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Relationship between Working Capital Management, Policies, and Profitability of Small Manufacturing Firms

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This is to certify that the doctoral study by

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Abstract

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MBA, University of Botswana, 1998

BSC, Addis Ababa University, 1991

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Working capital optimization, as an act of balancing liquidity and profitability, presents significant challenges when small businesses lack managerial expertise and access to affordable capital and credit facilities. To remain successful through efficient utilization of working capital, small business leaders need to understand the association between working capital management (WCM), working capital policy (WCP), and business profitability (PFT). Anchored in the cash conversion cycle theory, the purpose of this correlational study was to examine the relationship between WCM, WCP, and PFT. The study employed a retrospective secondary analysis of financial data from 2004 to 2013 from a random sample of 176 publicly traded small U.S. manufacturing companies. The regression results incorporating 3 models were significant in predicting profitability in terms of gross operating profit (GOP), return on asset (ROA), and Tobin's q (TBQ). The regression results showed that WCM and WCP were significant predictors of GOP, F (5, 170) = 8.580, $p < .000$, $R^2 = .201$; ROA, F (5, 170) = 4.079, $p < .002$, $R^2 = .107$; and TBQ, F (5, 170) = 6.231, $p < .000$, $R^2 = .155$. The overall result confirmed that WCM and WCP predicted PFT significantly ($p < .05$). Small business leaders may incorporate working capital optimization practices into overall corporate strategy, thereby aligning working capital needs with the changing business requirements. The implications for positive social change included the potential to provide small business leaders with knowledge of WCM and WCP as drivers of PFT. Profitable businesses may provide employees and communities with better jobs; stock ownership; and development infrastructures such as road, healthcare, and educational facilities.

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Dedication

I dedicate this doctoral study to God, who gave me perseverance when I needed it the most. I dedicate this dissertation to my wife and best friend, Misrak, who was always supportive and exceptionally patient throughout my doctoral study journey. Her unending and unreserved support allowed me to realize my dream under difficult life and family circumstances. Special recognition also goes to my sister, Meseret, and my daughter, Bersabeh, who were always on my side in good and bad times. No one could ask for better sons than Nebiyat and Josiah, who achieved outstanding results in their respective academic endeavors while I was busy with my doctoral study.

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Section 1: Foundation of the Study

Successful small businesses are the foundation of the U.S. economy as they represent 99% of all companies and provide 65% of private sector employment (Small Business Administration [SBA], 2014). However, about half of small businesses fail in their first 4 years (Decker, Haltiwanger, Jarmin, & Miranda, 2014) because of lack of working capital financing and managerial skills (Gill & Biger, 2013). Because both inadequate and excess working capital affect firm profitability, effective working capital management (WCM) and working capital policy (WCP) are critical to small business success (Bei & Wijewardana, 2012; Gill & Biger, 2013). The purpose of this quantitative correlational study was to examine the relationship between WCM, WCP, and profitability of small manufacturing firms.

Background of the Problem

Small manufacturing companies account for 86% of all U.S. exports, 69% of research and development, and one-third of all new patents (Decker et al., 2014). Compared to financial and service companies, manufacturing firms require substantial investment in inventory, accounts receivable, and accounts payable (Kroes & Manikas, 2014). Aktas, Croci, and Petmezas (2015) found that working capital accounted for 24% and 18% of total manufacturing sales and assets, respectively. However, limited access to external financing, coupled with inefficient WCM and WCP, affect small manufacturers' profitability negatively (SBA, 2014). In a 2014 survey of WCM, Ernst and Young (2014) reported unnecessary working capital of between $330 billion and $590 billion in the

leading U.S. 1000 companies. Ernst and Young also reported that 60% of the companies analyzed showed deterioration in working capital performance from 2011 to 2012.

Compared to large enterprises, small firms lack both financial resources and managerial expertise (Decker et al., 2014). Small business leaders fail to attract external financing because of insufficient assets, vulnerability to market fluctuations, and high mortality rates (Tauringana & Afrifa, 2013). In the absence of efficient management systems and policies, many small business leaders fail to optimize day-to-day working capital (Orobia, Byabashaija, Munene, Sejjaaka, & Musinguzi, 2013). The President of the United States established a new initiative to improve small businesses' access to working capital (The Executive Office of the President, 2014). Small business leaders may be able to enhance their profitability through efficient WCM and WCP (Awopetu, 2012).

Problem Statement

Inefficient working capital management and policies have a negative impact on firm profitability (Gill & Biger, 2013). The Federal Reserve Bank of New York (2014) reported that 41% of small businesses operated at a loss in 2013 because of inadequate working capital and credit unavailability. The general business problem was the inability of some small business leaders to align WCM and WCP to the changing organizational and market requirements, which negatively affects profitability. The specific business problem was that some small business leaders do not understand the relationship between WCM, WCP, and firm profitability.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between WCM, WCP, and profitability of small publicly traded U.S. manufacturing companies. The independent variables were WCM and WCP. The dependent variable was firm profitability. The target population consisted of small publicly traded U.S. manufacturing companies from the S & P Capital IQ Netadvantage database. The target population accounts for about 50% of the U.S. private sector GDP (U.S. Census Bureau, 2015). The implications for positive social change include the potential to provide (a) business leaders with improved understanding of the association between WCM, WCP, and firm profitability; (b) employees with better jobs, compensation, training, and working conditions (Porter & Kramer, 2011); and (c) the general public with employment opportunities, stock ownership, quality products, and development infrastructures such as roads, healthcare, and educational facilities (Muller, Vermeulen, & Glasbergen, 2012).

Nature of the Study

Drawing on a postpositivist paradigm of determinism, I used a quantitative research method over qualitative and mixed-methods approaches. A quantitative method allows for deductive testing, empirical measurement, and statistical analysis of the hypothesized relationship between WCM, WCP, and firm profitability (Lach, 2014). Researchers use the qualitative research method to create meaning about a phenomenon derived from participants' vantage (Venkatesh, Brown, & Bala, 2013). Mixed-methods studies involve aspects of both qualitative and quantitative studies. Caruth (2013) stated

that a mixed-methods approach is advantageous when different research questions within one study call for different methods to overcome the inherent weaknesses of single-method studies. I did not choose qualitative or mixed-methods research for two reasons. First, a qualitative research method does not allow testing a theory deductively (Venkatesh et al., 2013). Second, the relationship between the research variables is not an experienced phenomenon for combining objective measurement with a subjective exploration through a mixed-methods approach (Lach, 2014).

The selection of a research design depends on the nature of the research question, target population, data collection, and analysis techniques (Wester, Borders, Boul, & Horton, 2013). The review of available research designs including experimental, quasi-experimental, and nonexperimental designs (Turner, Balmer, & Coverdale, 2013) indicated that a nonexperimental correlational design suited the objective of this study. A nonexperimental research design allows for an examination of the association rather than the causal relationship between WCM, WCP, and firm profitability (Turner et al., 2013). An experimental design involves the application of some treatments to the research participants (Wisdom, Cavaleri, Onwuegbuzie, & Green, 2012). A quasi-experimental design focuses on the evaluation of the effectiveness of interventions (Venkatesh et al., 2013). I did not choose the experimental and quasi-experimental research designs because this study did not involve manipulation of variables and administration of interventions.

Research Question

Research questions help researchers make appropriate decisions about the research methodology, design, data collection, and analysis techniques. Allwood (2012) argued that every scientific inquiry involves some form of questioning and the use of gap spotting in existing literature to formulate research questions. The research question guiding this study was the following: What is the relationship between WCM, WCP, and firm profitability in small publicly traded U.S. manufacturing firms?

Hypotheses

Null hypothesis (H_0): There is no statistically significant relationship between WCM, WCP, and profitability of small publicly traded U.S. manufacturing firms.

Alternative hypothesis (H_1): There is a statistically significant relationship between WCM, WCP, and profitability of small publicly traded U.S. manufacturing firms. Figure 1 shows the research constructs, variables, and relationships.

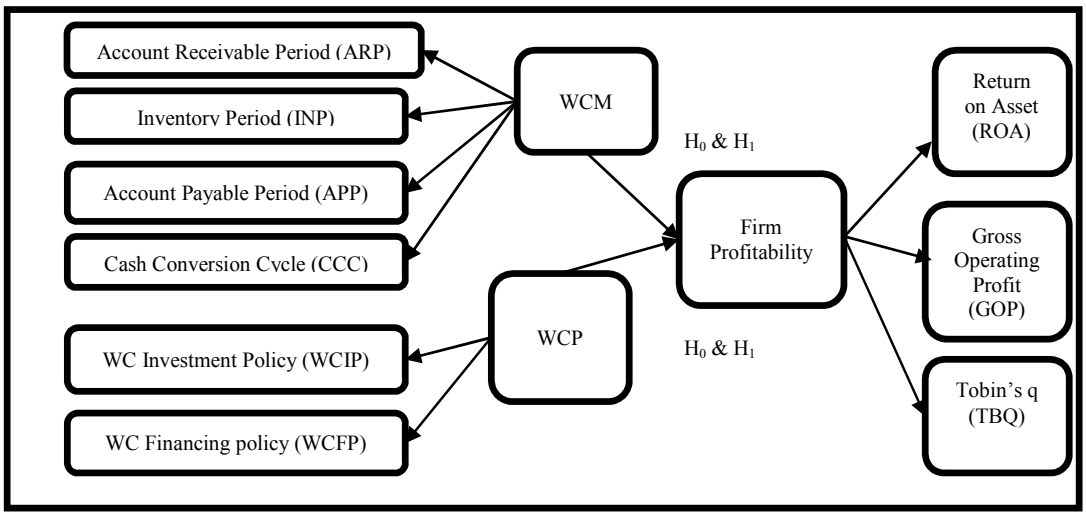

Figure 1. The research constructs and variables.

Theoretical Framework

A theoretical framework provides the context for conducting research and interpreting findings (Turner et al., 2013). The theoretical framework of this study was the cash conversion cycle (CCC). Although Gitman (1974) introduced the concept of the cash cycle in 1974, Richards and Laughlin (1980) developed the CCC into a comprehensive model in 1980. The CCC shows the relationships among WCM, WCP, and firm profitability and sets boundaries for the study. The CCC is a dynamic measure of working capital that establishes the time to convert a dollar of cash outflow back into a dollar of cash inflow (Richards & Laughlin, 1980). The CCC is the sum of inventory period (INP) and accounts receivable period (ARP) minus accounts payable period (APP). Figure 2 shows the operating cycle and the CCC of a manufacturing firm.

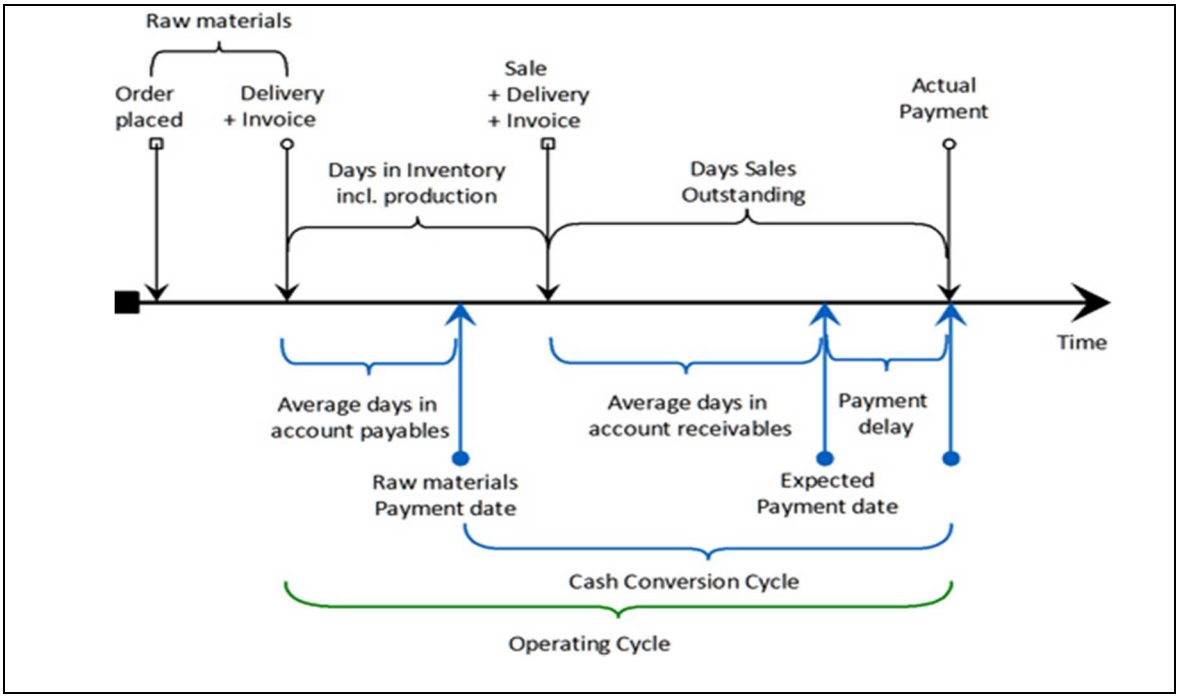

Figure 2. The cash conversion and operating cycles of a manufacturing firm.

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A more efficient WCM could generate a shorter CCC, which may lead to higher profitability (Richard & Laughlin, 1980). Although the original CCC focuses on optimizing WCM components, Weinraub and Visscher (1998) added the concept of WCP to explain variations in firm profitability. Sabri (2012) argued that small business leaders could reduce the CCC and improve firm profitability by adopting the right WCP. As applied to the proposed study, the CCC provides a coherent theoretical explanation of the relationship between the research variables.

Operational Definitions

Cash conversion cycle (CCC): The time difference between the purchase of raw materials and the collection of outstanding sales from goods sold on credit (Richard & Laughlin, 1980).

Going concern: The assumption that a company intends to remain in business for the foreseeable future (Richard & Laughlin, 1980).

Gross operating profit: The difference between the cost of goods sold and total sales divided by total assets minus financial assets (Nampopech, 2012).

Number of days in inventory: The average number of days that a company holds inventory of good before sales or production (Kroes & Manikas, 2014).

Number of days in receivables: The average number of days that a company takes to collect revenue from outstanding sales (Kroes & Manikas, 2014).

Number of days in payables: The average number of days a company takes to pay creditors (Kroes & Manikas, 2014).

Return on assets (ROA): A firm's net income divided by total assets or the amount earned on each dollar of assets invested (Butler, Martin, Perryman, & Upson, 2012).

Tobin's q: A firm's market value per dollar of the replacement cost of assets (Kroes & Manikas, 2014).

Working capital management: A managerial responsibility concerned with the problems that arise in dealing with current assets, current liabilities, and their interrelationships (Abuzayed, 2012).

Working capital policy: A firm-level strategy that provides guidance on the proportion of the firm's current assets and current liabilities to total asset that maximizes profitability (Bei & Wijewardana, 2012).

Assumptions, Limitations, and Delimitations

Assumptions, limitations, and delimitations provide essential information about the research methodology, design, conclusions, findings, and scope of the study. Leedy and Ormrod (2012) stated that assumptions, limitations, and delimitations are critical components of a viable research proposal. Assumptions help to identify and understand unconfirmed facts that researchers consider true without verification (Allwood, 2012). While the limitations highlight potential weaknesses of the study, delimitations specify the study's scope and boundaries (Donaldson et al., 2013).

Assumptions

Assumptions are research issues that researchers take for granted or accept in faith without verification (Tabachnick & Fidell, 2013). Leedy and Ormrod (2012) stated that assumptions are statements that help to remove or reduce doubts regarding the reliability

and validity of the study. Donaldson et al. (2013) stated that assumptions might cover issues about the characteristics of the target population, research methodology, design, and nature of data. This study relied on three sets of assumptions about (a) research methodology, (b) the nature of archival data, and (c) significance of the study. The choice of research methodology and design included five assumptions. First, the theoretical framework, the CCC, was an accurate reflection of the WCM and WCP constructs. Second, all the variables under investigation were measurable. Third, the predictor variables did not have direct relationships, and the dependent variable was not a combination of other independent variables. The fourth assumption was that the quantitative correlational research design fit the purpose of the study. The last assumption was that the statistical analysis and the sample size were sufficient to detect the direction and magnitude of the relationship between the variables if they exist in the population.

The second set of assumptions relates to the nature of the archival data. I assumed the archival data provided a valid and reliable metrics to measure all the variables under investigation (Tasic & Feruh, 2012). I also assumed that the archival data met the assumption of normal distribution and enabled the use of parametric analysis using financial ratio scales (Johnston, 2014). The third assumption was that the official financial statements complied with the generally accepted accounting principles (GAAP) and adhered to the legal requirements of the U.S. Securities Exchange Commission (SEC). The fourth assumption was that the financial reports contained all the measures for operationalizing the constructs of WCM, WCP, and firm profitability. The last assumption was that the S & P Capital IQ Netadvantage database represented small

publicly traded firms with a maximum market capitalization of $1.4 billion (Standard & Poor's, 2013).

The third set of assumptions was about the significance of the study. First, I assumed the findings of the study would be relevant to small business leaders, financial analysts, investors, creditors, and other stakeholders (Kachova & Enlow, 2013). Second, I assumed the potential exists to apply best practices in WCM and WCP to improve firm profitability (Bei & Wijewardana, 2012; Kroes & Manikas, 2014). The last assumption was that without further research, small business leaders could not optimize WCM, WCP, and firm profitability (Kachova & Enlow, 2013).

Limitations

Limitations are barriers that might prevent researchers from obtaining representative data and generalizable findings (Leedy & Ormrod, 2012). Tabachnick and Fidell (2013) described limitations as unavoidable shortcomings surrounding the study and within which researchers confine their conclusions. From the perspectives of the end users of the study, limitations serve as precautions on the extent to which the readers can generalize the findings (Leedy & Ormrod, 2012). First, the findings of the study may not be generalizable to all publicly traded firms because firm size, industry, and location could also affect firm profitability. Second, linking firm profitability only to WCM and WCP may undermine other drivers of profitability. Additional independent variables could account for inter-firm profit differentials because several factors other than WCM and WCP may contribute to firm profitability (Boesch, Schwaninger, Weber, & Scholz, 2013). Third, the use of numeric data alone to measure firm profitability may hide the

role of nonquantifiable measures (Delen, Kuzey, & Uyar, 2013). Finally, the audited financial reports may not reflect the potential of the firm in achieving and sustaining profitability in the future (Boesch et al., 2013).

Delimitations

Delimitations are descriptions of what the study will or will not cover concerning the scope, depth, subjects, sample, and methods (Leedy & Ormrod, 2012). Delen et al. (2013) described delimitations as self-imposed limitations. Tabachnick and Fidell (2013) stated that a clear description of delimitations would provide boundaries to the interpretation or generalization of the findings of the study. An essential delimitation was that the study examined only the magnitude and direction of the association, not causation, between WCM, WCP, and firm profitability. The second delimitation was that the study focused only on small manufacturing publicly traded companies that had all the necessary data to measure the variables of interest. The last delimitation was that the study covered only past rather than current practices and experiences in WCM and WCP.

Significance of the Study

The contributions of this study would be of interest to practicing small business leaders as well as scholars in finance. Studies on WCM and WCP in small businesses include core areas of research in the field of finance and small business management (Tauringana & Arfifa, 2013). The following paragraphs show how the results of the study may contribute to improving business practices and promoting positive social change.

Contribution to Business Practice

This study may be significant because small manufacturing businesses face challenges in accessing external capital to finance their day-to-day operations. Examination of the role of working capital as a driver of firm profitability is a timely response to address these challenges (Karadag, 2015). The contributions of this study were not exclusive to small manufacturing firms. The findings should also be of value to any business aiming to improve profitability through effective WCM and WCP. The study would also make important contributions to business practices. First, small business leaders may use the findings to improve their understanding of the connections between WCM, WCP, and firm profitability (Kroes & Manikas, 2014). Second, the results could help small business leaders to identify potential gaps between current and optimal working capital practices and assess the need for training and development (Gill & Biger, 2013; Karadag, 2015). Third, the findings may help small business leaders find alternative working capital policies (Bei & Wijewardana, 2012). Fourth, small business leaders may use the results to improve the processes for recruitment of finance and operations managers (Muller et al., 2012). Fifth, the study may enable small business leaders to bring different operations together on the same WCM and WCP platform to maximize firm profitability. Sixth, small business leaders could use the findings of the study to establish partnerships with suppliers and creditors to get favorable trade credits and low-cost financing (Karadag, 2015). Finally, researchers may also use the research as a basis for further exploration of alternative ways of conceptualizing and operationalizing the constructs of WCM, WCP, firm profitability, and their relationships (Karadag, 2015).

Implications for Social Change

Employees, investors, creditors, customers, and society could benefit from the findings of this study in several ways. The need for designing effective WCM and WCP and applying them concurrently within the same firm might have significant implications for social change. The findings may inform owners, managers, investors, financiers, and shareholders about WCM and WCP of small manufacturing firms (Kroes & Manikas, 2014). The findings could drive a behavioral change in the decision-making processes and practices within small manufacturing companies. Small business leaders who can optimize WCM and WCP and maximize profitability can empower their employees through better compensation, benefits, working conditions, training, and development (Muller et al., 2012). These benefits could translate over time into positive social changes that help families and communities (Porter & Kramer, 2011).

As small firms become profitable, they have a higher likelihood of investing in social infrastructure, education, and health care programs that can lead to positive social change (Karadag, 2015; Muller et al., 2012). Porter and Kramer (2011) stated that corporate leaders could make a positive social impact and create shared value by unleashing the power of their businesses to help solve fundamental social problems. Porter and Kramer also noted that profitable organizations could provide jobs, share ownership, pay taxes, and contribute to the welfare of the community. Muller et al. (2012) noted that profitable businesses could supply goods and services at lower costs and hire more employees. The results of the study may also inform potential investors,

shareholders, creditors, and lending institutions about the WCM and WCP practices of small publicly traded U.S. manufacturing firms.

A Review of the Professional and Academic Literature

A thorough review of the literature is the foundation for useful research (Turner et al., 2012). Allwood (2012) asserted that an exhaustive examination of the literature enables researchers to develop appropriate research questions and strategies. Leedy and Ormrod (2012) stated that a review of literature helps researchers to overcome methodological challenges. The purpose of this quantitative correlational study was to examine the relationship between WCM, WCP, and profitability of small publicly traded U.S. manufacturing firms. The research question guiding this study was the following: What is the relationship between WCM, WCP, and profitability of small publicly traded U.S. manufacturing firms? The central hypothesis of the study was there would be no statistically significant relationship between WCM, WCP, and profitability of small publicly traded U.S. manufacturing firms.

The cash conversion cycle was the theoretical framework of this study and guided the examination, conceptualization, and operationalization of the research constructs and variables. In this section, the main topics of review are WCM, WCP, and firm profitability. The review includes sources from around the world because publicly traded companies across the globe have more similarities than differences in complying with financial reporting requirements (Johnston, 2014). I searched multiple online research databases and local libraries for the literature. The primary sources of the literature review were peer-reviewed journal articles, dissertations, and seminal books. Topics for the search of literature included the key words of *working capital management*, *cash conversion cycle*, *working capital policy*, *profitability*, *current assets*, and *liabilities*. The electronic databases included ABI / INFO Complete, Academic Search Complete, Business Source Complete, Dissertation and Thesis, Emerald Management Journal, Sage Premier, Science Direct, and Taylor& Francis. I also used the Google Scholar search engine to locate sources. This review addresses 124 sources including 115 peer-reviewed journal articles, two journal articles that were not peer reviewed, five business and government sources, and two seminal books. Table 1 shows that 91% of the references are less than 5 years old, and 93% of the references are from peer-reviewed journals.

Table 1

Source Identification and Distribution Table

Total	<5 years	>5 years	Peer Reviewed	Non-peer reviewed
124	113 = 91%	11 = 9%	115 = 93%	9 = 7%

The literature review covers seven topics. The first two topics include the review of prior studies on the primary and rival theoretical frameworks of the research. The third and fourth topics cover an analysis of the literature on the two independent variables (WCM and WCP). The fifth topic, which includes the literature on the dependent variable, provides insights on the theoretical conceptualization of the construct of profitability. The last two topics address construct measurement and the methodologies for the study of the dependent variable. The section ends with a brief summary and transition to the next section.

The Cash Conversion Cycle (CCC) Approach to Working Capital

Review of the academic and professional literature showed that finance scholars did not completely synthesize their analyses of the relationship between aspects of working capital and profitability into a coherent theory (Falope & Ajilore, 2009). However, the literature showed consistency in the use of guiding concepts such as the static view, operating cycle, and cash conversion cycle. These concepts constitute what Falope and Ajilore (2009) labeled as alternative working capital theoretical frameworks. The main theoretical framework of this study is the CCC originated by Gitman in 1974 and further developed by Richards and Laughlin in 1980. Gitman (1974) introduced the cash cycle, which is the number of days between obtaining inventory and collecting account receivables. Richards and Laughlin (1980) adjusted the cash cycle by subtracting the number of days in account payables to get the CCC.

The CCC is a dynamic measure of ongoing liquidity management that combines data from the balance sheet and income statement to create a time dimension

measurement (Jose, Lancaster, & Stevens, 1996; Muscettola, 2014). Richards and Laughlin (1980) stated that the CCC establishes the period required to convert a dollar of cash disbursements back into a dollar of cash inflow from a firm's regular business operations. Shin and Soenen (1998) stated that the CCC begins with the payment for raw materials and moves through the transformation process to the collection of outstanding credits sales. Mathuva (2014) acknowledged that the CCC is a dynamic theory in explaining the effect of working capital on firm profitability. Yazdanfar and Öhman (2014) argued that optimization of the CCC affects profitability and cash flow and influences the amount of external finance needed for running day-to-day operations. The next section covers the key constructs and assumptions of the CCC.

The CCC constructs. The CCC comprises the constructs of WCM and WCP. While the original CCC focused on the components of WCM, Weinraub and Visscher (1998) added the WCP construct to explain variations in firm profitability. The CCC is the sum of the accounts receivable period (ARP) and inventory period (INP) minus accounts payable period (APP). An efficient WCM can generate a shorter CCC, which leads to higher profitability. Firms with a shorter CCC convert their current assets into cash quickly and settle their current liabilities in time (Richard & Laughlin, 1980). The length of the CCC is also a function of the rate of aggressiveness or conservativeness of WCP (Bei & Wijewardana, 2012). WCP reflects decisions on the level of investment and sources of financing current assets and liabilities (Weinraub & Visscher, 1998). WCP may affect the CCC and firm profitability either negatively or positively depending on

the ability of small business leaders to align WCP with operational and market requirements (Sabri, 2012).

