</b>	<b>24</b>	<b>100%</b>

The respondents also indicated that the financial manager in 59.1% (13) of the cases and the board in 18.2% (4) of the cases set target levels for cash. Where accounts receivable is concerned, 50% (11) of the cases indicated the financial manager, 13.6% (3) of the cases indicated the production manager and 13.6% (3) indicated the board set the target levels. The production manager in 33.3% (3) of the cases, and the financial manager and the board in 22.2% (2) of the cases set inventory target levels.

These findings show that the financial manager plays a significant role in making the investment decision with regards to the current assets of the business. Since senior levels of management are more concerned with strategy and policy, according to the theory of management (Greenley, 1989), it is evident that the setting of these targets is a task of senior levels of financial management.

### 5.4.2 Financing of Working Capital

Table 5.6 Frequency with which Target Levels of Accounts Payable, Equity, Long-term debt and Secured Short-term Debt are set.

Frequency of setting target levels	Accounts payable		Equity		Long-term debt		Secured short term debt	
	No.	%	No.	%	No.	%	No.	%
Always	9	37.5	15	62.5	14	58.3	13	54.2
Often	8	33.3	7	29.1	6	25	5	20.7
Sometimes	4	16.7	1	4.2	1	4.2	1	4.2
Seldom	1	4.2	1	4.2	2	8.3	-	-
Never	2	8.3	-	-	-	-	1	4.2
N/A	-	-	-	-	1	4.2	4	16.7
TOTAL	24	100%	24	100%	24	100%	24	100%

Table 5.6 presents the results of the frequency with which accounts payable, equity, long-term debt and secured short-term debt target levels are set by 24 respondents, with data not made available by 1 respondent. If “always” is interpreted to mean that target levels are set, with intent, probably because it is policy or practice to do so, then the results show that in the case of accounts payable as a source of finance 37.5% of respondents “always” set target levels, whereas 62.5% of respondents “always” set equity target levels. A total of 58.3% of the respondents finance their current assets with long-term debt and 54.2% of the respondents use secured short term debt.

The respondents also indicated that the financial manager in 52.4% (11/21) of the cases and the accountant in 38.1% (8/21) of the cases set target levels for accounts payable. It is clear that respondents have a greater concern for equity as a source of finance as 70.8% (17/24) of the responses indicated that the board sets the target levels. In only 20.8% of the cases does the financial manager play a role in setting equity target levels. Where long term debt is concerned, 56.5% (13/23) of the cases indicated the board, 34.8% (8/23) of cases indicated the finance set the target levels. The board in 55% (11/20) of the cases

and the financial manager in 40% (8/20) of the cases set secured short-term debt target levels.

From these results the highest level within the company, namely the board, obviously plays a major role in managing the financing decision where non-spontaneous sources (equity, long term debt and secured short term debt) of finance is concerned. Whereas with spontaneous (accounts payable) financing the financial manager is mainly responsible. Therefore setting target levels for the financing of working capital is not only a senior management role, but also a board role. This is quite interesting given the lesser role of the board in the investment decision.

### 5.4.3 Factors that Influence Working Capital

Table 5.7 Frequency of Revision of Target Levels set for Cash, Accounts Receivable, Inventory and Accounts Payable

Frequency of target level revisions	Cash		Accounts receivable		Inventory		Accounts payable	
	No.	%	No.	%	No.	%	No.	%
Daily	4	17.4	-	-	-	-	-	-
Weekly	1	4.4	1	4.4	2	10	1	4.8
Fortnightly	-	-	-	-	-	-	-	-
Monthly	7	30.4	9	39.1	7	35	7	33.3
Quarterly	2	8.7	4	17.4	4	20	5	23.8
Half-yearly	-	-	-	-	1	5	1	4.8
Annually	4	17.4	7	30.4	5	25	5	23.8
<b>SUB-TOTAL</b>	<b>18</b>	<b>78.3</b>	<b>21</b>	<b>91.3</b>	<b>19</b>	<b>95</b>	<b>19</b>	<b>90.5</b>
Never	5	21.7	2	8.7	1	5	2	9.5
<b>TOTAL</b>	<b>23</b>	<b>100%</b>	<b>23</b>	<b>100%</b>	<b>20</b>	<b>100%</b>	<b>21</b>	<b>100%</b>

Table 5.7 presents the results of the time intervals over which the target levels for cash, accounts receivables, inventory, and accounts payables are revised. The results show that

cash is monitored on a daily basis by 17.4% (4/23) of the respondents. The most common time interval that target levels for working capital are revised is monthly. An interesting statistic in Table 5.7 relates to those respondents that *never revise* their target levels, which suggests that these companies may not be monitoring any factors that may influence working capital on a periodic basis. This, in turn, raises questions as to the management of these items, particularly in the case of cash, and whether this practice is possible because of high cash holdings, strong lines of credit, some other reason, or some combination of reasons. From Table 5.7 it is clear that the majority of respondents: 78.3% (18/23) of responses for cash, 91.3% (21/23) of responses for accounts receivable, 95% (19/20) of responses for inventory, and 90.5% (19/21) for accounts payable, monitor factors that influence working capital, as evidenced by their revisions of their target levels.

In the case of cash, 63.2% (12/19), accounts receivable, 68.4% (13/19), inventory, 43.8% (7/16), and accounts payable, 68.4% (13/19) of the respondents pointed out that the financial manager is responsible for revising the target levels of these components of working capital. Although it is evident from the responses that the financial manager plays a significant role in revising the target levels for the components of working capital, the accountant and production manager also play a role in some of the companies that responded to the questionnaire. According to the respondents the accountant is responsible for revising target levels for accounts receivable in 21.1% (4/19) of the cases and accounts payable in 26.3% (5/19) of the responses. The production manager seems to be the main manager to revise target levels for inventory in 25% (4/16) of the cases.

The main factors that influence working capital cited by some of the respondents who completed the open-ended question, "What are the main reasons for revising the target levels of the above-mentioned components of working capital?" in the questionnaire, included: internal performance reasons; not meeting targets; when actual results differ from expectations; a changing credit environment; changing shareholder, investment and business requirements; business and economic conditions; organizational needs and

direction; competitive market; liquidity; seasonal influences; collections history; seasonal influences; changes in supply chain management and inventory levels; expansion; and change in short-term funding deficit. From these reasons it is evident that both internal and external factors are monitored and incorporated by the respondents into the management of working capital.

### 5.3.4 Cash Management

Table 5.8 Frequency with which Respondents Prepare Cash Forecasts and Budgets

To what extent is cash managed?	How often are forecasts done?		How often are budgets prepared?	
	No.	%	No.	%
Daily	4	18.2	2	9.1
Weekly	-	-	-	-
Fortnightly	-	-	-	-
Monthly	13	59.1	3	13.7
Quarterly	4	18.2	1	4.5
Half-yearly	1	4.5	2	9.1
Annually	-	-	14	63.6
Never	-	-	-	-
TOTAL	22	100%	22	100%

Table 5.8 presents the frequencies and percentages of the time intervals with which a sample of 22 respondents make cash forecasts and prepare cash budgets. This information provides an indication of the extent that cash is managed, particularly when taken in conjunction with the frequency with which the target levels are revised and the factors that are monitored and incorporated into these revisions, (5.3.3). If the companies "never" prepare cash forecasts and budgets then it may indicate that there is no specific cash management policy. The results show that all the respondents that completed this question indicated that they prepared cash forecasts and budgets, although with varying

frequency. Cash forecasts were generally made more frequently, monthly by 59.1% of the cases, whereas budgeting generally occurred on an annual basis in 63.6% of the cases.

Of the respondents 59.1% (13/22) pointed out cash management is mainly the responsibility of the financial manager. However, 26.1% (6/23) indicated that the accountant is mainly responsible for this task. Once again this result confirms that the financial manager has a determining role in managing cash. However, for these businesses the accountant may be the financial manager, a problem of nomenclature. Some of the techniques used by respondents to manage cash include budgets, variance analysis, forecasts, percentage creditors, funding available and required, minimize or maximize cash, size of the operation, target level of zero, and centralized cash management system.

The finding is that it was mainly the financial manager of the responding companies that managed cash by means of a variety of techniques.

#### **5.4.5 Accounts Receivable Management**

Table 5.9 presents the results of the time intervals of 22 cases that prepare accounts receivable forecasts and budgets, by frequency and percentages. In conjunction with the frequency with which the accounts receivable target levels are revised and the factors that are monitored and incorporated into these revisions, (5.3.3), and this information provides an indication of the extent with which accounts receivable is managed. If the companies "never" prepare accounts receivable forecasts and budgets this may be indicative that there is no specific accounts receivable management policy, or practice.

