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**PROFITABILITY AND WORKING CAPITAL MANAGEMENT NEXUS:
EVIDENCE FROM FOOD & PERSONAL CARE PRODUCT SECTOR FIRMS
LISTED ON PAKISTAN STOCK EXCHANGE**

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Profitability and Working Capital Management Nexus: Evidence from Food & Personal Care Products Sector Firms Listed on Pakistan Stock Exchange

Abstract

Working capital management (WCM) usually have an essential role to play in a firm's overall performance, especially those of manufacturing sector. The key aim of the current research work is to find the empirical association amid profitability and working capital management of the Food & Personal Care Product sector Pakistani firms. Eight companies are selected randomly as a sample from the firms listed on Pakistan Stock Exchange. Secondary data for six years, that is, 2010 - 2016 is gathered from the financial reports of these companies and evaluated through Pearson correlation coefficient and regression analysis techniques, using STATA software. The results prove that Return on Assets (ROA) is negatively correlated with Average Collection Period (ACP) and positively correlated with Inventory Turnover in Days (ITID), Average Payment Period (APP), Current Ratio (CR) and Sales Growth (SG). All the relationships are significant except ITID and SG ones.

Keywords: Working Capital, Profitability, Food & Personal Care Products, ROA, ACP, APP, ITID, CR, SG, KSE.

JEL Classification Codes: C330, G310 and G320

1. Introduction

Prudent working capital management (WCM) of a firm is considered among the key influential aspects of gauging its financial condition. It summarizes the liquidity status of a firm as it comprises of the balance sheet short term components. Hence, it is the basic source of a firm's internal financial management assessment (Eljelly, 2004). It represents the current assets which help to improve the financial resources that changes during daily operations of a firm from one type into another type of items (Gitman, Juchau, & Flanagan, 2015). WCM efficiency is important for manufacturing sector companies because significant portion of assets is constituted of short term assets (Van Horne & Wachowicz, 2008). WCM directly influences profitability as well as liquidity of corporations (Raheman & Nasr, 2007). It is imperative to give consideration to WCM and to trade-off between profitability and liquidity or else a firm may face financial failure or bankruptcy (Kargar & Blumenthal, 1994; Shah & Khan, 2017).

Furthermore, working capital management is especially significant for sectors such as food and personal care products' because the major part of their assets is in current shape. Therefore, it calls for researcher's attention as previously this sector is inadequately explored. Current assets contain the cash equivalent, inventories, marketable securities, cash receivables, prepaid expenses and other current assets. Deducting current liabilities from current assets gives net working capital. Decisions effecting working capital are collectively referred to as working capital management. Firms maintaining appropriate levels of current assets and current liabilities easily meet their short term obligations and can guarantee

uninterrupted daily operations. On the contrary lax WCM management leads to negative net working capital indicating deficit in working capital.

WCM can improve the performance of a firm. Its objective is to maintain balance in day to day operations in order to maximize profit and minimize liquidity risk. Firm's daily operations may be effected negatively when there is shortage of working capital. Excess of working capital will increase opportunity cost especially in organizations using external financial sources for working capital. Therefore working capital should be kept at the optimal level in a business. It's obvious that the major goal of an organization is to increase its profits. Raheman & Nasr, (2007) stated that delaying payments to suppliers is useful for the firm but sometimes they are costly if the supplier offers discount on timely payments.

Hence, WCM plays a vital role in an organization's performance. This study is conducted to get thorough insight and grasp in depth understanding of the correlation between WCM and profitability of Pakistani Food & Personal Care Product firms.

1.1 Research Question

Does a significant relationship exist between profitability and prudent WCM of Food & Personal Care Product Pakistani firms?

1.2 Research Gap

The study focuses on the Food & Personal Care Product sector companies listed at Pakistan Stock Exchange (PSE) with the aim of finding out the nexus between WCM and profitability. To our knowledge, no such study is performed on this sector prior to our work.

1.3 Significance of the Study

WCM influences the profitability as well as liquidity of a firm. Previous empirical works concluded that WCM globally affects the profitability of companies. However, the Food & Personal Care Products (FPCP) is so far not explored. This study will be the first effort to gauge the WCM possible influence on the profitability of FPCP firms listed on PSE.

