Working Capital Management and its association with Firm Performance and Value: Evidence from NZX Firms

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LIST OF ABBREVIATIONS

CSR	Corporate Social Responsibility activities
GFC	Global Financial Crisis
GOI	Gross Operating Income
ICB	Industry Classification Benchmark
NZX	New Zealand Stock Exchange
R&D	Research and Development expenses
ROCE	Return On Capital Employed
ROI	Return On Investment
SME	Small and Medium Enterprises
WCM	Working Capital Management

ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of knowledge and belief, it contains no materials previously published or written by another person, (except where explicitly defined in the acknowledgement), nor material which to a substantial extent has been submitted for the award of any other degree or diploma at a university or other institution of higher learning.

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ABSTRACT

Objective – The purpose of this research is to assess whether working capital management (WCM) relates significantly with firm performance in non-financial firms listed on the New Zealand stock exchange.

Design and methodology – The cash conversion cycle (CCC) is the proxy for WCM performance. Return on assets (ROA) and Tobin's Q (TQ) represent firm performance, namely profitability and firm value. The relationship between CCC, ROA, and TQ is investigated using panel data of a sample of 57 NZX non-financial listed firms for the period 2010 – 2019. Linear regression analysis is employed to assess the impact between variables.

Findings – The study finds that CCC is strongly and negatively related to ROA, indicating that efficient WCM policies supported by shorter CCC enhance profitability in NZX firms. Moreover, the study evidences that CCC does not meaningfully influence TQ, implying that WCM policies do not impact firm value in the NZX business context.

Outcome – The findings of this research will be helpful for financial decision-makers in determining short-term financial plans and strategies, which are primarily associated with the main working capital components of inventory, accounts receivables, and accounts payables.

Originality/value – The importance of working capital is growing in the global business context as a substantial amount of capital is tied up in working capital investments that hinder long-term investments globally. Hence, this research urges academic works to examine different WCM approaches and their relationship with firm performance in different business settings. Moreover, no recent empirical studies are found in New Zealand business settings to assess the relationship between WCM and firm performance. This research fills that gap in the WCM literature.

Keywords – working capital management, cash conversion cycle, profitability, firm value, return on assets, Tobin's q, NZX firms.

CHAPTER 1 – INTRODUCTION

1.1 Background to the research

Short-term financial planning has received constant attention from financial decision-makers and academics due to its strong impact on business. Working capital management (WCM) is a crucial function of short-term financial planning and business operation because it influences firm performance and business continuity. Hence, working capital has been referred to as the lifeblood of a business enterprise because poor WCM may weaken operational ability and cause business failures (Sawarni et al., 2020; Singhania & Metha, 2017).

Among many other financial decisions, determining the appropriate working capital level is critical to enhancing firm performance. More importantly, efficient working capital plays a valuable role in economic downturns by elevating firm profitability. In light of tumultuous financial markets and ambiguous market dynamics with restricted external financing, key short-term assets and liabilities of inventory, receivables, and payables should be managed effectively (Sinhania & Metha, 2017). To what extent the investment in working capital should increase or decrease is a key question that managers should find answers to, as it impacts firm profitability, risk, and consequently firm value (Smith, 1980). Investment in working capital is a decision based on the tradeoff between profitability and risk (Martínez-Solanco & García-Teruel, 2006). According to Kieschnick et al. (2013), firms' future sales expectation, debt load, financial constraints, and bankruptcy risk are considerably influenced by incremental fund investment in net operating working capital.

WCM primarily manages inventory and accounts receivable levels by deciding on the amount of investments required to optimise firm performance while maintaining accounts payable at an appropriate level. Efficient management of these three working capital components is vital for firm performance. Maintaining inventory at the right level is a key factor in determining firm profitability. The stock levels decide the uninterrupted supply of raw material for production and to meet customer demand. When firms have large inventory, it may lead to higher sales because of the reduced risk of stock out. However, overstocking should be eliminated while ensuring an optimal inventory level as it could cause additional storage costs and stock damages, which in turn would reduce firm profitability.

Besides an optimal inventory level, investment in accounts receivable also determines firm performance. Allowing customers more credits with longer terms will enhance revenues. Deloof (2003) points out that a generous credit policy may stimulate sales. However, higher investments in accounts receivable will increase credit risks, resulting in bad debts and extra collection costs. Moreover, a large value of accounts receivable may require extra borrowing to fill cash shortages, consequently increasing interest costs and decreasing firm profitability.

Managing accounts payable affects firm profitability due to possible settlement rebates from suppliers on early payments of bills. However, typically, firms negotiate longer and larger credit accounts from suppliers due to the convenient accessibility of credits rather than dealing with the complexities involved in credits from institutional lenders. In addition, trade credit from suppliers is an inexpensive and flexible source of finance (Deloof, 2003). Thus firms should determine the optimal accounts payable level by ensuring the incremental benefits from trade credits exceeds the forgoing value of early settlement discounts.

Furthermore, many other elements have been enumerated by academics regarding the dynamic nature of WCM and firm performance. For example, Anton and Nucu (2020) highlight that sales are stimulated by trade credits by strengthening relationships with customers while holding more inventories that are secure from potential price fluctuations. Mahmood et al. (2019) reinforce that higher working capital investment is a practical approach to better firm performance because the short-term finance used for working capital financing offers a lower interest rate that is free of inflationary risk. However, in contrast, Altaf and Shah (2017) point out that higher investments in working capital may increase bankruptcy risk on account of the increase in finance costs due to additional borrowing for increased working capital investments. Sinhania and Metha (2017) point out that too much investment in working capital tempts a firm to overtrade or accumulate excess inventory, which may unfavourably affect profitability. Hence the efficiency of working capital is associated with the turnover of inventory, accounts receivable, and accounts payable. Measurement of WCM efficiency is vital in the optimisation process. The most dynamic and standard measure for WCM is the cash conversion cycle (CCC).

Optimal working capital levels may vary in different business settings depending on the business environment that the firms operate in. Thus, managers must determine the optimal inventory, accounts receivable, and accounts payable levels to trade off the risk against firm performance in line with the firm's business strategies. This leads firms to

adopt different working capital strategies resulting in different working capital levels, referred to as WCM approaches in the literature.

Firms tend to employ different WCM approaches to improve their performance according to the internal and external factors that affect WCM components. Wetzel and Hofmann (2019) categorised WCM approaches into three types, namely (i) traditional, (ii) alternative, and (iii) progressive, and suggest that a firm's working capital and profitability are negatively associated under the traditional approach, whereas the alternative approach suggests the opposite, and the progressive approach proposes an inverted U-shaped relationship between working capital level and profitability.

Many internal and external factors affect firms in determining working capital levels. Among the internal factors, product, market, and supply chain strategies are vital in adopting a firm's optimal working capital levels. For example, trading firms may require efficiently moving inventory with quicker turnover, while manufacturing firms may hold inventory for relatively a long time to ensure an uninterrupted supply of raw materials to the production. Accessibility of external finance, supplier strategies, consumer behaviours are among external factors affecting firms' working capital levels. Therefore, working capital management becomes a vital and challenging financial function that requires greater attention from financial decision-makers. The first motivation for this study is to examine how WCM strategies (which are referred to as WCM approaches) influences firm performance that will be useful for managers to make challenging short-term financial decisions.

WCM and firm performance studies are conducted in different countries and industry contexts. For example, studies by Deloof (2003), Martínez-Solanco and García-Teruel (2006), Enqvist et al. (2011), Högerle et al. (2020), and Boisjoly et al. (2020) examined the relationship between WCM and firm performance in the developed western economies of Belgium, Spain, Finland, Germany, and the US respectively. The studies of Nobanee et al. (2011), Le (2019), Altaf and Shah (2017), and Sawarni et al. (2020) examined this relationship in the Asian economies of Japan, Vietnam, and India, respectively. Studies by Moussa (2018) in Egypt and Abuzayed (2012) in Jordan also signify the relationship between WCM and firm performance in Middle East economies. However, no noticeable academic attempts have been found in the existing literature to examine WCM's relationship with firm performance in the New Zealand business context during the 2010s. Therefore, this study secondly seeks to shed light on the WCM literature and its relationship with firm performance in the New Zealand business environment.

The third motivation behind the study relates to New Zealand market characteristics. New Zealand is a small but developed economy that offers free market based economic activities. Its acknowledgement of productivity as a key factor for economic success is highly valued in the private sector. The New Zealand economy demonstrated great resilience and a quick recovery in response to the global financial crisis (GFC) of 2007 to 2009. The private sector was the major economic driver that contributed to faster economic stability in New Zealand following the GFC, showing dynamic and effective performance. Hence, it is vital to investigate how important WCM is as a moderator in firm performance in the relatively high performing corporate sector of New Zealand.

Fourthly, the study offers a holistic overview of the WCM literature by analysing its competing approaches in three directions: traditional, alternative, and progressive. Prior studies have been limited in their analysis of WCM from these aspects, and no analysis in the WCM literature has focused on New Zealand business settings. Moreover, this study investigates the importance of investment in working capital and the implications of different WCM approaches in the New Zealand business setting.

Finally, the study investigates the role of profitability as a moderator between WCM and firm value. Wichitsathian and Pestonji (2019) highlight that profitability might play a moderating role by forming a negative relationship between WCM and firm value. In contrast, Nobanee et al. (2011) argue that a possible scenario for WCM's influence on firms' market value is that a shorter CCC leads to a relatively high net present value of cash flows and then causes a relatively high firm value. These two arguments raise the need for further investigation as to how WCM influences firm value. This study offers a detailed investigation into whether profitability plays a moderating role between WCM and firm value.