All of the respondents indicated that they prepared accounts receivable forecasts and budgets during some stage of an accounting year. Once again it is clear that in 68.3% of the cases accounts receivable forecasts occur monthly, which is more frequently than accounts receivable budgets, which takes place every year in 63.6% of the cases. An

interesting fact is that both the cash and accounts receivable budgets are reported to occur annually by 14 respondents, the same number of responding companies.

The results concerning who manages accounts receivable indicate that the financial manager's role in managing accounts receivable is not as significant as in the case of cash management. In 35% (7/20) of the responses it was the financial manager, followed in magnitude by the accountant, 35% (7/20), and the production manager, 25% (5/20). Some of the techniques used by the responding companies to manage accounts receivable include a centralized debt management system, forecasts, budgets, percentage of historical billings, contractual, minimize accounts receivable, price estimates, strategic plans, production forecasts, variance analysis, percentage sales, debtor days, and targets.

The finding is that the financial manager, accountant and production manager of the responding companies manages accounts receivable which is probably dictated by the accounts receivable policy, although there is no specific consistent extent to which this is done, and a variety of techniques are evidently used.

Table 5.9 Frequency with which Respondents Prepare Accounts Receivable Forecasts and Budgets

To what extent is accounts receivable managed?	How often are forecasts done?		How often are budgets prepared?	
	No.	%	No.	%
Daily	-	-	4	18.2
Weekly	1	4.5	-	-
Fortnightly	1	4.5	1	4.5
Monthly	15	68.3	-	-
Quarterly	4	18.2	-	-
Half-yearly	1	4.5	3	13.7
Annually	-	-	14	63.6
Never	-	-	-	-
TOTAL	22	100%	22	100%



### 5.4.6 Inventory Management

Table 5.10 Frequency with which Respondents Prepare Inventory Forecasts and Budgets

To what extent is inventory managed?	How often are forecasts done?		How often are budgets prepared?	
	No.	%	No.	%
Daily	-	-	-	-
Weekly	1	5.3	-	-
Fortnightly	-	-	-	-
Monthly	13	68.3	2	10.5
Quarterly	4	21.1	1	5.3
Half-yearly	1	5.3	2	10.5
Annually	-	-	14	73.7
Never	-	-	-	-
TOTAL	19	100%	19	100%

Table 5.10 presents the frequencies and percentages of the time intervals of making inventory forecasts and preparing inventory budgets by a sample of 19 respondents. In conjunction with the frequency with which the inventory target levels are revised and the factors that are monitored and incorporated into these revisions, (5.3.3), this information provides an indication of the extent with which inventory is managed. From Table 5.10 it is clear that all the respondents prepare forecasts and budgets. The results also suggest that inventory forecasts are prepared more frequently than inventory budgets, with monthly forecasts being prepared more often (68.3%) than any other interval. In contrast, budgets are prepared annually by more than 73.7% (14) and monthly by only 10.5% (2) of the respondents.

When managing inventory, the role of the production manager is pre-eminent. The responses showed that managing inventory was the responsibility of the production manager in 47.1% (8/17), financial manager in 29.4% (5/17), and the accountant in

23.5% (4/17) of the cases. A variety of techniques were used by some of the respondents to manage inventory, and included budgets, inventory days, inventory turnover, variance analysis, basing inventory on the average sales rate, basing inventory on costs, just-in-time approach, minimizing inventory, strategic planning, historical trends, inventory is demand driven and forecasts.

The finding is that the production manager of the responding companies manages inventory in most of the cases, which may be achieved by means of some inventory policy, although there is no specific consistent extent to which this is done, and a variety of techniques are evidently used.

#### 5.4.7 Accounts Payable Management

Table 5.11A Frequency with which Respondents Prepare Accounts Payable Forecasts and Budgets

To what extent is accounts payable managed?	How often are forecasts done?		How often are budgets prepared?	
	No.	%	No.	%
Daily	-	-	-	-
Weekly	1	4.5	-	-
Fortnightly	-	-	-	-
Monthly	15	68.3	4	18.2
Quarterly	4	18.2	1	4.5
Half-yearly	1	4.5	3	13.7
Annually	1	4.5	13	59.1
Never	-	-	1	4.5
<b>TOTAL</b>	<b>22</b>	<b>100%</b>	<b>22</b>	<b>100%</b>

Table 5.11A presents the results of the time intervals of preparing accounts payable forecasts and budgets by 22 respondents. This serves as an indicator of the extent to which accounts payable is managed, when considered in conjunction with the frequency

with which the accounts payable target levels are revised and the factors that are monitored and incorporated into these revisions, (5.3.3). If the companies "never" prepared accounts payable forecasts and budgets then it may indicate that there is no accounts payable management policy of any shape or form. In contrast to cash, accounts receivable and inventory management as discussed above, where all the responses indicated that budgets are prepared for these management functions, one respondent indicated that they never prepare budgets for accounts payable. However the majority (95.5%) of the respondents prepares accounts payable budgets and all of the respondents prepare forecasts.

Table 5.11B Ranking by the respondents of the components of Working Capital

Working Capital Components	The most important working capital components		The second most important working capital components		The third most important working capital components		The fourth most important working capital components	
	No.	%	No.	%	No.	%	No.	%
Accounts Receivable	10	40	12	48	2	9.5	4	26.7
Cash	8	32	5	20	4	19	4	26.7
Inventory	7	28	3	12	2	9.5	4	26.7
Accounts Payable	0	0	5	20	13	62	3	20
TOTAL	25	100%	25	100%	21	100%	15	100%

According to the responses the accountant in 52.4% (11/21) and the financial manager in 42.9% (9/21) of the cases manage accounts payable. This may be so because senior management may not necessarily be as concerned about the management of accounts payable as they are about cash, accounts receivable and inventory or it may be viewed as less important. This is particularly evident in Table 5.11B, which shows in descending order, the number of respondents out of a sample of 25 that ranked each component of working capital as the most important component, both in frequency and percentages. It

is clear from this table that accounts payable was not ranked by any company as the most important component of working capital.

Some of the techniques used by respondents to manage accounts payable include accounts payable days, credit terms, variance analysis, budgets, forecasts, percentage cost of sales, paid within one month, paid when due, major expenditure authorized at corporate level, accounts payable to accounts receivable ratio, historical trends, set by payment cycles and cheque runs, and strategic plans. The finding is that the accountant of the responding companies is mainly responsible for managing accounts payable in most of the cases using some accounts payable policy, although there is no specific consistent extent to which this is done as a variety techniques are evident from the responses.

#### **5.4.8 Cash Conversion Cycle (Aggregative Approach)**

Table 5.12 presents the results of the number and percentages of a sample of 21 respondents that confirm whether the companies manage the components of working capital in aggregate. If the responses were "strongly agree" or "agree" for the proposal "there is a strong relationship between cash, inventory, accounts receivable, and accounts payable", and "strongly disagree" or "disagree" for the statements: "inventory is managed independently of accounts receivable", and "inventory is managed independently of accounts payable" then it is reasonable to infer that the companies manage working capital in aggregate.

It is clear from the results that although more than 90.4% (19) "strongly agree" and "agree" that there is a strong relationship between cash, inventory, accounts receivable, and accounts payable, only one (4.8%) respondent "strongly disagree" that inventory is managed independently of accounts receivable and five (23.8%) "disagree" and "strongly disagree" that inventory is managed independently of accounts payable. Although the literature clearly states that accounts receivable, inventory and accounts payable should not only be managed at the component level but also at the aggregate level (cash

conversion cycle), these results show that working capital is not managed in aggregate by the majority of the responding companies.

**Table 5.12 Responses to the Management of the Components of Working Capital in Aggregate**

Confirmation	There is a strong relationship between cash, inventory, accounts receivable, and accounts payable		Inventory is managed independently of accounts receivable		Inventory is managed independently of accounts payable	
	No.	%	No.	%	No.	%
Strongly agree	11	52.3	5	23.8	2	9.5
Agree	8	38.1	9	42.8	8	38.1
Indifferent	1	4.8	1	4.8	1	4.8
Disagree	-	-	-	-	4	19
Strongly disagree	1	4.8	1	4.8	1	4.8
Not applicable	-	-	5	23.8	5	23.8
<b>TOTAL</b>	<b>21</b>	<b>100%</b>	<b>21</b>	<b>100%</b>	<b>21</b>	<b>100%</b>

#### **5.4.9 Performance Measurement and Analysis**

Table 5.13 presents the results by frequency and percent of the extent to which performance is measured and analyzed as part of the working capital management process. There is the possibility that performance is not measured nor analyzed if the companies maintained it "never" prepared reports, and did not give any information to the open ended questions as to how performance was measured or assessed in terms of liquidity, efficiency, solvency, profitability and shareholder wealth, and furthermore did not provide details to the open ended questions of any tests performed to determine:

- whether their business had adequate working capital,
- was able to meet current commitments,
- was overtrading,
- had an appropriate investment in inventory and accounts receivable, and

- was over reliant on accounts payable, short-term debt finance, long term debt finance and equity.