The CCC assumptions. The CCC relies on four assumptions. First, small business leaders can improve profitability by reducing the CCC through efficient management of ARP, INP, and APP and by adopting appropriate WCP (Awopetu, 2012; Bei & Wijewardana, 2012). For example, small business leaders can reduce the average ARP through sound trade credit and collection policies or extend the APP through a strategic collaboration with suppliers (Kroes & Manikas, 2014). Small business owners and managers could also optimize the CCC by adopting an aggressive or conservative WCP that meets the firm's operational and market requirements (Weinraub & Visscher, 1998).

The second assumption is that an optimal level of WCM and WCP exists for firms. Small business leaders could balance the tradeoffs between risk and return by manipulating the components of WCM and WCP (Awopetu, 2012; Ebben & Johnson, 2011). A longer or shorter than optimal CCC may reflect the ability or inability of business leaders to convert cash outflows into cash inflows quickly (Richards & Laughlin, 1980). The length of the cycle may also reflect the ability or inability of business leaders to formulate and implement appropriate policies (Weinraub & Visscher, 1998). The third assumption is that WCM and WCP have complimentary effects on firm profitability (Awopetu, 2012; Bei & Wijewardana, 2012; Gill & Biger, 2013; Mathuva, 2014). Profit maximization depends on effective WCM and WCP (Sabri, 2012; Yazdanfar & Öhman, 2014). The fourth assumption is that small business leaders could

influence organizational factors such as trade credits and inventory policies that may affect WCM and WCP (Talonpoika, Monto, Pirttila, & Kärri, 2014).

Several previous researchers used the CCC to explain the effects of WCM and WCP on firm profitability (Awopetu, 2012). Gentry, Vaidyanathan, and Wai (1990), for example, used a weighted (wCCC) and an advanced (aCCC) cash conversion cycle, respectively. Jose et al. (1996), Shin and Soenen (1998), and Farris and Hutchison (2003) used the CCC to explain inter-firm differences in profitability. Talonpoika et al. (2014) used a modified CCC to accommodate the effects of advance payments on working capital. Awopetu (2012), Bei and Wijewardana (2012), and Weinraub and Visscher (1998) argued that adopting appropriate WCP could help firms optimize working capital and improve profitability. As applied to this study, the CCC provided a theoretical explanation of how a firm's WCM and WCP predict profitability (Richards & Laughlin, 1980).

The Static View of Working Capital

Traditionally, financial analysts use short-term liquidity measures such as the current or quick ratios to evaluate a firm's liquidity position (Jose et al., 1996). These ratios assess firms' ability to satisfy their obligations in the event of liquidation. Static ratios reflect only the balance sheet structure at a given point in time for determining short-term borrowing capacity (Richards & Laughlin, 1980). Bolek and Wolski (2012) acknowledged that these measures do not allow investors and lenders to distinguish between different sources of liquidity. Bolek and Wolski also concluded that because these measures show only the firm's liquid assets for the immediate past period, they do

not allow an estimate of future cash flow patterns. Jose et al. (1996) stated that these measures do not show the accurate and complete picture of firms' liquidity position because the measures exclude inventory from liquidity analysis.

The static measures do not provide information about the causes of changes in the working capital cycle over time (Falope & Ajilore, 2009; Richard & Laughlin, 1980). Kroes and Manikas (2014) stated that static measures do not address whether changes in cash flows are associated with performance changes. The static measures also do not indicate whether effects are instantaneous or whether there is a time lag before cash flows affect firm performance. Similarly, Jose et al. (1996) acknowledged the weaknesses of these measures in distinguishing the resources unnecessarily tied up in operations.

The Operating Cycle Theory of Working Capital

The operating cycle is the length of time between the cash outflow for the purchase of input resources and the cash inflow from sales (Richards & Laughlin, 1980). The operating cycle theory integrates accounts receivable and inventories into working capital (Shin & Seonen, 1998). Unlike the static view, which focuses only on balance sheet activities, the operating cycle theory combines balance sheet and income statement measures (Richard & Laughlin, 1980). The operating cycle theory also allows researchers to consider firms as going concerns (Falope & Ajilore, 2009). However, unlike the CCC, the operating cycle excludes accounts payable from liquidity analysis. As a result, the operating cycle does not provide the net working capital cycle (Richards & Laughlin, 1980). The CCC is a dominant theoretical framework to explain the association between WCM, WCP, and firm profitability (Talonpoika et al., 2014; Yazdanfa & Öhman, 2014).

Working Capital Management and Profitability

Working capital management involves optimization of the firm's cash, receivables, inventories, and payables in a manner that maximizes firm profitability (Kaur & Singh, 2013). In uncertain markets, companies must maintain an adequate level of cash to meet running expenses, and at the same time they must reduce the cost of holding cash (Mateut & Zanchetti, 2013). Gill and Biger (2013) stated that excessive credit sales affect the company's cash flows, and appropriate credit policies enable firms to attract customers and increase profitability. From an inventory management perspective, owners and managers must find an optimal level that balances the costs and benefits of maintaining large and small inventory (Shockley & Turner, 2014).

Accounts payable is the least expensive source of short-term financing (Marttonen, Monto, & Karri, 2013). However, excessive liability may lead to insolvency (Mateut & Zanchetti, 2013). Therefore, WCM focuses on aligning current assets and liabilities to the changing market and operational requirements. Kaur and Singh (2013) stated that WCM is probably one of the most fundamental and least studied aspects of corporate finance. Drawing data from the U.S. publicly traded companies, several researchers provided evidence of the relationship between WCM and profitability. Gentry et al. (1990), Jose et al. (1996), Shin and Soenen (1998), and Farris and Hutchison (2003) found a significant relationship between WCM and profitability.

Review of U.S.-based studies since 2011 confirmed the existence of an optimal WCM that maximizes profitability (Aktas et al., 2015; Gill & Biger, 2013; Kroes & Manikas, 2014). Ebben and Johnson (2011) examined 1, 712 U.S. manufacturing and

retail firms through the CCC and found a significant relationship between WCM and firm profitability. Gill and Biger (2013) reported a significant positive association between WCM and profitability of U.S. manufacturing firms. In contrast, Rauscher and Wheeler (2012) found a negative correlation between WCM and profitability of U.S. hospitals. Although the above review showed evidence of some relationships between WCM and firm profitability, the magnitude and nature of the relationship vary from industry to industry (Gill & Biger, 2013). Kroes and Manikas (2014), for example, reported a nonsignificant relationship between WCM and profitability of 1, 233 U.S. manufacturing firms. Mun and Jang (2015) found a nonlinear relationship between WCM and profitability of U.S. restaurants.

Review of prior studies outside the United States also provided empirical support for the relationship between WCM and profitability. Abuzayed (2012) examined 52 small Jordanian companies through the CCC and found that profitable firms were less motivated to manage their working capital. Wasiuzzaman (2015) studied the WCM practices of 192 Malaysian companies from 1999 to 2008 using the ordinary least squares regression technique. Wasiuzzaman concluded that working capital efficiency significantly increases business value for financially constrained rather than financially unconstrained firms. Enqvist, Graham, and Nikkinen (2014) found that WCM is more important during times of economic downturns than in economic booms. Muscettola (2014) examined the impact of the CCC on the profitability of 4,226 Italian manufacturing SMEs firms. Muscettola used an ordinal logistic regression and found a significant positive association between the CCC and firm profitability.

Using an interview-based qualitative approach, Orobia et al. (2013) argued that the experience, skills, and knowledge of small business owners and managers moderate the relationship between WCM and profitability. Banos-Caballero, Garcia-Teruel, and Martinez-Solano (2012) supported Orobia et al. (2013) by arguing that small business owners and managers could improve profitability through efficient WCM. Banos-Caballero et al. (2012) found a nonmonotonic (concave) relationship and showed that profitability decreased for the sample Spanish firms as they moved away from the optimal level. Banos-Caballeros et al. suggested that owners and managers should avoid any significant deviations from the optimal working capital.

Although the findings on the relationship between WCM and profitability are mixed and inconclusive, the CCC is the dominant theoretical framework explaining the effects of WCM on profitability. Marttonen et al. (2013) found a negative relationship between WCM and profitability of firms in Bangladesh and Finland, respectively. Ukaegbu (2014), Napompech (2012), Yazdanfar and Öhman (2014), and Wasiuzzaman (2015) also reported similar findings for African, Thai, Swedish, and Malaysian firms, respectively.

Working Capital Policy and Profitability

Working capital policy is a set of decisions on the level of investment and sources of financing current assets and liabilities (Kadumi & Ramada, 2012). To reduce the CCC and maximize firm profitability, owners and managers must formulate and implement appropriate WCP (Nyabuti & Alala, 2014). Several researchers reported a significant relationship between WCP and firm profitability (Al-Shubiri, 2011; Awopetu, 2012; Bei

& Wijewardana, 2012). Firms may finance their working capital through either short-term or long-term debt (Bei & Wijewardana, 2012). Firms may adopt either an aggressive or conservative WCP depending on the nature of their internal operations, cash flow volatility, and external market conditions (Kadumi & Ramdan, 2012). Table 2 shows a list of prior U.S.-based studies on the relationship between WCM, WCP, and firm profitability.

Table 2

Selected U.S. Based Prior Studies on WCM, Policies, and Profitability

Author	Sample	Study Period	Method	Key Findings
Jose, Lancaster, Stevens, 1996	2718	1974-1993	C + R	CCC is an ongoing dynamic liquidity measure. Aggressive WC policy leads to profitability
Shin & Soenen 1998	58950 *	1975-2007	C + R	Negative relationship between CCC and profit, and between Short CCC and high stock return
Weinraub & Visscher, 1998	216	1984-1993	C + R	Positive correlation between WCIP & WCFP. Firms match WCIP with WCFP
Farris & Hutchison, 2003	5884	1986-2006	D	Managers must understand how C2C performance changes over time and affects profitability
Ebben & Johnson, 2011	1712	2002-2004	C + R	Firms with shorter CCC require less equity & debt financing
Molina & Preve, 2012	120000*	1978-2000	C	Increasing AP during financial distress leads to decline in sales
Kieschnick et al 2013	3786	1996-2006	C + R	Investment in AR has more impact on shareholders' value than investment in inventory
Rauscher& Wheeler, 2012	1397	2000-7	R.	Negative relationship between ARP + APP & profit.
Mishra, Modi, and Animesh 2013	197	2000-9	C + R	Inventory effectiveness improves stock market returns and shareholders value
Gill & Biger 2013	180	2009-11	C + R	corporate governance affects WCM efficiency
Steinker & Hoberg, 2013	2785	1991-2010	R	Inventory volatility is related to financial performance
Kroes & Manikas 2014	1233	2008-2011	R	Changes in CCC & Tobin's q not related to TBQ
Aktas, Croci, Petmezas, 2014	15541	1982-2011	R	Efficient WCM allows firms to redeploy underutilized resources to high value use
Shockley & Turner, 2014	335	1995-2011	C + R	Effective inventory management leads to firm profitability.

Keys: C = correlation; R = Regression; D = Descriptive, * = Observations

An aggressive WCP is a high-risk, high-return strategy. An aggressive WCP is appropriate for firms operating in a stable market with established products that generate a steady cash flow (Awopetu, 2012). Companies with aggressive WCP use only small investment in current assets and rely on current liabilities as a primary source of financing (Weinraub & Visscher, 1998). A conservative policy is a low-risk low return strategy, which is appropriate for firms operating in a volatile market with uncertain demand for goods (Awopetu, 2012). Firms with a conservative WCP make a substantial investment in current assets to avoid the risk of stock out and loss of revenue (Bei & Wijewardana, 2012).

Both aggressive and conservative WCP have advantages and disadvantages depending on the ability of owners and managers to align the policies to the characteristics of the external market and internal operations. Firms with an aggressive WCP run the risk of heavy reliance on short-term debt to finance current assets whereas firms with a conservative WCP take the risk of high inventory costs and bad debts (Awopetu, 2012). If companies with an aggressive WCP are operating in stable markets and generating steady cash flows, they have a higher likelihood of having a short CCC and high potential for profitability (Al-Shubiri, 2011). If companies with a conservative WCP are slow in converting inventory and receivables into cash, they have a higher likelihood of having a long CCC and little potential for profitability (Nyabuti & Alala, 2014).

Several empirical studies provided evidence of the relationship between WCP and profitability. Jose et al. (1996) examined the effect of WCP on the profitability of 2, 718

U.S. companies using data from the Compustat database and found that a high-risk policy may lead to higher returns. Weinraub and Visscher (1998) examined the WCP of 216 U.S. publicly traded companies and found that firms balance a relatively aggressive financing WCP by a relatively conservative investment WCP. Al-Shubiri (2011) investigated the relationship between aggressive/conservative WCP and profitability of 59 industrial companies and 14 banks in Jordan from 2004-2008. Al-Shubiri found an inverse relationship between aggressive investment policy and firm performance but a positive correlation between aggressive financing policy and firm performance.

Supporting the findings of Weinraub and Visscher (1998), Al-Shubiri (2011) suggested that companies should match their aggressive WCP with a conservative WCP. Bei and Wijewardana (2012) investigated the WCP of 155 Sri Lankan companies from 2002 to 2006 using multiple regression analysis. Bei and Wijewardana found that different types of WCP had various levels of impacts on firm profitability depending on the timing of the decision and volatility of cash flows. Bei and Wijewardana stated that high risk-taking (aggressive) owners and managers made a minimum investment in current assets. Ademiola and Kesumola (2014) found a positive and significant relationship between WCP and firm performance.

In contrast, Al-Mwalla (2012) found a negative and significant association between aggressive WCP and profitability, showing that excessive reliance on short-term debt may lead to liquidity problems. Kadumi and Ramadan (2012) supported Al-Mwalla (2012) by stating that excessive use of short-term obligations may overstretch working capital on the negative side. In support of these arguments, Toby (2014) warned that the

wrong timing coupled with a constrained liquidity position could lead to insolvency and loss of profitability.

Onwumere et al. (2012) argued that the adverse impacts of an aggressive WCP increase as the firm's current assets deteriorate over time. These results show that firms in different industries and markets may have different working capital policies. Cash flow volatility and industry and market uncertainties affect the choice of WCP. Small business leaders must, therefore, have clear understanding of the characteristics of their market, cash flows, and internal operational requirements (Kadumi & Ramada, 2012). Although the conditions for adopting a specific WCP is open to debate, the review of the literature showed empirical evidence of the relationship between WCP and profitability (Ademola & Kesumola, 2014; Al-shubiri, 2011).

Profitability: The Ultimate Dependent Variable

Firm performance is one of the most prominent concepts in business studies because the study of firm performance focuses on why certain companies outperform others (Butler et al., 2012). Steigenberger (2014) stated that firm performance is an elusive, imprecise, and abstract concept to apply in a scientifically rigorous way. Steigenberger acknowledged that firm performance serves as the ultimate dependent variable of interest in strategic management. Boyd, Bergh, Ireland, and Ketchen (2013) stated that the main problem concerning the measurement of firm performance is a misfit between construct specification in theory and operationalization of the construct in empirical analysis. While firm performance specifications require a broad understanding of firm success, empirical studies often focus on one or a few distinct aspects of firm

performance (Boyd et al., 2013). In their seminal work, Venkatraman and Ramanujam (1987) conceptualized firm performance as a multidimensional construct involving objective and subjective measures, as well as primary and secondary sources of measurement.

Similarly, Butler et al. (2012) conceptualized firm performance as consisted of the dimensions of financial, operational, and business performance. Butler et al. also stated that profitability is the narrowest conceptualization of economic performance because the profitability measure focuses on outcome-based objective indicators. Theoretically, studies of firm performance should include financial and non-financial measures as well as objective and subjective measures (Venkatraman & Ramanujam, 1987). Likewise, Butler et al. recommended the use of stakeholders and contingency approaches to account for the interests of various stakeholders under different conditions.

Venkatraman and Ramanujam (1987) argued that non-financial measures could reflect organizational effectiveness and efficiency, and yet they admitted that these measures lack consistency and objectivity. Santos and Brito (2012) also argued that subjective operational measures could provide valuable insights when researchers combine them with objective measures. Butler et al. (2012) suggested that researchers should choose the dimensions most relevant to their research and judge the outcomes of their choice.

Theoretical frameworks, research designs, and research questions dictate the conceptualization and operationalization of the dependent variable (Steigenberger, 2014). For example, the result of statistical analysis in non-experimental studies only

demonstrates correlation rather than causation (Steigenberger, 2014). Deng and Smyth, (2013) suggested that researchers using contingency theory should conceptualize firm performance in its broadest context to address a set of contingencies. However, Deng and Smyth also suggested that researchers examining firm performance through the lens of resource-based theory should use indicators directly connected to the resources under analysis. Similarly, researchers who apply a stakeholder's theory to examine firm performance should use variables that represent the interests of various stakeholders (Butler et al., 2012). The CCC as the theoretical framework for this study requires the use of profitability as a dependent variable (Kroes & Manikas, 2014).

The use of profitability as a dependent variable fits with the research question, hypotheses, methodology, design, and secondary data sources (Venkatraman & Ramanujam, 1987). Drawing data from the U.S. publicly traded companies and applying a non-experimental design and the CCC as a theoretical framework, several empirical studies used profitability as their ultimate dependent variable. Ebben and Johnson (2011) examined the effect of WCM on the profitability of 1712 U.S. manufacturing and retail firms through the CCC. Drawing data from S & P Compustat database from 1975 to 1994, Shin and Soenen (1998) operationalized firm performance through profitability measures. Kroes and Manikas (2014) stated that profitability is the most practical dimension of firm performance when researchers use the CCC as their theoretical framework. Jose et al. (1996) used a non-experimental design and secondary data sources from the Compustat database to examine differences in firm profitability.

In investigating the effects of WCP on the performance of 59 industrial companies and 14 banks in Jordan, Al-Shubiri (2011) conceptualized and operationalized firm performance in terms of profitability. Al-Shubiri stated that profitability is an appropriate theoretical construct to explain the outcome of WCP using archival panel data. Bei and Wijewardana (2012) employed profitability as their dependent variable to describe the effects of WCP practices of 155 Sri Lankan publicly traded companies. Nyabuti and Alala (2014) used profitability to examine the impact of WCP through the lens of the CCC. Al-Mwalla (2012) argued that researchers could explain the effect of WCM and WCP only with objective financial indicators such as profitability.

Construct Measurement

Rigorous construct measurement is critical for the advance of science, particularly when the variables of interest are unobservable (Santos & Brito, 2012). The lack of measurement accuracy affects the quality of quantitative studies and masks real relationships between variables (Venkatraman & Ramanajum, 1987). The next section covers review of the measurement variables for the constructs of WCM, WCP, and firm profitability.

Measures of working capital management. Several studies conceptualized the WCM construct as consisted of an account receivables period (ARP), inventory period (INP), and account payables period (APP) and the CCC. To improve firm profitability, small business leaders must strive for a shorter ARP, INP, and CCC, and a longer APP (Richard & Laughlin, 1980). However, the optimal time length is dependent on many factors that are both internal and external to the firm (Molina & Preve, 2012). The first

measure of WCM is the ARP. Account receivable represents the total unpaid trade credits that the company offered to its customers (Yano & Shiraishi, 2012). The ARP is the proportion of average accounts receivable to sales multiplied by 365 days and expresses the average number of days firms expect to collect outstanding credit sales back from customers (Yazdanfa and Öhman (2014)

While a shorter ARP shows the ability of the company to collect receivables quickly, a longer ARP reflects a slow rate of collection of outstanding sales. Thus, the ARP and firm profitability have an inverse relationship (Kestens, Cauwenberge, & Bauwhede, 2012; Rauscher & Wheeler, 2012). Molina and Preve (2012) suggested that small business leaders must find ways of minimizing the time-lapse between completion of sales and receipt of payments. Molina and Preve also argued that in times of economic recession and financial distress, small business leaders should substitute the most expensive source of financing with trade credits. Martı´nez-Sola, Garcı´a-Teruel, and Martı´nez-Solano (2014) argued that the benefits of providing customers with trade credits surpass the costs of financing. Yano and Shiraishi (2012) made a similar conclusion that highly profitable firms both give and receive trade credits. Kestens et al. (2012) and Sheng et al. (2013) agreed that giving time to customers to pay their credit helps firms to establish customer relationship that improves long-term profitability. Therefore, a shorter or longer than the optimal ARP affects WCM and firm profitability.

The second measure of WCM is INP. Inventory is the stock of physical goods for eventual sale (Pong & Mitchell, 2012). Mishra, Nadi, and Animesh (2013) investigated the role of inventory management in fostering the growth of 44 small firms and found

that proper inventory management nurtures competitive ability and paves the way for cost reduction. Pong and Mitchel (2013) stated that an efficient management of inventory ensures a stable working capital, which ultimately increases profitability. An average inventory period (INP) is the proportion of stocks to costs of goods sold multiplied by 365 days (Shockley & Turner, 2014). A longer INP means that firms keep inventory in stock for a longer time while a shorter INP indicates a quick inventory conversion (Kaur & Singh, 2013). Mishra et al. (2013) examined the impact of inventory management on the profitability of 197 U.S. publicly traded companies from 2000 to 2009 and found that inventory efficiency increases stock market returns.

Inventory level should neither be too small to impact production or sales nor too high to tie the funds unnecessarily (Pong & Mitchel, 2013). According to research at Ernst and Young (2014), the leading 2000 companies had an excess working capital of $1.3 trillion unnecessarily tied up in operations in 2013. Although both longer and shorter than optimal INP affect profitability negatively, there is no consensus among researchers and practitioners on the optimal INP (Mishra, et al., 2013). Steinker and Hoberg (2013) examined the inventory management practices of 2785 U.S. publicly traded firms and concluded that changes in INP provide a valuable insight into firm level risks and opportunities.

A large inventory compensates for inefficient management and minimizes the adverse effects of price fluctuations (Pong & Mitchel, 2013). However, excess inventory may lead to liquidity problems because of high inventory costs. Conversely, Mathuva (2014) argued that a high level of stocks might contribute to profitability by minimizing

the risks of stock outs and interruptions in operations whereas a small level of inventory reduces inventory costs. However, maintaining low inventory also increases the likelihood of stock out and loss of sales (Mishra et al., 2013). Thus, a shorter or longer than the optimal INP would affect WCM and firm profitability. Table 3 shows empirical evidence on the variables representing the constructs of WCM, WCP, and firm profitability.

Table 3

Example of Prior Studies on the Study Constructs and Variables

Constructs	**Variables**	**Authors and year of publication**
Working Capital Management (WCM)	Accounts Receivable Period (ARP)	Enqvist et al. (2014); Gill & Biger (2013); Farris & Hutchison (2003); Napompech (2012); Rauscher & Wheeler (2012).
	Inventory Period (INP)	Enqvist et al. (2014); Gill & Biger (2013); Napompech (2012); Sheng et al. (2014); Shockley & Turner (2014); Steinker & Hoberg (2013).
	Accounts Payable Period (APP)	Enqvist et al. (2014); Gill & Biger (2013); Farris & Hutchison (2003); Napompech (2012); Rauscher & Wheeler (2012).
	Cash Conversion Cycle (CCC)	Gill & Biger (2013); Kroes & Manikas (2014); Mansoori & Muhammad (2012); Mathuva (2014); Napompech (2012); Kwenda & Holden (2012).
Working Capital Policies (WCP)	Working Capital Investment policy (WCIP)	Al-Shubiri (2011); Awopetu (2012); Bei & Wijewardana (2012); Nyabuti & Alala (2014); Sabri (2012); Weinraub & Visscher (1998).
	Working Capital Financing policy (WCFP)	Al-Shubiri (2011); Awopetu (2012); Bei, & Wijewardana (2012); Nyabuti & Alala (2014); Sabri (2012); Weinraub & Visscher (1998).
Profitability	Return on Asset (ROA)	Baños-Caballero et al. (2012); Bei & Wijewardana (2012); Mansoori & Muhammad (2012); Shockley & Turner (2014); Yazdanfa & Öhman (2014).
	Gross operating Profit (GOP)	Ebben &Johnson (2011); Enqvist et al. (2014); Napompech (2012); Kwenda & Holden (2012); Ukaegbu (2014)
	Tobin's q (TBQ)	Abuzayed (2012); Al-Shubiri (2011); Kroes & Manikas (2014).

The third measure of WCM is the APP. Accounts payable is an instantaneous financing source because it spontaneously arises from ordinary business transactions

(Kaur & Singh, 2013). The APP is the ratio of average accounts payable to the cost of goods sold multiplied by 365 days. The APP is the average length of time a trade credit is outstanding (Richard & Loughlin, 1980) and shows the average time the firm requires to meet short-term obligations (Yano & Shraishi, 2012). Accounts payable are the least expensive source of short-term financing, particularly for small businesses with limited access to external capital markets (Mateut & Zanchetti, 2013).

A longer APP allows small business leaders to overcome short-term financing constraints and devote available resources to other commitments (Tauringana & Afrifa, 2013). However, while a delay of payments to suppliers enhances cash flows, late payments can bring the risk of paying penalties and loss of creditworthiness (Talonpoika et al., 2014). Moreover, failure to meet short-term obligations will pass a negative signal to the market. Molina and Preve (2012) argued that an extended APP will directly affect the share price and relationship with creditors and suppliers. Sheng et al. (2014) examined the accounts payable management practices of 265 Latin American firms and found that efficient management of payables improves profitability.

Although a shorter APP could signal ability to meet short-term obligations and take advantage of trade discounts for early payments, it can lead to liquidity problems (Tauringana & Afrifa, 2013). The optimal APP reflects the extent of control over payments and trade credits from suppliers (Kroes & Manikas, 2014). Gill and Biger (2013) suggested that to maximize profit and maintain creditworthiness, small business leaders should pay creditors in time, but as slowly as possible without damaging the firm's credit rating. In sum, despite the lack of consensus among researchers on what

constitutes the optimal APP, empirical evidence exists showing the relationship between APP, WCM, and firm profitability.

The CCC is a composite or additive measure of WCM and provides a comprehensive explanation for inter-firm profit differentials (Richard & Laughlin, 1980). A longer CCC denotes that it takes more time for a company to convert its cash outflows into cash inflows (Mathuva, 2014). A shorter CCC may improve profitability because firms turn their accounts receivable and inventories quickly (Marttonen et al., 2013). Given the limited access to external capital to finance business operations, a shorter CCC plays a critical role in enhancing the profitability of small firms. A shorter CCC is an indicator of the efficient utilization of the firm's working capital (Marttonen et al., 2013).

Earlier studies by Jose et al. (1996), Shin and Soenen (1998), and Farris and Hutchison (2003) used ARP, INP, APP, and CCC to measure the WCM. More recently, Gill et al. (2015) and Kroes and Manikas (2014) used similar measures to operationalize the construct of WCM using data from U.S. publicly traded companies. Lind et al. (2012), Mansoori and Muhammad (2012), and Napompech (2012) used similar measures in businesses in Germany, Singapore, and Thailand, respectively. The above review showed empirical evidence in the use of ARP, INP, APP, and CCC to operationalize the WCM construct.

