Impact of Working Capital on Corporate Performance in Seasonal and Non-Seasonal Industries: Evidence from Pakistan

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Abstract
The study examines the impact of working capital on corporate performance in the seasonal and non-seasonal industries of Pakistan. The five selected industries comprising a sample of 137 companies have been studied and five years of secondary data have been collected for analysis. These industries have been selected based on their unique characteristics with regard to inventories, receivables, and payables and due to the fact that these industries form a significant part of the overall economy of the country. Textile and sugar are seasonal industries based on cotton and sugar cane crops which are available for a limited period and hence bulk purchase and huge inventories are required to meet yearlong market requirements as chemical, pharmaceutical, cement, and manufacturing are non-seasonal industries where no such crop limitation or inventory buildup is required. The study suggests a significant positive relationship between working capital and profitability in seasonal (textile and sugar) industries. The study also finds a negative but significant relationship between working capital and profitability in the chemical industry. However, the study finds an insignificant relationship between working capital and profitability in the chemical and engineering industry. Moreover, the study suggests that there is a significant difference in the relationship between working capital and profitability across industries. The research findings are expected to be useful for the senior management, managers as well as practitioners in the area of investment decision-making.
*Keywords***:** Working Capital, Corporate Performance, Seasonal Industries

1. Introduction

The primary objective of every firm in this competitive world is profit maximization (Raheman & Nasr, 2007) and many challenges and limitations are being faced by them in achieving this objective. One such element of profitability is working capital which is a vital area of financial management, since managers are concerned with effective and efficient deployment of funds (Joshi, 1995; Arunkumar & Ramanan, 2013). Working capital (liquidity) management is ability of the firm to pay its short-term liabilities from its short-term assets.

Chakraborty (2008) has mentioned two different schools of thought on the subject of working capital and profitability; one school claimed that there is an inverse connectedness between working capital and profitability, while according to the second school of thought, increased working capital leads to improved firm profitability, and there is an optimum level of working capital that is required to maintain sales.

In view of above, it can be hypothesized that the association between working capital and profitability is nonlinear and industry specific, as it varies from industry to industry and an appropriate way to study this relationship would be to study it across different industries. In this research study, this relationship is explored in selected five industries of Pakistan, i.e., textile, sugar, cement, chemical and manufacturing. These industries have been selected because major portion of the economy is made up of these five sectors [Pakistan Economic Survey (PES), 2014].

1.1. Significance of the Study

The findings of the study expected to be helpful to the managers, senior management and practitioners in the area of decision-making. The study suggests decision-makers to explore and select decision making methods by considering the various financial factors.

1.2. Main Research Objective

Therefore, the main objective of the study is to measure the impact of working capital on the corporate performance in seasoned and non-seasoned industries of Pakistan. The five selected industries comprising a sample of 137 companies have been studied and five years (2015-2019) of secondary data has been collected for analysis. These industries have been selected based on their unique characteristics with regard to inventories, receivables and payables and due to the fact that these industries form a major part of overall economy of the country.

2. Literature Review

Smith (1973) has described fundamental approaches for working capital. Working capital efficiency is basically increasing the speed of collections of receivables and delaying the payments where possible. This working capital management (WCM) principle was given by Richards and Laughlin (1980) on conventional framework of the cash conversion cycle. Gilbert and Reichert (1995) in their study on of financial management practices found that 59 percent of these firms use account receivable management models, while 60 percent of the companies, and use some type of inventory management models to improve WCM.

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Soenen (1993) explored the influence of working capital on profitability of United States (US) firms. He took net trade cycle for measuring working capital and measured profitability through return on investments. He found that an inverse relationship exists between length of trade cycle and return on assets, his study further confirmed that this relationship was varying in nature across difference industries depending upon the nature and type of industry.

Lamberson (1995) worked on working capital of small firms and investigated how they adjust working capital in view of changes in economic activity. The study concluded a direct relationship between changes in economic conditions and working capital of the small firm, contrary to the previous studies.

Jose, Lancaster and Stevens (1996) studied working capital management "the aggressive style "and its influence on the US firms performance. They used cash conversion cycle which is the most acceptable variable for measuring working capital. They found significant negative relationship between the two variables and concluded that profitability can be increased through reduction in working capital.