**Table 5.13 Frequency with which Performance is Measured and Analyzed as part of The Working Capital Management Process**

Frequency	Cash		Accounts Receivable		Inventory		Accounts Payable	
	No.	%	No.	%	No.	%	No.	%
Daily	14	61	2	8.7	1	5.3	1	4.3
Weekly	1	4.3	2	8.7	2	10.5	1	4.3
Fortnightly	-	-	-	-	-	-	1	4.3
Monthly	7	30.4	19	82.6	15	78.9	18	78.5
Quarterly	1	4.3	-	-	-	-	1	4.3
Half-yearly	-	-	-	-	-	-	1	4.3
Annually	-	-	-	-	-	-	-	-
Never	-	-	-	-	1	5.3	-	-
<b>TOTAL</b>	<b>23</b>	<b>100%</b>	<b>23</b>	<b>100%</b>	<b>19</b>	<b>100%</b>	<b>23</b>	<b>100%</b>

It is clear from the results that performance is measured and analyzed by 100% of responses where the sample size is 23 in the case of cash, accounts receivable, and accounts payable. A total of 94.7% of responses where the sample size is 19 measure and analyzed inventory. The common time interval for accounts receivable, inventory and accounts payable is "monthly", whereas for "cash" it is "daily".

Some of the measures used by the respondents to measure liquidity include the actual results, weekly and monthly cash flows, current ratio, hold sufficient funds to meet commitments, security ratios, legislative requirements, cost of short term loans, quick ratio, overdue debtors monitoring, return on short term investments, budget and forecast.

The solvency/ bankruptcy measures cited by the respondents included solvency test per the Company's Act, actual results, current ratio, equity to total asset ratio, forecasts, budgets, audit report monitoring levels of short term debt on a monthly basis, quick ratio,

security ratios, inventory cover to cash requirements ratio, and debtors cover to cash requirements ratio.

The efficiency ratios the respondents mentioned included actual results, asset turnover ratios, earnings per share, inventory turnover, rates of return against benchmarks 30, 60, 90 days depending on duration, budgets and forecasts, aging creditors, average payable days, days sales outstanding, net profit after tax, return on capital, average debtor days, debtor collection, and earnings before interest and tax.

Profitability is measured by the respondents by means of actual results, cash flows, cost of capital, interest income, monitoring forecasting costs, net profit after tax excess over previous year excluding abnormal items all other things being equal, budgets and forecasts, working capital to sales, and debt interest costs.

Shareholders wealth maximization is measured and assessed by the responding companies by means of actual results, cash flow, cash flow return on investment, the dividends per share, earnings per share, budgets, debt interest costs, earnings before interest and tax, growth in share price and economic value added.

Tests reported by the respondents for adequate working capital include current and quick ratios, examining financial statements and cash flows, and sales values. To test whether the companies are able to meet current commitments examining financial statements, liability management and liquidity ratios were commonly reported. Overtrading was reported by the respondents to be tested by examining the cash flows and debtor days. In order to determine whether a company had an appropriate investment in inventory the respondents reported the examination of their financial statements and cash flows, stock turn ratios, the level and mix of inventory, matching inventory levels to forward sales requirements and determining whether supply is being constrained to the customer. Tests performed by the respondents for the investment in accounts receivable included reporting and analysis of the average days sales outstanding, debtor days, debtors

turnover, determine the creditworthiness of customers, examining financial statements and cash flows, sales forecasts and periodic actuarial valuations, monitoring collections, debtor level and level of business activity. Respondents maintained that they tested for over reliance on accounts payable by assessing the accounts payable deferral and current ratios. Over reliance on short term debt finance was assessed by the respondents by analyzing the debt/equity ratio, optimum capital structure, short term interests costs, budgets, and seasonality of cash flows. The respondents tested for the reliance on long term debt finance by considering the equity ratio, seasonality of cash flow balance, long term debt matched to long term asset profile, optimum capital structure, working capital less than debt greater than zero, budgets, and working capital ratio.

#### **5.4.10 Working Capital Management**

To determine whether working capital was being managed according to the theory of working capital management, each of the aforementioned variables shown in Table 5.14 were analyzed according to a binomial scoring system. The variables that were scored for each company included variable (var.):

- 1 investment in working capital;
- 2 financing of working capital;
- 3 monitor factors that influence working capital;
- 4 measured cash management;
- 5 measured accounts receivable management;
- 6 measured inventory management;
- 7 measured accounts payable management;
- 8 represented the cash conversion cycle: aggregative approach;
- 9 assessed performance measurement and analysis; and

A score of "one" indicated that the respondent managed the variable in accordance with the theory of working capital management and a score of "two" indicated that working capital was not managed in accordance with the theory. All the "ones" of variables 1 to 9



were added together to provide the final score out of nine ('Total' column). If the respondents scored 6 and above then they managed working capital in accordance with the theory of working capital management, else if they scored 5 and lower they did not manage working capital in accordance with the theory of working capital management.

Respondents 23 to 25 had four and more missing values and for this reason they scored very poorly, and no comment can be made as to the reasons for their poor scores. From the results it is evident that not one of the respondents scored a "nine". The highest score was 7 and the lowest was 4. A total of 12 respondents manage and 10 respondents do not manage working capital in accordance with the theory of working capital management.

Table 5.14 shows to what extent the variables of working capital are managed. It is interesting to note that the investment in working capital is managed by 50% of the respondents, and the financing of working capital is managed by only 29% of the companies. Only 50% of the companies provided evidence to indicate factors that influence working capital is monitored. It is evident that cash, accounts receivable, inventory as components of working capital are managed by 100% of the respondent companies and accounts payable by 95%. However when the aggregative approach is considered only 1 respondent manages the components of working capital as an aggregate. Information provided by the companies on the measurement and analysis of working capital indicated that all responding to the questions relating to this issue perform this function when managing working capital. As none of the companies scored a "nine", the finding from the above results is that there is room for improvement where the management of working capital is concerned

**Table 5.14 Working Capital Management Score Card**

Company	var 1	var. 2	var. 3	var. 4	var. 5	var. 6	var. 7	var. 8	var. 9	Total
1	1	2	1	1	1	1	1	2	1	7
2	2	1	1	1	1	1	1	2	1	7
3	1	2	1	1	1	1	1	2	1	7
4	1	1	2	1	1	1	1	2	1	7
5	2	1	2	1	1	1	1	1	1	7
6	1	1		1	1	1	1			6
7	1	1	2	1	1		1		1	6
8	2	2	1	1	1	1	1	2	1	6
9	2	2	1	1	1	1	1	2	1	6
10	1	1		1	1	1	1	2		6
11	2	2	1	1	1	1	1	2	1	6
12	2	2	1	1	1	1	1	2	1	6
13	2	2	1	1	1	1	1	2		5
14	1	2	1	1	1		1			5
15	1	2	2	1	1	1	1	2		5
16	2	2	2	1	1	1	1	2	1	5
17	2	2	2	1	1	1	1	2	1	5
18	2	2	1	1	1		1		1	5
19	1	2		1	1	1	1	2		5
20	1	2		1	1	1	2	2		4
21	2	2	2	1	1	1	1			4
22	2	2		1	1	1	1			4
23	1	1	2					2		2
24	1	2	2							1
25			2							0
Sample size	24	24	20	22	22	19	22	17	13	
No of "ones"	12	7	10	22	22	19	21	1	13	
Percent	50%	29%	50%	100%	100%	100%	95%	6%	100%	
No of "twos"	12	17	10				1	16	-	
Percent	50%	71%	50%				5%	94%	-%	

The cross tabulation depicted in Table 5.15 shows the frequency of the variables in the model that are and are not managed in accordance with the theory of working capital management. The results indicated that 9 of the respondents that do not manage the financing of working capital also do not manage working capital in accordance with the theory. Furthermore, the companies that manage cash (9), accounts receivable (9),

inventory (7) and accounts payable (8), do not manage working capital in accordance with the theory. The results from the cross tabulation also indicated that a greater proportion of the respondents that managed the *investment in working capital* (3:2), the *financing of working capital* (6:0), *factors that influence working capital* (7:3), *cash* (4:3), *accounts receivable* (4:3), *inventory* (11:7), *accounts payable* (3:2), *cash conversion cycle* (1:0) and *performance* (10:3) also managed working capital in accordance with the theory, as opposed to those that did not.