Measures of working capital policy. Several prior studies conceptualized the WCP as consisting of working capital investment policy (WCIP) and working capital financing policy (WCFP) (Awopetu, 2012; Bei & Wijewardana, 2012). WCIP sets the level of investment in the firm's current asset (Weintraub & Visscher, 1998). WCIP

could be either aggressive or conservative depending on the value of the ratio (Weinraub & Visscher, 1998). While a low WCIP ratio reflects a more aggressive policy, higher ratios show more conservativeness (Weinraub & Visscher, 1998). Firms with an aggressive WCIP make the minimum investment in current assets. However, companies with a conservative WCIP make substantial investments in current assets to avoid the risk of potential disruptions in the firm's operations (Bei & Wijewardana, 2012).

An aggressive WCIP reflects the firm's active control and management of current assets (Nyabuti & Alala, 2014). Theoretically, an aggressive WCIP results in a minimal level of investment in current assets, and a shorter CCC. Awopetu (2012) stated that aggressive WCIP is a higher risk and higher return strategy, because companies with an aggressive policy take the risk of making only a minimal investment in current assets to maximize profitability. According to Bei and Wijewardana (2012), a conservative WCIP is a passive approach because it increases current assets regardless of changes in operations. However, Al-Mwalla (2012) argued that the degree of business volatility and uncertainty dictate the choice of policies.

Firms tend to adopt a conservative WCIP during the time of high business volatility and an aggressive WCIP during the period of low volatility (Bei & Wijewardana, 2012). Weinraub and Visscher (1998) and Al-Shibiri (2011) agreed that aligning aggressive and conservative WCIP to market and firm conditions is more important than adopting either aggressive or conservative WCIP. Nyabuti and Alala (2014) and Al-Shubiri (2011) reported a significant negative relationship between aggressive WCIP and firm profitability. Thus, a lower investment in the current asset

would lead to higher profitability. However, Onwumere et al. (2012) warned that an aggressive WCIP would have an adverse impact on the long term as the firm's current assets deteriorate over time. The above review showed that the conditions for adopting either an aggressive or conservative WCIP is open for debate, and yet there is evidence of the relationship between WCIP and firm profitability.

The other measure of WCP is the working capital financing policy (WCFP). The WCFP deals with a decision on the extent of using short-term liabilities to finance firms' assets (Nyabuti & Alala, 2014). The WCFP is the proportion of current liabilities to the total asset. While a higher ratio shows aggressiveness, the lower ratio represents a more conservative WCFP (Weinraub &Visscher, 1998). Firms with an aggressive WCFP have larger current liabilities (Al-Shubiri, 2011). An aggressive WCFP results in higher short-term obligations, shorter CCC, and higher profitability under stable market conditions (Weinraub & Visscher, 1998). However, excessive reliance on current liabilities can put firms' liquidity at risk (Awopetu, 2012). Al-Mwalla (2012) found that an aggressive WCFP might have a negative impact on firm's profitability when financing costs are high. Also, small business leaders could over stretch working capital when they use short-term debts to finance assets (Awopetu, 2012).

Firms with a conservative WCFP use more long-term debt to finance their current assets and maintain better liquidity levels. Bei and Wijewardana (2012) stated that companies tend to adopt a conservative WCFP during the time of high business volatility. Although the risk of a conservative WCFP is low because of minimal reliance on short-term funding, the high cost of long-term finance makes the policy less profitable

(Kadumi, 2012). Ukaegbu (2014) argued that firms with high risk-return operations adopt aggressive WCFP while those with little risk-return operations use conservative WCFP. From this discussion, one can deduce that there is evidence of a relationship between WCIP, WCFP, and firm profitability (Weinraub & Visscher, 1998).

Measures of profitability. Given that firm performance is a multifaceted construct, the selection of performance measures may affect the research results and interpretations (Deng & Smyth, 2013). Santos and Brito (2012) stated that profitability measures could be objective accounting ratios, market valuation measures, or subjective perceptual measures. The accounting measures include return on asset, return on investment, return on equity, gross operating profit, and earnings per share (Santos & Brito, 2012). The market valuation measures include market value added and Tobin's q (Deng & Smyth, 2013). The subjective non-financial measures include customer satisfaction, employee morale, product quality, and other non-objective performance measures (Deng & Smyth, 2013). Return on asset (ROA), gross operating profit (GOP), and Tobin's q (TBQ) measure profitability from different perspectives (Katchova & Enlow, 2013; Santos & Brito, 2012). This study uses the accounting measure of ROA, the operational efficiency measure of GOP, and market performance measures of TBQ. The following section presents evidence of the use of these proxies to operationalize the construct of profitability.

The ROA is a well-known traditional accounting measure of profitability (Katchova & Enlow, 2013). The ROA includes the measurement of the return on the firm's total investment. Awopetu (2012), Deng and Smith (2013), and Steinker and

Hoberg (2013) used the ROA as a proxy for the profitability of U.S. publicly traded companies. Enqvist et al. (2014), Li et al. (2014), and Yazdanfa and Öhman (2014) employed the ROA as a measure of profitability of non-U.S. companies. Enqvist et al. (2014) argued that various degrees of financial leverages and nature of business do not affect the ROA. Banos-Caballero et al. (2012) demonstrated that the ROA correlates to stock price and consequently implies that higher ROA yields a greater value for shareholders.

Yazdanfa and Öhman (2014) stated that the ROA is a useful measure of profitability for companies with capital-intensive operations. Abuzayed (2012) stated that ROA is particularly important for manufacturing companies because the operating activities of these companies account for a larger portion of their assets. However, since the ROA is a backward looking tool subject to manipulation by owners and managers, researchers should combine the ROA ratio with other profitability measures (Lind et al., 2012). The ROA does not consider risk or give information about firm's potential for profitability (Mansoori & Mohammud, 2012).

Gross operating profit (GOP) is another proxy for profitability. Abuzayed (2012) examined the impact of WCM on profitability through GOP. Banos-Caballero et al. (2012) also used the GOP as a proxy measure of profitability. The GOP reflects the operating activities of the firm better than the ROA (Napompech, 2013). The GOP also relates operating activities of the company to CCC and its components (Banos-Caballero et al., 2012). Kwenda and Holden (2012) stated that removing financial assets from the calculation of GOP minimizes the impact of economic activities on overall profitability.

Kwenda and Holden also argued that studies relying on the CCC as a theoretical framework use the GOP variable to measure profitability. Ukaegbu (2014) also used GOP as a proxy for profitability because their samples represented different industries.

Tobin's q (TBQ) is a market valuation measure that firms and potential investors frequently use to evaluate the market replacement value of the firm. Tobin's q represents the value added by management above the value of the firm's assets (Abuzayed, 2012). Tobin's q reflects the company's market value per dollar of the replacement cost of assets (Kroes & Manikas, 2014). Investors and creditor consider high q firms as companies for which the market anticipates favorable future investment opportunities. In contrast, investors and creditors expect low q firms to have unfavorable opportunities. Kroes and Manikas (2014) used Tobin's q as a proxy for market value. Mathuva (2014) argued that shareholders and financial analysts use Tobin's q to evaluate the market or replacement value of companies.

Abuzayed (2012) noted that the comparison of market and book value-oriented variables makes Tobin's q an important measure of overall firm value. Kroes and Manikas (2014) stated that Tobin's q allows the capture of the working capital policy interests of investors and creditors. Al-Shubiri (2011) stated that the Tobin's q ratio allows evaluation of firms with different sizes by reflecting a firm's assets in the denominator. One problem with the use of Tobin's q is that the replacement value of the firm's assets is historical rather than current replacement cost (Kroes & Manikas, 2014). Another problem is the exclusion of intangibles from the company's market value.

However, despite these limitations, researchers continued using Tobin's q as an important measure of business value (Abuzayed, 2012; Kroes & Manikas, 2014).

Reliability and validity properties of measurements. The overarching attributes of science are the pursuit of truth and the limitation of errors (Engberg & Berben, 2012). Reliability and validity analysis are ways of demonstrating the rigor of research instruments and the trustworthiness of the findings (Hamann, Schiemann, Bellora, & Guenther, 2013). In traditional data collection tools such as survey questionnaire, researchers have a clear explanation of the data collection purposes and processes. Published reliability and validity properties are also available for some instruments (Houston, 2004). Because of the proliferation of private and governmental electronic databases, researchers in finance and economics continued to use secondary archival data sources (Tasic & Feruh, 2012). Boyd et al. (2012) found that the use of surveys and laboratory studies declined from the 1980s to the 2000s whereas the use of archival data increased. This shift toward increased reliance on archival data highlights the need for ensuring the reliability and validity of these sources. I will provide a detailed account of reliability and validity in the following section.

Reliability is the degree to which a particular measure is free from any random errors and produces similar results in different circumstances (Du & Zhou, 2012). The test–retest reliability is the temporal stability of a test from one session to another (Engberg & Berben, 2012). Another important characteristic is the internal consistency of the measures, which is the relationship between all the results obtained from a single test (Tabachnick & Fidell, 2013). Inter-rater reliability is an evaluation of different observers

scoring a behavior or event using the same instrument (Engberg & Berben, 2012). Researchers also conduct a split half reliability analysis dividing question items into two groups, computing scores for each half and examining their correlation (Du & Zhou, 2012). Researchers using survey instruments with multiple scale items often evaluate the reliability of a measure by using statistical procedures. The Cronbach's alpha coefficient and Confirmatory Factor Analysis (CFA) are conventional reliability analysis methods (Hamann et al., 2013).

However, the reliability of secondary data sources comes from the credibility given to the reports (Tasic & Feruh, 2012). Parker (2012) argued that researchers must ensure that secondary sources are free from material error and bias. Parker also noted that secondary data sources must also contain all the information necessary to measure what they purport to measure consistently. Tasic and Feruh (2012) also argued that a reliable secondary data would give the same result consistently and repeatedly. Johnston (2014) argued that if the assumption that publicly traded companies adhere to the legal and financial reporting requirements holds, the use of archived financial reports stands the test of reliability. Independent auditing, verification, and attesting processes are among the quality indicators for the financial statements of publicly traded firms (Boyd et al., 2012). However, computational errors, sample inadequacy, and missing data can affect the reliability and quality of the data (Butler et al., 2012).

Validity is the accuracy with which an instrument or a test represents the concept it claims to measure (Hamann et al., 2013). Internal validity analysis asserts that variations in the outcome variable result from changes in the independent variables, not

from other confounding factors (Engberg & Berben, 2012). Threats to internal validity may include insufficient knowledge of the research design, instrumentation issues, researcher biases, and errors in statistical testing (Engberg & Berben, 2012). Construct validity is the extent to which the instrument measures what the construct claims to measure (Tabachnick & Fidell, 2013). In traditional data collection tools such as questionnaire, correlations that fit the expected pattern can provide evidence of construct validity (Butler et al., 2012). Little construct validity reflects the low credibility of the findings involving the measure (Engberg & Berben, 2012). Ketchen et al. (2012) suggested that scholars should identify whether and how prior studies used secondary data proxies to operationalize another construct.

Content validity deals with the relevance and representativeness of items to the intended setting (Hamann et al., 2013). To ensure content validity, researchers often conduct pilot studies and provide an explicit theoretical specification of the constructs. Johnston (2014) discussed the importance of aligning measures with research constructs (Donaldson et al., 2013). Butler et al. (2012) recommended the use of expert judgment and prior studies to ensure validity. Criterion-related validity such as discriminant and convergent validity demonstrates how well scores on a measure correlate with other measures of the same construct (Engberg & Berben, 2012).

Discriminant validity indicates the extent to which the test assesses the construct of interest and no other constructs (Hamann et al., 2013). Convergent validity shows the degree to which a measure of a construct is consistent with other measures of the same construct (Hamann et al., 2013). External validity reflects the ability to apply the findings

to other populations, times, and places (Tabachnick & Fidell, 2013). Population, time, and place validities reflect whether researchers can draw inferences to a larger population, other times, or across locations (Engberg & Berben, 2012).

There are many potential sources of error in secondary data. Sampling error occurs when each element of the population does not have an equal chance of being selected (Tasic & Feruh, 2012). The original data collector might manipulate or reorganize the data to meet a purpose that is unknown to the current study (Johnston, 2014). Archival data sometimes does not reflect the construct of interest adequately because of changing units of analysis and measurement (Butler et al., 2012). Researchers can mitigate these threats by using a random sampling technique and by confirming that all of the secondary data sources contain the same unit of analysis and measurement (Tasic & Feruh, 2012).

Researchers should also provide a clear theoretical specification of the constructs and variables as the basis for the selection of secondary data proxies (Boyd et al., 2012). Johnston (2014) urged researchers to demonstrate in the literature review the degree to which the secondary data proxies fit into the theoretical constructs. Houston (2004) suggested that researchers using archival data must gain a comprehensive understanding of the strength and weaknesses of the dataset. Parker (2012) recommended examination of frequency tables and cross-tabulations to assess the profile of missing values.

Although some scholars have questioned the reliability of secondary data sources such as financial statements, the review of the literature showed empirical support for audited financial reports as dependable and reliable sources. Abuzayed (2012), Mathuva

(2014), and Ukaegbu (2014) argued that ARP, INP, and APP fit the use of CCC. Al-Shubiri (2011), Bei and Wijewardana (2012), and Nyabuti and Alala (2014) considered audited financial reports as reliable data sources for measuring WCP. Awopetu (2012), Moore (2014), and Pavlovich (2014) conducted their doctoral studies using archival data from the U.S. publicly traded companies.

All of these researchers considered the archival corporate records as reliable and dependable sources. Marttonen et al. (2013) argued that in many cases, there is no a better data source available in context of research in finance. Mathuva (2014) also argued that financial reports are reliable because independent and external entities have already audited, verified, and attested to the accuracy of the documents. Johnston (2014) claimed that investors, creditors, and financial analysts use financial reports as reliable sources of information for decision-making purposes.

Methodologies for the Study of Profitability

Firm performance is the ultimate dependent variable in management research (Deng & Smith, 2013). Butler et al. (2012) stated that lack of clear understanding of the conceptualization and operationalization of firm performance reflects the need for careful examination of its theoretical and methodological underpinnings. The construct of firm performance and its measurement continues to challenge scholars because of its complexity. As a result, different researchers use different research methods and techniques to examine profitability as an essential dimension of firm performance (Santos & Brito, 2012). Only a few prior studies employed a qualitative research method and phenomenological and case study designs to examine firm profitability. Sunday (2011)

used a qualitative phenomenological approach to explore the impact of liquidity and cash policy on the profitability of companies. Through interaction and discussion with owners and managers, Sunday (2011) uncovered valuable insights that are difficult to obtain with secondary data sources.

Similarly, Agey-Mensah (2012) employed a case study to explore the barriers to effective WCM and identified that owners and managers lack understanding of the effects of WCM on profitability. Ramiah, Zhao, and Moosa (2013) used a qualitative phenomenological design to explore the impacts of global financial crises on WCM and the profitability of 173 Australian public companies. However, these qualitative studies included small sample sizes, which limit the generalizability of findings to a larger population (Turner et al., 2012). Besides, these studies relied upon only a cross-section of data as opposed to a time series or longitudinal data (Butler et al., 2012). Quantitative researchers combined cross section and time series with panel data sources covering many years of firm operations (Tasic & Feruh, 2012).

A review of prior studies confirmed that a quantitative research method, nonexperimental research design, and correlation and regression analysis techniques are standard in the study of firm profitability. Kachova and Enlow (2013) employed regression analysis to examine the economic performance of agribusiness firms using data from the Standard & Poor's COMPUSTAT data set. Ebben and Johnson (2011) examined the effect of WCM on the profitability of 1,712 small retail and manufacturing U.S. firms through correlation and regression analysis. Abuzayed (2012), Awopetu (2012), and Kroes and Manikas (2014) used different forms of regression analysis to

examine the construct of profitability. The above review showed that finance researchers employed a quantitative research method with a nonexperimental design, large sample size, panel data, and regression analysis in the study of firm profitability.

Transition

Section 1 included descriptions of the research problem, purpose, nature, assumptions, and significance to provide a sound basis for the study. The review of prior studies showed that a quantitative research method, nonexperimental design, and publicly available archival data are appropriate to investigate the relationship between WCM, WCP, and firm profitability. Section 1 also included a review of the academic and professional literature on the primary and rival theoretical frameworks, the research constructs and variables, measurements, and methodologies. The initial challenge during the literature review was the lack of prior studies that combined WCM and WCP to predict firm profitability. However, I overcame these challenges through extensive analysis and integration of multiple sources. Section 2 includes discussions of the role of the researcher, characteristics of the research participants, and the selection of research method and design. Section 2 also includes population and sampling, ethical research, instrumentation, data collection and analysis techniques, and the validity of the study. Section 3 included the results and findings of the study together with their application to professional practice and implication for social change.

Section 2: The Project

This section presents the mechanics of the study starting with a restatement of the purpose to reiterate the rationale for the study. In this section, I describe the role of the researcher, the participants, and the research method and design. I also describe the population and sampling, data collection and analyses, and the validity of the study. The research problem, questions, and hypotheses serve as the basis for the choice of research methods, designs, population, sample, as well as data collection and analysis techniques.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between WCM, WCP, and profitability of small publicly traded U.S. manufacturing companies. The independent variables were WCM and WCP. The dependent variable was firm profitability. The target population consisted of small publicly traded U.S. manufacturing companies from the S & P Capital IQ Netadvantage database. The target population accounts for about 50% of the U.S. private sector GDP (U.S. Census Bureau, 2015). The implications for positive social change include the potential to provide (a) business leaders with improved understanding of the association between WCM, WCP, and firm profitability; (b) employees with better jobs, compensation, training, and working conditions (Porter & Kramer, 2011); and (c) the general public with employment opportunities, stock ownership, quality products, and development infrastructures such as roads, healthcare, and educational facilities (Muller et al., 2012).

Role of the Researcher

The role of researchers in the data collection process begins with the identification of the study population and the sample using the research question as a guide (Wester et al., 2013). Qualitative researchers may take the role of interpreter, observer, and observer-participant. However, quantitative researchers rely on the development of empirical measurement instruments and procedures to collect data and deduce analytical conclusions (Caruth, 2013). Unlike qualitative and mixed methods researchers, quantitative researchers may collect data with little or no contact with the participants (Wisdom et al., 2012). I relied on publicly available archival financial reports without any interaction with human participants. Throughout the proposal development and data collection stages, I obtained Institutional Review Board's (IRB) approval, checked for data completeness, aligned the sampling techniques to the research question, and imported the data into a Microsoft Excel spreadsheet.

I served different universities as an assistant professor for over 15 years and published several articles in peer-reviewed journals and conference proceedings in the field of small business management. These experiences did not contribute any material biases to the study. According to Leedy and Ormord (2012), prior research experience enhances researchers' knowledge and understanding of the research phenomenon. Delen et al. (2012) stated that the absence of any direct contact with research subjects minimizes the potential for any material bias in data collection and analysis. Because different quantitative researchers should produce similar results under similar conditions, they play the role of an objective or independent observer (Johnston, 2014). Furthermore,

the use of secondary archival data sources limits the role of quantitative researchers to data retrieval and analysis (Parker, 2012).

Snowden (2014) stated that concerns over confidentiality and privacy are major factors affecting human participation in research. Researchers must extend the ethical principles stipulated in the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979) from data collection to data analysis (Engberg & Berben, 2012). Throughout the data analysis and report writing stages, I maintained the anonymity of participating companies and avoided subjectivity in analyzing and reporting the results (Tasic & Feruh, 2012).

Participants

Small publicly traded manufacturing companies throughout the United States constituted the target population for this study. Tasic and Feruh (2013) stated that an explicit specification of sample selection and eligibility criteria improves both the reliability and validity of the study. The sample firms met three eligibility criteria. First, the maximum market capitalization was $1.4 billion. Second, the principal line of operation was manufacturing. Finally, the financial statements contained all the relevant data from 2004 to 2013. Because of the absence of direct interaction with human participants, the need for establishing working relationships with owners and managers of the sample firm was not necessary for this study (Leedy & Ormord, 2012). The primary strategy to access the S & P Capital IQ NetAdvantage Small Cap 600 companies' databases was through my membership in the Maryland Montgomery County Public Libraries. The use of archived financial reports provided both time-series and cross-

sectional data to answer the overarching research question and test the research hypothesis (Johnston, 2014).

Research Method and Design

In business studies, researchers' choice of method and design raises philosophical concerns that revolve around ontological and epistemological issues (Kura, 2012). From the ontological perspective, the central research question is whether social reality exists independently of human conceptions and interpretation (Wisdom et al., 2012). From the epistemological perspective, the primary concern is whether to examine or understand social reality (Wester et al., 2013). These philosophical views influence why and how individual researchers choose some research methodologies and designs over others (Donaldson et al., 2013). To determine whether, and to what extent, a relationship exists between WCM, WCP, and firm profitability, I employed a quantitative research method and nonexperimental correlational research design. The following section provides justifications for the selection of the research method and design over others.

Research Method

The quantitative, qualitative, and mixed-methods approaches represent three popular options for conducting a study (Turner et al., 2012). Yilmatz (2014) stated that a quantitative researcher follows an objectivist epistemology and seeks to measure a static reality through a deterministic theoretical framework. In contrast, a qualitative researcher follows a constructivist epistemology and explores a socially constructed dynamic reality through a context-sensitive conceptual framework (Allwood, 2012). I followed a positivist research philosophy and used a quantitative research method over qualitative

and mixed methods. Kura (2012) stated that positivism relies on the ontological assumptions of quantification, operationalization, and objective reality. Thus, the quantitative research method provides a rigorous methodological process that emphasizes rationality, objectivity, and prediction (Allwood, 2012). A quantitative method also allows for deductive testing, empirical measurement, and statistical analysis of the hypothesized relationship between WCM, WCP, and firm profitability (Donaldson et al., 2013). A quantitative research method is best when the researcher needs to compare data in a systematic way and generalize the findings to a larger population (Allwood, 2012).

A qualitative research method focuses more on creating meaning about a research phenomenon than testing a theory deductively (Venkatesh et al., 2013). A qualitative research method can be useful for gaining an understanding of complex situations by interacting with human subjects (Kaczynski, Salmona, & Smith, 2013). Kaczynski et al. (2013) stated that qualitative inquiry means staying inductively open to the unknown while seeking to discover a deeper understanding of intricate social relationships. Allwood (2012) stated that qualitative researchers attempt to make sense of events in terms of the meanings people bring to them. Yilmatz (2014) argued that unlike quantitative researchers, qualitative researchers make local and context-dependent decisions in their studies. For these reasons, I did not choose the qualitative research method. However, other researchers can add depth and breadth to my findings by employing a qualitative research method.

Mixed-methods studies involve both qualitative and quantitative approaches (Caruth, 2013). A mixed-method approach is advantageous when different research

questions within one study call for different methods to overcome the inherent weaknesses of single-method studies (Afrifa, 2013). Researchers should not consider mixed methods as best practice solely because of its ability to reduce method-specific weaknesses (Ahmed & Sil, 2012). Unless the decision relies on ontological compatibility, mixed-methods research could subvert methodological pluralism (Ahmed & Sil, 2012). The use of mixed-methods research also adds requirements in terms of time, funding, and skills in how to integrate the different methods (Donaldson et al., 2013). I did not choose a mixed-methods approach because the relationship among the research variables was not an experienced phenomenon for combining objective measurement with a subjective exploration of meanings (Kura, 2012). However, future researchers may combine qualitative and quantitative research methods to balance method-specific advantages and shortcomings.

Research Design

A research design is the researcher's overall plan or outline for obtaining answers to the research questions (Donaldson et al., 2013). The selection of research design depends on the nature of the research question, target population, data collection, and analysis techniques (Wester et al., 2013). When selecting a research design, researchers should also consider the advantages and disadvantages of all available experimental, quasi-experimental, or nonexperimental designs (Wester et al., 2013). I used a nonexperimental research design because the research question was about examining a noncausal relationship between WCM, WCP, and firm profitability. Venkatesh et al.

(2013) stated that researchers use a nonexperimental design to examine association without causation.

An experimental research design requires manipulating variables or applying treatments to the participating firms (Wester et al., 2013; Wisdom et al., 2012). A quasi-experimental design focuses on comparison and evaluation of the effectiveness of interventions (Venkatesh et al., 2013). However, this study did not require any form of intervention or manipulation as it relied on the retrieval of archival data (Kura, 2012). The following section presents the target population and sampling techniques.

Population and Sampling

The target population for the study was small publicly traded manufacturing firms throughout the United States. The profitability of small manufacturing firms depends mainly on efficient WCM and WCP (Al-Shubiri, 2011; Kroes & Manikas, 2014). The U.S. manufacturing industry went through significant transformations in terms of interaction with creditors, investors, and shareholders (Kroes & Manikas, 2014). Compared to services or financial companies, manufacturing firms make significant investments in inventories, accounts receivable, and accounts payable. Kroes and Manikas (2014) argued that manufacturers' positions in the middle of supply chains allow them to interact with both suppliers and customers. These interactions also provide substantial opportunities for flexible trade terms and conditions (Kroes & Manikas, 2014). Molina and Preve (2012) stated that working capital is more critical to the profitability of small firms with limited access to external capital than it is for big businesses.

Another justification for the choice of the population was that all the relevant data for answering the research question and testing the hypotheses were publicly available. Ebben and Johnson (2011) noted that audited financial reports are dependable sources if they meet the legal and financial reporting requirements. Narrowing the focus of the study to only small manufacturing companies allowed controlling for the effects of size and industry factors on the findings (Kroes & Manikas, 2014). Panel data from publicly traded companies provided rich longitudinal and cross-sectional data (Johnston, 2014). This population was, therefore, an ideal source of data to answer the overarching research question and test the null hypothesis of no significant relationship between WCM, WCP, and firm profitability.

Sampling is the process of selecting some study units from a defined target population (Acharya et al., 2012). Researchers may use either probabilistic or nonprobabilistic sampling techniques depending on the research method, design, and questions. Wisdom et al. (2012) stated that qualitative researchers often prefer to select nonprobability sampling to increase the scope of data and to uncover multiple perspectives. A probability sampling gives every member of the target population an equal chance of inclusion in the sample (Acharya et al., 2012). Probability sampling may also allow researchers to generalize their findings from the sample to the study population (Tabachnick & Fidell, 2013).