Smith and Begemann (1997) emphasized that for a firm, profitability and liquidity are both main objectives which should be achieved simultaneously. They argued that increased profits through reduced working capital threaten the liquidity of the firm and similarly excess liquidity dilutes the returns. They took firms listed on Johannesburg Stock Exchange (JSE) and measured profitability as return on investments. Their results revealed that total current liability divided by fund flow gives/covers maximum variability in the return on investment. They proved that working capital has strong association with return of investment.

Table 1

Statement	Authors	Hypothesis No. 1 & 2 (In each sector)
A negative relationship between WCM and profitability	Deloof (2003); Eljelly, 2004; Charitou (2010); Karaduman et al., (2010); Teruel and Salano (2007)	There is a nonlinear relationship between working capital and profitability in each selected industry.
A positive relationship between WCM and profitability	Arunkumar & Ramanan (2013); Agyei and Yeboah (2011); Gill (2010); Padachi (2006); Lyroudi & Lazaridis (2002)	
A concave relationship between working capital and profitability	Charitou (2010); Filbeck and Krueger (2005); Long et al. (1993); Soenen (1993)	There is a significant relationship between working capital components and working capital itself
Components of working capital have different relation with working capital	Lazaridis and Tryfonidis (2005) Egbide and Enyi (2008); Moynihan and Pandy (2005)	
Statement	Authors	Hypothesis No. 3 (In each sector)
Relationship between working capital and profitability was found different across industries depending on the type of industry	Long et al. (1993); Gombola and Ketz (1983); Charitou (2010); Filbeck and Krueger (2005); Soenen (1993)	There is a significant difference in relationship between working capital and profitability across different industries
Statement	Authors	Hypothesis N0. 4
A concave relationship between working capital and profitability which leads to optimal working capital which is different across industries	Caballero, Teruel and Solano (2011); Gill, Biger and Matheer (2010); Nobanee and Alhajjar (2009)	There is an optimal level of working capital for a firm which varies across industries

Weinraub and Visscher (1998) studied the relationship between different approaches of working capital (aggressive and conservative) with the firm performance measured through profitability using quarterly data over the period 1984-1993. The study took ten different industry groups to study the relationship, they found that each industry has a significant and different working capital management policy and is highly significantly negative correlated with the profitability of the firm. The study supported that negative correlation exists between industry liability and asset policies and aggressive working capital asset policies are balanced by relatively conservative working capital asset policies.

Shin and Soenen (1998) have also investigated the impact of working capital management on the value of the firm. They took net trade cycle for measuring the working capital of the company, and performed correlation and regression analysis on a data of 58985 firms covering a period 1975 to 1994.The study established negative relationship between length of net trade cycle and firm performance.

Deloof (2003) studied impact of working capital on profitability of selected firms. He collected data from a sample of 1009 Belgian firms for the period 1992-1996.These were large non-financial firms. By using correlation and regression analysis to test the relationship between two variables, he found inverse relationship between working capital and profitability and recommended that managers can improve performance by decreasing number of days account receivables and stocks held by the firms.

Ghosh and Maji (2003) investigated the working capital management of Indian cement industry during the period 1992-2002. They instead of using conventional working capital management ratios measured working capital management efficiency through calculation of three indexes i.e., overall efficiency index, utilization index, and performance index. They tested the speed of achieving target efficiency level of selected firms and concluded that selected firms successfully improved efficiency during the period.

Working capital investment has a tradeoff relationship with profitability. Decisions that tend to reduce working capital leads to increased profitability, conversely, decisions that increases working capital will reduce profitability (Teruel and Solano, 2007). It has always remained a key question that whether shortening cash conversion cycle will or will not improve firm's profitability. Researches with regard to working capital management and its impact on profitability supports that reduced investment in working capital policies can lead to increased profitability (Deloof, 2003; Jose et al., 1996; Wang, 2002). Thus, aggressive working capital leads to increased profitability.

2.1. Research Hypothesis

Following researchers described the relationship between profitability and the cash conversion cycle as negative which means an inverse relationship.