**Table 5.15 Cross-Tabulation Showing the Frequency of the Facets of Working Capital that Are and Are Not Managed in Accordance with the Theory of Working Capital Management**

Variables	Manage working capital	Do not manage working capital
Manage the investment in working capital	6	4
Do not manage investment in working capital	6	5
Manage the financing of working capital	6	0
Do not manage the financing of working capital	6	9
Monitor factors that influence working capital	7	3
Do not monitor factors that influence working capital	3	4
Manage cash	12	9
Do not manage cash	0	0
Manage accounts receivable	12	9
Do not manage accounts receivable	0	0
Manage Inventory	11	7
Do not manage Inventory	0	0
Manage accounts payable	12	8
Do not manage accounts payable	0	1
Manage cash conversion cycle (Aggregative approach)	1	0
Do not manage cash conversion cycle (Aggregative approach)	9	6
Measure and analyze performance	10	3
Do not measure and analyze performance	0	0

The finding is that the respondents that manage working capital exceed the respondents that do not manage their working capital. Apart from the variables, did not manage the *investment in working capital* (6:5), and the *cash conversion cycle* (3:2), a smaller proportion of the companies that responded did not manage the *financing of working capital* (2:3), *factors that influence working capital* (3:4), *cash* (0:0), *accounts receivable* (0:0), *inventory* (0:0), *accounts payable* (0:1), and *performance* (0:0), also did not manage working capital in accordance with the theory. In other words working capital is generally not managed in aggregate.

Finally, apart from the results regarding the *cash conversion cycle approach* (1:9), the *investment in working capital* (1:1), and *financing of working capital* (1:1), all the companies that indicated that *factors that influence working capital* (7:3), *cash* (12:0), *accounts receivable* (12:0), *inventory* (11:0), *accounts payable* (12:0), and *performance* (10:0) were managed, were in greater proportion to those responses that did not manage the factors that influence working capital, cash, accounts receivable, inventory, accounts payable, and performance. In other words, the number of respondents that manage the components of working capital exceeds the number of respondents that do not do so.

#### **5.4.11 Purpose and Function of Working Capital**

As can be seen from the Table 5.16, which is a summary of the responses to the open-ended question from the questionnaire "What is the main purpose of working capital in your business?" 20 respondents completed this question. However, from the details of their responses it is apparent that function/s of working capital rather than its purpose were reported. From this finding there appears to be confusion among respondents as to the purpose and function of working capital, or, the definition of "purpose" is misunderstood. Recall that the purpose of working capital is to ensure the effective and efficient utilization of long term (fixed) assets, whereas the list in Table 5.16 generated by the respondents are the functions of working capital. If the frequency of the responses are ranked in descending order in terms of frequency, it is interesting to note that the management of cash flows is evident in 40% of the responses.

**Table 5.16 Summary of the Main Purpose of Working Capital reported by Respondents.**

Responses	Frequency	Percent
Manage cash flows	8	40
Fund daily operations	5	25
Manage inventory	3	15
Balance customer/supplier interests	1	5
Cover policy payments	1	5
Facilitate daily operations	1	5
To facilitate trading operations	1	5
<b>TOTAL</b>	<b>20</b>	<b>100%</b>

## **5.5 CONCLUDING REMARKS**

From the discussion on the scope, difficulties encountered, and results of this study on how working capital is managed in New Zealand, the main findings with recommendations for further research can be summarized in the next chapter.

## **CHAPTER 6      SUMMARY OF FINDINGS, RECOMMENDATIONS FOR FURTHER RESEARCH, AND CONCLUSION**

### **6.1      INTRODUCTION**

This thesis has presented normative guidelines regarding the management of working capital, and has also sought to describe and report how working capital is actually managed by companies listed on the New Zealand Stock Exchange. In this final chapter of the thesis, a summary of the main findings is presented, and is followed by recommendations for further research and the conclusion.

### **6.2      MAIN FINDINGS**

#### **6.2.1    Response to the Questionnaire**

Of the companies which satisfied the requirements of being listed on the New Zealand Stock Exchange, namely being registered in New Zealand, and being limited liability companies (which were the criteria used to select a sample of 125 companies) a total of 57 companies had responded by July 1999, giving a response rate of 45.6%. Of the 57 companies that responded, 32 out of 125 (25.6%) companies returned uncompleted or partially completed questionnaires. Of the 32 companies, 27 (21.6%) provided a reason(s) for non-completion. This level of participation was disappointing because prior to the pre-test, pilot studies and feasibility studies, whilst in the employ of Price Waterhouse (now PricewaterhouseCoopers), discussions had been held with senior members of the accounting profession, a stockbroker, an analyst and with practitioners as to the need for a survey on working capital management in New Zealand. This proposed survey received enthusiastic support and encouragement. During the discussions, which were held in 1997 and 1998, time and again it was categorically stated that working capital was a

problematic issue. During 1997 participants spoke of the high external value of the New Zealand dollar and the high level of interest rates, and how these factors caused difficulty for their management of working capital. By late 1998, the participants were expressing grave concern over the "Asian crisis" and the need to manage working capital accordingly.

Of the 32 out of 125 companies that did not complete the questionnaire, yet provided a reason for non-completion, 13 (40%) companies stated that lack of time was a major constraint. The 63 (50.4%) companies that completely ignored the survey and follow-up documents, were distributed across the Energy, Processing, Distribution and Utilities sector, Primary: Building and Construction sector, Primary: Mining sector, and the Services: Media and Telecommunications sector. No responses were received from the market sectors, Services: Leisure and Tourism, Primary: Forestry and Forestry Products, Services: Consumer, and Primary: Mining. The best response rate came from the Services: Transport sectors (50%), followed by Primary: Building and Construction sector (40%). The only respondent that reported that working capital management was not relevant to their business came from the Services: Consumer market sector. In the literature, the nature of the business and the type of market or industry sector in which it operates will affect its working capital requirements (Beaumont Smith, 1997) and thus the management of working capital. Hence, this may provide some insight as to the different response rates from the different market sectors.

According to the biographic details all the respondents were employed at the higher managerial levels of their respective companies. This finding is worthy of note given the increasing importance of strategic matters as one move toward higher levels in the hierarchical structure within an organization. A total of 64% of the respondents held a Chartered Accountant qualification and the majority of respondents, 84%, were commerce graduates. Thus an important finding from the respondents is that working capital management is undertaken in these companies by qualified and experienced staff employed at senior levels. This finding provides an indication of the importance with

which the companies that constructively participated in the survey regard working capital management.

### 6.2.2 Working Capital Management: Summary of Findings

Tables 6.1 presents the frequency and percentages of the investment in working capital, cash, accounts receivable and inventory management. It is evident from the summary that all the respondents manage cash, accounts receivable, and inventory in accordance with the theory. However, under the heading investment in working capital, only 50% of the respondents are concerned about managing the investment decision according to the theory.

Table 6.1 Investment in Working Capital, Cash, Accounts Receivable and Inventory Management

	Investment in working capital	Cash management	Accounts receivable management	Inventory management
Number of responses	24	22	22	19
Working capital managed in accordance with the theory				
No.	12	22	22	19
Percent	50%	100%	100%	100%
Working capital not managed in accordance with the theory				
No.	12			
Percent	50%			



If this result is taken in conjunction with Table 6.4 which reports the working capital targets, forecasts, budgets and reports, it is evident that only about 58.4% of respondents set target levels for cash and 50% in the case of inventory. This result may suggest that composition and structure of these current assets is not an important issue, or some other reason may shed more light as to why this is the case.

Table 6.2 shows the financing of working capital and accounts payable management, by number and percentages. Evidence regarding the financing of working capital indicates that 71% of responding companies do not manage the financing of working capital according to the theory of working capital management. Yet, international studies (for example, Hossain and Akon, 1997) show that working capital financing has a major influence on liquidity and profitability and should be accorded greater importance.