I used a simple random probability sampling technique for two reasons. First, probability sampling decreases the likelihood of selection bias and minimizes the potential for skewed results (Acharya et al., 2012). Acharya et al. noted that

nonprobability sampling does not guarantee every element to have an equal chance for inclusion in the study and limits generalization of findings to a larger population. Second, a simple random sampling technique requires only minimal knowledge of the population and provides possibilities for high internal and external validity (Acharya et al., 2012). Although this sampling method involves a high cost of establishing a sampling frame compared to a stratified sampling technique, its benefits outweigh the limitations (Acharya et al., 2012). For example, in a systematic random sampling, the risk of bias may increase as the sampling interval can coincide with systematic variations in the sampling frame (Tabachnick & Fidell, 2013). Similarly, multistage and cluster sampling may be problematic as the use of strata may lead to greater risk of a nonrepresentative sample (Acharya et al., 2012).

An acceptable sample size is one that is both statistically viable and economically feasible (Tabachnick & Fidell, 2013). To determine the optimal sample size, researchers need to know the acceptable level of significance, power, and effect size (Wisdom et al., 2012). The significance level indicates how much safeguard researchers require against accidentally rejecting a true hypothesis (Faul et al., 2009). Statistical power indicates the ability of a test to prevent the rejection of a false hypothesis. An effect size measures either the sizes of associations or the sizes of differences in a test (Tabachnick & Fidell, 2013). I used the conventional significance level of 0.05, a statistical power of 0.80, and a medium effect size of 0.15 (Faul et al., 2009).

Before taking a random sample of 68 firms from the S & P Capital IQ Netadvantage database, I employed the following selection criteria. First, the firms'

maximum market capitalization should not be more than $1.4 billion. Second, the firms' principal line of operation is manufacturing. Third, the firms' balance sheet and income statement contain all the information needed to measure WCM, WCP, and firm profitability from 2004 to 2013. Tasic and Feruh (2013) stated that incomplete secondary sources affect the reliability of the tests. As shown in Figure 3, the minimum sample size was 68 small publicly traded U.S. manufacturing firms. However, the actual sample was 176 companies.

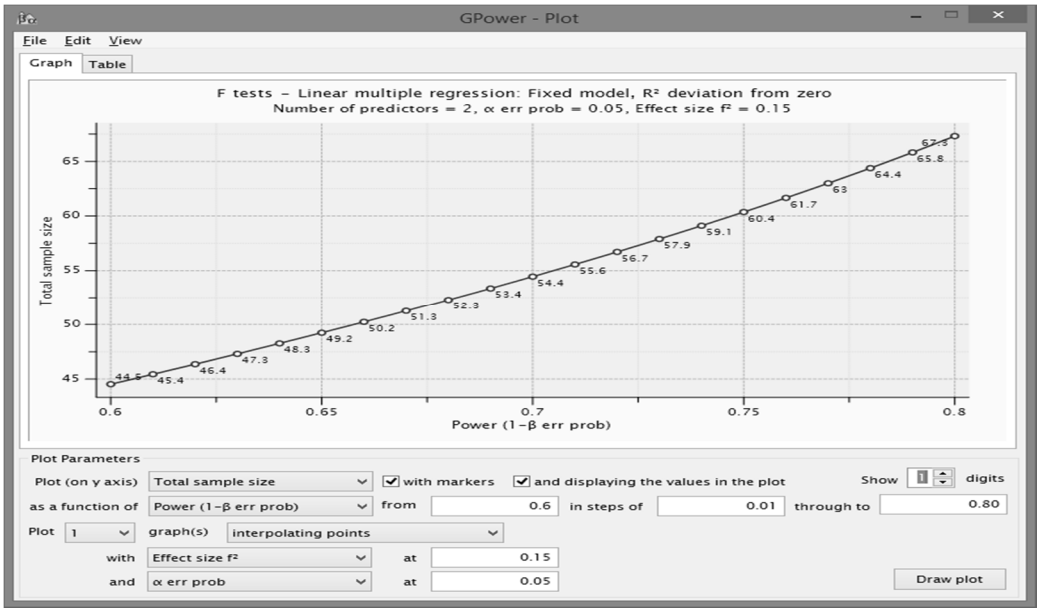


Figure 3. A priori sample size (*N* =68) generated by using the free G*Power 3.1 software by Faul et al. (2009).

Ethical Research

Ethics is a critical aspect of a research (Snowden, 2014). Snowden (2014) stated that ethical research is free from unfair discrimination, harming individuals, violating individual's privacy and confidentiality. The Belmont Report protocol (1979) endorsed respect, beneficence, and justice for research participants as the three top principles

underlying ethical research. Kaczynski et al. (2013) stated that a researcher must treat participants ethically, gain informed consent, maintain privacy, and avoid any form of deception. Turner et al. (2012) stated that all researchers must exercise care to safeguard the rights of individuals and institutions by adhering to ethical principles and standards.

Snowden (2014) suggested that whenever human subjects serve as sources of data, researchers have the responsibility to ensure confidentiality, privacy and mitigate any intended or unintended risks. Wester et al. (2013) stated that honesty, objectivity, integrity, carefulness, openness, and confidentiality are critical areas in research and scholarship. To mitigate potential ethical challenges, I (a) used random sampling technique, (b) included the IRB's approval number in the research report, (c) provided a statement on the absence of conflict of interest with the sample firms, and (d) maintained the confidentiality of any sensitive information. Ethical concerns may vary when studies involve secondary data and primary data sources (Johnston, 2014).

Studies using secondary data require minimal ethical considerations if the data is publicly available and retrievable with relative ease (Parker, 2012), and does not contain confidential data (Butler et al., 2012). As this study did not involve direct contact with human subjects, the potential for ethical threats was minimal. However, Tasic and Feruh (2012) stated that biases in data collection and interpretation can raise ethical concerns. Upon conclusion of the data analysis, I (a) transfered all the data from my personal computer to a password protected Universal Serial Bus (USB) flash drive, (b) kept the USB flash drive in a password protected safe, (c) destroy the data records after 5 years, and (c) provide a summary of key findings to any interested parties upon request.

Data Collection Instruments

All quantitative studies require careful attention to the development and measurement of constructs (Turner et al., 2012). Measurement is the allocation of numbers to observations to quantify phenomena (Butler et al., 2012). In finance, many of these phenomena, such as WCM, WCP, and firm profitability are abstract concepts known as theoretical constructs. Measurement involves the operationalization of constructs and the application of instruments to quantify the variables Engberg & Berben, 2012). An instrument is a data-gathering tool whereas Instrumentation is the process of developing, testing, and using a data collection instrument (Butler et al., 2012). Wisdom et al. (2012) stated that selecting a reliable data collection instrument to answer the research question ensures that the data is representative of the variables of interest.

The data collection instruments for this study were audited annual financial reports of publicly traded companies from the S & P Capital IQ NetAdvantage database. These reports were accessible by the public and contain standard form 10-k reports filed by the sample firms to the U.S. Securities Exchange Commission (SEC). The SEC requires each publicly traded company to prepare and file annual financial reports following the federal accounting and financial reporting laws and the Generally Accepted Accounting Principles (GAAP). A third party independent auditing company, approved by the SEC, audits, verifies, and attests the quality and credibility of all financial reports.

The financial reports were appropriate sources of information to measure the constructs of WCM, WCP, and firm profitability for five reasons. First, audited financial statements provide all the relevant data to operationalize the research constructs, answer

the research question, and test the hypotheses. Second, historical financial reports allow researchers to examine the phenomenon in the context of actions that had already taken place (Johnston, 2014). Third, financial reports provide reliable measures when researchers use the company as a unit of analysis. Fourth, there are no other sources that combine both time-series and cross-sectional data for a relatively large sample size (Parker, 2012). Fifth, financial ratios are necessary tools for performance evaluation and industry benchmarking. Finally, external analysts, creditors, and investors use audited financial reports for decision-making purposes (Tasic & Feruh, 2012). In the following section, I provided detailed description, calculation, and interpretation of each of the measures for the WCM, WCP, and profitability variables.

WCM Measures

In this study, I used four variables to operationalize the construct of WCM. The accounts receivable period (ARP) is the ratio of average accounts receivable to sales multiplied by 365 days (Richard & Laughlin, 1980). The ARP expresses the average number of days firms expect to collect their accounts receivable back from the respective debtors (Mathuva, 2014). The ARP measures the time needed to collect outstanding sales from customers. Since receivables depend on sales volume, the denominator in the formulae is total sales (Gill & Biger, 2013).

$$\textbf{Accounts Receivable, ARP} = \frac{\textbf{Average Accopunts Receivable}}{\textbf{Sales}}(\textbf{365})$$

Shorter collection period can lead to improved profitability. While a short collection period implies prompt payment by debtors and reduces the chances of bad debts, a longer collection period implies inefficient credit collection that may lead to

insolvency (Kroes & Manikas, 2014; Mathuva, 2014). Large accounts receivable can raise the profit by increasing the sale, but the firm may face the risk of bad debts (Enqvist et al. 2014).The inventory period (INP) is the length of time that resources are tied up in inventory and measures whether the firm is able or unable to convert inventories quickly into cash Gill & Biger, 2013). A longer INP may increasethe the opportunity cost of funds tied up in inventory. A shorter inventory time reflects the speed with which the firm converts inventory into cash, which may lead to improved profitability (Farris & Hutchison, 2003; Napompech, 2012).

$$\textbf{Inventory Period, INP} = \frac{\textbf{Average Inventory}}{\textbf{Cost of Goods Sold}}(\textbf{365})$$

The accounts payable period (APP) is the ratio of average payables for the year to the cost of goods sold multiplied by the number of days in a year (Mathuva, 2014). A shorter APP reflects that the company sttles its short term obligations in time and takes advantage of trade discounts (Abuzayed, 2012). Many scholars consider a longer APP as a sign of failure to satisfy firm's short-term obligations, which may lead to loss of creditworthiness. Unlike ARP and INP, the interpretation of APP is not straightforward because both shorter and longer APP have benefits and disadvantages depending on the nature of the transactions (Enqvist et al., 2014). However, there is a consensus among researchers that negotiating for a longer payable period has a positive influence on profitability (Napompech, 2012; Rauscher & Wheeler, 2012).

$$\textbf{Accounts Payable, APP} = \frac{\textbf{Average Accopunts Payable}}{\textbf{Cost of Goods Sold}}(\textbf{365})$$

The CCC is a composite measure of WCM (Richard & Laughlin, 1980). The CCC is the sum of the INP and ARP less APP (Mathuva, 2014). An efficient WCM can generate a shorter CCC, which leads to higher profitability (Richard & Loughlin, 1980). Warrad (2015) examined the impact of WCM on the liquidity levels of service firms through the the CCC. Firms with shorter CCC convert current assets into cash quickly and settle current liabilities within the credit period (Gill & Biger, 2013).

$$\textbf{Cash Conversion Cycle, CCC} = \textbf{ARP} + \textbf{INP} - \textbf{APP}$$

WCP Measures

In this study, I used the working capital investment policy (WCIP) and working capital financing policy (WCFP) to operationalize the construct of WCP. The WCIP ratio measures the proportion of current assets (CA) to total assets (TA). While higher ratios indicate conservative WCIP, lower ratios show aggressive WCIP. Businesses with an aggressive policy take the risk of keeping less inventory and accounts receivable to maximize profitability (Al-shubiri, 2011). Companies with a conservative policy maintain high current assets relative to total asset to minimize the risk of a stock out (Ukaegbu, 2014). An aggressive WCIP could result in lower current assets, less expenses, a shorter CCC, and higher business risk and return (Bei & Wijewardana, 2012). A conservative WCIP is a passive approach because current assets grow regardless of the uncertainties surrounding the firm's cash flow (Awepotu, 2012). Table 4 shows the research constructs, variables, and measures.

$$\textbf{Working capital Investment Policy, WCIP} = \frac{\textbf{Current Assets}}{\textbf{Total Assets}}$$

Table 4

The Research Constructs, Variables, and Measures

Constructs	Variables	Measures
Workin Capital Management	(1) Accounts Receivable Period (ARP)	$\frac{\text{Average Receivables}}{\text{Sales}/365}$
	(2) Inventory Period (INP)	$\frac{\text{Average Inventory}}{\text{Cost of Goods sold}/365}$
	(3) Accounts Payable Period (APP)	$\frac{\text{Average Trade payables}}{\text{Cost of Goods sold}/365}$
	(4) Cash Conversion Cycle (CCC)	ARP + INP - APP
Working Capital Policies	(1) WC Investment Policy (WCIP)	$\frac{\text{Current Asset}}{\text{Total Asset}}$
	(2) WC Financing Policy (WCFP)	$\frac{\text{Current Liabilities}}{\text{Total Asset}}$
Firm Profitability	(1) Return on Asset (ROA)	$\frac{\text{Net profit}}{\text{Total Asset}}$
	(2) Gross Operating Profits	(Sales – Cost of goods Sold)/(Total Assets- Financial Assets)
	(3) Tobin's q (TBQ)	$\frac{\text{Book value of total Debt + market value o}}{\text{Book value of Total Asset}}$

The WCFP ratio is the proportion of current liabilities to total assets. While higher ratios indicate an aggressive WCIP, lower ratios show a conservative WCIP (Kadumi, 2012). A current liability is a desirable source of financing because short-term debts are less expensive than long-term liabilities (Awopetu, 2012). Companies with an aggressive WCFP use current liabilities to finance their current assets (Al-Shubiri, 2011). In contrast, firms with a conservative WCFP use long term debts to finance their current assets (Bei & Wijewardana, 2012).

$$\textbf{Working capital Financing Policy, WCIP} = \frac{\textbf{Current Liabilities}}{\textbf{Total Assets}}$$

Profitability Measures

The measures profitability reflect the interests of the firm's stakeholders (Margeritha & Supartika, 2016). Falavi and Abdoli (2015) and Feng, Morgan, and Rego (2015) suggested the use of multiple measures of profitability to reflect the diverse interests of stakeholders. Wang, Feng, and Lawton (2016) stated that a multi-dimensional perspective provides a more comprehensive picture of firm perfromance than does a single measure of profitability. In this study, I used multiple measures of profitability to reflect the diverse interests of different stakeholders of publicly traded companies. The return on asset (ROA) is the ratio of net income to total assets and is perhaps the single most useful ratio for assessing management's overall operating performance (Baños-Caballero et al., 2012). The ROA also correlates to stock price and consequently implies that higher ROA yields greater value for shareholders (Mansoori & Muhammad, 2012). A higher ROA reflects a higher or better return on the firm's total investment (Yazdanfa & Öhman, 2014).

$$\textbf{Return on Asset, ROA} = \frac{\textbf{Net Profit}}{\textbf{Total Asset}}$$

Gross operating profit (GOP) is the ratio of sales minus costs of goods sold to total assets minus financial assets (Enqvist et al., 2014). The GOP can reflect the operating activities of the firm better than the ROA, because the GOP relates operating activities of the business to non-financial assets to measure the firm's operational

efficiency (Kwenda & Holden, 2012). A higher GOP reflects higher return from the companies operations (Ukaegbu, 2014).

$$\textbf{Gross Operating Profit, GOP} = \frac{\textbf{Sales} - \textbf{Cost of Goods Sold}}{\textbf{Total Asset} - \textbf{Financial Assets}}$$

Tobin's q is the ratio of the market value plus the book value of debt to the market value plus the book value of total assets (Abuzayed, 2012). According to Kroes and Manikas (2014), the comparison of market and book value-oriented variables makes Tobin's Q an important measure of overall business value. TBQ allows investors and creditors current market valuation of a firm to compare the market value of a company's stock with the value of a business's equity book value (Al-Shubiri, 2011). A q value greater than one means that the market believes the assets of a company can generate cash flows that exceed the liquidation value of those assets (Abuzayed, 2012).

$$\textbf{Tobin's q, TBQ} = \frac{\textbf{Book Value of Debt} - \textbf{Market Value of Equity}}{\textbf{Book Value of Total Assets}}$$

Numerous prior studies used the above financial measures to examine the relationship between WCM, WCP, and firm profitability. Krose and Manikas (2014) used secondary data from S & P COMPUSTAT database and regression analysis to examine the impact of cash management on the profitability of 1233 U.S. manufacturing firms. Duggal and Budden (2012) used S & P 500 Companies database to evaluate the effects of the recession on working capital management. Other studies such as Shockley and Turner (2014) used ratio scales and the S & P COMPUSTAT database to examine the relationship between aspects of WCM and firm performance. The review of the literature also showed a similar trend in studies conducted outside the United States. For example,

Li et al. (2014) used ratio scales from the financial statements of 113 Chinese public companies from China Stock Market and Accounting Research (CSMARC) Database. Mansoori and Mohammed (2012) used financial ratios 92 Singapore firm's financial statement from DataStream database. This evidence shows three important features related to measurement instruments. First, financial statements of publicly traded companies are independently audited, verified, and attested reliable sources (Parker, 2012). Second, the use of databases as a source of secondary data allows researchers to combine time series data with a cross-sectional study (Johnston, 2014). Third, ratio scales are continuous data that allow application of standard regression and correlation analyses (McKenzie et. al., 2012).

Reliability and validity of measurement instruments are critical indicators of research quality. In traditional data collection tools such as survey questionnaire, researchers have a clear explanation of the data collection process. There are also published properties of reliability and validity of standardized data collection instruments (Houston, 2004). The reliability and validity properties of some measurement instruments are explicit with the error margins meeting rigorous standards. However, some measures involve a greater degree of subjectivity in judgment (Turner et al., 2012). In such cases, researchers should control for possible sources of error and report the reliability and validity properties of the measurements (Hamann et al., 2013).

Reliability involves consistent and dependable measurement of variables (Du & Zhou, 2012). Although audited financial reports of publicly traded companies are reliable sources for both research and decision-making purposes, computational errors, sample

inadequacy, and missing data can affect their reliability (Du & Zhou, 2012). One of the potential errors in secondary data is sampling error, which occurs when each element of the population does not have an equal chance of being selected (Tasic & Feruh, 2012). In this study, I (a) employed a random sampling technique, (b) ensured that Standard Poor's does not make changes to the original financial reports, and (c) addressed any incorrect and missing entries (Hamann et al., 2013; Turner et al., 2012).

Validity is the extent to which an instrument measures what it claims to measure (Tasic & Feruh, 2012). Turner et al. (2012) argued that research results gain credibility when researchers demonstrate ways of addressing all types of validity threats. There are no objective statistical tests to evaluate the reliability and validity of archival data sources (Du & Zhou, 2012). However, I (a) used prior studies as a guide and follow a rigorous process to select the secondary data proxies, (b) provided a precise theoretical specification of the study variables, (c) ensured the alignment of the measurement variables with the theoretical constructs, and (d) included the instrumentation procedures as an Appendix.

Data Collection Technique

The purpose of this correlational study was to examine the relationship between WCM, WCP, and firm profitability. After obtaining IRB's approval, I collected data through electronic retrieval of financial statements of 176 companies from the S & P Capital IQ Netadvantage database from 2004 to 2013. This data collection technique is similar to the method that investors and financial analysts use to evaluate the performance of publicly traded companies (Johnston, 2014). The first step in secondary

data collection is to ensure whether the sources contain relevant data to answer the research question (Hamann et al., 2013; Tasic & Feruh, 2012). A systematic collection of financial data is important to ensure that researchers have consistent and comparable data across companies over time and offers a solid foundation for rigorous analysis (Tasic & Feruh, 2012). The S & P Capital IQ Netadvantage database is a comprehensive source of business and investment information (Standard and Poor's, 2013). Table 5 shows an example of the raw data from the database.

Table 5

Example of Raw Data Imported From Database to Excel for Company 050

Company Code 050	2004	…	2013	Mean	Variables	Values
Acc. Receivables	261,776		811,376	522,076	ARP	105.10
Inventory	189,649		551,674	399,277	INP	115.72
Total Current Asset	549,089		1,647,375	1,098,389	APP	36.62
Total Asset	1,124,928		3,237,095	2,280,176	CCC	184.20
Acc. Payables	54,200		181,893	126,367	WCIP	0.48
Total Cur Liabilities	227,284		723,230	437,879	WCFP	0.19
Total Sales	938,852		2,610,311	1,813,115	ROA	0.04
Cost of goods sold	652,447		1,826,561	1,259,380	GOP	0.24
Gross profit	286,405		783,750	553,735	TBQ	0.40
Net Income	57,287		120,497	102,555		
Shareholders' equity	471,656		1,535,765	984561		
Total liabilities	653,272		1,701,330	1295615		
Average share price	40.17		55.40	38		
Outstanding shares	25705710		45,359,258	37312163		

Retrieving secondary data from electronic databases has both advantages and disadvantages. Johnston (2014) stated that secondary data are inexpensive as researchers could bypass instrument creation and data collection stages by drawing data from existing sources. Park (2012) reported that secondary data saves time and resources by

complementing primary data. Johnson argued that secondary sources are reliable because researchers can collect data in a less obtrusive manner. Johnston also argued that secondary data proxies could minimize biases that informant-sampling approaches may bring to the study. Butler et al. (2012) acknowledged that the use of secondary data without involving human subjects minimizes threats to ethical principles. The second step in secondary data collection included (a) importing the data into Microsoft Excel, (b) calculating the measures for all variables from 2004 to 2013, and (c) importing the values to SPSS for analysis. Table 6 shows an example of the relevant variables (Hamann et al., 2013; Tasic & Feruh, 2012).

Table 6

Example of Measures of the Research Variables Imported from Excel to SPSS

Code	APR	INP	APP	CCC	WCIP	WCFP	ROA	GOP	TBQ
001	36.96	111.96	29.44	119.48	0.46	0.14	0.06	0.32	1.21
.	68.29	148.42	30.43	186.29	0.56	0.13	0.10	0.31	0.94
.	58.29	215.57	40.37	233.49	0.43	0.16	0.04	0.42	1.25
.	45.25	85.11	33.09	97.27	0.33	0.12	0.01	0.18	0.64
.	59.44	77.35	52.68	84.11	0.63	0.10	0.02	0.18	1.77
.	63.02	142.90	33.55	172.37	0.73	0.43	0.03	0.36	1.19
.	79.35	57.55	57.18	79.72	0.52	0.24	0.06	0.42	1.54
.	90.95	137.83	82.20	146.58	0.44	0.16	0.03	0.44	2.72
.	64.43	56.90	48.53	72.81	0.81	0.25	0.04	0.12	0.70
176	90.12	118.07	72.21	135.99	0.55	0.27	-0.03	0.49	0.87

The collection of a panel data lends itself to trend analysis because a panel data offers a relatively easy way to monitor changes over time and across firms (Tasic & Feruh, 2012). Researchers use secondary data sources to overcome the problem of accessing the research setting and gathering sensitive information (Johnston, 2014).

According to Parker (2012), researchers use secondary data collection for large sample sizes and expands the scope and coverage of the study. Compared to company websites, trade publications, and email communications, electronic retrieval of archival data is both efficient and unobtrusive (Butler et al., 2012). A panel data allows for the pooling of observations on a cross section of several firms over several years (Tasic & Feruh, 2012). Tasic and Feruh (2012) also argued that when researchers collect only time-series or cross-section data, they run the risk of obtaining biased results due to lack of control over heterogeneity. Likewise, Parker (2012) argued that while time-series data often suffer from multicollinearity, a panel data has a lower likelihood of violating the assumption of multicollinearity.

Secondary data are not without limitations. Collecting data from archival datasets often suffer from missing or incomplete data and are not always available or may not contain all the information needed to address the research problem under investigation (Johnston, 2014). There is a consensus among Johnston (2014), Parker (2012), and Tasic and Feruh (2012) that secondary data may not be appropriate to address the research question under investigation. The main reason lies in the differences in the purposes of the original data collection and the current study. Tasic and Feruh (2012) stated that secondary data might not precisely align with the domain of the research construct and that the data might suffer from self-report biases. Secondary data sources do not also reflect current reality or explain why something has happened. Finally, secondary data are often difficult to match to other types of primary data (Tasic & Feruh, 2012). To get the best out of a panel data, Parker (2012) and Johnston (2014) suggested that researchers

must ascertain the adequacy, accessibility, relevance, and completeness of the dataset. Johnston (2014), Parker (2012), and Tasic and Feruh (2012) agreed that the major limitation of secondary data is the problem of verifying its quality, reliability, and validity.

Data Analysis

The research question guiding this study was; what is the relationship between WCM, WCP, and firm profitability? The central hypothesis of the study states: there would be no statistically significant association between WCM, WCP, and firm profitability. The choice of a particular statistical analysis technique depends on the type of research question, the number of constructs and variables in the study, and the scale of measurement (Tabachnick & Fidell, 2013). While descriptive, correlation, and regression analysis are important to answer the research question and test the null hypothesis, data editing and cleaning are also crucial steps to verify the accuracy, completeness, and consistency of data (Butler et al., 2012; Tasic & Feruh, 2012).

The data cleaning processes involved checking for any missing or invalid information in the dataset and taking appropriate actions. When the missing data record also had several other missing values on other variables, I removed the entire data record from further consideration (Tasic & Feruh, 2012). Another important aspect of data cleaning was checking for the presence of potential outliers and reducing the effects of outliers either through data replacement or removal (Tabachnick & Fidell, 2013). Replacement of outliers with a non-outlying average observation is advantageous in a panel data because the removal of one observation will eliminate the entire record from

the study (Johnston, 2014). The use of scatterplots and charts is a common practice to check for the presence of any outliers (Parker, 2012).

Descriptive analysis is typically the first form of analysis to transform raw data into a form that will make the analyses easy to understand and interpret (Boesch et al., 2013). Butler et al. (2012) stated that descriptive statistics is useful to detect any abnormalities in the data and to understand the characteristics of the data. I will use frequency tables, histograms, scatter plots, charts, and other graphical illustrations to examine the integrity of underlying assumptions (Bradley & Brand, 2013). The frequency distribution, histogram, stem-and-leaf plot, box plot, probability-probability plot, and quantile-quantile plot are necessary tools for checking normality visually (Tabachnick & Fidell, 2013). Tabachnick and Fidell recommended the use of Shapiro-Wilk test features in the SPSS software to evaluate the normality assumption.

Correlation analysis is essential to determine the strength and direction of the relationship of WCM and WCP to profitability. A correlation coefficient (r) shows the joint variation in two variables (Wester et al., 2013). A correlation coefficient (*r*) measures and establishes the linear relationship between WCM, WCP, and profitability, individually. The correlation coefficient takes on the values from –1 to +1 (Bishara & Hittner, 2012). A correlation coefficient close to either –1 or +1 indicates a strong negative or positive relationship, respectively between variables whereas a correlation coefficient of zero indicates that the variables do not have a relationship (Wisdom et al., 2012). Tabachnick and Fidell (2013) considered a correlation coefficient value of (r) of .50 to 1.0 as a large relationship, .30 to .49 as a medium and 0.01 to 0.30 as a small

relationship. Correlation analysis will also help test the assumptions of linearity, normality, multicollinearity, autocorrelation, and homoscedasticity (Bettany-Saltikov & Whittaker, 2013).