1.2 Research objective

The objective of the study is to shed light on the WCM literature regarding the relationship between WCM and firm performance in the NZX business environment. The study fills the gap in the WCM literature on how working capital influences firm performance in NZX business settings, particularly during the period of an economic boom. To achieve this objective, firm performance is studied in two aspects, namely profitability and firm value.

1.3 Research questions

The following two research questions are addressed in the study to find the relationship between WCM and firm performance.

RQ01: How do the different WCM approaches (traditional/alternative/progressive) influence the profitability of NZX firms?

RQ02: How do the different WCM approaches (traditional/alternative/progressive) impact the market value of NZX firms?

1.4 Research methodology

To address the above research questions, firms' CCC, which proxies WCM, is examined with ROA and Tobin's Q (TQ) that represent firm performance. A correlation and regression tests are employed to determine the relationship between these variables in the NZX context.

1.5 Research findings

The findings of the study reveal a strong negative relationship between CCC and ROA, indicating that the traditional WCM approach supported by faster CCC improves firm profitability in NZX firms. The empirical results also suggest that leverage plays a significant role in moderating firm profitability by the lower level of borrowing supported by efficient WCM strategies that enhance the availability of internally generated cash flows. The findings also indicate that in a growing economy, efficient working capital strategies, referred to as the traditional WCM approach, improves firm profitability than the other WCM approaches.

Furthermore, the findings indicate that CCC does not significantly relate to TQ, suggesting that WCM does not influence firm value in NZX business settings. Investors in New Zealand are less concerned about firms' WCM approach in determining firm value because they might assume the other price-sensitive factors are more important for firm valuation. Information asymmetry is a possible reason for investors' lower interest in firms' WCM approaches in determining their market value.

1.6 Structure of the study

The structure of the remaining study follows the following format: Chapter 2 presents a literature review related to WCM and firm performance as well as hypotheses development. Chapter 3 provides details of the data collection and research methodology. Chapter 4 provides the data analysis and the empirical results, and Chapter 5 presents a discussion of research findings, concluding remarks, limitations, and future research implications.

CHAPTER 2 – LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This chapter consists of two sections. Section 2.1 discusses the prior literature on the theoretical background of WCM and its influence on firm profitability and firm value. It focuses on the literature related to the measurement of working capital and the role of three working capital components: inventory accounts receivable and accounts payable. This section also provides a detailed discussion on prior WCM literature, examining the different approaches outlined and their impacts on firm profitability and value. Section 2.2. presents the study's hypotheses related to WCM's impact on firm performance and value under two subsections describing how CCC relates to profitability and firm value.

2.1 Literature review

The primary objective of WCM is to discharge funds tied up in daily operations to increase firm liquidity, which can be utilised for internal funding requirements and reduce finance costs (Högerle et al., 2020). Moreover, the released cash flow can be invested in revenue generation sources which may increase firm profitability. Prior literature has evidenced that a working capital management policy significantly influences firm profitability and market value (Deloof, 2003).

Efficient management of inventory accounts receivable and accounts payable improves firm performance (Nobanee et al., 2011). Accelerating the inventory turnover is traditionally referred to as efficient inventory management using strategies such as just-in-time stock ordering and lean management (Högerle et al., 2020). Efficient accounts receivable and accounts payable management refers to timely debt collection from customers and timely payments to suppliers, maximising firm profitability.

2.1.1 Measurements of working capital

In the WCM literature, working capital measures are viewed in two distinct dimensions: static and dynamic. The static view or position measurement concentrates on current assets and current liabilities and considers working capital as the current assets net of current liabilities. Static measurements represent liquidity ratios such as current and quick ratios. On the other hand, dynamic or activity measurement examines the efficiency of working capital management through the cash conversion cycle (Sawarni et al., 2020). A firm's CCC is the period between the cash outflow from purchases and the cash inflow from sales (Wang, 2017; Deloof, 2003). Prior studies recognise CCC as a comprehensive measure of WCM (e.g., Deloof, 2003; Wichitsathian & Pestonji, 2019; Nobanee et al., 2011).

Martínez-Solanco and García-Teruel (2006) explain that CCC reflects the decision about how much investment there should be in inventory and accounts receivable and how much trade credit to accept from suppliers. It is the aggregation of days inventory outstanding (DIO) and days receivable outstanding (DRO) less days payable outstanding (DPO). Therefore, any action taken by managers that affect inventory accounts receivable or accounts payable will lead to changes in CCC. In other words, to determine the optimal level of a firm's CCC, managers should plan and implement strategies through these three components of CCC. Since CCC provides an effective indication of working capital efficiency, many empirical studies have used it as a proxy for WCM because it represents performance in the management of inventory, accounts receivable, and accounts payable.

2.1.2 Inventory management

Inventory management is a key operational function that is directly linked with revenue generation. Average days of inventory holding is one of the three components of CCC. It is influenced by firms' inventory management policies and procedures, sales and marketing strategies, and supply chain strategies. An adequate level of raw material inventory must be maintained to ensure uninterrupted production to cater for demand (Blinder & Maccini, 1991). Inventory management is critical in both manufacturing and trading firms.

Availability of inventory to cater for consumer demands is a key determinant of revenue generation. However, excessive inventory may lead to cost escalation and hence reduces firm profitability (Kim & Chung, 1990). Therefore, managers face the challenge of determining the optimal inventory level that can maximise firm profitability. To measure inventory management efficiency, the days inventory outstanding (DIO) is widely used. It shows the average number of days that a firm holds its inventory from the date of receiving to the date of sales. Firms typically target to minimise the average inventory holding days whilst ensuring no occurrence of stock-outs.

2.1.3 Accounts receivable management

Accounts receivable management is one of three components of CCC and reflects firms' credit management policies. Firms may employ different credit management policies based on credit risk that they are willing to undertake which may also depend on factors such as industry, firm size, cost of funding, and the ability to access external funding (Burkart & Ellingsen, 2004). Firms that employ liberal credit policies may tend to offer a higher level of trade credits to customers. In contrast, less credit risk-oriented firms may

employ a conservative approach in offering trade credits. Determining the optimal level of trade credit is a challenging task for managers as wrong credit risk calculations may lead to bad debts that can eventually increase bankruptcy risks.

Lee et al. (2018) point out that offering trade credit at the industry level improves firm performance. Moreover, debt collection is vital in the efficient credit management process. Firms may offer different credit terms to customers; for example, 30, 45, or 60-day credit terms are often offered based on firms' credit policy. The collection of debts as per the offered credit term is vital to maintain the required liquidity levels. If a firm encounters difficulty in collecting the debts as per the offered credit term, it may result in liquidity shortages; thus, such firms may require external funding to bridge the delays in cash inflows which in turn could decrease firm profitability due to extra borrowing cost (Baños-Caballero et al., 2014).

It is important to manage accounts receivable as per the firm's credit policy; hence, it requires a proper measurement to evaluate the performance of the accounts receivable function. Days receivable outstanding (DRO) is recognised as an effective measure for accounts receivable management. DRO is the average period from the date of sales of goods/services to customers on credit term to the date of collection of debts. Lower days of DRO indicate efficient debt collection. Besides debt collection efficiency, the amount of investment that a firm can put in accounts receivable is also crucial in determining DRO. The level of investment in accounts receivable mainly depends on a firm’s ability to access the capital market. Firms with a higher ability to access the capital market may tend to invest higher amounts in accounts receivables. This can increase revenue by attracting additional customers through offering more trade credits and can also be used as a tool for price discrimination (Petersen & Rajan, 1997).

2.1.4 Accounts payable management

Accounts payable management is the third component of CCC and involves obtaining trade credit facilities from suppliers and settlement of dues according to the credit term. Petersen and Rajan (1997) highlight that trade credit is the single most important source of short-term external finance for US firms because it provides relatively less complex access to finance than institutional financing such as short-term credit facilities or working capital loans from banks. Longer credit term provides extra room for firms to convert purchases into sales, whereby external finance requirements can be reduced. Thus, firms typically attempt to negotiate longer credit terms which shorten CCC. However, suppliers encourage firms to pay bills early by offering settlement discounts.

Firm profitability may increase through the use of settlement discounts, which is an extra income. Firms may pay supplier bills early if the net benefit from settlement discounts exceeds the saving of borrowing cost through supplier financing. Trade credits may increase the cost of purchases as suppliers use them as a tool for price discrimination (Petersen & Rajan, 1997); thus, firms that have a higher concentration on trade credits might experience reductions in profitability due to adverse price discrimination by suppliers when offering longer or excessive credit term. Lee et al. (2018) point out that the excess trade credit is negatively associated with buyers' performance. Hence managers are required to maintain an appropriate level of trade creditors that can optimise firm profitability. To measure the efficiency of the accounts payable function, days payable outstanding (DPO) is widely used. It shows the average timeframe from the date of credit purchases to the settlement date of supplier bills.

2.1.5 Debate of optimal CCC

The WCM literature provides mixed opinions regarding the efficient level of CCC that a firm should maintain. The debate regarding an efficient level of CCC for optimal performance is primarily over two choices, namely, a shorter CCC regime or a longer CCC regime. Several prior studies have argued that shorter CCC is efficient. For example, Nobanee et al. (2011) and Deloof (2003) argue that CCC can be improved in three ways: (i) shorten the inventory conversion period by quicker processing and selling goods to customers; (ii) shorten the receivable collection period by speeding up collections; and, (iii) extend the payable deferral period via slowing down payments to suppliers. Moreover, the shortened inventory conversion cycle might reduce the inventory holding costs such as storage, handling, and insurance. The reduction in accounts receivable might release funds that can be invested elsewhere (Altaf & Shah, 2017).