3. Research Methodology

3.1. Data Variables

For measuring the working capital, it has been observed that most accepted variable for measuring working capital is Cash Conversion Cycle (CCC) which has been extensively used in the researches (Caballero, Teruel and Solano, 2011). It is time lag function of money spent on purchase of raw material and collected through sale of finished products. Cash conversion cycle and its components are defined as under:

- Average collection period (Accounts receivables multiply by 365 and divided by sales)
- Inventory turnover in day (Inventories multiply by 365 and divided by cost of sales)
- Average payment period (Accounts payable multiply by 365 and divided by purchases)
- Cash conversion cycle (Collection period + Inventory turnover in days - Payment period)

3.2. Sources of Information

Secondary data is used and is extracted from annual published balance sheets and income statements of companies listed at Karachi and Lahore stock exchanges. These statements can be obtained from Securities and Exchange Commission of Pakistan (SECP) office, company's offices and company's websites.

3.3. Population and Sample

Sampling design is a process in which a sample is derived from given population. The sample for this study will be selected randomly from a list of companies listed at Karachi and Lahore stock exchanges. For the purpose of this study,

- Seventy textile companies were randomly selected from a population of 150 textile companies.
- Seventeen sugar mills from total population of 36 sugar mills were selected.
- Twenty-four chemical companies from a population of 43 companies were randomly selected.
- Eight cement manufacturing companies from a population of 20 companies were selected.
- Eighteen engineering companies were selected out of 30 companies

A total of 137 companies representing the population have been selected as these remained profitable during the research period and also due to data availability issues. The five selected industries i.e., textile, sugar cement chemicals and engineering comprising of 279 companies has been studied and five years (2015-2019) of secondary data has been collected for analysis. These industries have been selected based on their unique characteristics with regard to inventories, receivables and payables and due to the fact that these industries form a major part of overall economy of the country. Textile and sugar are seasonal industries based on cotton and sugar cane crop which are available for limited period and hence bulk purchase and huge inventories are required to meet yearlong market requirement were as chemical, pharmaceutical, cement and manufacturing are non-seasonal industries where no such crop limitation or inventory buildup is required. These five groups were compared to study possible difference in relationship between working capital and profitability. Only those firms were selected which remained in profit during this period.

3.4. Data Analysis Technique

In the present study, Pearson correlation and multivariate regression analysis are used as a tool to identify the nature and extent of the relationship between the variables and process is repeated for each industry to find difference across industries.

3.5. Research Model

In this study gross operating income (profitability) is dependent variable and liquidity is taken as dependent variable which is measured through cash conversion cycle. It can be written as Profitability (GP) = f (CCC). Which shows GOI is the function of CCC, from this equation we will draw empirical model.

3.6. Control Variables

Following variables have taken as control variables in line with previous researches such as Deloof (2003);
- Growth ([current year sales – previous year sales] / previous year sales
- Size (the natural logarithm of sales)
- Leverage (financial debt/total assets)

4. Results and Discussion

We have used SPSS 21 for our analysis and through the data have derived following results.

Hypothesis # 01: Relationship between Working Capital and Profitability

4.1. Correlations

In sector one, that is textile sector, the dependent variable (profitability) and independent variable (cash conversion cycle) are correlated because significance (2-tailed) value is below 0.05. This also holds true for in the case of sector two and three, however, in sector four and five the correlation is not significant. Sector wise significance is reported in Table 2.

Table 2: Correlation Analysis

Sector	Control Variables			CCC
1	Lg. sale & Growth & Lev	lgNgp	Correlation	.116
			Significance (2-tailed)	.014
			Df	443
2	Lg. sale & Growth & Lev	lgNgp	Correlation	.403
			Significance (2-tailed)	.000
			Df	96
3	Lg. sale & Growth & Lev	lgNgp	Correlation	-.181
			Significance (2-tailed)	.035
			Df	134
4	Lg. sale & Growth & Lev	lgNgp	Correlation	.086
			Significance (2-tailed)	.523
			Df	56
5	Lg. sale & Growth & Lev	lgNgp	Correlation	.176
			Significance (2-tailed)	.066
			Df	108

In view of positive / negative and statistically significant relationship, one can safely say that the null hypothesis is proved for sector 1, 2 and 3 where as it does not hold for sector 4 and 5.