The scatterplot and normal probability plot (P-P) features in SPSS are important tools to check for normality, linearity, and homoscedasticity. Researchers can apply a series of standard recommendations such as bootstrapping to address violations of statistical assumptions. Multicollinearity is a condition in which the predictor variables are highly correlated (.90 or greater), and singularity is when these variables show perfect correlation (Boesch et al., 2013). Researchers examine multicollinearity and singularity by observing the correlation coefficients among the predictor variables from the SPSS output on the correlation matrix (Boyd et al., 2013). Researchers also use tolerance indices and the variance inflation factor (VIF) to test the assumption of multicollinearity (Bettany-Saltikov & Whittaker, 2013). Any value of a predictor with a VIF value of greater or equals to 10 or a VIF tolerance coefficients value of below 0.1 indicate a high level of multicollinearity (Butler et al., 2012). I will compute and report all the Variance Inflation Factors (VIF) and tolerances of variables in the results of the study.

WCM and WCP may affect firm profitability simultaneously, and hence independently measuring the influence of each variable on firm profitability through only correlation analysis will give an inaccurate result. Multiple regression analysis is, therefore, the ultimate statistical procedure to test the hypothesized simultaneous relationship between the research variables (Wester et al., 2013). Analysis of variance (ANOVA) and chi-square tests are not appropriate for this study for three reasons. First,

analysis of variance (ANOVA) and chi-square tests focus on evaluating the effects of different interventions and group differences on a dependent variable (Bettany-Saltikov & Whittaker, 2013). Second, the predictor variables in this study are continuous rather than categorical (Wisdom et al., 2012). Third, the purpose of this study was not to analyze variances among different groups of firms but to see if there was a relationship between the independent and dependent variables (Bettany-Saltikov & Whittaker, 2013).

The regression coefficient, R^2, indicates the power of the independent variables in explaining the variances in the dependent variable (Donaldson et al., 2013). The regression analysis will also generate the residuals and produce a graphical illustration to gauge the goodness of the model's fit (Boyd et al., 2012). The size of the beta coefficients for the independent variables and their R^2 values will be examined and statistically analyzed by using F tests to see if they contribute to improving the predictive efficiency of the equation. If the test shows a statistical significance level greater than 0.05, it indicates a lack of significant relationships (Bishara & Hittner, 2012). Tabachnick and Fidell (2013) suggested that researchers may also review the SPSS output to check for violations of the underlying statistical assumptions. In this study, I (a) used the IBM SPSS Statistics Version 21 for data analysis, (b) kept the data in a password protected USB flash drive, (c) provide summary of key findings to interested parties upon request, and (d) destroy the records 5 years after the completion of the study.

Study Validity

Validity is an integral aspect of all research and reflects the approximate truth of an inference (Boesch et al., 2013). Researchers often view threats to the validity of

research as tools with which to overcome weaknesses in research designs and instrumentation. Wester et al. (2013) and Wisdom et al. (2012) suggested that researchers must assess the likely flaws affecting the quality of their findings and develop approaches to overcome. The following section describes external, internal, and statistical conclusion validity threats and the strategies to mitigate these threats.

External validity is the degree to which researchers can generalize their findings to different circumstances (Johnston, 2014). Researchers should evaluate whether the results apply to other population, time, and places (Delen et al., 2013). The population, time, and place validities show the extent to which the findings apply to different circumstances and settings (Engberg & Berben, 2012). One of the strategies to overcome external validity threats is to obtain an adequate sample that is representative of the target population (McKenzie et al., 2012). If the sample does not represent the target population adequately, a selection bias will be the major threat to external validity (Bevan, Baumgartner, Johnson, & McCarthy, 2013). Researchers cannot generalize the findings from a biased sample to the larger population (Delen et al., 2013).

Compared to other sampling techniques, the use of a random sampling provides improved external validity (Butler et al., 2012). Turner et al. (2012) stated that the more representative the sample is, the higher the confidence in generalizing from the sample to the population (Bevan et al., 2013). Turner et al. (2012) recommended the use of several measures for each construct to show a complete picture of the findings. In this study, I employed a randomly selected sample (N = 176) large enough to generalize the results to a larger population. Since the sample represents small manufacturing firms operating in

same geographic location and sharing similar characteristics, the findings might also apply to the larger population (Turner et al., 2012).

Internal validity is the extent to which the researcher controls extraneous variables (Boesch et al. 2013). Tabachnick and Fidell (2012) defined internal validity as the approximate truth about inferences regarding causal relationships. Boesch et al. (2013) argued that lack of control for extraneous variables in experimental and quasi-experimental studies prevents the researcher from concluding that the causes of observed results are changes in the independent variables. Butler et al. (2012) argued that history, maturation, testing, instrumentation, and regression artifacts pose threats to internal validity. Vankatesh et al. (2012) stated that internal validity is only relevant in experimental and quasi-experimental studies that try to establish a causal relationship. Tabachnick and Fidell (2013) stated that the threat to internal validity increases when researchers use a multi-group non-experimental study. Since the goal of this study is to provide evidence of an association, rather than causation, I did not find any significant threats to the internal validity of the study.

Statistical conclusion validity is the ability to make an accurate assessment of the strength of the relationship between the independent and dependent variables (Tabachnick & Fidell, 2013). Tasic and Feruh (2012) stated that statistical conclusion validity is about the appropriate use of statistics to arrive at accurate decisions about accepting or rejecting hypotheses. Threats to statistical conclusion validity may include low statistical power, low reliability of measures, and a random heterogeneity of cases (Boesch et al., 2013). McKenzie et al. (2012) stated that the use of multiple statistical

analysis tools such as descriptive, correlation, and multiple regression minimize potential validity threats to research findings significantly. These procedures show whether a relationship is statistically significant or not (Bettany-Saltikov & Whittaker, 2013). To determine the strength of the relationship, I used effect size indicators such as the correlation coefficient (R) and the coefficient of determination (R^2). Researchers should use as many approaches as possible to overcome threats to validity (Bettany-Saltikov & Whittaker, 2013). The findings of this study were generalizable to the larger population of small publicly traded manufacturing companies in the United States for three reasons. First, I focused on only small size companies to minimize the effects of the size difference on the findings. Second, the study focused on only manufacturing companies to reduce the impact of industry differences on the results. Third, I relied on a panel archival data, which provided both cross-sectional and time series data. Finally, I increased the original sample of 68 companies to 176 to increase the potential for generalizability of the findings. Flaws may occur either in the design, measurement, data collection or analysis stage (Bettany-Saltikov & Whittaker, 2013). However, paying attention to the various procedures to address validity threats is an important step in producing high quality research findings (Boesch et al., 2013).

Transition and Summary

Section 2 covered different quality indicators such as the role of researchers, participants, research methods and design, ethics, instrumentation, data collection, analysis and validation. Section 2 addressed the rationale for selecting a quantitative correlational study instead of qualitative and mixed methods and experimental or quasi-

experimental designs. Section 2 also included the rationale for selecting the sample firms from the S & P database, justifications for using correlation and regression analysis as well as the strategies to address ethical, validity, and reliability concerns. Section 3 contained the results of the study, interpretation of the findings and their potential applications within the context of the hypotheses and research questions. Section 3 also included the implications for social change, recommendations for action, further research, and an overall summary of key conclusions

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative correlational study was to examine the relationship between working capital management (WCM), working capital policies (WCP), and business profitability. The study focused on publicly traded U.S. manufacturing companies from 2004 to 2013. I collected corporate financial data from Standard and Poor's Capital IQ Netadvantage database. The research question for this study focused on whether there was a relationship between WCM, WCP, and firm profitability. The hypothesis of the study was that a significant relationship would exist between WCM, WCP, and firm profitability. The independent variable WCM included accounts receivable period (ARP), inventory period (INP), accounts payable period (APP), and cash conversion cycle (CCC). The second independent variable, WCP, included working capital investment policy (WCIP) and working capital financing policy (WCFP). The dependent variable was firm profitability measured by return on asset (ROA), gross operating profit (GOP), and Tobin's q (TBQ).

As discussed and outlined graphically in Section 1, I used multiple measures of firm profitability to reflect the diversified interests of different stakeholders of publicly held companies and generated three regression models. Based on the regression results, I rejected the null hypothesis that a significant relationship does not exist between WCM, WCP, and firm profitability. The results of this study may assist business leaders in the identification of appropriate WCM and WCP practices that maximize business profitability. This section includes (a) an overview of this study, (b) presentation of the

findings, (c) application to professional practice, (d) implications for social change, (e) recommendations for action and further study, and (f) my reflection on the researcher experience. The section ends with a summary and conclusion for the topic of research.

Overview of Study

In this study, I employed a quantitative correlational design with standard multiple regression analysis to examine the relationship between WCM, WCP, and firm profitability. After dealing with missing data, outliers, and tests of statistical assumptions, I regressed the five independent variables on the three dependent variables and produced three models predicting profitability. Using three models incorporating GOP, ROA, and TBQ as a proxy for business profitability allowed me to determine the effects of WCM and WCP on profitability from different perspectives. Santos and Brito (2012) stated that a single profitability measure could not reflect the diverse interests of different stakeholders of a company. Margaretha and Supartika (2016) recommended the use of multiple profitability measures to compensate for the limitation of the traditional economic measures. Afrifa (2012) acknowledged the use of a single measure of profitability (ROA) as the main limitation of his study.

The results of the parametric test indicated that all three models can predict profitability at $p < 0.01$ level of significance. Model 1 (the GOP model) was able to significantly predict profitability, F (5, 170) = 8.580, $p < .000$. The effect size, measured by R^2, was .201, indicating that the model accounted for approximately 20% of the variance in profitability as measured by GOP. While the ARP, APP, and WCFP made a significant contribution at $p < 0.01$ level of significance to the model, the WCIP also

made significant contribution to the model but at $p < 0.05$ level of confidence. However, the contribution of the CCC to the model was not significant at $p < 0.05$ level of confidence. Model 2 (the ROA model) was able to significantly predict profitability as measured by ROA, F (5, 170) = 4.079, p = .002. The effect size, measured by R^2, was only .107, indicating that the model accounted for approximately 11% of the variance in profitability as measured by ROA. The APP and WCIP variables made a significant contribution to the model at $p < 0.003$ and $p < 0.002$, respectively. The third model (the TBQ model) was able to significantly predict profitability, F (5, 170) = 6.231, $p < .000$. The effect size, measured by R^2, was 0.155, indicating that the model accounted for approximately 16% of the variance in profitability as measured by TBQ. The WCIP and WCFP variables made a significant contribution to the model at $p < 0.00$ level of significance. The components of WCM such as ARP, APP, and CCC did not make a significant contribution to the market value of companies as measured by TBQ. Overall, the findings indicated a statistically significant relationship between components of WCM, WCP, and business profitability, leading to the rejection of the null hypothesis that there is no statistically significant relationship between WCM, WCP, and firm profitability.

Dealing with missing data and outliers. Missing data have an impact on the validity of a study. Researchers should report the degree and causes of missing data as well as the method used to manage it (Leys, Ley, Klein, Bernard, & Licata, 2013). During the data cleaning processes, I found four companies with missing data and excluded them from the analysis. Although eliminating financial records from the

analysis affects the results and reduces the sample size, substituting the missing data with a mean could also underestimate variance (Leys et al., 2013). Outliers can cause incorrect results, and should be recognized and dealt with to improve the quality of the financial data (Leys et al., 2013). I examined the data for the presence of outliers using scatter and normal probability plots. The initial plots revealed the existence of some extreme values in some of the variables. I made the correction to the values of some variables where the causes of the extreme values were technical errors such as errors in the Excel formula. Even though researchers often use either trimming or elimination techniques to deal with outliers (Tabachnick & Fidell, 2013), I did not use these techniques for two reasons. First, there were no significant differences between the original and 5% trimmed mean for the variables. For example, the original mean (0.0466) and 5% trimmed mean (0.0468) of the ROA variable were significantly different. Second, the decision to maintain all of the financial records stemmed from the fact in balanced panel data, elimination of one observation would lead to the removal of the entire record, which could distort the results of the study. For example, in a 10-year data observation, a decision to remove a single year outlier observation would lead to the removal of the other nine-year observations (Leys et al., 2013). The preliminary examination of the results showed that the presence of outliers did not affect the regression coefficients significantly except that they affected some of the statistical assumptions such as normality (Leys et al., 2013), which I handled through a bootstrapping technique (Bishara & Hittner, 2012). Thus, I obtained the regression results from the original data without removing or adjusting for outliers.

Tests of assumptions. In this section, I present results of tests of the assumptions of multicollinearity, normality, linearity, homoscedasticity, and independence of residuals. To minimize the influence of potential violations of statistical assumptions, I used bootstrapping with 2000 samples and 95% bias-corrected confidence intervals.

Multicollinearity. Multicollinearity is an unacceptably high level of correlation between the independent variables such that effects of independent variables cannot be separated (Garson, 2012). A common approach to evaluating multicollinearity is by examining the correlation coefficients and the variance inflation factor (VIF). The VIF is a factor by which the variance of the given partial regression coefficient increases due to a given variable's extent of correlation with other predictors in the model (Tabachnick & Fidell, 2013). Lower levels of VIF are desirable while higher levels of VIF may affect adversely the results of the regression analysis. I evaluated multicollinearity by calculating and examining the correlation coefficients collinearity statistics. The bivariate correlation between inventory period (INP) and cash conversion cycle (CCC) was very high ($r = 0.904$), indicating a violation of the assumption of multicollinearity. These variables also showed a tolerance value less than 0.01 and a VIF value greater than 10. As a result, I could not continue using INP and CCC as two separate independent variables in the regression analysis. The cause of the high correlation between these variables was that the CCC value depended upon the values of other independent variables (CCC = ARP + INP- APP). Tabachnick and Fidell (2013) suggested that when two independent variables are highly correlated, researchers should remove the independent variable that (a) has the highest VIF, (b) makes a significant impact on the

regression coefficient, and (c) is not critical for applying the theoretical framework of the study. Following the suggestion of Bishara and Hittner (2012) and Tabachnick and Fidell (2013), I dropped the INP variable from the regression models. Table 7 shows acceptable levels of tolerance and VIF values as well as correlation coefficients after the removal of the INP variable, indicating the absence of violations of the assumption of multicollinearity.

Table 7

Correlation Coefficients Collinearity Statistics for Study Predictor Variables

No	Variables	Tolerance	VIF	1	2	3	4	5
1	ARP	.534	1.875	1.000				
2	APP	.719	1.391	0.528	1.000			
3	CCC	.580	1.724	0.552	0.313	1.000		
4	WCIP	.860	1.163	0.047	0.072	0.224	1.000	
5	WCFP	.846	1.182	-0.008	-0.014	-0.234	0.205	1.000

Normality, linearity, homoscedasticity, and independence of residuals. A debate among scholars exists regarding the need to have a normal distribution for standard multiple regression analysis (Bishara & Hittner, 2012). Sample data should approximate a normal distribution to comply with parameters of certain statistical tests, and a normal distribution is a requirement for a regression coefficient test (Leys et al., 2013). Tabachnick and Fidell (2013) noted that real-world data often do not follow a normal distribution. Tasic and Feruh (2012) stated that archival financial data are frequently asymmetrical and skewed. Following the suggestion by Bishara and Hittner (2012), I increased the sample size from 68 to 176 to minimize potential violations of statistical

assumptions. I evaluated the normality, linearity, homoscedasticity, and independence of residuals by examining the normal probability plot (P-P) of the regression standardized residual and the scatterplot of the standardized residuals for all the three dependent variables.

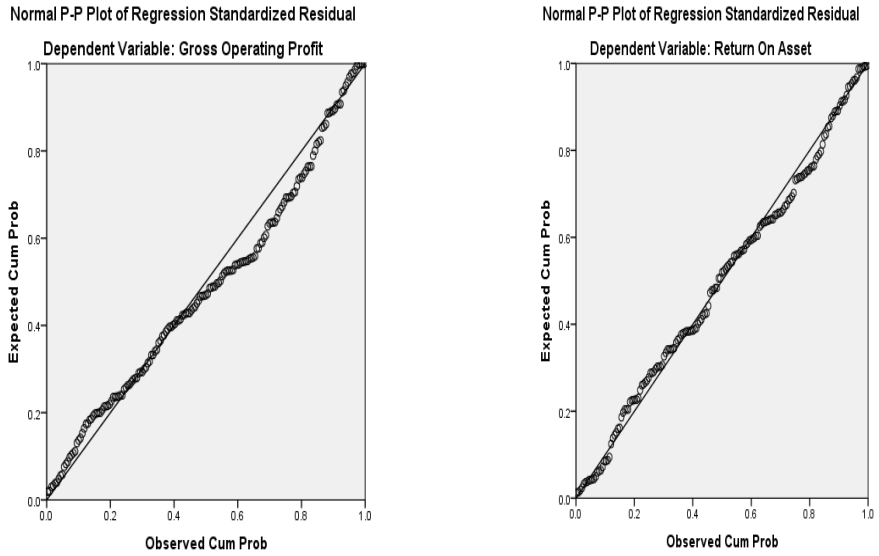


Figure 4. Normality P-P plot for variables predicting GOP and ROA.

A visual examination of the normal probability plot in Figure 1 indicated that there was no serious violation of the normality assumption for both the GOP and ROA models. The fact that the residuals followed a somewhat straight line provided evidence of the absence of a gross violation of the assumption of normality. Looking at the tendency of the points, I did not observe major deviations from the straight line. I also evaluated the scatterplot of the standardized residuals. The scatterplots of all of the residuals of all of the dependent variables revealed a widely dispersed data set with little or no visible patterns. The lack of a clear or systematic pattern in the scatterplot of the

standardized residuals (Figure 5) also indicated that there were no serious assumption violations.

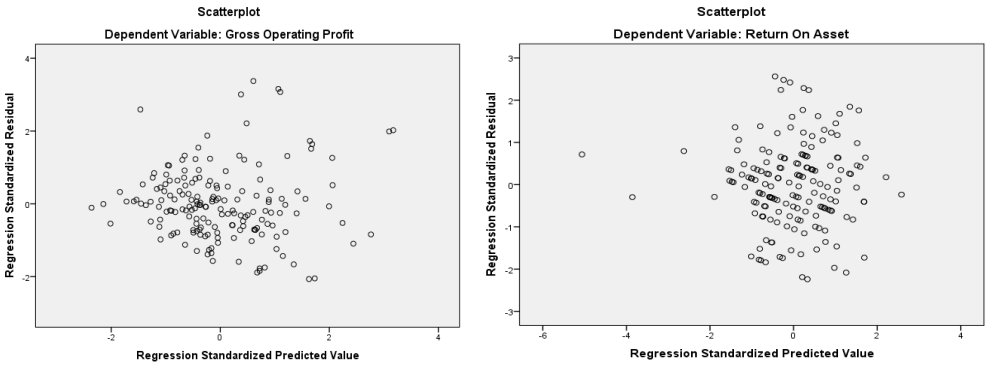


Figure 5. Scatterplot for variables predicting GOP & ROA.

However, a closer examination of the normal probability plot in Figures 6 indicated the existence of a potential violation of the normality assumption for the TBQ model. Because of these minor potential violations of the regression assumptions, I computed 2000 bootstrapping samples with bias-corrected 95% confidence intervals to minimize any possible influence of assumption violations on the findings and included in the confidence intervals in the research report. Appendices 2-4 contain the regression outputs including all of the normal probability plots, scatterplots, and histograms demonstrating the distribution of the data.

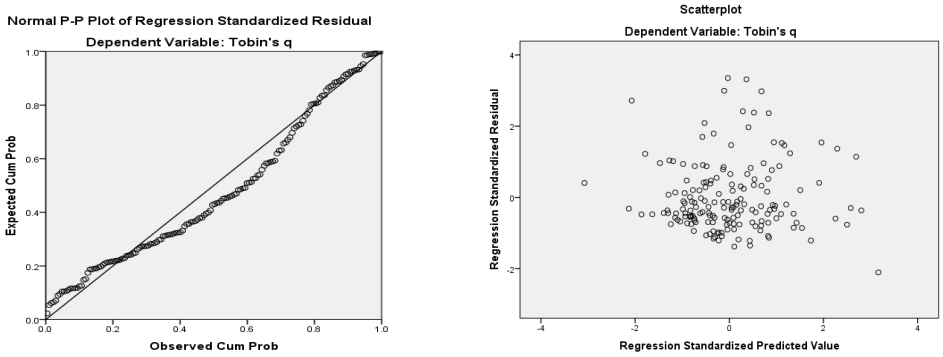


Figure 6. Normality P-P and scatterplots for variables predicting TBQ.

Presentation of the Findings

This section presents the descriptive statistics, preliminary correlation analysis, inferential statistics, summary of findings, and theoretical analysis of the findings. The research question focused on whether a relationship exists between WCM, WCP, and firm profitability within small publicly traded U.S. manufacturing companies. The null hypothesis was that a significant relationship does not exist between WCM, WCP, and firm profitability within small publicly traded U.S. manufacturing companies. Before testing the hypothesis through multiple regression analysis, I calculated the descriptive statistics and correlation analysis to provide a general picture of the study.

Descriptive Statistics

Descriptive statistics allow researchers to present important statistics such as measures of central tendency and spread to serve as a foundation for further analysis (Bradley & Brand, 2013). The descriptive statistics in Table 8 show the mean (*M*) and standard deviations (*SD*) for 176 small publicly traded U.S. manufacturing firms.

Table 8

Mean (M), Standard deviations (SD), and 95% Bootstrap confidence interval (CI)

Variables	***M***	***SD***	***Bootstrap 95% CI***
ARP	55.708	28.968	[51.875, 60.203]
INP	95.032	59.426	[87.249, 103.812]
APP	43.736	25.357	[40.1789, 47.576]
CCC	107.015	61.784	[98.7349, 116.305]
WCIP	.557	.156	[.535, .580]
WCFP	.192	.076	[.181, .204]
ROA	.047	.044	[.041, .053]
GOP	.349	.162	[.326, .373]
TBQ	1.134	.804	[1.023, 1.251]

Preliminary Correlation Analysis

A bivariate correlation analysis may be useful as a preliminary examination of the direction and magnitude of the linear association between the independent and dependent variables (Bradley & Brand, 2013). Table 3 depicts the bivariate correlation between the research variables.

Table 9

Correlation coefficients for the Study variables

No	***Variables***	***ARP***	***APP***	***CCC***	***WCIP***	***WCFP***
1	***GOP***	-.199**	0.057	-0.046	.236**	.294**
2	***ROA***	-0.089	-.234**	-0.074	.174*	0.047
3	***TBQ***	-0.019	0.093	0.058	.278**	-.185*

Note: **. Correlation is significant at the 0.01; *. Correlation is significant at the 0.05 level

The correlation coefficients indicated that while some variables have significant relationships, others do not have significant relationships at $P < 0.01$ and at $P < 0.05$ level of significance. For example, as opposed to the CCC, the WCFP has a statistically significant linear relationship with all the dependent variables. However, as the purpose of this study is to examine the joint predictive capacity of the independent variables, I used a standard multiple regression rather than a correlation analysis to test the null hypothesis that there would be no significant relationship between WCM, WCP, and firm profitability.

Inferential Statistics

Standard multiple linear regression with a two-tailed significance level of 5% (α = .05) was used to examine the relationship between WCM, WCP, and business profitability. The null hypothesis was that there would be no significant relationship between WCM, WCP, and business profitability. The alternative hypothesis was that there would be a significant relationship between WCM, WCP, and business profitability. I conducted preliminary analysis to assess possible violations of the assumptions of standard regression analysis such as multicollinearity, normality, linearity, homoscedasticity, and independence of residuals. Although there were no serious violations of these assumptions, I calculated 2000 bootstrapping samples with 95% bias-corrected confidence intervals. The preliminary analysis indicated the need to remove the INP variable from the regression models due to a multicollinearity problem. I regressed the remaining five independent variables on ROA, GOP, and TBQ, representing the dependent variable of firm profitability. All the three models were able to predict business profitability significantly. I tested the combined effect of all the independent variables of ARP, APP, CCC, WCIP, and WCFP on profitability. The multiple linear regression analysis, as presented below, showed the amount of influence that each independent variable had on profitability on a joint model.

WCM, WCP, and GOP (Model 1)

Model 1 (the GOP model) was able to significantly predict business profitability, F (5, 170) = 8.580, $p < .000$. The effect size was .201, measured by R^2, indicating the as model as a linear combination of the predictor variables (ARP, APP, CCC, WCIP, and

WCFP) accounted for approximately 20% of the variance in business profitability as measured by GOP. I rejected the null hypothesis that there would be no significant relationship. In the GOP model, ARP, APP, WCIP, and WCFP were statistically significant with ARP (*beta* = -.393, p = .000), the WCFP (*beta* = .289, p = 0.000), and the APP (*beta* = .210, p = 0.01), accounting for a higher contribution to the model than the WCIP (*beta* = 0.150, p = 0.044). The CCC (*beta* = 0.141, p = .118) did not provide any significant variation in gross operating profitability. The predictive model is:

$$\hat{P}_{GOP} = .168 - .002(ARP) + .001(APP) + .156(WCIP) + .615(WCFP)$$

Accounts receivable period (ARP). The negative slope for ARP (-.002) as a predictor of GOP indicated there was about a .002 decrease in GOP for each one-point increase in ARP. The negative slope suggests that by lowering the ARP, firms free up cash quickly to make payment of bills on time to enjoy early payment discounts and avoid the costly need of borrowing to fund investment in customers (Paise & Gama, 2015). In other words, GOP tends to decrease as ARP increases. The squared semi-partial coefficient (sr^2) that estimated how much variance in GOP was uniquely predictable from ARP was .08, indicating that 8% of the variance in GOP is uniquely accounted for by ARP, when APP, CCC, WCIP, and WCFP are controlled.

Accounts payable period (APP). The positive slope for APP (+.001) as a predictor of GOP indicated there was about a .001 increase in GOP for each one-point increase in APP. In other words, GOP tends to increase as APP increases. The squared semi-partial coefficient (sr^2) that estimated how much variance in GOP was uniquely predictable from ARP was .03, indicating that the APP accounted for 3% of the variance

in GOP, when controlling for ARP, CCC, WCIP, and WCFP.

Working capital investment policy (WCIP). The positive slope for WCIP (+.156) as a predictor of GOP indicated there was about a .156 increase in GOP for each one-point increase in WCIP. Companies increase their investment in the current asset or use a conservative working capital policy to improve business profitability. In other words, GOP tends to increase as WCIP ratio increases or as companies adopt a conservative working capital policy. The squared semi-partial coefficient (sr^2) that estimated how much variance in GOP was uniquely predictable from WCIP was .02, indicating that WCIP accounted for 2% of the variance in GOP when controlling for ARP, CCC, ARP, and WCFP. Table 4 depicts the regression analysis summary for the five variables predicting business profitability regarding GOP.