In contrast to this argument, other studies have suggested that shortening CCC could weaken firms' operations and cause lower performance. According to Nobanee et al. (2011), the reduced inventory conversion period might increase inventory shortage cost, and increased credit collection pressure might result in the loss of good customers. They also point out that lengthening the payable period could harm a firm's credit reputation. Altaf and Shah (2017) state that increased inventory levels reduce the disruptions between raw material supply and production and extended or increased credit facility to customers increases sales. Therefore, it is critical for financial decision-makers to identify and operate the business at the optimal CCC level based on their business environment.

Enqvist et al. (2011) point out that the optimal level of CCC may need to vary to reflect business conditions. Martínez-Solanco and García-Teruel (2006) argue that firms can choose between the relative benefits of two basic types of strategies for working capital management: they can minimise working capital investment or adopt working capital policies designed to increase sales. As Deloof (2003) points out, to operate at the optimal level of working capital that maximises firm performance, a firm's management must evaluate the trade-off between expected profitability and risk when deciding the level of CCC.

2.1.6 Working capital management and firm profitability

Many empirical studies on WCM support the traditional approach whereby efficient CCC is able to enhance the cash flow available to invest in revenue generation while minimising short-term finance costs. Enqvist et al. (2011) investigated Finnish listed firms over an 18-year period using CCC as a measure of working capital and documented a negative relationship between CCC and corporate profitability. Their results show that firms can achieve higher profitability by efficiently managing inventories and lowering accounts receivable collection times, particularly during economic recessions. Furthermore, they noted statistically significant results, suggesting that a negative relationship between CCC and profitability might exist even during prosperous economic times. Nobanee et al. (2011) investigated 2,123 Japanese non-financial firms (including small, medium, and large companies) listed on the Tokyo Stock Exchange for 1990-2004 and found a significant negative relationship between CCC and return on investment. The findings show that higher profitability can be achieved through shorter CCC because longer CCC requires extra external borrowings.

Martínez-Solanco and García-Teruel (2006) examined panel data of 8,872 SMEs in Spain for the period 1996 - 2002 and found that reducing a firm’s investment in working capital will cause an increase in its profits due to the increased revenue from improved inventory turnover and lower financial leverage. Deloof (2003) examined 1,009 Belgian non-financial firms for the period 1992-1996 and found a significant negative relation between gross operating income and the turnover days of accounts receivable, inventories, and accounts payable, arguing that longer inventory causes reduced sales and longer accounts receivable increases finance cost.

Contrary to the traditional approach, a positive relationship between WCM and profitability is evident in several prior studies, which Wetzel and Hofmann (2019) refer to as the alternative approach. Moussa (2018) investigated 68 industrial firms listed on the

Egyptian Stock Exchange in the period 2000-2010 and found a positive relationship between CCC and ROA. Moussa concludes that Egyptian firms have maintained sufficient cash holding for routine business operations; thus, finance decision-makers may not be motivated to optimise working capital management, resulting in a longer CCC. Sharma and Kumar (2010) argue that CCC exhibits a positive relationship with profitability based on their empirical study of 263 non-financial listed firms at the Bombay Stock Exchange for the period 2000 - 2008 and state that the positive relationship is because of the offering of longer trade credit which plays a vital role in increasing sales and profitability in the Indian corporate context. Abuzayed (2012) also stresses the positive relationship between profitability and CCC based on his empirical test on a sample of Jordanian listed firms for the period 2000 - 2008.

The above discussion regarding the relationship between WCM and firm profitability demonstrates that neither the traditional approach nor the alternate approach can dominate as the most effective WCM approach. It might be suggested that the optimum WCM level could trigger a trade-off that balances costs and benefits (Altaf & Shah, 2017). The study by Altaf and Shah (2017) reveals that firm performance grows until it reaches its optimal level of CCC, and a further increase of working capital beyond the optimal level decreases firm performance. This non-linier trend is referred to as the progressive WCM approach by Wetzel and Hofmann (2019).

The progressive WCM approach suggests an inverted U-shape relationship between working capital levels and profitability, indicating a trade-off between WCM and firm profitability. Anton and Nucu (2020) examined 719 listed firms in Poland for the period 2007 - 2016 and found an inverted U-shaped relationship between these two variables. Their empirical results highlight that a gradual increase in working capital investment significantly enhances sales and discounts on early payments and positively influences corporate profitability. However, a further increase in working capital investment above its optimum level has a negative impact on profitability, which indicates the disadvantages of working capital financing, as it increases opportunity cost and interest charges. Baños-Caballero et al. (2014) examined a sample of non-financial UK firms and suggested an inverted U-shaped relationship between WCM and ROA, explaining that firms increase working capital investments on inventories and accounts receivable to increase sales while making payments to suppliers to receive settlement rebates.

In their study, Wetzel and Hofmann (2019) concentrated on a different dimension of WCM efficiency, considering its impact on collaboration with supply chain partners. They found that shorter CCC might eliminate opportunities to maximise performance as the

provision of limited funding on working capital does not allow a collaborative approach with upstream and downstream supply chain partners. Moreover, they highlighted that firms should find an optimal working capital level to avoid excessive investment. Wetzel and Hofmann's (2019) findings show the importance of maintaining a collaborative relationship with suppliers and customers. They point out that firms can minimise the loss in sales through a collaborative approach by offering longer credit terms when customers encounter short-term financial difficulties rather than limiting trade credit facilities. Similarly, firms can assist suppliers by paying early when suppliers experience short-term financial difficulties. Such an approach creates stable relationships with both upstream and downstream supply chain partners. Firms can benefit by securing and growing their market share, ensuring continuous supplies even during a period of financial stress.

In an examination of conflicting views regarding the effects of shorter and longer CCC on profitability, Afrifa and Padachi (2015) conducted an empirical test on a sample of 160 SMEs for the period 2005 - 2010 and reported a nonlinear relationship between these two variables. They describe a concave relationship between WCM and profitability, suggesting that profitability is maximised at an optimal working capital level. Further, they maintain that profitability will reduce when the CCC level increases beyond the optimal level. The findings of Baños-Caballero et al.'s (2014) study on Spanish SMEs reinforce the concept of a concave relationship between WCM and profitability. They posit that a firm's operating performance will increase until a certain working capital level is reached, after which performance will start to decrease. Furthermore, they explain the possible reason for a concave relationship is the difficulties in bargaining with suppliers and customers, which might result in firms operating below and above the optimal CCC level.

Sinhania and Metha (2017) investigated listed firms in multiple emerging Asian countries to identify how WCM levels vary in different country contexts when focusing on optimising firm performance. Their finding of a nonlinear relationship suggests that firms in some countries achieve higher performance at a certain level of working capital, which is recognised as the optimal WCM level. They suggest that the relationship between CCC and ROA resembles an inverted U-shaped curve. Aktas et al. (2013) document an optimal working capital level that involves superior firm performance. They investigated an extensive sample of US firms over a 30-year period from 1982 to 2011 and found that the optimal level can trigger either increasing or decreasing investments in working capital. Their findings suggest that superior performance can be achieved by redeploying underutilised working capital resources in more efficient investments that result in growth.

2.1.7 Working capital management and firm value

A substantial number of empirical studies have investigated the relationship between WCM and firm value and provided mixed results. Many studies have supported the traditional WCM approach that suggests that shorter CCC provides higher firm value; however, the alternative approach suggests longer CCC improves firm value. According to the progressive approach, optimal firm value is achieved when working capital level trades off profitability.

As Deloof (2003) highlights, efficient WCM practices can create value for shareholders by reducing CCC to a reasonable level. Sawarni et al. (2020) also report that efficient WCM policies resulting in a quicker CCC provide higher TQ, suggesting the market responds positively towards WCM-efficient firms. Le (2019) investigated a sample of 497 Vietnamese firms for the period 2007 - 2016 and found a strong negative relationship between net working capital and stock returns which suggests that when an aggressive working capital policy is employed, firm performance, as measured by either market value or accounting value, also improves.

Wichitsathian and Pestonji (2019) found a significant negative impact on the market value of a sample of Thai listed firms when financial policies drove a high current ratio and shorter CCC. They highlight that profitability plays a moderating role in forming the negative relationship between WCM and firms' market value. Efficient CCC driven by a higher inventory turnover and accounts receivable turnover coupled with a lower level of account payables create statistically meaningful increases in TQ, substantiating a strong relationship between WCM and equity market valuation (Boisjoly et al., 2020).

Although a significant negative relationship is evident between an efficient WCM approach and firm market value, Boisjoly et al. (2020) point out the possibility of other unknown factors driving both firm valuation and WCM should be acknowledged and examined in future research. As such, one can argue that improved working capital levels, by way of shorter CCC, positively influence a firm's market value because of the moderating role of profitability. Endri and Fathony (2020) argue that, as a performance indicator, profitability represents an accounting value which is one of the key determinants of firms' market value.

Moliterni (2018) argues that current profitability is typically captured by net income (EAT) and may not be fully reflected in a firm’s market value, whereas expected profitability is captured by the market value of equity as forward-looking financial variables capture market expectations. Therefore, there is a need for extended empirical tests to examine

whether the WCM directly impacts market value without the moderating effect of profitability. Nobanee et al. (2011) point to WCM's direct influence on firms' market value whereby a shorter CCC leads to the relatively high net present value of cash flows, which subsequently leads to higher firm value. Gentry et al. (1990) also state that short CCC provides a higher present value of net cash flow and improves firm value. This indicates that improved free cash flows from quicker debt collection and delayed supplier payment lower the firm's weighted average cost of capital. Furthermore, Berk et al. (2009) note that increased free cash flows supported by efficient working capital policies enhance a firm's value because efficient WCM redeploys free cash flow or underutilised resources to pursue higher-value projects to create value for the firm.