**Table 6.2 Financing of Working Capital, and Accounts Payable Management**

	Financing of working capital	Accounts payable management
Number of responses	24	22
Working capital managed in accordance with the theory		
No.	7	21
Percent	29%	95%
Working capital not managed in accordance with the theory		
No.	17	1
Percent	71%	5%

Furthermore, if this result is considered in conjunction with the results set out in Table 6.4, which reports the working capital targets, forecasts, budgets and reports, some

interesting observations can be made regarding the target levels of accounts payable, equity, long term and short term loans. Target levels for accounts payable as a source of finance is not emphasized and perhaps largely neglected, as only approximately 37% of respondents set accounts payable target levels. Yet, in the case of equity more than 62.5% of respondents set target levels for this long-term source of finance. It is also clear from this Table 6.4 that more responding companies set target levels for long-term and short-term debt than is the case with accounts payable. Although it is clear in Table 6.2 that accounts payable, which is a spontaneous source of finance for working capital is managed by 95% of the responding companies according to the theory of working capital management, the financing of working capital is only managed by 29% of the responding companies.

In the literature review in Chapter 3, the theory of working capital emphasises the link between accounts receivable and inventory, and inventory and accounts payable, and contends that they should be managed in aggregate (for example, Schilling, 1996, Gentry, et al. 1995, Madura and Veit, 1988). From the results in Table 6.3 only one respondent reported that there is a strong relationship between cash, accounts receivable, inventory, and accounts payable, *and* that inventory is managed in conjunction with accounts receivable, *and* inventory is managed in conjunction with accounts payable.

If this finding is considered together with the results in Table 6.1 that presents the investment in working capital, cash, accounts receivable and inventory management, and Table 6.2 that shows the financing of working capital and accounts payable management, in number and percentages, then it suggests that cash, inventory, accounts receivable, and accounts payable are managed according to the theory in component form. However, these components of working capital are not managed in aggregate, and the results may suggest that the awareness, understanding, relevance and/or application of the cash conversion cycle is not evident among New Zealand listed limited liability companies.

Only 50% of the respondents stated that they monitor factors that influence working capital. With regards to performance measurement and analysis, all respondents that

completed the relevant section in the questionnaire stated that periodic reports were prepared (Table 6.7), provided criteria as to how performance was measured or assessed in terms of liquidity, efficiency, solvency, profitability and shareholder wealth (Table 6.8), and provided criteria used to assess the attainment of working capital performance goals (Table 6.9).

**Table 6.3      Aggregative Approach to Working Capital Management**

	Monitor factors which influence working capital	Aggregative approach (Cash Conversion Cycle)	Performance measurement and analysis
Number of responses	20	17	13
Working capital managed according to the theory			
No.	10	1	13
Percent	50%	6%	100%
Working capital not managed according to the theory			
No.	10	16	-
Percent	50%	94%	-

Table 6.4 presents the frequencies and percentages of working capital targets, forecasts, budgets and reports. The results reveal that 21.7% of respondents maintain that cash target levels are never reviewed, which is virtually more than double the number of respondents in the cases of the other components of working capital. Furthermore, in the case of cash, reports are only prepared "monthly" by 30.4% of the responses, which is less than half the number of respondents who prepare "monthly" reports for accounts receivable, inventory and accounts payable.

Further analysis that was reported in Chapter 5, Table 5.7, show that about 61% of respondents prepare cash reports on a "daily" basis, whereas not one respondent indicated that this was the case for the other components of working capital. The reasons for this could be that companies hold high levels of cash, or there are strong lines of credit, or some other reason, or some combination of reasons.

Table 6.4 Working Capital Targets, Forecasts, Budgets and Reports

	Company policy and practice to <i>always</i> set target levels		Companies that <i>never</i> review target levels		<i>Monthly</i> forecasts prepared		<i>Annual</i> budgets prepared		<i>Monthly</i> reports prepared	
	No.	%	No.	%	No.	%	No.	%	No.	%
Cash	14/24	58.4	5/23	21.7	13/22	59.1	14/22	63.6	7/23	30.4
Accounts Receivable	18/24	75	2/23	8.7	15/22	68.3	14/22	63.6	19/23	82.6
Inventory	12/24	50	1/20	5	13/19	68.3	14/19	73.7	15/19	78.9
Accounts Payable	9/24	37.5	2/21	9.5	15/22	68.3	13/22	59.1	18/23	78.5
Equity	15/24	62.5	-	-	-	-	-	-	-	-
Long-term debt	14/24	58.3	-	-	-	-	-	-	-	-
Short-term debt	13/24	54	-	-	-	-	-	-	-	-

It is clear from the summary in Table 6.5 that the Financial Manager is mainly responsible for managing cash, and monitoring factors that influence working capital. In contrast the Financial Manager and Accountant are involved in the management of accounts receivable and accounts payable. Although the Financial Manager sets target levels for accounts payable, it is the accountant who manages these target levels.

**Table 6.5 Summary of Persons Responsible for Managing Working Capital**

Working Capital Components	Investment in working capital: Target level set by:	Financing of working capital: Target level set by:	Monitor factors which influence working capital: Target levels are reviewed by:	Managed by:
Cash	Financial Manager	-	Financial Manager	Financial Manager
Accounts Receivable	Financial Manager	-	Financial Manager	Financial Manager and/or Accountant
Inventory	Production Manager	-	Financial Manager	Production Manager
Accounts Payable	-	Financial Manager	Financial Manager	Accountant
Equity	-	Board	-	-
Long-term debt	-	Board	-	-
Short-term debt	-	Board	-	-

Once accounts payables have been created, it is a contractual matter to ensure it is paid. It would seem that senior management might not be as concerned with the management of accounts payable as they are with cash, accounts receivable and inventory. When the importance of accounts payable *vis-a-vis* other components of working capital was ranked, not one company ranked accounts payable as the most important component of working capital. In fact accounts payable ranked between third and fourth, which may suggest that trade credit is considered to be of lesser importance than other items of working capital. The production manager plays a notable role in managing inventory.

These findings show that the financial manager plays a major role in making the investment decision with regards to the current assets of the business. Since senior levels of management are more concerned with strategy and policy, according to the theory of management (for example Greenley, 1989), it is evident that the setting and the management of these targets is a task of senior levels of financial management. However, there is no mention made of the marketing and purchasing managers and their role in the

management of working capital. With Just-in-time systems, Materials Requirements Planning and Manufacturing Resources Planning II, marketing and purchasing managers are integrated with production and financial managers in the management of working capital (Ehrhardt, et al. 1999, Gitman, 1997, Scherr, 1989, Cheatham 1989, Kallberg and Parkinson, 1984).

From these results the highest managerial level within the company, namely the board, plays a major role in managing the financing decision where non-spontaneous sources of finance is concerned. With spontaneous (accounts payable) financing the financial manager has prime responsibility. Therefore setting target levels for the financing of working capital is not only a senior management role, but also a board role. This is quite interesting given the lesser role of the board in the investment decision. This shows that the financing decision is considered by the responding companies to be of greater importance than the investment decision, and that these two decisions may be taken somewhat independently of each other. This is an interesting finding given the pre-eminence accorded to the investment decision in the literature (for example, Schilling, 1996, Modigliani and Miller, 1958), as well as the widely espoused need to give recognition to the inter-dependent nature of the investment and financing decisions. In short, they should not be managed independently of each other.

Table 6.6 reports the techniques used to manage working capital targets. There was no mention by any respondent of cash management by means of the Baumol, Miller–Orr, and Stone models (Brigham, et al. 1999, Gitman, 1997, Hill and Sartoris, 1992, Scherr, 1989, Gallinger and Healey, 1987).

In order to achieve satisfactory performance by debtors, factoring accounts receivable to speed up the cash inflows, outsourcing accounts receivable, analyzing payment patterns, using the Markov Chain Analysis (MCA), *ad hoc* scoring, simple probability, linear discriminant and sequential decision system, aging schedules, using balance fractions, and payment proportions (Gitman, 1997, Herridge, 1996, Mooney and Pittman, 1996, Williams, 1995, Berry, 1995, Moss and Stine, 1993, Scherr, 1989, Cheatham, 1989,

Back, 1988, Gallinger and Healey, 1987), were also not mentioned by any respondent as is evident in Table 6.6.

Surprisingly, from Table 6.5 in the case of inventory management the ABC system, EOQ (Economic Order Quantity), MRP (Materials Requirement Planning), and MRPII (Manufacturing Resource Planning), and outsourcing inventory (Gitman, 1997, Chang, et al. 1995, Maness 1994, Cheatham, 1989, Scherr, 1989, Kallberg and Parkinson, 1984) were not mentioned.