Table 10

Regression Analysis Summary of variables predicting GOP

Variable	B	SE B	β	t	Sig.	Bootstrap 95% CI	
(Constant)	0.168	0.051		3.272	0.001	0.063	0.283
ARP	-0.002	0.001	-0.393	-4.183	0.000	-0.004	-0.001
APP	0.001	0.001	0.210	2.603	0.010	0.000	0.003
WCIP	0.156	0.077	0.150	2.028	0.044	0.005	0.314
WCFP	0.615	0.159	0.289	3.874	0.000	0.267	0.950
CCC	0.000	0.000	0.141	1.570	0.118	0.000	0.001

Working capital financing policy (WCFP). The positive slope for WCFP (+.615) as a predictor of GOP indicated there was about a .615 increase in GOP for each one-point increase in WCFP. In other words, GOP tends to increase as WCFP ratio increases or as companies adopt an aggressive working capital policy. The squared semi-partial coefficient (sr^2) that estimated how much variance in GOP was uniquely

predictable from WCIP was .07, indicating that 7% of the variance in GOP is uniquely accounted for by WCFP, when ARP, CCC, ARP, and WCIP are controlled.

WCM, WCP, and ROA (Model 2)

Model 2 (the ROA model) was able to significantly predict business profitability, F (5, 170) = 4.079, $p < .002$. The effect size was .107, measured by R^2, indicating the model accounted for approximately 11% of the variance in business profitability as measured by ROA. I rejected the null hypothesis that there would be no significant relationship between WCM, WCP, and ROA. In the ROA model, APP and WCIP were statistically significant with the WCIP (*beta* = .245, $p = .002$) accounting for a higher contribution to the model than the APP (*beta* = -.261, $p = .003$). The ARP (beta = .102, p = .308), WCFP (beta = .043, p = .118), and CCC (*beta* = -.127, $p = .185$) did not provide any significant variation in gross operating profitability. The predictive model is:

$$\hat{Y}_{ROA} = .034 + 0.001(ARP) + .0001(APP) + .0691(WCIP) - 0.025(WCFP) - 0.0001(CCC)$$

Accounts payable period (APP). The positive slope for APP (+.001) as a predictor of ROA indicated there was about a .001 increase in ROA for each one-point increase in APP. Therefore, by delaying payments firms could enhance their profitability when they take advantage and use suppliers' credit for working capital needs. In other words, ROA tends to increase as APP increases or as companies get an extended credit payment period. The squared semi-partial coefficient (sr^2) that estimated how much variance in ROA was uniquely predictable from ARP was .05, indicating that APP

accounted for 5% of the variance in ROA when controlling for WCIP. Table 5 depicts summary for the five variables predicting business profitability regarding ROA.

Table 11

Regression Analysis Summary of variables predicting ROA

Variable	*B*	*SE B*	*β*	*t*	*p*	*Bootstrap 95% CI*	
(Constant)	0.034	0.015		2.321	0.021	0.005	0.065
ARP	0.001	0.000	0.102	1.023	0.308	0.000	0.000
PP	-0.001	0.000	-0.261	-3.053	0.003	-0.001	0.000
WCIP	0.069	0.022	0.245	3.137	0.002	0.021	0.119
WCFP	-0.025	0.045	-0.043	-0.544	0.587	-0.129	0.074
CCC	-0.001	0.000	-0.127	-1.332	0.185	0.000	0.000

Working capital investment policy (WCIP). The positive slope for WCIP (+.0691) as a predictor of GOP indicated there was about a .0691 increase in ROA for each one-point increase in WCIP. In other words, ROA tends to increase as WCIP ratio increases or as companies increase their investment in current assets or adopt a conservative working capital investment policy. The squared semi-partial coefficient (sr^2) that estimated how much variance in ROA was uniquely predictable from WCIP was .05, indicating that WCIP accounted for 5% of the variance in ROA when controlling for ARP, CCC, ARP, and WCFP.

WCM, WCP, and TBQ (Model 3)

Model 3 (the TBQ model) was able to significantly predict business profitability, F (5, 170) = 6.231, $p < .000$. The effect size was .155, measured by R^2, indicating the model accounted for approximately 16% of the variance in business profitability as measured by TBQ. I rejected the null hypothesis that there would be no significant

relationship between WCM, WCP, and profitability. In the TBQ model, WCIP and WCFP were statistically significant with the WCIP (*beta* = .351, p = .000) accounting for a higher contribution than does the WCFP (*beta* = -.278, *p* = .000). The ARP (*be*ta = -.046, *p* = .634), APP (*beta* = .119, *p* = .155), and CCC (*beta* = -.098, *p* = .289) did not provide any significant variation in gross operating profitability. The predictive model is:

$$P_{TBQ} = .034 + -0.001(ARP) + .0001(APP) + 1.811(WCIP) - 2.933(WCFP) - 0.001(CCC)$$

Working capital investment policy (WCIP). The positive slope for WCIP (+1.811) as a predictor of TBQ indicated there was about a 1.811 increase in TBQ for each one-point increase in WCIP. TBQ tends to increase as firms increase their WCIP ratio or increase their investment in current assets by adopting a more conservative working capital investment policy. The squared semi-partial coefficient (sr^2) that estimated how much variance in TBQ was uniquely predictable from WCIP was .11, indicating that WCIP accounted for 11% of the variance in TBQ when controlling for WCFP. Table 6 depicts WCM and WCP variables predicting TBQ.

Table 12

Regression Analysis Summary of variable predicting TBQ

Variable	*B*	*SE B*	*β*	*t*	*p*	*Bootstrap 95% CI*	
(Constant)	0.731	0.261		2.801	0.006	0.149	1.313
ARP	-0.001	0.003	-0.046	-0.477	0.634	-0.010	0.009
APP	0.004	0.003	0.119	1.429	0.155	-0.004	0.014
WCIP	1.811	0.393	0.351	4.61	0.000	1.116	2.574
WCFP	-2.933	0.809	-0.278	-3.623	0.000	-4.780	-1.404
CCC	-0.001	0.001	-0.098	-1.063	0.289	-0.004	0.002

Working capital financing policy (WCIP). The negative slope for WCFP (-2.933) as a predictor of TBQ indicated there was about a 2.933 decrease in TBQ for each one-point increase in WCFP. Firm's market value as measured by TBQ tends to decrease as the WCFP ratio increases or as companies adopt a more aggressive WCFP. In other words, as firms increase the use of current liabilities to financing their working capital, they get a less favorable market valuation. The squared semi-partial coefficient (sr^2) that estimated how much variance in TBQ was uniquely predictable from WCFP was .07, indicating that WCFP accounted for 7% of the variance in TBQ when controlling for WCIP.

Summary of the analysis. The purpose of this study was to examine the efficacy of ARP, APP. CCC, WCIP, and WCFP in predicting gross operating profit, return on asset, and Tobin's *q* as proxies of business profitability. I used standard multiple linear regression to examine the ability of ARP, APP. CCC, WCIP, and WCFP in predicting business profitability. Even though there were no serious violations of the assumptions surrounding multiple the regressions, I used Bootstrapping with 2000 samples and a 95% bias-corrected confidence interval to combat any potential violations of the statistical assumption

Model 1 (the GOP model) as a whole was able to significantly predict gross operating profit, F (5, 170) = 8.580, $p < .000$, $R^2 = .201$. All the variables except the CCC variable provide useful predictive information about business profitability as measured by gross operating profit. The conclusion from this analysis is that WCM (as measured by ARP and APP) and WCP (as measured by WCIP and WCFP) are significantly associated

with business profitability as measured by gross operating profit. All the variables except the CCC variable provide useful predictive information about business profitability as measured by GOP. Model 2 (the ROA model) as a whole was able to significantly predict return on asset, F (5, 170) = 4.079, $p < .002$, $R^2 = .107$. The APP and WCIP variables provide useful predictive information about business profitability as measured by return on asset. The conclusion from this analysis is that APP and WCIP are significantly associated with business profitability as measured by gross operating profit return on asset. Model 3 (the TBQ model) as a whole was able to significantly predict firms' market value as measured by TBQ, F (5, 170) = 6.231, $p < .000$, $R^2 = .155$. The WCIP and WCFP variables provide useful predictive information about business profitability as measured by TBQ. The conclusion from this analysis is that WCIP and WCFP are significantly associated with firms' market valuation as measured by TBQ. The overall conclusion from the study is that ARP, APP, WCIP, and WCFP are significant predictors of firm profitability. In line with the findings of prior studies, the CCC and firm profitability have inverse relationship. However, contrary to the findings of prior studies (Paise and Gama, 2015; Mathuva, 2014; Kroes and Manikas, 2014; Westerman, 2015), the CCC was not a significant predictor of profitability.

Theoretical of the Findings

The cash conversion cycle, as the theoretical framework of this study, explains how WCM and WCP affect firm profitability. The CCC is a dynamic measure of working capital that establishes the time to convert a dollar of cash outflow back into a dollar of cash inflow (Richards & Laughlin, 1980). The central concept in the CCC is that business

leaders can improve profitability through effective management of the components of WCM (ARP, INP, APP) and the components of WCP (WCIP and WCFP). The application of the CCC to this study yielded a deeper understanding of the patterns of the interrelationships between ARP, INP, APP, CCC, WCIP, WCFP, and business profitability. The application of the CCC to business practice facilitated the identification and implementation of a more robust and comprehensive approach to working capital optimization and profit maximization. The regression result that the ARP, APP, WCIP, and WCFP are significant predictors of firm profitability is in line with the propositions of the CCC as a theoretical framework. An important argument in the CCC is that small business leaders can improve profitability by manipulating ARP, INP, and APP (Westerman, 2015) and by adopting appropriate WCIP and WCFP (Gill, Mand, & Obradovic, 2015). The CCC also assumes that the WCM and WCP components have synergistic effects on firm profitability (Azeem & Marsap, 2015). The CCC also holds that small business leaders could optimize ARP and APP through effective management of trade credits and policies (Talonpoika et al., 2014). However, the finding that the CCC is not a significant predictor of firm profitability is in contrast to prior studies by Falavi and Abdoli (2015), Bhunia and Das (2015), and Kroes and Manikas (2014). Abuzeyed (2012) and Kroes and Manikas (2014) and my research confirmed that the CCC, as a composite measure, is not a significant predictor of profitability.

In line with the extant literature and the CCC framework, the management of ARP is critical for small manufacturing firms as it determines firm profitability. The finding that the ARP has a statistically significant and negative relationship with firm

profitability indicates extending credit period to customers represents a cost to a company and, therefore, reduces profitability. I confirmed that the ARP is a key factor leading to improved firm profitability. This result is consistent with prior studies by Arfifa (2012), Falavi, and Abdoli (2015) that have looked into the relationship between ARP and company profitability. Arfifa (2012) concluded that less profitable companies wait longer to pay their bills. As ARP emanates from credit sales to customers, the findings from this study implied that small publicly traded U.S. companies should establish and maintain strong relationships with customers to improve long-term profitability. Arfifa (2012) stated that such relationships would help firms to reduce the incident of bad debt arising from credit sales.

Regarding the practical application of the CCC theoretical framework for business, small business leaders must pay considerable attention to the ARP management (Hoang, 2015). Yano and Shraishi (2012) also stated that effective management of ARP involves the formulation and implementation of credits terms and policies that stimulate sales and collections of outstanding credits. The use of the CCC as a theoretical framework requires the integration of WCM into corporate strategy because the strategic choices will ultimately affect WCM efficiency (Arfifa, 2012). Supporting the inverse relationship between ARP and profitability, Warrad (2015) suggested that small business leaders must find ways of minimizing the time-lapse between completion of sales and receipt of payments. In line with this suggestion, Hoang (2015) also argued that the benefits of providing customers with trade credits surpass the costs of financing.

An important linkage between this study, the CCC theoretical framework, and existing literature is the use multiple measures of firm profitability to reflect the diverse interests of stakeholders of publicly traded companies. The regression results showed that the direction and magnitude of relationship of ARP, APP, WCIP, and WCFP with firm profitability is different from the perspectives of GOP, ROA, and TBQ. Wang, Feng, and Lawton (2016) used seven measures of profitability to provide a comprehensive evaluation of firm performance. Feng, Morgan, and Rego (2015) added the total shareholding returns (TSR) to the traditional ROA measure to capture the firm's long-term future prospects. Kroes and Manikas (2014) used ROA and Tobin's q to measure profitability.

In line with previous studies by Mathuva (2014), Monica (2015), and Kaur and Singh (2013), this study confirmed that the APP predicted gross operating profit positively and significantly, indicating that an increase in credit payment period could lead to an increase in firm profitability. Tauringana and Afrifa (2013) concluded that a longer APP allows small business leaders to overcome short-term financing constraints. Azeem and Marsap (2015) stated that extended APP allows businesses to devote available resources to other commitments. Marttonen et al., (2013) applied the CCC model to examine the effects of accounts payable on profitability and found that an extended APP might improve profitability in stable market conditions. The positive relationship between APP and profitability suggests that as small businesses get longer credit payment period, they can invest their limited resources in other profitable venture. However, in contrast to the findings by Mateut and Zanchetti (2013), this study showed a

significant inverse relationship between APP and ROA, indicating that obtaining a longer credit payment period from suppliers reduces ROA by increasing firms' financing costs. Talonpoika et al. (2014) stated that while a delay of payments to suppliers enhances cash flows, late payments could bring the risk of paying penalties and loss of creditworthiness. Mateut and Zanchetti (2013) found that an extended APP and excessive liability might lead small businesses to insolvency. Arfifa (2012) also noted extending the APP comes with a cost when it does not spontaneously arise from ordinary business transactions. Paise and Gama (2015) suggested that small firms must align their APP with the characteristics their operations and markets. Warrad (2015) stated that in the case of publicly traded companies, failure to meet short-term obligations would pass a negative signal to the market. Hoang (2015) argued that an extended APP would directly affect the share price and relationship with creditors and suppliers. The findings of this study substantiated the mixed findings that APP may affect profitability both negatively and positively depending on the market and organizational requirements. While the negative relation between APP and profitability is consistent with the view that less profitable firms wait longer to pay their bills, the positive relationship might imply the benefits of extended credit payment period outweighs the cost of financing trade credits (Singhania, Sharma, & Rohit, 2015).

The regression results indicated that the CCC, as a composite measure, is not a significant predictor of profitability. This finding is in contrast to the findings of prior studies (Arfifa, 2012; Gill, Mand, & Obradovic, 2015; Mathuva, 2014). The lack of significant relationship between the CCC and firm profitability shows that the primary

focus of small companies is not to achieve a certain pre-determined CCC but rather to focus on optimization of ARP, APP, WCIP, and WCFP in the light of the prevailing market and organizational conditions. For example, firms may not reject a very generous offer of credit from a supplier even if it affects the CCC. This finding brought new light into the working capital literature in that business leaders should not rely solely upon the CCC as a composite measure of working capital effectiveness (Bhunia & Das, 2015). Falavi and Abdoli (2015) found that changes in the CCC did not translate into significant changes in profitability, indicating that changes in the APP appear to mute the combined impact of changes in ARP and INP.

The regression results showed that both WCIP and WCFP influence the market value of publicly traded companies. This study confirmed the findings of Awopetu (2012) and Bei and Wijewardana (2012) that working capital policies are significant predictors of firm market value. Bei and Wijewardana (2012) found that WCIP and WCFP lead to profitability because firms with minimum investment in current assets rely heavily on current liabilities to finance their working capital. Iqbal, Ahmed, and Raiz (2015) found that WCIP and WCFP lead to profitability because companies with substantial investments in current assets do not take the risk of using current liabilities as a source of financing their working capital. The finding of this study that WCIP and WCFP affect the market value of publicly traded companies shows that investors give more value to those firms that match their working capital policy to organizational and markets requirements. This study confirmed, in line with the proposition of the CCC

framework, that the choice of policies influences profitability; and that small business leaders could manipulate alternative policies to enhance firm profitability.

Applications to Professional Practice

The purpose of this quantitative correlational study was to examine the relationship between WCM, WCP, and profitability of small publicly traded U.S. manufacturing companies. The findings of this study, which showed that ARP, APP, WCIP, and WCFP are significant predictors of firm profitability, apply to professional business practices in several ways. First, these results present leaders of small manufacturing companies with information about the magnitude and direction of relationship between WCM, WCP and firm profitability. The evidence on the dynamic linkage between working capital and profitability may add to the existing body of knowledge on the subject matter. Second, the regression results showed that ARP, APP, WCIP, and WCFP predict profitability to different levels. For example, the study found that the ARP made a greater contribution to gross operating profit than all other components of WCM. Similarly, WCIP and WCFP are the only significant predictors of firms' market value. These findings indicate that small business leaders should identify and prioritize the components of WCM and WCP that are more critical to achieve the intended results. Given the resource limitations in small businesses, the use of a selective approach to working capital optimization seems effective and practical.

Third, the study showed that while ARP and APP were key predictors of profitability, the CCC, as a composite variable, was not a significant predictor. The applicability of this finding was that small business leaders should focus more on the

components of WCM than on the CCC. Fourth, the findings showed that the WCFP has a positive relationship with gross operating profitability, but negative association with the market value of firms. Small business leaders could apply this finding by understanding that the use of current liabilities as a source of financing can affect firms' gross operating profit and market valuation differently. Another important application to action is the need small business leaders to align their WCFP to their organizational and operational requirements. Paise and Gama (2015) stated that small business leaders are responsible for matching their internal resources with the requirements of their operations and market.

Fifth, the finding that ARP and APP are significant predictors of profitability indicate that as the ARP and APP are direct results of firms' interaction with customers and suppliers, small business leaders should find ways of establishing and maintaining strong working relationships with customers and suppliers. Azeem and Marsap (2015) stated that effective relationship with customers and suppliers would lead to better trade credit terms and improved profitability. Finally, the study generated 3-regression model predicting profitability as measured by GOP, ROA, and TBQ. An important area of application is the need to use multiple measures of firm performance in order to cater for the diverse interests of stakeholders of publicly traded companies. For example, the fact that WCFP and TBQ have a negative relationship but significantly positively related to gross operating profits sends different signals to different stakeholders. In other words, an increased use of current liabilities to finance operations will affect market valuation

negatively but gross operation profit positively. Business leaders in publicly traded companies should use multiple but appropriate performance indicators.

Implications for Social Change

The implications for positive social change included the potential to provide small business leaders with a better understanding of the relationship between aspects of working capital and firm profitability. The findings of this study confirmed that the WCM components of ARP and APP are significant predictors of profitability. Therefore, the potential exists to provide business leaders with the necessary tools to identify and prioritize the WCM and WCP practices that are critical to the profitability of small businesses. The potential also exists to provide small business leaders with information to help them align their WCM and WCP components to the changing business requirements. The fact that ARP and APP, as predictors of profitability, are the outcomes of business interactions with customers and suppliers has important implications for social change. The potential to build working relationships with working capital providers in a manner that maximizes mutual benefits will have important implications for social change (Wasiuzzaman, 2015). Small businesses with collaborative relationship with clients may achieve improved profitability (Paise and Gama, 2015). As small business leaders optimize their working capital and profitability, they may increase their investment in employee training and education, compensation, working conditions, product and service qualities. Porter and Kraemer (2011) stated that profitable firms might also invest in development infrastructures such as road, education, and health facilities. Muller et al (2012) also stated that investments in internal organization

capabilities and external development infrastructure would translate into meaningful social changes. Furthermore, profitable companies have a higher likelihood of providing products and services to the local community at lower prices and employment opportunities to help sustain communities.

Another major implication for social change comes from the finding that WCIP and WCFP are significant predictors of firm profitability. Improved knowledge of the effects of WCIP and WCFP on firm profitability may help business leaders to find an optimal combination of current assets and current liabilities (Gill, Mand, & Obdarovic, 2015). Hoang (2015) noted that to achieve optimal working capital investment and financing policies, business leaders must understand that effective policies lead to profitability. Paise and Gama (2015) and Wasiezzaman (2015) stated that the integration of WCM and WCP is the foundation for long-term competitiveness and profitability. Thus, a key implication for social change is the potential for reducing small business failure rate and for increasing profitability through integrated WCM and WCP. In other words, successful small businesses have the potential to offer the community goods at lower prices and employment opportunities. Society may also benefit as publicly traded profitable companies become attractive for public investment through the purchase of stocks.

Recommendations for Action

Small business leaders may use the cross-sectional and longitudinal data from this study as an analytical tool to predict the effects of WCM and WCP on business profitability. Corporate leaders need to examine the results of the study and evaluate

which working capital management practices and policies positively correlate with business profitability. Based on the findings of the study, I provided four sets of recommendations.

The first set of recommendation stemmed from the finding that ARP and APP are significant predictors of firm profitability. Effective management ARP and APP requires companies to establish a smooth working relationship with both their suppliers and customers. A strong partnership with customers will help the company to understand better its customers, tailor-made credit arrangement, and reduce the incident of bad debts. A smooth working relationship with suppliers will lead to trust building, which will allow the company to obtain better credit terms and facilities from suppliers. In addition, small business leaders must improve their trade credit management practices through review of the terms of trade and credit collection policies. Arfifa (2012) suggested leveraging electronic invoicing, payment, and inventory processing to improve ARP and APP through minimization of costs and inefficiencies.

Second, small business leaders should provide leadership support across branches, operations, and departments to align their relationships with customers and suppliers with company level business strategy. Warrad (2015) noted that small businesses often use an informal and unsystematic approach to WCM. When implementing an effective ARP and APP management plan, corporate leaders should involve functional managers such as sales, customer service, finance, and credit collection managers across operational units departments. Iqbal, Ahmed, and Riaz (2015) stated that small businesses put greater emphasis on ARP and APP issues without due consideration to internal mechanisms such

as functional integration, structure, and information systems. The finding that ARP and APP are significant predictors of profitability shows that small business leaders must consider ARP and APP as strategic tools to maximize profitability. Singhania, Sharma, and Rohit (2015) stated that small business could easily obtain short-term improvements in ARP and APP by speeding up collections or slowing down payments. However, they suggested that sustainable results require a strategic or long-term view of working capital. Paise and Gama (2015) suggested that small business leaders should integrate WCM and WCP into their strategic planning.

Third, small business leaders should conduct period review of trade credit terms and policies that affect ARP and APP in order to align them with the changing market and operational requirements. Paise and Gama (2013) acknowledged that flexible credit collection terms is the essence of effective WCM because it takes into account the impact of changes taking place in the market. They also suggested the need for small businesses to have contingency plans to mitigate the impacts of unexpected events. Arfifa (2012) stated that while large companies can manage uncertainty better, small companies must have risk management procedures that incorporate alternative ways of addressing problems related to ARP and APP. Warrad (2015) suggested that effective relationship and dispute management might reduce the number of bad debts and improve cash collection. Small business leaders should, therefore, formulate and implement trade credit policies and contingency plans by taking into account the impacts of the changing organizational and market forces because different market and organizational changes may require changes in credit terms and risk management plans. Hoang (2015) suggested

that firms should benchmark their working capital requirements with best practices in their industry.

The second set of recommendation stemmed from the finding that WCIP and WCFP are significant predictors of firm profitability. Small business leaders should understand that effective management of WCIP and WCFP requires a smooth working relationship with both their trade creditors and short term-loan providers. While WCIP determines the level of investment in current assets relative to total assets, the WCFP determines the level of current liabilities relative to total assets as a source of financing. Wasiezzaman (2015) stated that a strong partnership with creditors such as banks and suppliers would help the company to understand better the advantages and disadvantages of a certain level of investment and source of financing current assets. Iqbal et al. (2015) stated that a smooth working relationship with creditors and lenders would lead to trust building, which will allow the company to obtain better external credit terms and facilities. The finding that ARP, which affects the firm's current assets, has a significant negative relationship with profitability calls for understanding the limitations and benefits of investment in current assets and the use of current liabilities. Given the finding that WCIP and profitability have a positive relationship, small business leaders would maximize profitability and add value by increasing their investment in current assets provided the operating environment, and money markets are robust. However, Kroes and Manikas (2014) stated that a heavy reliance on current liabilities would affect profitability negatively in a harsh business environment and distressed money market. They suggested that small business leaders should be versatile not only with internal

operations but also with the requirements of the money markets and creditors. Jose et al. (1996) stated that the wrong timing in financing assets with short-term liabilities and a constrained cash flow position could lead to insolvency.

The third set of recommendation focused on the need for integration of WCM and WCP. The regression results showed that the components of both WCM (ARP and APP) and WCP (WCIP and WCFP) made a substantial joint contribution to firm profitability. Small business leaders should integrate WCM and WCP in their business and financial strategies because profitability is ultimately a function of both WCM and WCP. This study was the first of its kind in assessing the joint effects of WCM and WCP on profitability. Thus, small business leaders should consider WCM and WCP as integral parts of working capital optimization. For example, optimization of ARP depends on the firm's WCIP as it determines the magnitude of investment in current assets. Similarly, optimization of APP depends on the firm's WCFP because it determines the extent to which the firm uses current liabilities to finance operations.

The fourth set of recommendation focused on the importance of the CCC as a theoretical framework to explain the effects of working capital on profitability. To maximize firm-level profitability, small business leaders should pay more attention, in line with the proposition of the CCC, to the management of ARP, INP, APP, WCIP, and WCFP. Small business leaders should use the CCC as a theoretical framework to align their limited financial resources with the requirements of external market forces (Wasiezzaman, 2015; Gill, Mand, & Obradovic, 2015).

The final recommendation for action is to disseminate the results of the study through publications in a peer reviewed journal and conference proceedings. I will present the findings of my study in the National Association of Manufacturers (NAM) conference scheduled for June 7–8, 2016, at the Mandarin Oriental Hotel, Washington, D.C. I will also send copies of my abstract and excerpts from my study to NAM with an offer to supply copies of my entire study upon request. The NAM is the largest manufacturing association, representing manufacturers throughout the United States of America.

Recommendations for Further Research

There are several potential avenues for future research and improvement as this study was not without limitations. The study was limited to the examination of only association rather than causal relationships between the research variables. However, it may serve as a basis for future researchers to expand the correlational design to experimental or quasi-experimental research design with adequate control for extraneous variables. This study was limited to only manufacturing companies. The WCM and WCP practices may differ in other industries such as financial and service organizations. Future researchers should apply the measurement scales and constructs on companies from different industries to substantiate the findings from across industry perspective. Bhunia and Das (2015) stated that examination WCM and WCP practices across industries might generate valuables comparative insights. As this study focused only on small business, it would be interesting to compare and contrast the working capital optimization practices of small, medium, and large companies.