Several empirical studies reinforce the alternate WCM approach and show a positive relationship between WCM and firm market value. Moussa (2018) found a significant positive association between CCC and firm value in a sample of Egyptian listed firms. Moussa (2018) argues that the firms that achieve a higher return of assets are more attractive to investors. His study also substantiates the moderating effect of profitability in forming a relationship between CCC and firm value. Furthermore, Vural et al. (2012) investigated 75 manufacturing firms listed on the Istanbul Stock Exchange and found a positive association between CCC and TQ, suggesting that firm value significantly increases when firms extend inventory holding and longer credit terms while paying suppliers early. This result also indicates that increased profitability through longer CCC might moderate firms' market value.

A limited number of academic studies have examined the progressive WCM approach that suggests an optimal level of working capital to maximise firm value. Baños-Caballero et al. (2014) found that maximum firm value occurs at the optimal working capital level. They point out lost sales due to short stock holding and aggressive credit policy coupled with lost discounts from early payments might reduce firm profitability. Besides the possible drawbacks of aggressive net trade cycles, they highlight the danger of excessive working capital levels lowering profitability due to additional finance costs. Aktas et al. (2013) found a higher market value in US firms when investments in working capital reach an optimal level through redeploying underutilised working capital resources in efficient investments that generate revenue growth. This indicates that the relationship between WCM and firm value may be non-monotonic. Therefore, it can be suggested that firm value can reach its highest point when WCM is operated at its optimal level. Furthermore, Anton and Nucu (2020) also reported the existence of a concave relationship between these two variables.

2.2 Hypotheses development

As discussed in the literature review, prior studies provide mixed and conflicting results regarding WCM's relationship with firm performance. The traditional WCM approach assumes that shorter CCC triggers higher firm performance in terms of profitability and firm value. In contrast, the alternative WCM approach suggests an opposite view to the traditional approach. In contrast to both traditional and alternative approaches, the progressive approach supports the existence of a nonlinear relationship between CCC and firm profitability, suggesting the relationship forms an inverted u-shaped curve.

2.2.1 Working capital management and profitability

Although many studies argued that a shorter CCC is the most efficient WCM approach and provides higher firm profitability, it might not be realistic in certain business scenarios where the business environment is immensely competitive. Deloof (2003) explains that lower inventory levels, strict trade credit policies, and increased trade credits from suppliers as a means of short-term financing can increase the risk of lost sales due to stock-outs and increase accounts payable costs due to forging settlement rebates on early payments to suppliers. In a competitive business context, an offer of extended trade credits to customers can be a main determining factor in securing market share. Martínez-Solano and García-Teruel (2006) point out that a significant reduction in granting trade credits to customers might provoke a reduction in sales. Petersen and Rajan (1997) highlight that investment in accounts receivable can increase sales because firms can attract new customers by offering credit terms. However, this contradicts the assumption of the traditional WCM approach, where the shorter DRO is presumed to generate higher profitability.

On the other hand, to compensate for the potential increase in finance cost due to extending credit offers to customers, as a strategy, firms could increase the margin to sustain profitability. Petersen and Rajan (1997) point out that trade credit acts as an effective price cut and encourages customers to purchase when firms are experiencing low demand. Moreover, Deloof and Jegers (1996) highlight trade credit as a vital supplier selection criterion when it is difficult to differentiate products; as such, the importance of trade credit as a revenue generation tool increases. Furthermore, facilitating trade-credit leads to a strong long-term relationship between customers and suppliers (Ng et al., 1999). A strong business relationship assures continuity of business transactions between a supplier and a customer, which in turn establishes market share and leads to revenue growth. An offer of trade credit gives customers sufficient time to check whether the goods supplied are in accordance with the order specifications in terms of quantity

and quality; hence, it minimises information asymmetry between the customer and the supplier (Smith, 1987), which consequently strengthens the relationship between suppliers and customers.

The abovementioned factors reinforce that a higher investment in trade receivable resulting in longer CCC can generate higher firm profitability. Thus, the traditional view of achieving higher profitability through shorter CCC supported by shorter DRO can be challenged in certain business scenarios. The traditional WCM approach encourages firms to reduce DIO to increase inventory management efficiency, leading to a shorter CCC and increased profitability. However, inventory availability is a crucial factor in increasing sales and profitability. Wang (2002) highlights that excessive inventory reduction runs the risk of losing sales increases. As well as higher inventory levels leading to increased sales, profitability might also be stimulated by negotiating higher rebates on bulk purchases leading to longer DIO and extended CCC. This contradicts the traditional WCM approach, which anticipates higher profitability through shorter DIO and shorter CCC.

Firms import extra raw materials when exchange rates are favourable for importation, whereby the local currency appreciates against foreign currency. This increases DIO but reduces the landing cost of raw materials. However, overall, it might increase profitability due to the reduced landing cost of raw materials. Although such a strategy improves profitability, it contradicts the traditional WCM approach, which discourages the extension of DIO. Blinder and Maccini (1991) point out that a larger inventory reduces procurement costs and provides a hedge against price escalations. Moreover, an uninterrupted supply of raw materials is crucial to ensure continuous production and to sustain market share, unless customers shift to a competitor when the supply is interrupted.

To ensure uninterrupted production, a larger raw material inventory might be required in certain businesses. Hence DIO might extend; however, due to uninterrupted production and supply, this can enhance firm profitability, which is again an opposing view to the traditional WCM approach. Blinder and Maccini (1991) support longer DIO for higher profitability, arguing that the revenue loss due to scarcity of products and production process interruptions can be prevented by maintaining a larger inventory. As discussed above, shorter DIO does not always provide higher profitability; thus, the traditional WCM approach that supports shorter DIO can be challenged in certain business environments. According to the traditional WCM approach, longer DPO provides higher profitability because trade credit is used as a short-term external financing source that does not incur

interest expense. However, Martínez-Solano and García-Teruel (2006) highlight that an increase in supplier financing may result in the loss of settlement rebates from suppliers when making early payments. When the bills are paid early, suppliers tend to grant settlement rebates, which may improve firm profitability. A shorter DPO policy may be better if the settlement rebate exceeds the cost of funds needed to bridge the additional working capital requirements due to early payments to suppliers. Shorter DPO supported by settlement discounts contrasts with the view of the traditional WCM approach, where higher profitability is anticipated through longer DPO.

On the other hand, although several studies have suggested that longer CCC offers higher firm performance, there are many studies that point out the drawbacks of longer CCC in decreasing firm performance. According to Baños-Caballero et al. (2014), additional investments in working capital may unfavourably affect firm performance if the cost of additional investment in working capital exceeds the benefits of holding larger inventory and/or of granting extended credit terms to customers. Kieschnick et al. (2013) highlight that, like other investments, increased inventory, accounts receivable, and decreased accounts payable require additional financing, which involves interest expense and opportunity costs. Enqvist et al. (2011) also point out that firm profitability might be diminished by a faster rise in the cost of larger investments in inventories and/or trade debtors relative to their benefits. For example, extended credit terms and additional credit facilities provided to customers may increase DRO and CCC. This may not only increase external finance costs but also may increase credit administration and collection costs. Such increased administrative and collection costs could decrease firm profitability. As such, one can argue that longer DRO resulting in increased CCC might hinder firm profitability.

Significant investments in inventory resulting in longer DIO may increase stock obsolescence and damages because extended stock holding might outdate products, and increased stock handling might result in more damages to inventories. Moreover, longer DIO may require additional resources to manage the inventory, such as workforce, storage, equipment and racking. These will push costs up and reduce profitability. Kim and Chung (1990) explain that warehouse costs, insurance, and security costs are amongst the possible expenses which might increase when enhancing stock availability. Hence, extended CCC supported by longer DIO can be challenged because it might cause cost escalation in certain business circumstances.

The alternative argument suggests that longer CCC enhanced by shorter DPO provides higher firm profitability due to possible settlement discounts from suppliers. However,

larger and longer credit terms from suppliers could help firms to obtain short term financing when they have limited access to formal lending sources (Burkart & Ellingsen, 2004). Moreover, such credit terms reduce borrowing costs; thus, improving firm profitability. Firms that import materials from overseas have the advantage of longer credit terms, providing an additional period that can be used to convert inventory into cash. Hence it can be argued that the alternative WCM approach supported by shorter DPO does not always result in higher profitability than longer DPO, which might provide more benefits in some business scenarios. Deloof (2003) maintains that released funds from working capital can be invested in value-enhancing projects, thus eliminating opportunity costs. Ek and Guerin, (2011) support Deloof's argument, stating that a large amount of cash tied up in working capital may hinder firms from implementing value-adding investments in the short run. Both of these arguments challenge the validity of the alternative WCM approach supported by extended CCC.

Aktas et al. (2013) point out that according to the progressive WCM approach, working capital levels potentially involve benefits and drawbacks, implying a nonlinear relationship between WCM and firm profitability. They explain that excess working capital needs to be redeployed in underutilised resources associated with higher firm performance. Afrifa and Padachi (2015) employed CCC and ROA as proxies of WCM and profitability and concluded that the relationship between CCC and ROA is neither negative nor positive. This again indicates that these two variables form a nonlinear relationship.

The above discussion highlights the absence of a stable and consistent relationship between WCM and firm profitability based on the findings of prior studies which have provided conflicting conclusions regarding the relationship between these two variables. The traditional WCM approach promotes shorter CCC by maintaining shorter DIO and DRO with longer DPO for higher profitability. In contrast, the alternative WCM approach promotes a completely opposite view, and the progressive WCM approach suggests a nonlinear relationship between CCC and profitability. Hence, to test the relationship between CCC and profitability in this study, a null hypothesis is suggested as follows:

H1: There is no strong relationship between WCM and firm profitability.