Table 3: Results for Hypothesis # 01

Hypothesis No. 1	Sector	Results
A significant relationship between working capital and profitability	Textile	Positive/Significant
-Same as Above-	Sugar	Positive/Significant
-Same as Above-	Chemical	Negative/Significant
-Same as Above-	Cement	Positive/non-significant
-Same as Above-	Engineering	Positive/non-significant

Hypothesis # 02: Correlation between Components of Working Capital and Working Capital
For second hypothesis, we first explore the correlation between different components of working capital with themselves and with working capital. The results are shown in Table 4.

Table 4: Correlations between Working Capital Components and WC

Sector			CCC	RA	AP	AI
	CCC	Pearson Correlation	1	0.043	.644**	.649**
Textile		Sig. (2-tailed)		0.322	0	0
		N	523	522	523	523
	CCC	Pearson Correlation	1	.247**	-0.001	.857**
Sugar		Sig. (2-tailed)		0.007	0.991	0
		N	117	117	117	117
	CCC	Pearson Correlation	1	0.009	.206**	.272**
Chemical		Sig. (2-tailed)		0.912	0.008	0
		N	164	164	164	164
	CCC	Pearson Correlation	1	.549**	-.328**	0.077
Cement		Sig. (2-tailed)		0	0.006	0.524
		N	70	70	70	70
Eng.	CCC	Pearson Correlation	1	0.042	-0.025	.426**
		Sig. (2-tailed)		0.633	0.777	0
		N	130	130	130	130

RA-Average collection period, AP-Average payment period, AI-Inventories (in days)
** $p < 0.01$

After going through the results above results, the second hypothesis is narrated below in Table 5.

Table 5: Results for Hypothesis # 02

Hypothesis No. 2	Sector	Results
There is a significant relationship between components of CWC and WC	Textile	Hypothesis is proved
-Same as Above-	Sugar	Hypothesis is proved.
-Same as Above-	Chemical	Hypothesis is proved.
-Same as Above-	Cement	Hypothesis is proved.
-Same as Above-	Engineering	Hypothesis is proved.

Results details are in under discussion section

Table 6: Significant Difference in Relationship between WC and Profitability

Sector	Control Variables				CCC
Textile	Lg. sale & Grow & Lev	lgNgp	Correlation		0.116
			Sig.(2-tailed)		0.014
			Df		443
Sugar	Lg. sale & Grow & Lev	lgNgp	Correlation		0.403
			Sig. (2-tailed)		0
			Df		96
Chemical	Lg. sale & Grow & Lev	lgNgp	Correlation		-0.181
			Sig. (2-tailed)		0.035
			Df		134
Cement	Lg. sale & Grow & Lev	lgNgp	Correlation		0.086
			Sig. (2-tailed)		0.523
			Df		56
Eng.	Lg. sale & Grow & Lev	lgNgp	Correlation		0.176
			Sig. (2-tailed)		0.066
			Df		108

Hypothesis # 03: Significant Difference in Relationship between Working Capital and Profitability across Industries
For third hypothesis, we have to see the relationship between working capital and profitability across industries for which we again first measure the correlation among the variables.
After going through the results above results, the second hypothesis is narrated below in Table 5.

Table 7: Result for Hypothesis # 03

Hypothesis No. 3	Sector	Results
There is significant difference in relationship between working capital and profitability across industries	Textile, Sugar, Chemical, Cement & Engineering	Hypothesis stands proved

Hypothesis # 04: Optimal Level of Working Capital for a Firm that Varies across Industries
The regression analysis is shown in Table 8.