This study was limited to only publicly traded companies. Unlike privately held companies, publicly traded companies follow strict regulatory and financial reporting requirements. Privately held companies have the flexibility in determining their working capital requirements without much pressure from shareholders. It would be interesting for future researchers to replicate the study on privately held companies. This study did not link WCM and WCP practices with firms' business models. It would be interesting to study whether one could find the most efficient way to manage working capital under certain business models (Westerman, 2015). Another related area of future research is to see if firms with different business strategies (e.g., differentiation, cost leadership) employ different WCM and WCP practices. As the optimization of working capital is dependent on the management of suppliers and customers throughout the supply chain, future researchers may wish to relate working capital optimization with supply chain management.

The study used multiple measures of firm profitability to overcome the limitations of prior studies that relied only on a single profitability measure, which cannot cater for the interests of different stakeholders of publicly traded companies. However, since this study did not examine the nature of the interaction among these multiple dependent variables, it would be interesting if future research focus of examination of these interactions. The study used a limited number of predictive variables, which explained only 20 percent of the variance in firm profitability as measured by GOP. In other words, other factors explained about 80 percent of the variance in profitability. It would be interesting if future researchers could increase the independent variables to see if the

level of explained variance increases significantly. Although this study used the CCC as the theoretical framework of the study to explain how WCM and WCP affect profitability, the literature on the linkage between working capital policies and the CCC is scarce. Future researchers should address this gap by investigating the interaction between different working capital policies and the CCC.

This study did not examine all possible factors affecting working capital management components that have effects on profitability. Therefore, future researchers should investigate the effects of other factors such as prepayments, trade discounts, accrued expenses, and changes in the economic environment on WCM, WCP, and firm profitability. Finally, this study relied on only secondary archival data to examine the relationship between WCM, WCP, and profitability. The use of historical financial records will reflect only past practices. To get a comprehensive picture of current WCM and WCP practices, future researchers should supplement the financial records with qualitative data or use a mixed research approach to include current practices and experiences.

Reflections

I joined the doctoral study program with little interest and confidence. However, I found the program to be rigorous, challenging, enlightening, and rewarding. I did not expect that the program would require such a huge amount of time, energy, and effort. In addition to family and work related responsibilities, I had to overcome the challenges of academic writing at the doctoral level. I had produced over 15 articles in peer-reviewed journals and yet, learning how to write a scholarly research paper has been one of the

most rewarding experiences in the program. The study entailed an examination of the relationship between six independent variables and three dependent variables from the secondary archival database for a sample of 176 small publicly traded U.S. companies. Identifying companies with a complete dataset to measure all the variables and collecting a ten-year financial data for nine variables were formidable challenges. These challenges facilitated my understanding of how scholars overcome such challenges. The other lesson was the importance of maintaining a strong focus on the application of the study to business practices and positive social change.

As a professor of management with over 15 years of research and publication in small business development, I understand how working capital management and policies influence firm profitability. However, my previous experiences did not influence the results because I used a quantitative correlational research design and archival data. Through an extensive review of the literature on the relationship between working capital and firm performance, I was able to identify two important gaps. First, while the majority of prior findings focused only on the effects of WCM on profitability and only a few studies examined the relationship between WCP and profitability, I did not find a study that examined the combined effects of WCM and WCP on firm profitability. Second, although profitability is a multi-dimensional construct, the review of literature showed that many researchers use a single metric to measure profitability. Arfifa (2012) acknowledged that the use of a single measure was the major limitation of his study. Multiple measures of profitability are particularly important in studies using publicly traded companies that have multiple stakeholders with diverse interests. This study,

therefore, addressed these two gaps in existing research on the relationship between WCM, WCP, and firm profitability.

I also learnt that, at Walden University, students are a learning community, where a focus on social change and continuous interactions played a valuable role in the doctoral study process. The commitment and dedication of my research committee chairs and members inspired me to work hard to produce a high-quality research report. Strict adherence to the DBA rubric and IRB guidelines facilitated the smooth development the research proposal and completion of the study. The use of Standard and Poor's Capital IQ Netadvantage database proved beneficial regarding cost, time, and adhering to IRB's research protocol.

One of the important lessons was the use of regression analysis during this research. Although the review of the literature showed that researchers used either data removal or trimming techniques in dealing with missing value and outliers, the use of these techniques in archival panel data poses different challenges. For example, removing a one-year financial record because of missing data will lead to the elimination of all the ten-year data and the exclusion of that company from the sample. The trimming technique to adjust for extreme values will distort the interpretation of the statistical evidence. Based on the recommendation that increasing the sample size will reduce potential violations of statistical assumptions, I increased the sample size from 68 to 176 companies. Although there were no obvious or serious violations of the statistical assumptions, I used bootstrapping with 2000 samples and bias corrected 95% confidence intervals.

At the start of the study, I assumed that the APP variable would have only a positive relationship to firm profitability because the theoretical framework assumes that, as the APP increases profitability will also increase. In other words, when companies delay payments to creditors through negotiation and contracts they can invest the money in operations that are critical to the firm. However, the negative and significant relationship between APP and ROA indicated that a longer APP might lead to penalties for late payments and loss of discounts for early payments. As I reflect back, the research process and the results led me to have an open mind regarding the relationship between the various components of WCM, WCP, and profitability and interest in further investigating other factors that may moderate or contribute to this relationship.

Summary and Study Conclusions

The driving force for this study was that the need to find evidence of relationships between WCM, WCP, and firm profitability. The study examined the ability of ARP, APP, CCC, WCIP, and WCFP to predict GOP, ROA, and TBQ. This study consisted of a random sample of 176 small publicly traded U.S. manufacturing companies from 2004 to 2013, making the total observations 1760. To reduce the potential violations of statistical assumptions and increase the generalizability of the findings to a larger population, I increased the sample companies from 68 to 176 companies. Section 3 provided the results of the descriptive, correlational, and regression analysis on the relationship between WCM, WCP, and firm profitability. An in-depth description of statistical results regarding the quantitative correlation design study directed between the relationship between WCM, WCP, and business profitability. The findings confirmed that ARP, APP,

WCIP, and WCFP are significant predictors of firm profitability. Small business leaders should consider the results of this study as a benchmark for assessing their working capital management practices and policies using the data generated from the study to enhance firm profitability. The study addressed an important gap through combining multiple independent variables (ARP, APP, CCC, WCIP, and WCFP) and multiple dependent variables (GOP, ROA, and TBQ). However, as the study is not without limitations, future researchers should focus on both small and large firms from different industries, quantitative and qualitative data, and experimental and quasi-experimental designs. The finding that ARP, APP, WCIP, and WCFP are significant predictors of profitability is applicable to effect improved business practices and positive social changes.

References

Abuzayed, B. (2012). Working capital management and firms' performance in emerging markets: The case of Jordan. *International Journal of Managerial Finance, 8*, 155-179. doi:10.1108/17439131211216620

Acharya, A., Prakash, A., Saxena, P., & Nigam, A. (2013). Sampling: Why and how of it? *Indian Journal of Medical Specialties, 4,* 330-333. doi:10.7713/ijms.2013.0032

Afrifa, G. F. (2013). *Working capital management and aim listed SME companies profitability: A mixed research method approach* (Doctoral dissertation). Retrieved from ProQuest Digital Dissertations and Theses database (No 0032).

Agyei-Mensah, B. K. (2012). Working capital management practices of small firms in the Ashanti Region of Ghana. *International Journal of Academic Research in Business and Social Sciences, 2*, 567-583. doi:10.2139/ssrn.1596734

Ahmed, A., & Sil, R. (2012).When multi-method research subverts methodological pluralism—or, why we still need single-method. *Research Perspectives on Politics 10*, 935-953. doi:10.1017/S1537592712002836

Aktas, N., Croci, E., Petmezas, D. (2015). Is working capital management value enhancing? Evidence from firm performance and investments. *Journal of Corporate Finance 30*, 98-113. doi:10.1016/j.jcorpfin.2014.12.008

Allwood, C. (2012). The distinction between qualitative and quantitative research methods is problematic. *Quality & Quantity*, *46*, 1417-1429. doi:10.1007/s11135-011-9455-8

Al-Mwalla, M. (2012). The impact of working capital management policies on firms profitability and value: The case of Jordan. *International Research Journal of Finance and Economics, 85*, 147-153. Retrieved from http://www.internationalresearchjournaloffinanceandeconomics.com/

Al-Shubiri, F. N. (2011). The effect of working capital practices on risk management: Evidence from Jordan. *Global Journal of Business Research, 5*(1), 39-54. Retrieved from http://www.theibfr.com/gjbr.htm

Awopetu, L. K. (2012). *The impact of an aggressive working capital management policy on a firm's profitability* (Doctoral dissertation). Retrieved from ProQuest Digital Dissertations and Theses database. (UMI No. 3547808)

Azeem, M. M., & Marsap, A. (2015). Determinant factors and working capital requirement. *International Journal of Economics and Finance, 7*(2), 280-292. doi:10.5539/ijef.v7n2p280

Banos-Caballero, S., Garcia-Teruel, P. J., & Martinez-Solano, P. (2012). How does working capital management affect the profitability of Spanish SMEs? *Small Business Economics 39,* 517-529. doi:10.1007/s11187-011-9317-8

Bei, Z., & Wijewardana, W. P. (2012). Working capital policy practice: Evidence from Sri Lankan companies. *Procedia-Social and Behavioral Sciences, 40,* 695-700. Retrieved from http://repository.rjt.ac.lk/jspui/bitstream/7013/525/1/Manoj.pdf

Bettany-Saltikov, J., & Whittaker, V. J. (2013). Selecting the most appropriate inferential statistical test for your quantitative research study. *Journal of Clinical Nursing, 23*, 1520-1531. doi:10.1111/jocn.12343

Bevan, S., Baumgartner, F. R., Johnson, E. W., & McCarthy, J. D. (2013). Understanding selection bias, time lags and measurement bias in secondary data sources: Putting the Encyclopedia of Associations database in broader context. *Social Science Research, 42*, 1750-1764. doi:10.1016/j.ssresearch.2013.08.003

Bhunia, A., & Das, A. (2015). Underlying relationship between working capital management and profitability of pharmaceutical companies in India. *American Journal of Theoretical and Applied Business, 1*(1), 27-36. doi:10.11648/j.ajtab.20150101.15

Bishara, A. J., & Hittner, J. B. (2012). Testing significance of a correlation with nonnormal data: Comparison of Pearson, Spearman, transformation, and resampling approaches. *Psychological Methods, 17*, 399-417. doi:10.1037/a0028087

Boesch, I., Schwaninger, M., Weber, M., & Scholz, R. W. (2013). Enhancing validity and reliability through feedback-driven exploration: A study in the context of conjoint analysis. *Systems Practice Action Research, 26*, 217-238. doi:10.1007/s11213-012-9248-6

Bolek, M., & Wolski, R. (2012). Profitability or liquidity: Influencing the market value, the case of Poland. *International Journal of Economics & Finance, 4*(9), 182-190. doi:10.5539/ijef.v4n9p182

Boyd, B. K., Bergh, D. D., Ireland, R. D., & Ketchen, D. J. (2013). Constructs in strategic management. *Organizational Research Methods, 16*, 3-14. doi:10.1177/1094428112471298

Bradley, M. T., & Brand, A. A. (2013). Alpha values as a function of sample size, effect size, and power: Accuracy over inference. *Psychological Reports*, *112*, 835-844. doi:10.2466/03.49.PR0.112.3.835-844

Butler, F. C., Martin, J. A., Perryman, A. A., & Upson, J. W. (2012). Examining the dimensionality, reliability, and construct validity of firm financial performance. *Strategic Management Review, 6*, 57-74.doi:10.4128/1930-4560-6.1.57

Caruth, G. D. (2013). Demystifying mixed methods research design: A review of the literature. *Mevlana International Journal of Education, 3*(2), 112-122. doi.10.13054/mije.13.35.3.2

De Almeida, J. R., & Eid, W. Jr. (2014). Access to finance, working capital management, and company value: Evidences from Brazilian companies listed on BM&FBOVESPA. *Journal of Business Research, 67*, 924-934. doi:10.1016/j.jbusres.2013.07.012

Decker, R., Haltiwanger, J., Jarmin, R., & Miranda, J. (2014). The role of entrepreneurship in U.S. job creation and economic dynamism. *Journal of Economic Perspectives, 28*(3), 3-24. doi:10.1257/jep.28.3.3

Delen, D., Kuzey, C, & Uyar, A. (2013). Measuring firm performance using financial ratios: A decision tree approach. *Expert Systems with Applications, 40*, 3970–3983. doi:10.1016/j.eswa.2013.01.012

Deng, F., & Smyth, H. (2013). Contingency-based approach to firm performance in construction: Critical review of empirical research. *Journal of Construction*

Engineering and Management, 139, 1-14. doi:10.1061/(ASCE)CO.1943-7862.0000738)

Donaldson, L., Qiu, J., & Luo, B. (2013). For rigor in organizational management theory research. *Journal of Management Studies, 50*, 153-172. doi:10.1111/j.1467-6486.2012.01069.x

Du, J., & Zhou, L. (2012). Improving financial data quality using ontologies. *Decision Support Systems, 54*, 76-86. doi:10.1016/j.dss.2012.04.016

Ebben, J., & Johnson, A. (2011). Cash conversion cycle management in small firms: relationships with liquidity. *Journal of Small Buinssiness & Entrepreneurship, 24*, 381-396. doi:10.1080/08276331.2011.10593545

Engberg, S., & Berben, L. (2012). Selecting instruments: Reliability and validity considerations. *Journal of Wound Ostomy & Continence Nursing*, *39*, 18-20. doi:10.1097/WON.0b013e3182400d7f

Enqvist, J., Graham, M., & Nikkinen, J. (2014). The impact of working capital management on firm profitability in different business cycles: Evidence from Finland. *Research in International Business and Finance, 32,* 36-49. doi:10.1016/j.ribaf.2014.03.005

Ernst & Young (2014). *All tied up: Working capital management report*. Retrieved from http://www.ey.com/Publication/vwLUAssets/EY-working-capital-management-2014-all_tied_up/$FILE/EY-working-capital-management-2014-all-tied-up.pdf

Falavi, M., & Abdoli, M. R. (2015). The efficiency of data mining models in determining the effect of working capital management on corporate performance.

International Journal of Academic Research, 7(1), 339-343. doi:10.7813/2075-4124.2015/7-1/B.57

Falope, O. I., & Ajilore, T. (2009). Working capital management and corporate profitability: Evidence from panel data analysis of selected quoted companies in Nigeria. *Research Journal of Business Management 3,* 73-84. doi:10.3923/rjbm.2009.73.84 ·

Farris, M. T., & Hutchison, P. D. (2003). Measuring cash-to-cash performance. *The International Journal of Logistics Management, 14*, 83-91. doi:10.1108/09574090310806611

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. (2009). Statistical power analyses using G*Power 3.1:Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160. doi:10.3758/BRM.41.4.1149

Federal Reserve Bank of New York (2014). *Key findings: Small business credit survey*, Retrieved from http://newyorkfed.org/smallbusiness/Spring2014/pdf/full-report.pdf

Feng, H., Morgan, N. A., & Rego, L.L. (*2015*).Marketing department power and firm performance. *Journal of Marketing, 79*(5), 1-20. doi.org/10.1509/jm.13.0522.

Gentry, A., Vaidyanathan, R.,. & Wai, L. (1990). A weighted cash conversion cycle. *Financial Management, 19*, 90-99. Retrieved from http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1755-053X

Ghodrati, H., & Ghanbari, J. (2014). A study on relationship between working capital and profitability. *Management Science Letters, 4*, 1675-1684. doi:10.5267/j.msl.2014.7.017

Gill, A., & Biger, N. (2013). The impact of corporate governance on working capital management efficiency of American manufacturing firms. *Managerial Finance, 39*, 116-132. doi:10.1108/03074351311293981

Gill, B., Biger, N., & Obradovich, J. (2015). The impact of independent directors on the cash conversion cycle of American manufacturing firms. *International Journal of Economics and Finance, 7*(1), 87-96. doi:10.5539/ijef.v7n1p878

Gitman, L. J. (1974). Estimating corporate liquidity requirements: A simplified approach. *Financial Review, 9*, 79-88. doi:10.1111/j.1540-6288.1974.tb01453.x

Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2013). Who creates jobs? Small versus large versus young. *Review of Economics and Statistics, 95*, 347-361.doi:10.1162/REST_a_00288

Hamann, P. M., Schiemann, F., Bellora, L., & Guenther, T. W. (2013). Exploring the dimensions of organizational performance: A construct validity study. *Organizational Research Methods, 16*, 67–87. doi:10.1177/1094428112470007

Hoang, T. V. (2015). Impact of working capital management on firm profitability: the case of listed manufacturing firms on ho chi minh. *Asian Economic and Financial Review, 5*(5),779-789. doi: 10.18488/journal.aefr/2015.5.5/102.5.779.789

Houston, M. B. (2004). Assessing the validity of secondary data proxies for marketing constructs. *Journal of Business Research, 57*, 154-161. doi:10.1016/S0148-2963(01)00299-5

Iqbal, N., Ahmad, N., & Riaz, Z. (2014).The Relationship between Working Capital Management and Profitability: Evidence from Pakistan. *International Letters of Social and Humanistic Sciences, 20*, 14-25. doi:10.18052/www.scipress.com/ILSHS.20.14

Johnston, M. P. (2014). Secondary data analysis: A method of which the time has come. *Qualitative and Quantitative Methods in Libraries, 3,* 619-626. Retrieved from http://www.qqml.net/

Jose, M. L., Lancaster, C., & Stevens, J. L. (1996). Corporate return and cash conversion cycle. *Journal of Economics and Finance, 21*, 33-46. doi:10.1007/BF02920497

Kaczynski, D., Salmona, M., & Smith, T. (2014). Qualitative research in finance. *Australian Journal of Management, 39*, 127–135. doi:10.1177/0312896212469611

Karadag, H. (2015). Financial management challenges in small and medium-sized enterprises: A strategic management approach. *Emerging markets Journal, 5*, 25-40. doi 10.5195/emaj.2015.67

Katchova, A.L., & Enlow, S.J. (2013). Financial performance of publicly-traded agribusinesses. *Agricultural Finance Review, 73*, 58-73. doi:10.1108/00021461311321311

Kaur, H. V., & Singh, S. (2013). Managing working capital efficiency in capital goods sector in India. *Global Business Review 14*, 343-355. doi:10.1177/0972150913477526

Kestens, K., Van Cauwenberge, P., & Vander Bauwhede, H. (2012). Trade credit and company performance during the 2008 financial crisis. *Accounting and Finance, 52*, 1125-1151. doi:10.1111/j.1467-629X.2011.00452.x

Ketchen, Jr. D. J. Ireland, D., & Baker, L.T. (2012). The use of archival proxies in strategic management studies: Castles made of sand. *Organizational Research Methods, 16*, 32-42. doi:10.1177/1094428112459911

Kieschnick, R., Laplante, M. & Moussawi, R. (2013). Working capital management and shareholders' wealth. *Review of Finance, 17*, 1827-1852. doi:10.1093/rof/rfs043

Knauer, T. & Wöhrmann, A., (2013). Working capital management and firm profitability. *Journal of Management Control, 24*, 77-87. doi:10.1007/s00187-013-0173-3

Kroes, J., & Manikas, A. (2014). Cash flow management and manufacturing firm financial performance: A longitudinal perspective. *International Journal of Production Economics, 148*, 37-50. doi:10.1016/j.ijpe.2013.11.008

Kura, S. Y. B., (2012). Qualitative and quantitative approaches to the study of poverty: taming the tensions and appreciating the complementarities. *The Qualitative Report, 17*(34), 1-19. Retrieved from http://tqr.nova.edu/

Kwenda, F., & Holden, M. (2013). Working capital structure and financing pattern of selected JSE-listed firms. *Mediterranean Journal of Social Sciences, 4*(3), 532-540. doi:10.5901/mjss.2013.v4n13p531

Lach, D. (2014). Challenges of interdisciplinary research: Reconciling qualitative and quantitative methods for understanding human-landscape systems. *Environmental Management, 53*, 88-93. doi:10.1007/s00267-013-0115-8

Leedy, P. D., & Ormrod, J. E. (2012). *Practical research: Planning and design* (10th ed.). Upper Saddle River, NJ: Prentice Hall.

Leys, C., Ley, C., Klein, O., Bernard, P., & Licata, L. (2013). Detecting outliers: Do not use standard deviation around the mean, use absolute deviation around the median. *Journal of Experimental Social Psychology, 49*, 764-766. doi:10.1016/j.jesp.2013.03.013

Lind, L., Pirttilä, M., Viskari, S., Schupp, F., & Kärri, T. (2012). Working capital management in the automotive industry: Financial value chain analysis. *Journal of Purchasing & Supply Management, 18*, 92-100. doi:10.1016/j.pursup.2012.04.003

Mansoori, E., & Muhammad, J. (2012). The effect of working capital management on firm's profitability: Evidence from Singapore. *Interdisciplinary Journal of Contemporary Research in Business,* 472-486. Retrieved from http://www.ijcrb.com/

Margaretha, F. & Supartika, N. (2016). Factors affecting profitability of small-medium enterprises (SMEs) listed in Indonesia stock exchange. *Journal of Economics, Business and Management, 4*(2), 131-137. doi:10.7763/JOEBM.2016.V4.379.

Marttonen, S., Monto, S., & Kärri, T. (2013). Profitable working capital management in industrial maintenance companies. *Journal of Quality in Maintenance Engineering, 19,* 429-446. doi:10.1108/jqme-08-2013-0054

Mateut, S., & Zanchettin, P. (2013). Credit sales and advance payments: Substitutes or complements? *Economics Letters, 118*, 173-176. doi:10.1016/j.econlet.2012.10.020

Mathuva, D. M. (2014). An empirical analysis of the determinants of the cash conversion cycle in Kenyan listed non-financial firms. *Journal of Accounting in Emerging Economies, 4,* 175-196. doi:10.1108/JAEE-10-2011-0045

Mishra, S., Modi, S. B., & Animesh, A. (2013). The relationship between information technology capability, inventory efficiency, and shareholder wealth: A firm-level empirical analysis. *Journal of Operations Management, 31*, 298-312. doi:10.1016/j.jom.2013.07.006

Molina, C. A., & Preve, L. A. (2012). An empirical analysis of the effect of financial distress on trade credit. *Financial Management, 41*, 187-205. doi:10.1111/j.1755-053x.2012.01182.x

Moore, G. A. (2014). *Relationship between chief executive officer compensation and firm performance for U.S. health insurance companies (*Doctoral Dissertation). Retrieved from ProQuest Digital Dissertations and Theses database. (UMI No. 3617632)

Muller, C., Vermeulen, W. J. V., & Glasbergen, P. (2012). Pushing or sharing as value-driven strategies for societal change in global supply chains: Two case studies in

the British-South African fresh fruit supply chain. *Business Strategy and the Environment, 21,* 127-140. doi:10.1002/bse.719

Muscettola, M. (2014). Cash conversion cycle and firm's profitability: An empirical analysis on a sample of 4,226 manufacturing SMEs of Italy. *International Journal of Business and Management, 9*(5), 25-35. doi:10.5539/ijbm.v9n5p25

Napompech, K. (2012). Effects of working capital management on the profitability of Thai listed firms. *International Journal of Trade, Economics and Finance, 3*, 227-232. doi:10.7763/ijtef.2012.v3.205

National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979). *The belmont report:Ethical principles and guidelines for the protection of human subjects of research*. Retrieved from http://ohsr.od.nih. gov/guidelines/belmont.html#gob3

Nyabuti, W. M., & Alala, O. B. (2014). The relationship between working capital management policy and financial performance of companies quoted at Nairobi securities exchange, Kenya. *International Journal of Economics, Finance, and Management Sciences. 2,* 212-219. doi:10.11648/j.ijefm.20140203.12

Onwumere, J. U., Ibe, I. G., & Ugbam, O. C. (2012). The impact of working capital management on profitability of nigerian firms: A preliminary investigation. *European Journal of Business and Management, 4*(15), 192-201. Retrieved from http://www.iiste.org/Journals/index.php/EJBM/article/view/3522/3561

Orobia, L. A., Byabashaija, W., Munene, J. C. Sejjaaka, S. K., & Musinguzi, D. (2013). How do small business owners manage working capital in an emerging economy?

Qualitative Research in Accounting & Management, 10, 127-143. doi:10.1108/QRAM-02-2012-0008

Paise, M. A., & Gama, P. G. (2015).Working capital management and SMEs profitability: Portuguese evidence, *International Journal of Managerial Finance, 11*(3), 341- 358 doi.org/10.1108/IJMF-11-2014-0170.

Parker, L. D. (2012). Qualitative management accounting research: Assessing deliverables and relevance. *Critical Perspectives on Accounting, 23*, 54-70. doi:10.1016/j.cpa.2011.06.002

Pong, K. M., & Mitchell, F. (2012). Inventory investment & control: How have UK companies been doing? *The British Accounting Review, 44*, 173-188. doi:10.1016/j.bar.2012.07.008

Porter, M., & Kramer, M. (2011). Creating shared value: How to fix capitalism and unleash a new wave of growth. *Harvard Business Review*. Retrieved from https://hbr.org/

Ramiah, R., Zhao, Y., & Moosa, I. (2014).Working capital management during the global financial crisis: The Aistralian experience, *Qualitative Research in Financial Markets, 6*, 332-351. doi.10.1108/QRFM-09-2012-0026

Rauscher, S., & Wheeler, J. C. R. (2012). The importance of working capital management for hospital profitability: Evidence from bond-issuing, not-for-profit U.S. hospitals. *Health Care Manage Review, 37*, 339-346. doi:10.1097/HMR.0b013e3182224189

Richards, V. D., & Laughlin, E. J. (1980). A cash conversion cycle approach to liquidity analysis. *Financial Management, 9*, 32-38.doi:10.2307/3665310

Sabri, T. B. (2012). Different working capital policies and the profitability of a firm. *International Journal of Business and Management, 7*(15), 50-60. doi:10.5539/ijbm.v7n15p50

Santos, J. B., & Brito, L. A. B., (2012). Toward a subjective measurement model for firm performance. *BAR, Rio de Janeiro, 9*, 95-117. doi:10.1590/S1807-76922012000500007

Sheng, H. H., Bortoluzzo, A. B., & dos Santos, G. A. P. (2013). Impact of trade credit on firm inventory investment during financial crises: Evidence from Latin America. *Emerging Markets Finance & Trade, 49*, 32-52. doi:10.2753/REE1540-496X4905S403

Shin, H. H., & Soenen, L. (1998). Efficiency of working capital management and corporate profitability. *Financial Practice Education. 8*, 37-45. Retrieved from http://www.fma.org/jaf.htm

Shockley, J., & Turner, T. (2014): Linking inventory efficiency, productivity and responsiveness to retail firm outperformance: empirical insights from U.S. retailing segments. *Production Planning & Control. 25,* 1213-1301. doi:10.1080/09537287.2014.906680

Singhania, M., Sharma, N., & Rohit, J.Y. (2014). Working capital management and profitability: evidence from Indian manufacturing companies. *Decision, 41*(3), 313–326.doi:10.1007/s40622-014-0043-3

Snowden, A. (2014). Ethics and originality in doctoral research in the UK. *Nurse Researcher, 21*(6), 12-15. doi:10.7748/nr.21.6.12.e1244

Standard and Poor's. (2013). *Capital IQ. Understanding the COMPUSTAT (North America) Database.* Retrieved from http://www.standardandpoors.com/products-services/netadvantage/en/us

Steigenberger, N. (2014). Only a matter of chance?: How firm performance measurement impacts study results. *European Management Journal, 32*, 46-65. doi:10.1016/j.emj.2013.09.003

Steinker, S., & Hoberg, K. (2013). The impact of inventory dynamics on long-term stock returns: An empirical investigation of U.S. manufacturing companies. *Journal of Operations Management, 31*, 250-261. doi:10.1016/j.jom.2013.05.002

Sunday, K. J. (2011). Effective working capital management in small and medium scale enterprises (SMEs). *International Journal of Business and Management, 6*(9), 271-279. doi:10.5539/ijbm.v6n9p271

Tabachnick, B., & Fidell, L. (2013). *Using multivariate statistics* (6th ed.). Boston, MA: Pearson Education.