2.2.2 Working capital management and firm value

Many internal and external factors influence the market value of a firm. Le (2019) points out that a firm's working capital policy influences firm value as measured by either market value or accounting value. Prior WCM studies have empirically evidenced different

relationships between WCM and firm value, which conflict with each other. Based on studies in different business settings, Boisjoly et al. (2020), Nobanee et al. (2011), and Wichitsathian and Pestonji (2019) found a significant negative relationship between WCM and firm value, whereas Moussa (2018) and Vural et al. (2012) found a positive relationship between these two variables. Anton and Nucu (2020), Baños-Caballero et al. (2014), and Aktas et al. (2013) argue that this relationship is neither negative nor positive; rather, it forms a concave relationship.

Management of DRO through credit policy impacts the level of CCC; hence, Sawarni et al. (2020) tested the effect of DRO with TQ and found no statistically significant relationship between them in a sample of 414 Indian non-financial listed firms, suggesting that the market response to investment in accounts receivable is mixed. They explain a possible reason might be the mixed reactions of investors to the accounts receivable balance; some investors might place higher importance on the positive effects of longer DRO from the perspective of sale's stimulation, while others might be concerned about the potential escalation of finance cost as a result of extended DRO. On the contrary, Boisjoly et al. (2020) found that DRO is negatively and significantly related to firm value, indicating that firms with less investment in accounts receivable through quicker debt collection show higher firm value.

The length of DIO is a key component of managing CCC; hence, several studies have tested its association with firm value. Sawarni et al. (2020) and Boisjoly et al. (2020) found a statistically significant negative relationship between DIO and firm value, suggesting a lower inventory that triggers shorter CCC stimulates firm value. This finding contradicts the view of Abuzayed (2012), who posits that investors may not consider shorter DIO as a driver for firm value, and as a result, financial decision-makers in the corporate sector are not motivated to increase working capital efficiency.

Some studies have investigated the effects of DPO on firm value, and unlike other variables, DPO shows a relatively consistent relationship with firm value. According to Deloof (2003) and Sawarni et al. (2020), DPO demonstrates a negative relationship with firm value indicating, that profitable firms do not delay payments to their suppliers, which in turn creates a positive image of these firms in the market. They highlight that investors may value such a positive image, and thus the market value of such firms increases.

The above discussion shows that the relationship between CCC, as the proxy of WCM, and TQ (the proxy of firm value) is not consistent. According to the traditional WCM approach, shorter CCC leads to higher market performance, whereas the alternative

WCM approach promotes longer CCC for better firm value. In contrast to these views, the progressive approach maintains that there is a nonlinear relationship between CCC and firm value. Due to these conflicting views, in this study, a null hypothesis is suggested regarding the relationship between WCM and firm value as follows.

H2: There is no strong relationship between CCC and firm value.

The chapter discussed prior literature relating to firm performance and the value effects of WCM. Prior literature has presented conflicting views on how WCM influences firm performance, thus, it seeks further examination on this topic, particularly concerning NZX business settings. Two hypotheses were presented to investigate how WCM contributes to firm performance in the NZX business environment.

CHAPTER 3 – RESEARCH DESIGN AND METHODOLOGY

This chapter contains details of the research design and methodology. Section 3.1 presents the data collection methods, while section 3.2 presents the test models and data analysis methods. Sections 3.3, 3.4 and 3.5 describe the dependent, independent, and control variables, respectively, that are used in the study.

3.1 Data collection

The study focused on non-financial firms listed on the New Zealand Stock Exchange. Data was collected from different sources, with the Eikon database being the main data source. Eikon is provided by Refinitive, and it facilitates real-time and historical data analytics related to trading and market trends, commodities, foreign exchange, and a large amount of other trading information. The variables of industry, CCC, ROA, TQ, debt to equity, growth, market to book ratio (M/B), and firm size were collected from Eikon. The time series search engine in Eikon was used to extract the variables from the database. Initially, ten years of data (2010 – 2019) related to 125 firms listed on the NZX stock exchange was collected from the Eikon database. Then, the banks and finance firms and the firms that did not have ten years of data were removed from the initial sample. Finally, 57 non-finance listed firms on the NZX stock exchange were included in the test sample.

To calculate TQ, values of market capitalisation, total assets, and total liabilities as of balance sheet date over the 10-year period were obtained from the database. Then, the sum of market capitalisation and total liabilities was divided by the total asset value to derive the TQ value of the firms in the sample. The statutory auditor was identified from the annual reports published on the investor information page of 57 firms' websites. Auditor switching/rotation, if any, was noted when obtaining auditor data.

The ten-year period of 2010-2019 was selected because, during this period, the New Zealand economy showed continuous growth after the economic shock waves of GFC. Private sector performance has immensely contributed to this economic recovery from the GFC and to sustain continuous economic growth until 2020. Kumar and Singh (2017) found that firms have become more efficient in managing working capital after the GFC in the Indian business context. Therefore, this study seeks answers for how and to which extent WCM has influenced firm performance during the post-GFC business environment in New Zealand.

3.2 Model development

Since prior literature has reported mixed and conflicting results regarding the relationship between WCM and firm performance, the first hypothesis was developed as a null hypothesis (there is no strong relationship between WCM and firm profitability) to test the relationship between the two variables in the NZX business settings. Hence, the model for H1 is as follows.

$$ROA_t = \alpha_0 + \beta_1 CCC_{it} + \beta_2 Lev_{it} + \beta_3 Growth_{it} + \beta_4 Size_{it} + \beta_5 M/B_{it} + \beta_6 Auditor_{it} + \beta_7 Industry_i + \beta_8 Year_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (Eq.1)$$

H2 was also developed as a null hypothesis (there is no strong relationship between WCM and firm market value) because of mixed and conflicting results in the existing literature regarding the relationship between WCM and firm value. Hence, the following model is employed to test H2.

$$TQ_t = \alpha_0 + \beta_1 CCC_{it} + \beta_2 ROA_{it} + \beta_3 Lev_{it} + \beta_4 Growth_{it} + \beta_5 Size_{it} + \beta_6 M/B_{it} + \beta_7 Auditor_{it} + \beta_8 Industry_i + \beta_9 Year_{it} + \varepsilon_{it} \ldots\ldots\ldots (Eq.2)$$

The Pearson correlation test and linear regression analysis were used to examine the relationship between WCM, firm profitability, and firm value in the selected sample.

3.2.1 Dependent variables

Existing literature has used different profitability measures to examine firm performance in terms of accounting values, including ROA, ROCE, GOI, NOI, and ROI. ROA is used to measure firm profitability in this study because it is regarded as an overall indicator of profitability since it is not limited by special items in the capital structure (Barber & Lyon, 1996). In addition, ROA is an indicator that demonstrates a firm's profitability with respect to its assets (Singhania & Metha, 2017).

ROA_t is the proxy for firm profitability, which is the dependent variable of model1. ROA stands for the return on assets of a firm. It provides firm profitability relative to its total assets and indicates how its management utilises the firm's total assets to generate revenue efficiently. A higher ratio shows that a firm utilises its assets efficiently to generate a higher return.

TQ_t is used as a proxy for firm value, which is the dependent variable of model 2. TQ provides a measure for a firm's market value relative to its asset replacement cost. TQ is considered a more comprehensive measure of market value as it takes the book value

of a firm's assets into account (Klapper & Love, 2004). TQ is generally calculated by dividing market capitalisation plus book value of total liabilities by book value of total assets.

3.2.2 Independent variables

CCC_{it} is the proxy for WCM and is the independent variable of the test. CCC is the net days of a firm's cash conversion cycle. Wang (2017) explains that CCC is the timespan used to sell inventory and collect accounts receivable less the time taken to pay accounts payables. Shorter CCC requires less external finance as cash is internally generated quicker, whereas longer CCC requires external finance to fill the cash shortages as the cash conversion period is longer. Singhania and Metha (2017) describe CCC as the pace of converting raw materials into finished goods, then selling the finished goods and collecting cash from customers while paying suppliers' bills. CCC can be calculated by subtracting DPO from the aggregation of DIO and DRO.

DIO is the average number of days taken to convert the raw materials into finished goods and then to sell the finished goods to customers. DRO is the timespan from the date of the sale of goods on credit to the date of collecting debts from customers. DPO is the timespan from purchasing raw materials on credit term to the settlement of dues to suppliers.

3.2.3 Control variables

Control variables are used to lower the potential bias that might arise on account of omitted variables. The variables that might influence firm profitability and market value, such as leverage, growth, firm size, market to book ratio, industry, and auditor, are employed as the control variables.

Lev_{it} stands for the level of leverage of firm *i* in year *t.* Leverage refers to the amount of debt a firm uses to finance its assets. Alkhatib (2012) explains that leverage is the level at which firms may utilise debt to increase profitability. The use of debt to generate revenue is evident; thus, leverage is included as an independent variable in the model that could influence ROA and firm value. Therefore, the Debt to Equity ratio, which shows the level of indebtedness over a firm's total equity, is chosen to represent the firm leverage that might influence profitability and firm value.

Growth_{it} represents the percentage of total sales that has increased concerning the preceding financial year. Sales growth can be an opportunity for a firm to improve its profitability; that is, positive sales growth increases profitability and firm value, whereas

negative sales growth does the opposite. Since sales growth may influence firm profitability and firm value, it is employed as a control variable.

Size_{it} represents the logarithm value of sales of firm *i* in year *t.* Firm size is a basic firm characteristic that affects firm performance because larger firms might have a higher ability to sustain themselves in the market than smaller firms. According to Niresh and Velnampy (2014), firm size is a significant factor in determining firm profitability based on economies of scale. Hence firm size is considered as a control variable in the models that can influence ROA and firm value. Total assets, total sales, and market capitalisation are measures that are widely used to estimate the firm size. Annual sales is used to measure the firm size in the selected sample.