**Table 6.6 Techniques used to set Target Levels of Working Capital**

Cash Management	Accounts Receivable Management	Inventory Management	Accounts Payable Management
Forecasts Budgets Target level = 0 Target level = maximum Target level = minimum Percentage creditors Centralized cash management Variance Analysis	Forecasts Budgets Percentage of sales Percentage of total debtors Debtor days Percentage of historical billings Centralized debt management Contractual Target level = minimum Price estimates Strategic planning Production needs Variance Analysis	Forecasts Budgets Inventory days Inventory turnover JIT (Just in time) Average sales rate Costs Target level = minimum Strategic planning Historical trends Variance analysis	Forecasts Budgets Accounts payable days Credit terms Percentage of cost of sales Authorize major expenditure Average for each month Historical trends Determined by cheque runs and payment cycles Strategic planning Variance Analysis

Table 6.7 lists a summary of the factors that caused respondents to review target levels. From these reasons it is evident that both internal and external factors are monitored and incorporated by the respondents into the management of working capital. However, it is only in the case of cash management that changes in economic conditions has any influence. Seasonal influences are evidently monitored in the case of accounts receivable, inventory and accounts payable management.

It is also interesting to note that no reference is made specifically to monetary policy, fiscal policy, the term structure of interest rates, and the stage of business cycle. Normative theory include these factors because monetary policy has an impact on price levels and exchange rates (Gitman, 1997, Brigham and Gapenski, 1994, Back, 1988), the term structure of interest rates has an impact on the cost of finance of different maturities (Gitman, 1997, Brigham and Gapenski, 1994, Weston and Brigham, 1992, Asch and Kaye, 1989, Back, 1988), and the business cycle (Brigham, et al. 1999, Petty, et al. 1996, Begg, et al. 1994, Beardshaw and Ross, 1993) affects business performance in different ways in the different stages of this cycle.

**Table 6.7 Factors that Influence Working Capital Management**

	Cash Management	Accounts Receivable Management	Inventory Management	Accounts Payable Management
Reasons for reviews:	Changes in:	Changes in:	Changes in:	Changes in:
Internal factors	Internal performance Business requirements Business conditions Organizational direction Investment requirements	Internal performance Business requirements Business conditions Organizational direction	Internal performance Business requirements Business conditions Organizational direction	Internal performance Business requirements Business conditions Organizational direction Short term funding requirements
External factors	Shareholder requirements Economic conditions Credit environment	Collections history Credit environment Seasonal Influences	Supply chain management Market competition Seasonal Influences	Credit environment Market competition Seasonal Influences

Table 6.8 presents criteria used to measure and analyze the performance of the companies in terms of liquidity, solvency/bankruptcy, efficiency, profitability, and shareholder wealth maximization. The current and quick ratios are still very popular measures of performance, despite their shortcomings (Gallinger, 1997). Another common performance measure is the variations between actual balances and budgeted/ forecasted balances and it is apparently used to measure and assess liquidity, solvency/bankruptcy, efficiency, profitability, and shareholder wealth maximization. It is well recognized by the respondents that the management of working capital has an important bearing on the company's performance.



**Table 6.8** Criteria in terms of which Working Capital's Performance is Measured and Analyzed

Liquidity Measures	Solvency/Bankruptcy Measures	Efficiency Measures	Profitability Measures	Shareholder Wealth Maximization Measures
<b>Variations = Actual balances - budgeted/ forecasted balances</b>	<b>Variations = Actual balances - budgeted/ forecasted balances</b>	<b>Variations = Actual balances - budgeted/ forecasted balances</b>	<b>Variations = Actual balances - budgeted/ forecasted balances</b>	<b>Variations = Actual balances - budgeted/ forecasted balances</b>
Legislative requirements	Solvency test per Company's Act	Asset turnover ratios	Cost of capital	Cash flows
Security ratios	Current ratios	Earnings per share ratio	Interest income	Cash flow return on investment ratio
Current ratios	Quick ratios	Rates of return	Debt interest costs	Dividends per share
Quick ratios	Security ratios	Aging creditors	Cash flows	Earnings per share
Available committed funding lines	Equity to Total Assets ratio	Average debtor days	Costs	Economic value added
Cost of short term loans	Audit short term debt	Debtor collection	Net profit after tax excess from the previous year excluding abnormal	Return on assets
Return on short term investments	Inventory Cover to Cash requirements ratio	Average Payables days	Working capital to sales ratio	Return on capital employed
Collection history	Debtor cover to Cash requirements ratio	Days sales outstanding		Debt interest cost
		Net profit after tax		Earnings before interest & tax
		Earnings before interest & tax		Growth in share price
		Return on capital		

Table 6.9 shows the criteria used to assess the attainment of respondents' working capital management performance goals. Performance is taken seriously by the respondents who completed this section of the questionnaire. Some respondents reported that examining financial statements and cash flows are some of the criteria used to assess whether the company has adequate working capital, is able to meet current commitments, is over-trading, has appropriate levels of inventory and accounts receivable. On the financing side budgets play a role to assess whether the company concerned is over reliant on accounts payable, short-term debt, long-term debt, and equity funding.

**Table 6.9 Criteria used to assess attainment of Working Capital Performance Goals**

Working Capital Performance Goals	Criteria
Adequate working capital	Supply customers timeously Industry comparisons of working capital requirements Current, security and quick ratios <b>Examining financial statements</b> <b>Examining cash flows</b> Monthly review Sales figures
Able to meet current commitments	<b>Examining cash flows</b> <b>Examining financial statements</b> Current and quick ratios Periodic actuarial valuation Monthly reviews How often are payments deferred? Liability management ratios
Overtrading	Inability to supply Monthly reviews Monthly targets Sales forecasts Inventory levels <b>Examining cash flows</b> Debtor days <b>Examining Financial statements</b> Quick ratios
Appropriate Inventory levels	<b>Examining financial statements</b> Inability to supply customers Monthly reviews Match inventory to forward sales requirements Inventory levels and mix Inventory turnover ratio <b>Examining cash flows</b>
Appropriate accounts receivable levels	Average days sales outstanding Average credit terms given to debtors Debtor days and debtor turnover <b>Examining financial statements</b> Periodic actuarial valuations Collection history <b>Examining cash flows</b> Sales forecasts
Over reliant on accounts payable finance	Frequency of accounts payable deferral Cash flow liquidity Current ratio <b>Budgets</b>
Over reliant on short-term debt finance	Debt/equity ratio Optimum capital structure Short term interest costs Monitoring seasonality of cash flows <b>Budgets</b>
Over reliant on long term debt finance	40-50% of equity ratio Monitoring seasonality of cash flows Long term debt match long term asset profile Optimum capital structure Working capital less debt must be greater than zero <b>Budgets</b> Working capital ratio Gearing
Over reliant on equity finance	Gearing Monitoring seasonality of cash flows Optimum capital structure Return on capital/shareholders funds <b>Budgets</b> Debt/equity ratio Earnings per share Working capital ratios

The purpose of working capital is to ensure the effective and efficient utilization of long term (fixed) assets (Paulo, 1992, Bierman and Smidt, 1988), and it does this *inter alia* by managing cash, debtors, and inventory, balancing customer/supplier interests, funding daily operations, and facilitating trading. From the information in Table 6.10 it is apparent the respondents have either a confused understanding of the purpose and functions, or have a very limited application of the capacity of working capital.

Table 6.10 Main Purpose of Working Capital as reported by Respondents

Responses	Frequency	Percent
Manage cash flows	8	40
Fund daily operations	5	25
Manage inventory	3	15
Balance customer/supplier interests	1	5
Cover policy payments	1	5
Facilitate daily operations	1	5
To facilitate trading operations	1	5
TOTAL	20	100%

Working capital management is an important issue for companies in New Zealand as is evident from the results of the complete responses, yet a large group of companies ignored the survey. The management of working capital involves both the investment and financing decision, but it is evident that the respondents placed greater emphasis or importance on the financing decision, with the investment decision largely taken for granted.

Some effort is made *prima facie* to manage cash, accounts receivable, inventory and accounts payable, however given the theory of working capital management, there may be room for improvement regarding the strategies, tactics and techniques used to manage these components.

According to the theory working capital should be managed by a committee or multidisciplinary team of managers comprising for example the board, financial manager, management accountant, purchasing manager, production manager, and marketing manager. In so doing the management of working capital in aggregate, for example by means of the cash conversion cycle approach is attainable and is facilitated.