Talonpoika, A., Monto, S., Pirttila, M., & Kärri, T. (2014). Modifying the cash conversion cycle: revealing concealed advance payments. *International Journal of Productivity and Performance Management, 63*, 341-353. doi:10.1108/IJPPM-12-2012-0130

Tasic, S., & Feruh, M. B. (2012). Errors and issues in secondary data used in marketing research. *The Scientific Journal for Theory and Practice of Socioeconomic Development, 1*, 326-335. Retrieved from http://www.socioeconomica.net/

Tauringana, V., & Afrifa, G. A. (2013). The relative importance of working capital management and its components to SMEs' profitability. *Journal of Small Business and Enterprise Development, 20*, 453-469. doi:10.1108/JSBED-12-2011-0029

The Executive Office of the President. (2014). *Supply chain innovation: Strengthening America's small manufacturers.* Retrieved from https://www.whitehouse.gov/sites/default/files/docs/supply_chain_innovation_report_final.pdf

Turner, T. L., Balmer, D. F., & Coverdale, J. H. (2013). Methodologies and study designs relevant to medical education research. *International Review of Psychiatry, 25,* 301-310. doi:10.3109/09540261.2013.790310

U. S. Census Bureau. (2015). *Statistics of U.S. Businesses Employment and Payroll Summary*. Retrieved from http://www.census.gov/content/dam/Census/library/publications/2015/econ/g12-susb.pdf

U.S. Department of Commerce, Economics, and Statistics Administration (2014). *The benefits of manufacturing jobs*. Retrieved from http://www.esa.doc.gov/sites/default/files/1thebenefitsofmanufacturingjobsfinal5912.pdf

U.S. Small Business Administration, Office of Advocacy. (2014). *The small business state and territory profiles*. Retrieved from https://www.sba.gov/sites/default/files/advocacy/SB_Profiles_2014-15_0.pdf

Ukaegbu, B. (2014). The significance of working capital management in determining firm profitability: Evidence from developing economies in Africa. *Research in International Business and Finance, 31,*1-16. doi:10.1016/j.ribaf.2013.11.005

Venkatesh, V., Brown, S. A., & Bala, H. (2013). Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems. *MIS Quarterly, 37,* 21-54. Retrieved from http://www.misq.org/

Venkatraman, N., & Ramanujam, V. (1987). Measurement of business economics perfromance: An examination of methods convergence. *Journal of Management, 13*, 109-122. doi:10.1177/014920638701300109

Wang, F., Feng. T., & Lawton, A. (2016). Linking Ethical Leadership with Firm Performance: A Multi-dimensional Perspective. *Journal of business ethics, 1,* 1-12.doi:10.1007/s10551-015-2905-9

Warrad, L. H. (2015). The Impact of Cash Conversion Cycle on Services Firms' Liquidity: An Empirical Study Based on Jordanian Data. *International Journal of Business and Management, 10*(10), 108-115. doi:10.5539/ijbm.v10n10p108

Wasiuzzaman, S. (2015) .Working capital and firm value in an emerging market. *International Journal of Managerial Finance, 11*, 60-79. .doi:10.1108/IJMF-01-2013-0016

Weinraub, H. J., & Visscher, S. (1998). Industry practice relating to aggressive conservative working capital policies. *Journal of Financial and Strategic Decisions, 11*(2), 11-18. Retrieved from http://www.financialdecisionsonline.org/archive/pdffiles/v11n2/weinraub.pdf

Wester, K. L., Borders, L. D., Boul, S., & Horton, E. (2013). Research quality: Critique of quantitative articles in the journal of counseling & development. *Journal of Counseling & Development, 91*, 280-290. doi:10.1002/j.1556-6676.2013.00096.x

Westerman, W. (2015). Working capital management programs: Yesterday, today, tomorrow. *Journal of Modern Accounting and Auditing, 11*(4), 210-217.doi: 10.17265/1548-6583/2015.04.003

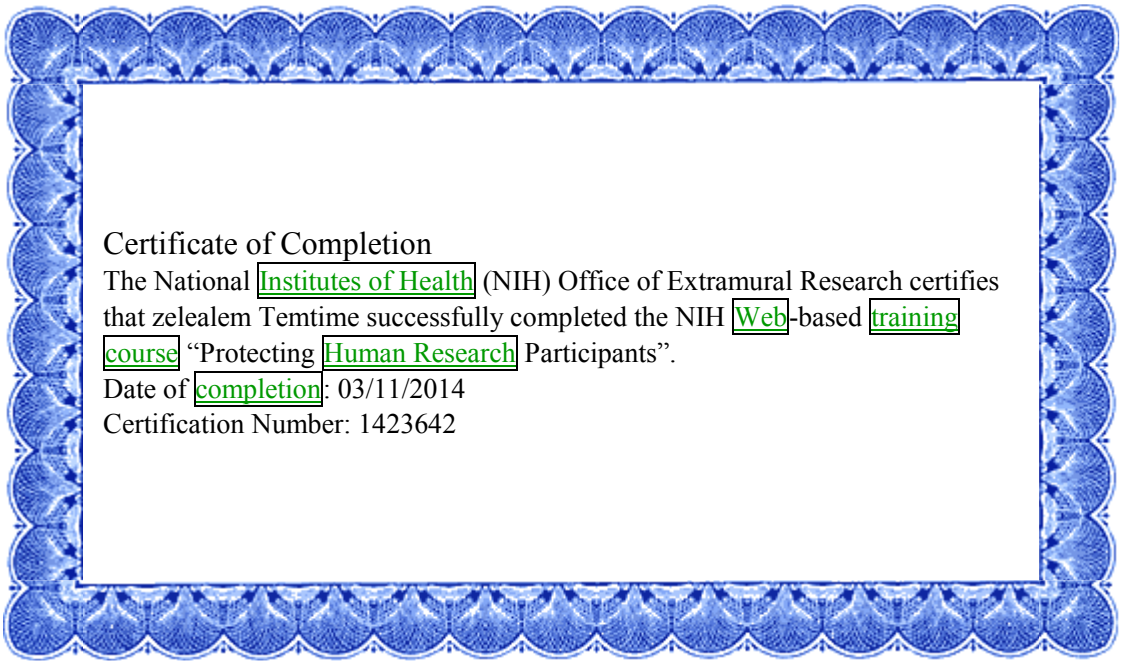
Wisdom, J. P., Cavaleri, M. A., Onwuegbuzie, A. J., & Green, C. A. (2012). Methodological reporting in qualitative, quantitative, and mixed methods health services research articles. *Health Services Research, 47*, 721-745 doi:10.1111/j.1475-6773.2011.01344.x

Yano, G., & Shiraishi, M. (2012). Efficiency of trade credit finance in china. *Comparative Economic Studies, 54*, 203-225. doi:10.1057/ces.2011.30

Yazdanfar, D., & Öhman, P. (2014).The impact of cash conversion cycle on firm profitability. *International Journal of Managerial Finance, 10,* 442-452. doi:10.1108/IJMF-12-2013-0137

Yilmaz, K. (2013). Comparison of quantitative and qualitative research traditions: Epistemological, theoretical, and methodological differences. European Journal of Education, 48, 311-325. doi:10.1111/ejed.12014

Appendix 1: Certificate of Completion of National Institutes of Health Course



Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that zelealem Temtime successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 03/11/2014

Certification Number: 1423642

Appendix 2: Regression Analysis Output for Gross Operating Profit

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.449[a]	.201	.178	.14712

a. Predictors: (Constant), Working Capital Financing Policy, Accounts Receivable Period, Working CVapital Investment Policy, Accounts Payable Period, Cash Conversion Cycle

b. Dependent Variable: Gross Operating Profit

ANOVA[a]

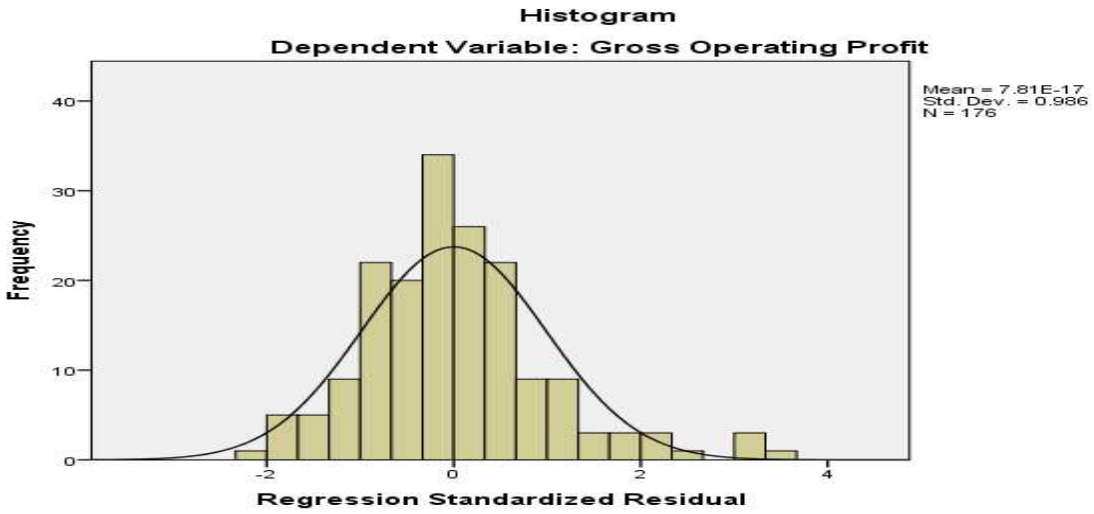
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.928	5	.186	8.580	.000[b]
	Residual	3.679	170	.022		
	Total	4.608	175			

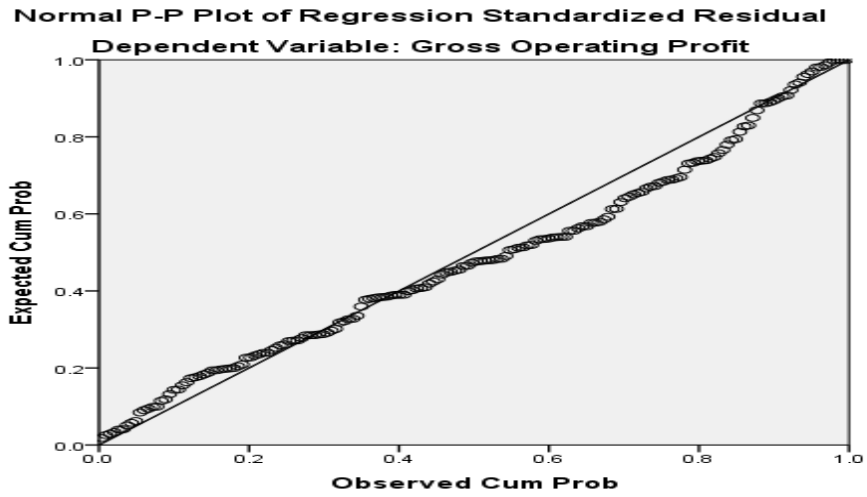
a. Dependent Variable: Gross Operating Profit

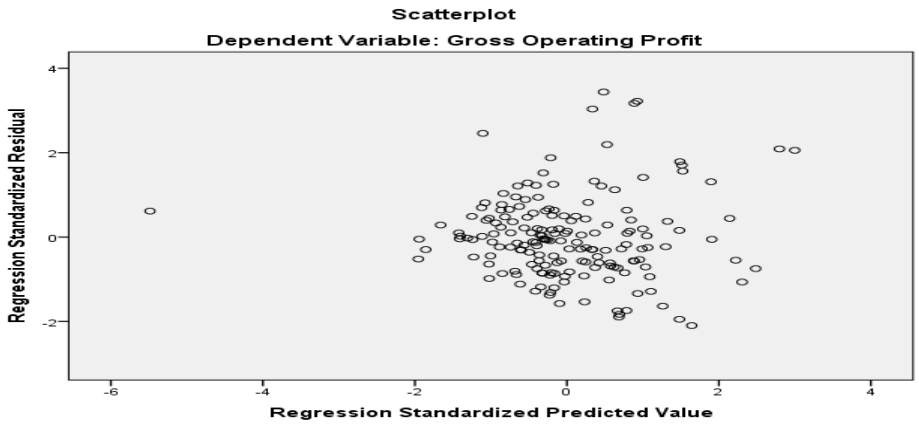
b. Predictors: (Constant), Working Capital Financing Policy, Accounts Receivable Period, Working CVapital Investment Policy, Accounts Payable Period, Cash Conversion Cycle

Coefficients

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part
(Constant)	.168	.051		3.272	.001			
Accounts Receivable Period	-.002	.001	-.393	-4.183	.000	-.199	-.305	-.287
Accounts Payable Period	.001	.001	.210	2.603	.010	.054	.196	.178
Cash Conversion Cycle	.000	.000	.141	1.570	.118	-.043	.120	.108
Working Capital Investment Policy	.156	.077	.150	2.028	.044	.237	.154	.139
Working Capital Financing Policy	.615	.159	.289	3.874	.000	.286	.285	.265


Histogram
Dependent Variable: Gross Operating Profit
Mean = 7.81E-17
Std. Dev. = 0.986
N = 176
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Gross Operating Profit
Expected Cum Prob
Observed Cum Prob


Scatterplot
Dependent Variable: Gross Operating Profit
Regression Standardized Residual
Regression Standardized Predicted Value

Appendix 3: Regression Results on Return on Asset

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.338[a]	.115	.089	.04180

a. Predictors: (Constant), Working Capital Financing Policy, Accounts Receivable Period, Working CVapital Investment Policy, Accounts Payable Period, Cash Conversion Cycle

b. Dependent Variable: Return On Asset

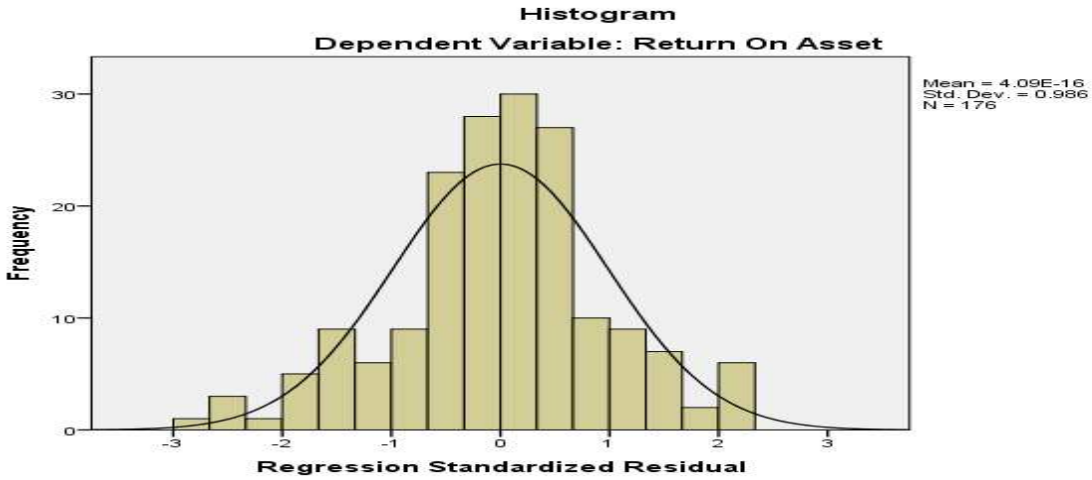
ANOVA[a]

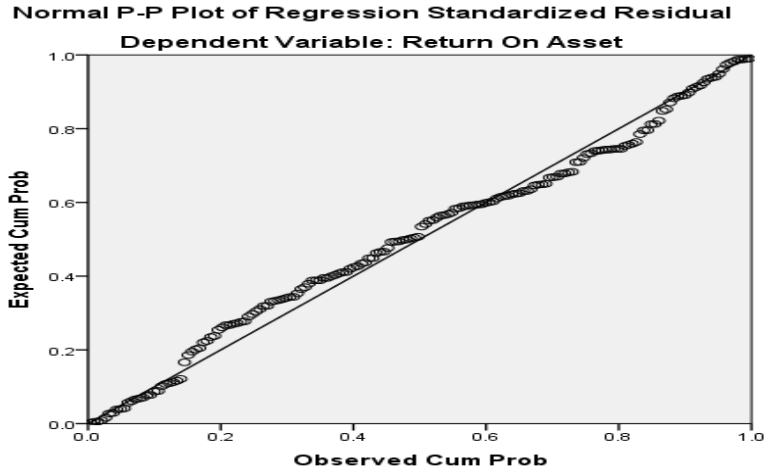
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.038	5	.008	4.398	.001[b]
	Residual	.297	170	.002		
	Total	.336	175			

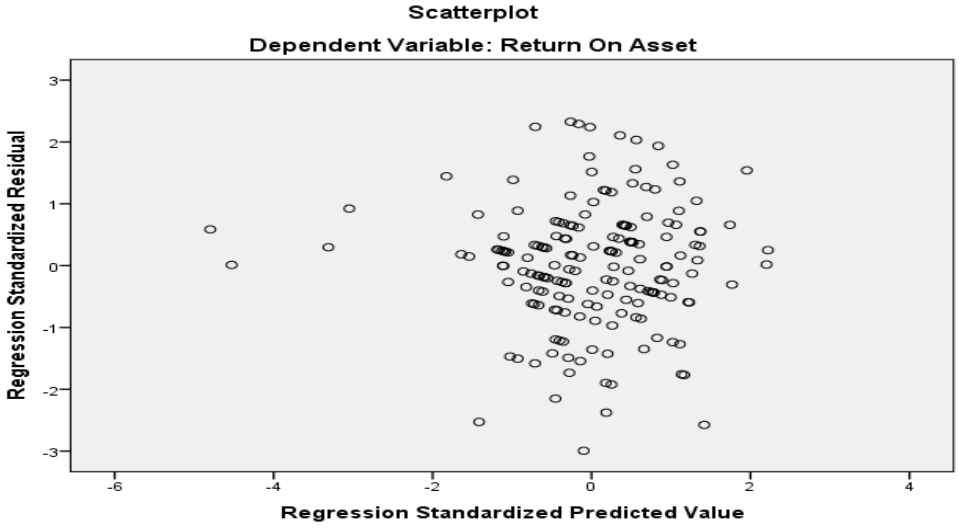
a. Dependent Variable: Return On Asset

b. Predictors: (Constant), Working Capital Financing Policy, Accounts Receivable Period, Working Capital Investment Policy, Accounts Payable Period, Cash Conversion Cycle

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part
(Constant)	.034	.015		2.369	.019			
Accounts Receivable Period	.000	.000	.077	.783	.435	-.117	.060	.057
Accounts Payable Period	.000	.000	-.263	-3.092	.002	-.242	-.231	-.223
Cash Conversion Cycle	########	.000	-.122	-1.287	.200	-.096	-.098	-.093
Working Capital Investment Policy	.070	.022	.250	3.213	.002	.199	.239	.232
Working Capital Financing Policy	-.023	.045	-.040	-.514	.608	.043	-.039	-.037


Histogram
Dependent Variable: Return On Asset
Mean = 4.09E-16
Std. Dev. = 0.986
N = 176
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Return On Asset
Expected Cum Prob
Observed Cum Prob


Scatterplot
Dependent Variable: Return On Asset
Regression Standardized Residual
Regression Standardized Predicted Value

Appendix 4: Regression output for Tobin's q

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.394[a]	.155	.130	.74985

a. Predictors: (Constant), Working Capital Financing Policy, Accounts Receivable Period, Working CVapital Investment Policy, Accounts Payable Period, Cash Conversion Cycle

b. Dependent Variable: Tobin's q

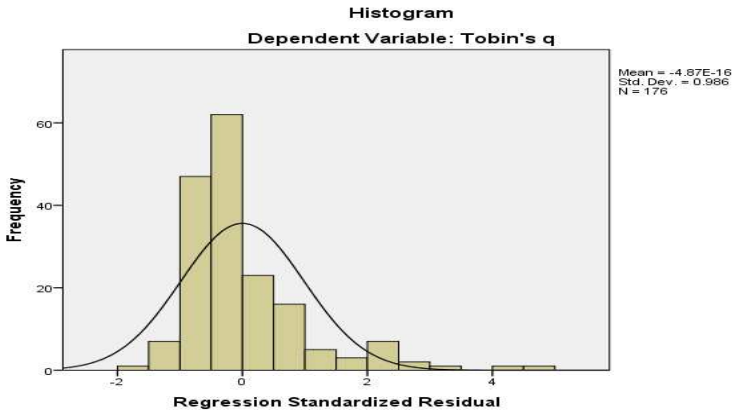
ANOVA[a]

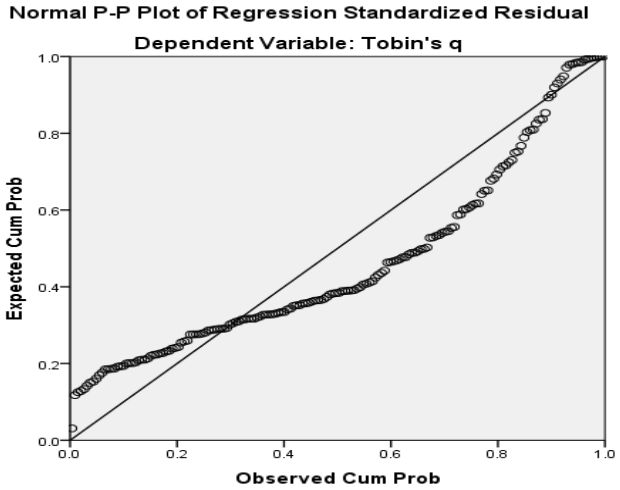
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.519	5	3.504	6.231	.000[b]
	Residual	95.587	170	.562		
	Total	113.106	175			

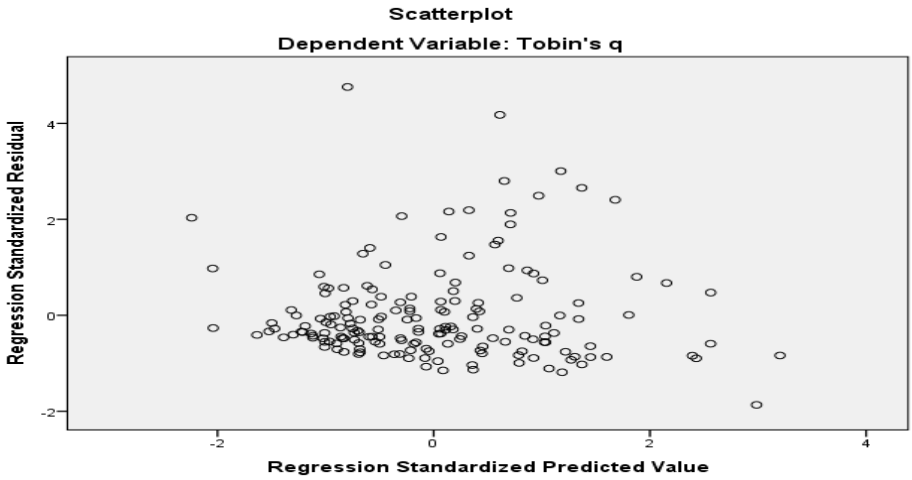
a. Dependent Variable: Tobin's q

b. Predictors: (Constant), Working Capital Financing Policy, Accounts Receivable Period, Working CVapital Investment Policy, Accounts Payable Period, Cash Conversion Cycle

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part
(Constant)	.731	.261		2.801	.006			
Accounts Receivable Period	-.001	.003	-.046	-.477	.634	-.019	-.037	-.034
Accounts Payable Period	.004	.003	.119	1.429	.155	.093	.109	.101
Cash Conversion Cycle	-.001	.001	-.098	-1.063	.289	.057	-.081	-.075
Working CVapital Investment Policy	1.811	.393	.351	4.610	.000	.278	.333	.325
Working Capital Financing Policy	-2.933	.809	-.278	-3.623	.000	-.184	-.268	-.255


Histogram
Dependent Variable: Tobin's q
Mean = -4.87E-16
Std. Dev. = 0.986
N = 176
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Tobin's q
Expected Cum Prob
Observed Cum Prob


Scatterplot
Dependent Variable: Tobin's q
Regression Standardized Residual
Regression Standardized Predicted Value

Appendix 5: IRB Approval Letter

Dear Mr. Temtime,

This email is to notify you that the Institutional Review Board (IRB) confirms that your doctoral capstone entitled, “Relationship Between Working Capital Management, Policies, and Profitability of Small Manufacturing Firms," meets Walden University’s ethical standards. Since this project will serve as a Walden doctoral capstone, the Walden IRB will oversee your capstone data analysis and results reporting. Your IRB approval number is 10-05-15-0439895.

This confirmation is contingent upon your adherence to the exact procedures described in the final version of the documents that have been submitted to IRB@waldenu.edu as of this date. This includes maintaining your current status with the university and the oversight relationship is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, this is suspended.

If you need to make any changes to the project staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 10 business days of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB materials, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the IRB section of the Walden website: http://academicguides.waldenu.edu/researchcenter/orec

You are expected to keep detailed records of your capstone activities for the same period of time you retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Both students and faculty are invited to provide feedback on this IRB experience at the link below:
http://www.surveymonkey.com/s.aspx?sm=qHBJzkJMUx43pZegKlmdiQ_3d_3d

Sincerely,
Libby Munson
Research Ethics Support Specialist
Office of Research Ethics and Compliance
Email: irb@waldenu.edu
Fax: 626-605-0472, Phone: 612-312-1283