$\mathrm{M/B}_{it}$ denotes the market to book ratio of firm *i* in year *t.* M/B ratio represents the market value of a firm's net assets and indicates a firm's growth potential. Thus, a higher M/B ratio indicates greater firm performance.

$\mathrm{Industry_i}$ refers to a firm's category according to the Industry Classification Benchmark (ICB). ICB classification is a globally used standard for the categorisation and comparison of firms by industry and sector. Firm performance can be dependent upon the industry in which the firm operates. Hence industry is used as a control variable that might influence profitability and firm value.

$\mathrm{Auditor_{it}}$ refers to whether the statutory auditor is a "big four firm" or a non "big four firm". Financial statements of a large number of listed firms are usually audited by one of the big four global audit firms. They are Deloitte, PWC, KPMG, and EY. If a big four firm audits the financial statements of a firm, it generally increases the confidence of prospective investors based on the assurance provided by the auditor. Several academic studies have shown that when a big four firm becomes the statutory auditor of a firm, the firm value in the market increases due to investors' confidence (Francis et. al, 2003). Hence, the auditor is assumed to be an influencer of firm market value.

This chapter explained the data collection methods, test models, data analysis approaches, and the variables used in the tests to examine the effect of WCM on firm performance in NZX business settings.

CHAPTER 4 – DATA ANALYSIS AND EMPIRICAL RESULTS

This chapter presents a detailed analysis of the empirical results of the tests. Section 4.1 provides a descriptive analysis of the variables used in the tests. Section 4.2 presents an analysis of the correlation between variables. Section 4.3 presents regression results and how the findings lead to the conclusions of the study.

4.1 Descriptive analysis

Firstly, a descriptive analysis was conducted in order to understand the basic features of the data analysed in the study. Table 1 shows the descriptive statistics of the variables that were used in the tests.

Table 1: Descriptive Statistics

Variables	Mean	Standard Deviation (SD)	Minimum	Maximum
ROA	4.43	8.15	-40.89	20.97
TQ	1.43	0.83	0.30	5.89
CCC	82	118	-320	524
Leverage	50.90	40.07	0.02	218.85
Growth	0.07	0.17	-0.38	1.03
Firm Size	19.57	1.91	15.2	24
M/B Ratio	1.84	1.61	0.11	16.01
Auditor	0.93	0.26	0.00	1

Note: Variable definitions are provided in Appendix 1

ROA represents profitability compared to a firm's asset base. It is a proxy for firm performance in the study. The mean value of ROA was 4.43%, showing relatively low performance in the sample of 57 NZX firms. The standard deviation of 8.15 indicates that the spread of ROA was high in the sample because of a few but extremely lower-performing firms and a moderate number of higher-performing firms. The higher spread of ROA was also substantiated by the minimum and maximum ROA values of -40.89% and 20.97%, respectively.

TQ represents asset replacement cost relative to a firm’s market capitalisation, and it is a widely used proxy for a firm’s market performance. If the TQ value is above 1, it reflects that the firm's market value exceeds the total asset value. The analysis shows the average TQ value of the sample was 1.43, which indicates, generally, the market value of the NZX firms was higher than their asset replacement cost. The standard deviation of TQ was 0.83, while the minimum and maximum values were 0.30 and 5.89, respectively, which indicate that only a few firms report higher TQ values in the sample.

The mean value of CCC was 82, which implies the average period for the NZX firms to convert inventory into cash was 82 days. The standard deviation of CCC was 118, while the minimum and maximum CCC values were -320 and 524, respectively. Some firms in the sample reported negative CCC because they took more days to settle accounts payable than the aggregate DIO and DRO. Besides the firms with negative CCC, a few firms reported extremely long CCC, reflecting more extended DIO plus higher DRO with a shorter DPO.

Leverage reflects the percentage of a firm's debts relative to its equity value. The mean value of leverage was 50.90% which means that, on average, the NZX firms had almost two times the equity against their liabilities which is, in general, a strong position. The maximum leverage value was 218.95%, meaning that the liabilities were 2.19 times greater than the equity. The minimum leverage value of 2% indicated a significantly low debt level against the firm's equity. The standard deviation of leverage was 40.07, which means the spread of leverage values from the mean was relatively high. The average growth in the sample of NZX firms was 7%. The sample reported a minimum growth of -38%, while the maximum growth was 103%. The spread of the growth values from the mean is represented by the standard deviation, which was 17%. In the study, firm size was measured based on annual revenue, and the log value of annual revenue was used in the analysis. The mean value of the firm size was 19.57, while the standard deviation was 1.91. Minimum and maximum values of firm size were 15.2 and 24, respectively.

The market to book (M/B) ratio represents a firm's market value of equity relative to the book value of equity. The average M/B ratio of the sample was 1.84, meaning that, in general, the market value of the NZX firms was higher than their book value. The standard deviation of the M/B ratio was 1.61, while the minimum and maximum values were 0.11 and 16.01, respectively. The auditor is a binary variable that specifies 1 if it is one of the big four firms and 0 otherwise. The mean value of auditor was 0.93, reflecting that most of the firms appointed one of the big four firms for the statutory auditor position.

4.2 Correlation analysis

Table 2 presents Pearson correlation results and shows the pairwise correlation coefficient between variables used in the models. The coefficient values illustrate the significance of the linear correlation between two variables. If the correlation is positive when one variable increases, the other variable also increases and when one variable decreases, the other variable also decreases. A negative correlation signifies that if one variable increases, the other variable decreases.

The analysis found a significant negative correlation between CCC and ROA (r = -.092, P<.05). This implies that shorter CCC positively associates profitability in NZX firms. Martínez-Solanco and García-Teruel, (2006) reported similar results between CCC and ROA in a sample of Spanish firms. The analysis also found that CCC was negatively correlated with TQ (r = -.013); however, it did not form a statistically significant association. Although not statistically significant, a negative correlation indicates that quicker CCC might moderate firm value in NZX firms. This is in line with Boisjoly et al.'s (2020) study of US firms between 1990 and 2017, which found a modest correlation between CCC and TQ. However, Boisjoly et al. (2020) point out that the modest correlation might have resulted from the broader panel data set used in the sample. Furthermore, Enqvist et al. (2011), who studied Finnish listed firms, and Sawarni et al. (2020), who studied non-finance firms listed on the Bombay stock exchange, reported a similar negative correlation between WCM and firm performance.

Table – 2 Pearson Correlation Analysis

Variables	CCC	Lev	Growth	ROA	TQ	Size	MB	Auditor
CCC	1.000							
Lev	-0.084*	1.000						
Growth	-0.041	-0.138*	1.000					
ROA	-0.092*	-0.202*	0.128*	1.000				
TQ	-0.013	-0.074	0.136*	0.369*	1.000			
Size	-0.134*	0.186*	-0.137*	0.122*	0.011	1.000		
M/B	0.018	-0.043	0.073	0.057	0.534**	-0.034	1.000	
Auditor	0.029	0.126*	0.014	-0.105	-0.169*	0.294*	-0.120*	1.00

N=570, *p< .05, **p< .01

ROA was positively and significantly correlated with TQ (r =.369, P<.05) in the sample, which is consistent with the finding of Moussa (2018), indicating that when profitability increases, firm value also increases. This supports the argument that profitability strongly modifies firm value (Wichitsathian & Pestonji, 2019).

The analysis found a meaningful and robust negative correlation between LEV and ROA (r = -.202, P<.05), implying that higher financial leverage in capital structure reduced the profitability of the NZX firms. A possible explanation for this result is that higher leverage involves greater debts over equity that might reduce profitability due to the increased borrowing cost. Similarly, Enqvist et al. (2011) found a negative correlation between debt level and firm profitability measured by ROA in a Finnish-listed firm sample. Moreover, it can be assumed that a negative correlation between leverage and ROA is connected with WCM performance because longer CCC might cause a firm to borrow more, which lowers profitability.

Despite that, a significant negative correlation was found between LEV and CCC (r = -.084, P<.05) in the NZX firms, implying an irregular association between these two variables that is, leverage reduced when CCC increased. This contradicts the traditional view of the influences of working capital on debt level, which suggests that leverage rises when CCC increases and vice-versa. Furthermore, the results show LEV had a non-significant negative correlation with TQ (r =-.074), suggesting firms' market performance is not materially affected by debt level in NZX firms. Firm growth was significantly and positively correlated with ROA (r =.128, P<.05) and TQ (r =.136, P<.05) in the sample, indicating that growth is a key determinant of firm profitability and investors are considerably motivated by firm growth as a measure for enhancing value in NZX firms. These results are consistent with the findings of a study by Moussa (2018) on Egyptian listed firms whose growth demonstrated a strong positive correlation with ROA and TQ, implying that growth generates profitability and firm value. Firm growth also had a significant negative correlation with LEV (r =-.0138, P<.05), suggesting that firms with higher growth report lower debt levels in NZX firms.

The analysis found that large firms made higher profits, with the firm size is positively correlated with ROA (r =0.122, P<.05), suggesting that large firms make greater profits than small firms in the NZX business context. Anton and Nucu (2020) found a similar correlation between firm size and ROA in a sample of listed Polish firms. The analysis showed that firm size formed a positive correlation with leverage (r =.186*, P<.05), indicating that large firms borrowed more than smaller firms. Furthermore, firm size showed a significant negative correlation with CCC (r = -.134, P<.05) and firm growth (r=-.137, P<.05), indicating that large NZX firms operated shorter CCC and reported a lower growth. Abuzayed (2012) found a strong negative correlation between CCC and firm size based on a sample of Jordanian listed firms, reinforcing the fact that larger firms maintain quicker CCC. A similar negative correlation was reported between CCC and firm size in the study of Sharma and Kumar (2010) based on a sample of listed firms on the Bombay stock exchange. However, the analysis found that firm size did not significantly correlate with TQ (r =.011), which suggests the firm size is not an influential factor in determining firm value in NZX firms.