Through credit sales businesses move their inventories to customers (accounts receivable), but at the risk of increasing bad and doubtful debts, yet no mention was made of bad and doubtful debts and any associated problems by any of the responding companies. Major risks that arise from granting credit include bad debts and debtor delinquency, because they reduce the returns from the investment in accounts receivable, and if inadequately monitored can impact severely on the business's financial performance (Brigham, et al. 1999, Gitman, 1997, Hampton and Wagner, 1989, Scherr, 1989, Gallinger and Healey, 1987, Kallberg and Parkinson, 1984).

Changes in the levels and compositions of the components of working capital impact on each other both directly and indirectly in an unsynchronized manner. Therefore, working capital management is not merely an administrative function consisting of a series of routines, but it is also strategic as it impact on the liquidity, solvency/bankruptcy, efficiency, profitability and shareholder wealth maximization of the business. The management of working capital affects the growth of a business and assists it survive the periodic crises which occur ("Asian crisis" of 1998/1999), and fluctuations of exchange and interest rates.

### **6.3 RECOMMENDATIONS FOR FURTHER RESEARCH**

This thesis reports and describes how New Zealand listed limited liability companies manage working capital. As is frequently the case with descriptive studies, more questions are raised than are answered, and this holds true of this thesis.

From the results it was clearly apparent that the respondents confused the understanding of the purpose and function of working capital, or has a limited application of the capacity of working capital. This aspect should be further investigated.

An in-depth case study research approach can enhance the survey questionnaire to further investigate the finding that respondents placed greater emphasis on the financing of working capital, while the investment in working capital was largely overlooked or perhaps taken for granted.

Given some of the findings of this thesis, such as no mention made of the risk of increasing doubtful and bad debts, further research should focus on the levels, composition and structure of working capital and introduce financial data for this purpose. This research could study an aspect of the management of working capital, such as cash, or accounts receivable, or inventory, or accounts payable management, which may provide more insight into the intricacies and complexities of the facets and risks of working capital management. A more detailed look at the different working capital management strategies, techniques and tactics used could be taken into account.

The results of this study suggest that New Zealand companies are not managing the components of working capital in aggregate. According to the theory, working capital should be managed by a committee or multidisciplinary team of managers by means of the cash conversion cycle and weighted cash conversion cycle models. Further research into the impact and relevance of these models on working capital management in New Zealand could provide worthwhile information.

The evidence suggests that cash is reported on a daily basis, whereas accounts receivable, inventory and accounts payable are not, and as no reasons were apparent from the survey this matter needs further investigation. As part of this study a further area for research should be empirical investigations into the impact of working capital on company performance, and here the case study approach could be considered. Once again financial

data would form an integral part of the data collected. In addition to this a more detailed study could assess the relevance of the different working capital performance and analysis measures used by companies when assessing their performance.

It is evident from the findings that some respondents within specific market sectors do not consider working capital management of any importance, or relevance, or are not interested in it. The nature of the business and the type of market or industry sector in which it operates will affect its working capital requirements (Beaumont Smith, 1997) and thus the management of working capital. A study into the role, if any, that working capital management plays in the different market and industry sectors could be worthwhile, as most of the literature tends to focus on working capital management within the manufacturing sector and ignores other sectors. In particular, a question that needs to be addressed relates to the working capital requirements of the different market and industry sectors.

From the findings of the study a large group, 63 out of 125 of companies, ignored the survey neither returning the documentation in the stamped self-addressed envelope nor providing a reason for not completing the survey. It would be interesting to ascertain through further research why this apathy is evident among companies in New Zealand that formed the total sample, despite the theory's contention that working capital management is an important issue.

The above recommendations provide a general indication of some of the gaps in the theory (normative) and in this particular study (positive) as the statistics collected are neither tight nor definitive.

#### **6.4 CONCLUSION**

From the theory of working capital management and the practice reported by companies listed on the New Zealand Stock Exchange, it is apparent that there is considerable scope

for valuable research in this field, and that much work remains to be done. The benefits that accrue to firms that manage their working capital well are reflected in key performance areas, such as liquidity, efficiency, profitability, and shareholder value creation. Surely, these benefits are worth pursuing.

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## APPENDIX A

### Survey: Working Capital Management Covering Letter

Commerce Division  
Lincoln University  
PO Box 84  
Canterbury

29 March 1999

<Address>

Dear <Name>

#### **Survey: Working Capital Management**

Recently the news media has reported that companies in New Zealand are facing a few challenges regarding the management of working capital. For example some of the articles relating to working capital management matters printed since 1998 include:

"Out-of stock epidemic", Grocers Review, 1 May, 1998, Page 16,

"Australia concern at New Zealand's credit rating downgrade". The Dominion, 25 September 1998, Page 1,

"Bad debt fears squeezing firms", NZ Herald, 13 January 1999, Page E3.

Lincoln University is undertaking an important survey of all New Zealand registered companies listed on the New Zealand Stock Exchange in an attempt to find out how working capital is managed in New Zealand. At present there is very little information on how working capital is managed in New Zealand, and to the best of our knowledge a survey of this nature has not yet been undertaken.

Neither you nor your organization will be identified as a respondent without your consent. You may at any time withdraw your participation, including withdrawal of any information you have provided. If you complete the questionnaire, however, it will be understood that you have consented to participate in the research and consent to publication of the results of the research with the understanding that anonymity will be preserved.

As a gesture of our appreciation of your participation, a copy of the main survey findings will be forwarded to you if you provide either your business card or address.

Please place the completed questionnaire in the freepost envelope provided and return this by **Monday, the 12th April 1999.**

The success of this research depends on your participation. We look forward to receiving your response.

Yours sincerely  
Angelique McInnes  
Master of Commerce and Management Student

**APPENDIX B**  
**LINCOLN UNIVERSITY**  
**COMMERCE DIVISION**  
**EMPIRICAL SURVEY**  
**WORKING CAPITAL MANAGEMENT**

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**CONSENT**

I have read and understood the covering letter detailing information of this research. On this basis I agree to participate as a subject in the research, and I consent to publication of the results of the research with the understanding that anonymity will be preserved. I understand also that I may at any time withdraw from the research, including withdrawing any information I have provided.

**Signed:**

**Dated:**

**INSTRUCTIONS**

This survey should take you approximately **15 minutes** to complete and may be completed by more than one person.

In appreciation of your participation in this survey a summary of the **main findings** will be posted to all respondents.

This questionnaire comprises two main sections, **Section A**, biographic information, and **Section B**, which is the survey, the management of working capital.

Please record your response by circling or ticking the number of the appropriate response, and providing additional information, such as comments or descriptions of processes used, in the spaces provided.





3.1. Please rank the following four components of working capital in order of **liquidity**:  
(Starting with 1 = the most liquid working capital element)

- a) Cash \_\_\_\_\_
- b) Inventory \_\_\_\_\_
- c) Accounts Receivable \_\_\_\_\_
- d) Prepayments \_\_\_\_\_

Why is this so?

3.2 Please rank the following working capital items in order of importance when **managing** working capital:  
(Please number in order of importance starting with 1 = the most important factor)

- a) Cash \_\_\_\_\_
- b) Inventory \_\_\_\_\_
- c) Accounts Receivable \_\_\_\_\_
- d) Prepayments \_\_\_\_\_
- e) Accounts payable \_\_\_\_\_
- f) Accruals \_\_\_\_\_

Why is this so?

4.1 Does your business have a **target level** for any of the following items?

	Always 1	Often 2	Sometimes 3	Seldom 4	Never 5	Not Applicable 6
a) Cash	1	2	3	4	5	6
b) Accounts receivable	1	2	3	4	5	6
c) Inventory	1	2	3	4	5	6
d) Prepayments	1	2	3	4	5	6
e) Accounts payable	1	2	3	4	5	6
f) Accruals	1	2	3	4	5	6
g) Equity	1	2	3	4	5	6
h) Long term debt	1	2	3	4	5	6
i) Secured short term debt	1	2	3	4	5	6
j) Unsecured short term debt	1	2	3	4	5	6
k) Off-balance sheet financing	1	2	3	4	5	6
l) Asset-based financing	1	2	3	4	5	6
m) Any other (Please state):						
1. _____	1	2	3	4	5	6
2. _____	1	2	3	4	5	6

Any comments (please state)

With respect to question 4.1, if a target level is determined, please answer the appropriate sections of questions 4.2 and 4.3.