Table 8: Regression Model Summary

Sector	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
		R Square Change	F Change	df1	df2	Sig. F Change	R Square Change	F Change	df1	df2
1	1	.912(a)	.832	.830	.23196	.832	730.723	3	444	.000
	2	.934(b)	.872	.870	.20288	.041	35.096	4	440	.000
2	1	.748(a)	.560	.546	.34800	.560	41.149	3	97	.000
	2	.850(c)	.722	.701	.28260	.162	13.523	4	93	.000
3	1	.956(d)	.915	.913	.21486	.915	482.445	3	135	.000
	2	.973(e)	.948	.945	.17084	.033	20.632	4	131	.000
4	1	.925(a)	.856	.848	.20619	.856	112.568	3	57	.000
	2	.957(f)	.915	.904	.16406	.059	9.260	4	53	.000
5	1	.901(d)	.811	.806	.30207	.811	155.844	3	109	.000
	2	.954(g)	.911	.905	.21169	.100	29.234	4	105	.000

4.2. For Textile and Sugar Sector (Seasonal Industries)

Refer to Table 7, the significance value of sector one i.e., Textile is 0.014 which is lower than 0.05, meaning by that our dependent variable (gross profit) and independent variable (cash conversion cycle) are significantly and positively correlated. This is in line with some of the previous researches because more working capital means more stocks, more sales, more receivables and in turn more profit. It is also because textile is a seasonal industry and mostly based on cotton crop in Pakistan. Since the arrival of cotton is seasonal in nature it is available in bulk during the season and is purchased in big lots for consumption through the year. During the crop season, it is available on lower rates and hence bulk purchases gives raw material for the industry at very low prices this is the reason that inventory is the major portion of current assets in this industry and larger amounts are invested in the working capital based on stocks which ensure good profit as cotton becomes expensive as the season ends.

Sugar sector, like textile sector, showed a strong statistically significant and positive correlation between working capital and profitability. This is based on the basic formula that sugarcane is available for a limited time period during the season. Whereas, sugar produced is consumed throughout the season. Due to availability of bulk in the season its prices are very low and hence mills purchase them in bulk. The more cane these mills purchase, more stocks of sugar they could manufacture at low price and then sell it in the market at higher prices throughout the year.

More purchases mean more stocks, more sales and greater profitability. Cost of inventory is lower than margin of profits in sales and hence more working capital investment will yield higher profitability. Each rupee invested in stocks and working capital has lower cost as compared to the return built in profit. This phenomenon has been captured in our results which is a factual position based in industry. The results are verifiable according to industry practice and aligned with previous researches mentioned in the literature review.

Although, the above results of strong positive correlation between working capital and profitability has roots in theory and literature, yet there is a lot of literature going against these results as bulk of the research indicates this relationship as negative based on Theory of Risk Reward Tradeoff, which explained that working capital has a cost and more working capital means more volume of funds invested in stocks and receivables means high interest which

is negatively related with profitability hence this relationship should be technically negative which implies we should have negative relationship between working capital and profitability but our results are opposite to this concepts and we have found following justifications which hold grounds.

- If the cost of holding inventory or receivables is lower than margin in sales than we can safely invest in working capital for higher returns and relationship between working capital and profitability is positive. This is the case with seasonal industries like cotton and sugar here the cost of inventory being seasonal is very low and return on sales is high because final product that is cloth or sugar is non-seasonal and sale is throughout the year at a very higher price. This yields an exception to the theory. Where low risk yields higher returns. Low risk means mills invest heavily in working capital which gives low risk (high liquidity is known as low risk) of in smooth sales and high cost of capital, but still, it gives them higher and safer return.

- But if the cost of capital is higher than margin in sales than the above relationship will not hold and normal risk reward trade off relationship will hold the grounds. (Reference is portfolio theory and liquidity risk are the reference in discussion).

4.3. Chemical Sector

This sector has shown a significant negative relationship between working capital and profitability which is aligned with risk reward trade off normally known as portfolio theory, which is understood as follows: "Higher risk will lead to higher profits and lower risk will yield lower profit."

Here in the industry, liquidity is the major risk. It has a very high cost. Higher liquidity will be having higher costs but low risks in operations and will ensure smooth sales as well continuous sales, but this due to higher cost will yield lower profitability. Here cost of keeping inventory or giving discounts or maintaining high receivables are covered in margin in sales or we can say that due to competition margin in sales are not very high hence we cannot afford heavy working capital or more investment in working capital. Hence, huge inventories or receivables or trade discounts are not practiced in this industry.

This industry behaves in a very normal manner. Small inventories are kept and very low investment is made in working capital to ensure a minimum smooth level of sales. Here in this industry, more a mill saves on inventory by keeping it short better it earns through higher yield. The results have captured a true phenomenon based on industry practice and widely recognized in the theory and literature.