M/B strongly and positively correlated with TQ (r=.534, P<.05), showing the effect of the common variable of market capitalisation that is used as a variable in the computation of both M/B and TQ. M/B did not significantly correlate with the variables of ROA (r =.057), CCC (r =.018), LEV (r = -.043), Growth (r =.073), and Size (r = -.034). The auditor, being one of the big four audit firms, is a binary variable, and it significantly and positively correlated with firm size (r =.294, P<.05), implying that large firms appointed one of four

big audit firms to the position of the auditor. The auditor was also significantly and negatively correlated with TQ (r = -.169, P<.05) and ROA (r = -.105, P<.05), indicating that the big four firms are expensive and thus reduce profitability. The auditor did not meaningfully correlate with CCC (r =.029) and growth (r =.014).

Overall, the correlation analysis found that CCC influenced the profitability of NZX firms. Moreover, CCC correlated negatively with profitability and leverage, suggesting that quicker CCC, which is referred to as the traditional WCM approach, may improve profitability. The reason is that fewer finance cost leads to higher profitability based on the healthy cash flow generated through faster inventory turnover and quicker debt collection, which might prevent excessive borrowing in NZX firms. CCC's modest correlation with TQ suggests that WCM did not influence firm value in the NZX firms. The correlation results showed no multicollinearity between variables.

4.3 Regression analysis

Table 3 shows the results of linear regression analysis. The dependent variables of ROA and TQ were regressed against the independent variable of CCC and the control variables of LEV, Growth, Size, M/B, and Auditor, with industry and year fixed effects and without industry and year fixed effects. The regression was conducted using model 1 and model 2.

4.3.1 Working capital management and firm profitability

Model 1 was developed to test hypothesis 1 based on the relationship between WCM and firm profitability. Model 1 was regressed with industry fixed effect and year fixed effect in test 1. The results are presented in Table 3, Panel A. Overall, the F value indicates that the regression model is significant at level 1% (R^2=.18, F=4.47, P=.001). The R^2 value demonstrates the model's strength, with a higher R^2 value representing better model fit. The analysis showed R^2 is 0.18, indicating that independent variables accounted for 18% variation in the dependent variable.

The analysis in column 1 shows that the coefficient between CCC and ROA was negative and significant (β = -.006, p<.05), hence it can be concluded that the CCC forms a negative relationship with ROA. It can also be concluded that efficient WCM supported by quicker CCC significantly impacts profitability in NZX firms. Nevertheless, hypothesis 1 suggests that there is no strong relationship between WCM and firm profitability. Since the coefficient of CCC and ROA was negatively significant, the results confirm that a shorter CCC improved firm profitability. Hence hypothesis 1 is rejected. Highlighting the

importance of industry and year fixed effects on these causations, the results were insignificant when the industry and year fixed effects were not included in the model. See Panel A, column2.

Table -3 – Linear Regression Analysis

	Panel A		**Panel B**	
	Dependent variable - ROA		**Dependent variable - TQ**	
Variables	Industry and Year fixed effects included	Industry and Year fixed effects NOT included	Industry and Year fixed effects included	Industry and Year fixed effects NOT included
	Coefficients (t-stat)	Coefficients (t-stat)	Coefficients (t-stat)	Coefficients (t-stat)
	(1)	(2)	(3)	(4)
CCC	-0.0062* (-1.98)	-0.0051 (-1.81)	-0.0001 (-0.54)	-0.00002 (0.07)
LEV	-0.0443*** (-5.13)	-0.0430*** (-5.16)	-0.00004 (-0.05)	-0.0008 (-1.02)
Growth	6.1560** (3.22)	5.8006** (3.05)	0.4188** (2.60)	0.5113** (3.01)
Size	1.0151*** (5.26)	0.895*** (4.88)	0.0225 (1.38)	0.03812* (2.33)
M/B	-0.0494 (-0.22)	0.1554 (0.76)	0.2214*** (11.62)	0.2642*** (14.52)
Auditor	-4.6358*** (-3.50)	-4.2321** (-3.21)	-0.4444*** (-3.99)	-0.4134*** (-3.51)
ROA	-	-	0.0463* (2.83)	0.0281* (2.12)
Ind. fixed effects	Yes	-	Yes	-
Year fixed effects	Yes	-	Yes	-
F - Statistic	4.47***	11.27***	17.93***	42.97***
R^2	0.1797	0.1072	0.4412	0.3141
Adj.R^2	0.1435	0.0977	0.4166	0.3068
No of Obs	570	570	570	570

*p< .05, **p< .01, ***p< .001

The negative relationship between WCM and firm profitability in the NZX firms is described as the traditional WCM approach in the literature and is consistent with several prior studies. For example, Sawarni et al. (2020) found that WCM was negatively related to profitability in a study of 414 firms listed on the Bombay stock exchange. They cited a statistically meaningful negative relationship between net trade cycle and ROE. They also stated that less borrowing cost due to fewer days of capital tied up in working capital and better utilisation of funds in more value-added projects might have improved profitability. The result of the study is also consistent with previous acadamic works, such as Deloof (2003), Martínez-Solanco and García-Teruel (2006), Nobanee et al. (2011),

Enqvist et al. (2011), Le (2019), and Högerle et al. (2020). All these studies found that the quicker CCC driven by efficient WCM policies improved firm profitability in the business contexts of Belgium, Spain, Japan, Finland, Vietnam, and Germany, respectively. The multi-country study of Sinhania and Metha (2017) also reported a negative relationship between WCM and profitability in firms in Thailand.

The regression analysis showed that leverage significantly impacted firm profitability ($\beta = -.044$, $p<.05$) in the NZX business context, showing that higher borrowing led to lower profitability due to increased financing costs. This shows that leverage is a meaningful moderator of profitability. The negative relationship also suggests that firms with a lower level of debt achieve higher profits and vice versa amongst NZX firms. Extended CCC resulting from lengthy inventory turnover with stretched debt collection may cause a firm to borrow short-term funds due to a shortage of cash inflows to fulfil short-term financial obligations. Moreover, short-term cash flow pressure can be intensified if suppliers do not provide adequate trade credits resulting in an extended CCC. Thus, firms may require extra borrowings that could increase finance costs, consequently lowering firms' profitability. Furthermore, as Sawarni et al. (2020) suggest, healthy cash flow generated through efficient CCC could be utilised in more value addition projects which can increase revenues. The same phenomenon seems to have existed in the sample NZX firms.

Quicker inventory conversion into sales reduces inventory holding costs such as warehouse costs, stock obsolesces, and insurance costs. Efficient trade credit policy also reduces costs such as debt collection costs and bad and doubtful debt provisions. Longer credit terms from suppliers can be used as a short-term financing source with lower costs. Supply chain channels are relatively efficient in the New Zealand business context; firms can source materials faster via developed transportation networks. For example, efficient and competitive logistic and courier service providers are available in New Zealand to deliver goods quickly, reducing warehousing costs.

Moreover, trade credits are reliable and timely payments are practised by most firms as delays in payments to suppliers can cause a bad credit reputation. When a trade credit account is assessed, credit reference and credit rating checks are the commonly used techniques in New Zealand, prompting efficient credit management policies implemented amongst NZX firms. Overall, the above factors may affect NZX firms to maintain efficient CCC, which eventually improves their profitability.

The coefficient on growth (β = 6.156, p<.01) showed that growth was a meaningful influencer on the profitability of the NZX firms. To achieve greater profitability through growth which ROA measures, the NZX firms must have utilised their assets more efficiently and effectively while keeping the assets base the same or slightly increased. Furthermore, the regression results indicate that firm size is a determinant of profitability. The positive coefficient of firm size on ROA (β = 1.0151, p<.001) showed that the larger NZX firms generated relatively higher profits than the smaller firms. A relatively large market share, economy of scale, and established branding may be the reasons why the larger firms made higher profits than the smaller firms. Finally, the analysis considered the auditor's ability to influence firm performance. The analysis found that when one of the big four firms was employed as the auditor, firm profitability was reduced amongst the firms. This suggests that employing one of the big four firms is more expensive than other audit firms.

4.3.2 Working capital management and firm value

Model 2 was developed to test hypothesis 2, through which the association between WCM and firm value was investigated. The variables were regressed in test 2 with industry fixed effect and year fixed effect. The F value of test 2 was significant at level 1% (R^2=.44, F=17.93, P=.001), indicating the model was adequately strong. The analysis showed R^2 was 0.44, indicating that independent variables accounted for 44% of the variation in the dependent variable. The results of model 2 presented in Panel B, Column 3 show that the coefficient between CCC and TQ (β = -.0001) was negative but statistically insignificant. This implies that WCM did not form a meaningful relationship with firm value in the NZX firms. Since the coefficient was negative, hypothesis 2 is rejected. Prior studies have reported strong negative, positive, and concave relationships in different countries and industries; however, in the NZX firms, a statistically significant relationship did not exist between WCM and firm value. This signifies that NZX investors are not motivated by a firm's WCM approach in determining firm value.

4.3.3 The moderating role of profitability on the association between WCM and firm value

The findings indicate that in the NZX business context, profitability can not be regarded as a moderator between WCM and firm value. However, Wichitsathian and Pestonji (2019) cited profitability to be an effective moderator that formed a significant negative relationship between WCM and profitability in a sample of Thai listed firms. According to Berk et al. (2009), free cash flows supported by the traditional WCM approach and a shorter CCC enhance firm value because of the redeployment of free cash flow.