4.2 **Who** within your organization **determines** the target level of the following items? [If necessary tick more than one box]

	Board	Accountant Manager	Financial Manager	Production Please state Who): _	Someone else Please state Who): _
a) Cash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Accounts Receivable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Inventory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Prepayments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e) Accounts Payable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
f) Accruals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g) Equity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
h) Long term debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
i) Secured short term debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
j) Unsecured short term debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
k) Off-balance sheet finance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
l) Asset-based finance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
m) Any other (Please state):					
1. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Any comments? (Please state)

4.3 Please state **who is responsible for managing** the target levels within your firm of the following items? [If necessary tick more than one box]

	Board	Accountant Manager	Financial Manager	Production Please state Who): _	Someone else Please state Who): _
a) Cash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Accounts Receivable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Inventory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Prepayments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e) Accounts Payable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
f) Accruals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g) Equity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
h) Long term debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
i) Secured short term debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
j) Unsecured short term debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
k) Off-balance sheet finance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
l) Asset-based finance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
m) Any other (Please state):					
1. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Any comments? (Please state)

4.4 . Briefly describe how your company determines the **target levels** for the following items?

---

a) Cash

---

b) Accounts Receivable

---

c) Inventory

---

d) Prepayments

---

e) Accounts Payable

---

f) Accruals

---

g) Equity

---

h) Long term debt

---

i) Secured short term debt

---

j) Unsecured short term debt

---

k) Off-balance sheet finance

---

l) Asset-based finance

---

5.1 How often does your company revise the target levels for the following items?

	Daily 1	Weekly 2	Fortnightly 3	Monthly 4	Quarterly 5	Half yearly 6	Annually 7	Never 8
a) Cash	1	2	3	4	5	6	7	8
b) Accounts Receivable	1	2	3	4	5	6	7	8
c) Inventory	1	2	3	4	5	6	7	8
d) Prepayments	1	2	3	4	5	6	7	8
e) Accounts Payable	1	2	3	4	5	6	7	8
f) Accruals	1	2	3	4	5	6	7	8
g) Equity	1	2	3	4	5	6	7	8
h) Long term debt	1	2	3	4	5	6	7	8
i) Secured short term debt	1	2	3	4	5	6	7	8
j) Unsecured short term debt	1	2	3	4	5	6	7	8
k) Off-balance sheet finance	1	2	3	4	5	6	7	8
l) Asset-based finance	1	2	3	4	5	6	7	8
m) Any other (Please state):								
1. _____	1	2	3	4	5	6	7	8
2. _____	1	2	3	4	5	6	7	8

Any comments? (Please state)

5.2 Who within your firm revises the target level for the following items? [If necessary tick more than one block]

	Board	Accountant Manager	Financial Manager	Production	Someone else Please state Who):__
a) Cash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Accounts Receivable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Inventory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Prepayments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e) Accounts Payable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
f) Accruals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
g) Equity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
h) Long term debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
i) Secured short term debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
j) Unsecured short term debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
k) Off-balance sheet finance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
l) Asset-based finance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
m) Any other (Please state):					
1. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Any comments? (Please state)

5.3 What are the **main reasons for revising the target levels** of the above-mentioned components of working capital?

---

a) Cash

---

b) Accounts Receivable

---

c) Inventory

---

d) Prepayments

---

e) Accounts Payable

---

f) Accruals

---

g) Equity

---

h) Long term debt

---

i) Secured short term debt

---

j) Unsecured short term debt

---

k) Off-balance sheet finance

---

l) Asset-based finance

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6. How often are **reports** prepared within your company for the following items?  
*(A report refers to the actual results a business achieves)*

	Daily 1	Weekly 2	Fortnightly 3	Monthly 4	Quarterly 5	Half yearly 6	Annually 7	Never 8
a) Cash	1	2	3	4	5	6	7	8
b) Accounts Receivable	1	2	3	4	5	6	7	8
c) Inventory	1	2	3	4	5	6	7	8
d) Prepayments	1	2	3	4	5	6	7	8
e) Accounts Payable	1	2	3	4	5	6	7	8
f) Accruals	1	2	3	4	5	6	7	8

Any comments? (Please state)

7. How often are **budgets** prepared within your firm for the following items?  
*(A budget refers to a plan for the future expressed in dollar terms)*

	Daily 1	Weekly 2	Fortnightly 3	Monthly 4	Quarterly 5	Half yearly 6	Annually 7	Never 8
a) Cash	1	2	3	4	5	6	7	8
b) Accounts Receivable	1	2	3	4	5	6	7	8
c) Inventory	1	2	3	4	5	6	7	8
d) Prepayments	1	2	3	4	5	6	7	8
e) Accounts Payable	1	2	3	4	5	6	7	8
f) Accruals	1	2	3	4	5	6	7	8

Any comments? (Please state)

8. How often are **forecasts** prepared by your business for the following items?  
*(A forecast refers to the future expectations of the business)*

	Daily 1	Weekly 2	Fortnightly 3	Monthly 4	Quarterly 5	Half yearly 6	Annually 7	Never 8
a) Cash	1	2	3	4	5	6	7	8
b) Accounts Receivable	1	2	3	4	5	6	7	8
c) Inventory	1	2	3	4	5	6	7	8
d) Prepayments	1	2	3	4	5	6	7	8
e) Accounts Payable	1	2	3	4	5	6	7	8
f) Accruals	1	2	3	4	5	6	7	8

Any comments? (Please state)

9. Briefly describe the **managerial process** used by your firm when managing working capital?

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10. What role does "experience", "hunch", "gut-feel" play in **managing** working capital?

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11. What do you consider the most challenging part of **managing** your firm's working capital? (Please state)

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12. How do you think the **management** of working capital can be improved?

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13. . How does your business **measure/assess** working capital management **performance** in terms of:

a) Liquidity

---

b) Solvency

---

c) Efficiency (Activity, Productivity)

---

d) Profitability

---

e) Shareholder wealth maximization

---

f) Other? (Please state)

---

14. . What **tests** are performed by your firm to determine whether it:

a) Has adequate working capital

---

b) Is able to meet current commitments

---

c) Is over trading (inadequate working capital)

---

d) Has appropriate investment in inventory

---

e) Has appropriate investment in accounts receivable

---

f) Is over reliant on accounts payable to finance working capital

---

g) Is over reliant on short term debt to finance working capital

---

h) Is over reliant on long term debt to finance working capital

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i) Is over reliant on equity to finance working capital

---

15. Indicate your level of agreement with the following statements.

	Strongly Agree 1	Agree 2	Indifferent 3	Disagree 4	Strongly Disagree 5	Not Applicable 6
a) In your firm the interrelationship between cash, inventory, accounts receivable and accounts payable is strong	1	2	3	4	5	6
b) In your firm inventory is best managed independently of accounts receivable	1	2	3	4	5	6
c) In your firm inventory is best managed independently of accounts payable	1	2	3	4	5	6
d) It is possible to successfully operate your organization with zero or negative working capital	1	2	3	4	5	6
e) It is possible to rely only on current liabilities to finance the total investment in current assets in your business	1	2	3	4	5	6
f) It is possible to successfully operate your business where the current liabilities are greater than the investment in current assets	1	2	3	4	5	6
g) It is possible to rely only on long term liabilities to finance the total investment in current assets in your firm	1	2	3	4	5	6
h) The total investment in current assets of your firm is financed from long term sources of finance, short term sources of finance and equity	1	2	3	4	5	6

Any comments?

**Thank you** for participating and for sharing your knowledge with us.

Please place the completed questionnaire in the franked envelope provided. Include **your business card** or contact details if you would like a copy of a summary of the **main findings**.

Yours faithfully

Mrs. Angelique McInnes (email: [mcinnesa@kea.lincoln.ac.nz](mailto:mcinnesa@kea.lincoln.ac.nz))

Research Leader  
Commerce Division  
Lincoln University  
PO Box 94  
Canterbury

## APPENDIX C

### Survey Follow up: Working Capital Management Covering Letter

Commerce Division  
Lincoln University  
PO Box 84  
Canterbury

3 May 1999

<Address>

Dear <Name>

#### **Survey Follow up: Working Capital Management**

Recently I mailed the enclosed empirical survey to you for completion with the intention of establishing how working capital is managed in New Zealand. As the success of this research depends on your participation I would truly appreciate it if you or an appropriate member of your staff would complete the enclosed survey questionnaire. You do not have to respond to every question in the questionnaire. However, if you are not in a position to complete the survey I would appreciate it if you or a member of your staff would complete the box below, stating your reason/s for not participating in the attached survey on working capital management. This ensures that I comply with university research policy that states that a master's degree postgraduate student follow up all the companies on the mailing list who was not in a position to respond to the survey.

I thank you for setting aside some of your valuable time to read, complete and return this letter in the freepost envelope and I look forward to receiving this reply.

Yours sincerely

Angelique McInnes  
Master of Commerce and Management Student