4.4. Cement & Engineering Sector

These two sectors have shown quite a similar behavior and therefore grouped together for the sake of discussion. Here we have seen that the relationship is insignificant yet positive. This is quite different / unexpected and significant results opposite to whatsoever said in literature or searched so far. Here the two variables has not shown any relationship with each other, which means that profitability in cement and engineering sectors is not linked with its cash conversion cycle or working capital. The question arises why it is so and how could these two industries display this responses / behavior which is quite opposite to the theory also? It can seen that in these two industries most of the value in sales in derived through much sophisticated value addition process based on technology and pricing of the final product is not based on cost of raw material and little working capital is involved in shape holding inventories or giving trade credits.

Referring to our Hypothesis that there is a relationship between working capital and its components, it holds and proved for some components in some industries whereas it could not be established for some components in other industries. Results can be summarized as under:

Table 9: Results Summary

Sector	Results
Textile	Inventories & payables have significant positive relationship with working capital. Receivables have insignificant relationship with working capital.
Sugar	Receivables and inventories have significant positive relationship with working capital. Whereas payables have insignificant relationship with the working capital.
Chemical	Payable and inventories have significant positive relationship with working capital whereas receivables do not have significant relationship with working capital.
Cement	Receivables and payables have shown significant relationship whereas inventories have shown insignificant relationship with working capital.
Engineering	Only inventories have shown significant relationship with working capital, whereas receivables and payable remained insignificant with working capital.

These results are of great importance for industry although receivables payables and inventories are all the important component of working capital, but these components do not have same level of importance in every industry. In some industries inventories have shown significant relationship with working capital where as in some industries this relationship in insignificant. Similar is the results for the other components of the working capitals. These results can be used very intelligently. Industries can use these results while deciding about investment in working capital exactly in which component they deploy funds to make increase working capital effectively

It may happen that companies might be increasing working capital through investment in one or any of its components but this investment would not be generating the results as the component would be insignificant for that sector in terms of its relationship with working capital. These results are of commercial importance and must be kept in mind before deciding any investment in working capital.

Referring to the third hypothesis that relationship between working capital and profitability varies across industries. It stands proved because in the textile and sugar i.e., for seasonal industries it has a significant positive relationship, whereas for chemical or non-seasonal industry, it is simply a negative and significant relation. In cement sector and engineering the relationship is not significant at all.

Hence, we can conclude safely that relationship between working capital & profitability varies from industry to industry. It is positive for some industries and negative for other while it could be insignificant for some industries also. Hence, our null hypothesis stands proved & established.

In regression the value of R^2 tells us how much independent variable affects our dependent variable, from the table we can see that it ranges from 72% to 91% in different industries/sectors which is good as it indicates that dependent variable is affected to a great extent by the independent variable. Further, ANOVA tables denote all p-values as significant which show that our model is significant and strong.

5. Conclusion and Recommendations

In nutshell, the research contributes to the theory in a sense that it supports that working capital has significant impact on profitability and this impact varies across industries. It may be positive for some industries and negative for some other industries. Research further establishes that components of working capital also have different relationship with working capital depending upon industry to industry. Some components may be significant over the other in some industries while others may be significant in some other industries and vice versa. In view of positive negative and sometime non-significant relationship between working capital and profitability, it assumes a preliminary question that must be answered first of all before making any investment in working capital to exactly forecast its impact on profitability. First we need to understand the basic relationship and its direction before going for increase or decrease in working capital.

Secondly, we need to understand which component of working capital needs to be given priority for investment for yielding good profitability as different component have different relation with working capital across industries. Lastly understanding the relationship between working capital and profitability and its components, we need to search for optimal amount which needs to be invested in the working capital that can only ensure maximization of profit, which is the foremost one single cause for which all business operates. The research assumes commercial importance as working capital and its component play a major role in profitability and every business entity is interested to know how to invest in working capital a decision which should not only be cost effective but also efficient-enough to keep the profitability attractive.

5.1. Future Implications

It is suggested that research can be expanded by adding industries operating in private and SME sector and further sectors can be included to make this type of study more generalized and also to expand the results to other sectors of the economy.

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