However, these phenomenons do not seem to exist in the NZX context, implying that other factors, such as dividend payout, EPS (Gill et al., 2012), market capitalisation, and growth opportunities (Gharaibeh & Qader, 2017) have a more meaningful influence on firm value than the impact of WCM.

Moreover, effective corporate governance practices, strong CSR, and R&D might also be regarded as factors influencing the share price. In contrast to the weak relationship found between WCM and firm value amongst the NZX firms, Enqvist et al. (2011), Le (2019), and Högerle et al. (2020) found that quicker CCC improves TQ as a measure of firm value. Similarly, although a negative relationship was found in the sample suggesting that higher inventory and debtor
turnover with extended payments to trade suppliers influence firm value, it was not statistically significant because other factors may have been more robust than WCM policies in determining the value of the NZX firms. Coefficient of growth ($\beta = .419$, $p<.01$) showed a strong positive impact on the value of NZX firms, suggesting that investors recognise growth as a vital factor in determining firm value. A statistically significant coefficient also showed that the firms with higher growth reported a greater share price. Results of the analysis also showed a strong positive relationship between M/B and TQ ($\beta = .24$, $p<.001$), which is not surprising as both variables consist of market capitalisation as a denominator. An increase or decrease in market capitalisation creates the same impact on M/B and TQ; as such, a positive relationship occurs between the two variables.

Prior studies have suggested that if the auditor is one of the big four firms, it influences firm value positively because it creates greater investor confidence in their assurance service (Francis et al., 2003). However, the analysis found a significant negative relationship between auditor and firm value in the NZX business context. This contrasting result might have been caused by the higher fees the big four firms charged for the assurance services, which decreased firm profitability. Auditor opinion may be less relevant in investor decision-making.

This chapter presented the empirical results and analysis. Correlation analysis indicated a strong negative association between CCC and ROA, while CCC showed a negative but insignificant association with TQ. Regression analysis reinforced the correlation results, confirming that shorter CCC strongly influences firm profitability while having no meaningful influence on firm value in NZX business settings.

CHAPTER 5 – DISCUSSION, CONCLUSION, LIMITATIONS AND FUTURE RESEARCH IMPLICATIONS

This chapter discusses the overall findings and presents the conclusion of the study in section 5.1. The limitations of the study and suggestions for future research on WCM in the NZX context are discussed in section 5.2.

5.1 Discussion and conclusion

The objective of the study was to assess whether WCM significantly relates to firm performance amongst NZX firms. Since WCM is a crucial function of short-term financial planning and operations, managers will find it very useful to know how WCM influences profitability and firm value. To achieve this objective, two models were employed with ROA and TQ as the proxies for profitability and firm value, which are considered as measures of firm performance. CCC was used as the proxy for WCM.

The study used a panel data set of 57 non-financial firms listed on the NZX stock exchange for the period 2010 - 2019. During this period, New Zealand's economy grew positively, and in general, businesses did not encounter major macroeconomic challenges. It is important to assess how WCM, as a crucial business operation, impacted firm performance during this period of economic growth in New Zealand. This study offers a contribution to the WCM literature by determining how WCM relates to firm performance in the NZX business context during an economic boom, an area in which prior empirical studies are limited.

To examine the relationships, two models were developed based on two hypotheses. Since prior studies have reported mixed results regarding WCM's relationships with profitability and firm value, two null hypotheses were established to test these relationships. The first model tested the relationship between WCM and firm profitability. The results of the empirical analysis showed a significant and negative coefficient between CCC and ROA. Thus, based on the traditional WCM approach, the conclusion was drawn that efficient WCM significantly improves profitability in NXZ firms.

There might be multiple reasons for this strong negative relationship between WCM and profitability. Firstly, according to this empirical result, leverage can be suggested as the main factor that moderates firm profitability depending on the WCM policies employed by NZX firms. This is because firms may implement efficient WCM policies to minimise the capital tied up in working capital components of inventory, accounts receivable, and accounts payable. For example, firms implement just-in-time stock ordering and lean management policies so that inventory turnover becomes efficient (Högerle et al., 2020)

and investment in inventory is lowered. Moreover, faster debt collection improves liquidity.

Further, extended credit terms negotiated with suppliers provide short-term financing with minimal costs. These strategies may support firms in keeping short-term borrowings to a minimum level. Consequently, firms can improve profitability due to fewer finance costs. The analysis found that the coefficient of leverage was significantly and negatively related to ROA; thus, showing that quicker CCC, referred to as the traditional WCM approach, minimises short-term borrowing costs and enhances the profitability of NZX firms.

Efficient WCM supported by shorter CCC improves liquidity. The resulting increase in funds can be invested in underutilised asset s and higher value-adding projects (Aktas et al., 2013), which will improve profitability. Moreover, shorter CCC may decrease several other costs. For example, since it improves inventory turnover, stock storage costs can be reduced. Efficient transport and logistics facilities help lower storage costs in New Zealand by optimising supply chain processes such as just-in-time inventory. Efficient and quicker debt collection also reduces bad and doubtful debts due to lower trade credits offered to customers. In New Zealand, credit rating is an important factor in credit reputation, and NZX firms generally pay debts on time. As discussed above, it can be assumed that NZX firms generally employ the policies of quicker CCC, which may help them increase profitability.

The second model examined whether WCM meaningfully influences firm value. The regression analysis found a statistically insignificant negative relationship between CCC and TQ, suggesting that firm value is not meaningfully influenced by WCM in NZX firms. According to Wichitsathian and Pestonji (2019), profitability plays a moderating role in the relationship between WCM and firm value. In other words, they argued that since WCM influences profitability, firm value can also be stimulated by WCM policies via profitability. However, such a phenomenon does not appear to exist in NZX firms based on the regression results.

This result suggests that investors do not consider the WCM approach as a determining factor in the share price of NZX firms. The possible reason could be information asymmetry. To understand a firm's WCM approach, dynamic WCM information is required. However, such information is not available in the disclosures adequately; thus, investors may not be motivated to assess how efficient the WCM policies are that are

employed by management to enhance a firm's performance. Moreover, investors pay more attention to future earning potentials than historical performance.

Many other factors strongly affect firm value. For example, dividend pay-out and EPS are significant price-sensitive indicators that investors mainly consider in valuing the market price of a share (Gill et al., 2012). Moreover, market capitalisation, growth opportunities (Gharaibeh & Qader, 2017), corporate governance, CSR activities and disclosures, research and development potentials, and enterprise risk management practices (Kommunuri et al., 2016) are some other main factors that are of importance to investors when determining the market value of a firm.

In conclusion, this study offers empirical evidence of WCM's influence on firm performance in NZX firms during a period of economic boom. The study findings show that the traditional WCM approach supported by shorter CCC strongly enhances firm profitability in NZX firms. This finding will be useful for managers in planning short-term financial strategies to optimise firm profitability in the New Zealand business context. Furthermore, the study found that WCM does not influence firm value meaningfully in NZX firms, a finding that is not consistent with prior studies. Investors in New Zealand are less concerned about firms' WCM approach in determining firm value because they might assume the other price-sensitive factors are more important.

5.2 Research limitations and future research implications

This study was conducted based on listed firms on the NZX stock exchange only. In New Zealand, most firms are privately owned, and 97% of businesses are SMEs. Hence, future research could be conducted on WCM and firm performance within SMEs, which would be useful to decision-makers in those firms by helping them understand the dynamic nature of WCM. To do that, researchers would need to approach owners of such firms to obtain unpublished financial information.

This research tested variables during the period 2010 – 2019 when New Zealand's economy was steadily growing. Therefore the results do not reflect the variations in the relationship between WCM and firm performance during an economic downturn. The Covid19 global pandemic adversely affected New Zealand's economy in 2020, resulting in a recession. Future research could focus on how WCM affects firm performance in a post-Covid business context as the pandemic has dramatically changed the business circumstances of New Zealand.

The study did not examine how individual working capital components relate to firm performance in the NZX business context. It is vital to investigate inventory, accounts receivable, and accounts payable individually in different industries to see how they relate to profitability and firm value since managers adopt different short-term financial strategies related to these working capital components to optimise performance in different industries.

This chapter discussed the research findings, and the conclusion contributed to the WCM literature by showing that quicker CCC is an effective moderator of profitability amongst NZX firms but not a meaningful influencer on firm value. The chapter also highlighted the need for future research in wider business contexts in industry-wise in NZ business settings as this study was limited to NZX listed firms only.

APPENDIX

Appendix 1 – Definition of variables

Variable	Acronym	Measurement
Return on assets	ROA	$\frac{\text{Earnings before tax}}{\text{Average Total Assets}}$
Tobin's Q	TQ	$\frac{\text{Market Capitalisation+Total Liabilities}}{\text{Total Asset Value}}$
Cash conversion cycle	CCC	CCC = Days Inventory Outstanding + Days Receivable Outstanding - Days Payable Outstanding
Days inventory outstanding	DIO	Days Inventory Outstanding = Inventory / Cost of Goods Sold x 365.
Days receivable outstanding	DRO	Days Receivable Outstanding = Trade Receivable / Sales x 365.
Days payable outstanding	DPO	Days Payable Outstanding = Trade Payable / Cost of goods sold x 365
Leverage	LEV	$\frac{\text{Book value of total debts}}{\text{Book value of total equity}} \ x\ 100$
Growth		$\frac{\text{Sales}_t - \text{Sales}_{t-1}}{\text{Sales}_{t-1}}$
Market to book ratio	M/B	$\frac{\text{Market Capitalsaition}}{\text{Total Equity}}$
Firm size		Log value of a firm's annual revenue.
Auditor		1 if it is one of the big four firms and 0 otherwise.

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