1.4 Scope of the Study

For this research, 8 firms out of the total 20 firms listed on PSE are selected as a sample from Food and Personal Care Product sector. The data is collected for 6 years starting from 2010 to 2016. So, the possible number of observations for each variable is 48 (Shah, 2009).

1.5 Limitation of the Study

Due to unavailability of data this study is restrained only to a six years' time period, from 2010 to 2016, consisting of 8 firms from the Food & Personal Care Product sector listed at Pakistan Stock Exchange. Furthermore, in light of the literature only five most suitable variables are selected (Shah & Qayyum, 2015).

1.6 Scheme of the Study

Introduction is followed by review of the literature, synthesising the previous researchers work on this topic. Third part shows the methodology used for the study, hypothesis created, data collection method, selection and explanation of variables, theoretical framework and statistical model used for the analysis of data. Section four is about analysis of data and interpretation of the derived results. The fifth one concludes the research paper.

2. Literature Review

Raheman & Nasr (2007) states that a firm should give adequate attention to working capital management otherwise, they will be unable to maintain the optimum levels of liquidity and profitability, leading to possibly bankruptcy. Smith (1973) proved that numerous organizational failures are due to manager's incompetence to properly allocate and effectively control current assets and current liabilities ratio. Smith (1980) further added that WCM is vital since it shapes a firm's profitability and ultimately its stock value.

Working capital has to be suitably planned and controlled because it deals with two important segments of balance sheet i-e current liabilities and current assets (Raheman, Qayyum & Afza, 2011). In order to avoid bankruptcy an organization needs to keep enough liquid assets to meet its short term liabilities. For assessment of WCM efficiency, cash conversion cycle (CCC) is considered the basic tool (Richards & Laughlin, 1980). Firms maintaining liquidity through excessive short term borrowings, face trade-off between earned profits and interest payable to creditors. Extremely high or very low level of liquidity has its associated costs (Yeager & Seitz, 1989). In contrast to traditional belief, Blinder and Maccini (1991) believes that firms investing more in working capital increase their profitability. For example, maintaining high inventory reduce chances of production process pause, minimize price fluctuation risks, avoid stock out losses and also reduce supply shock associated costs.

Deloof (2003) probed WCM's impact on 1009 Belgian firms' profitability for 1992 to 1996. Results show that profitability is inversely related to CCC, receivable time, inventory turnover and payable period. The author suggested that reducing receivable collection period and inventory turnover will possibly lead to efficient WCM. Afza and Nazir (2007) evaluated conservative and aggressive WCM policies for 205 Karachi Stock Exchange listed companies during 1998-2005. They concluded that aggressive policy of managing WC has negative impact on firm's profits. Ganesan (2007) researched efficiency of WCM for 349 Telecommunication & equipment industry firms for 2001-2007. He shows that effective WCM do not effects financial performance and profitability has a strong negative relation with industry's liquidity.

Chawla, Harkawat and Khairnar (2010) studying WCM, liquidity and profitability relationship of three petrochemical Indian firms for 2004-2009, through linear regression analysis and Pearson correlation, proves that there is significant inverse relationship between company's profitability with CCC and its components, that is, receivable collection period, inventory turnover and creditors settlement period; whilst, a statistically significant negative relationship exists between firm's profitability and liquidity. Gill, Biger and Mathur (2010) considered profitability and WCM association of 88 New York Stock Exchange listed companies for 2005-2007. Using gross profit as dependent variable regression analysis showed CCC's positive and account receivables period's negative relationship with firm's profitability. Nobanee, Abdullatif and AlHajjar (2010) investigated firm's CCC effect on profitability of 34771 small, middle and large sized Japanese firms for the years 1990-2004. The results show a strong inverse relation of account receivables and cash conversion cycle with profitability, except for services sector and consumer good enterprises. They suggested that managers should adopt possible ways of reducing CCC, accounts receivables and extend short term payment time to suppliers.

Ali (2011) studies the connection between WCM and the firm's profitability by analysing 160 textile sector companies from 2000-2005, through fixed effect panel technique. The results reveal that average receivable and average payable time is negatively related to inventory turnover and return on assets; CCC is positively related to ROA. Bieniasz and Gołaś (2011) worked on WCM impact on Poland's and other Eurozone economies food industry profitability from 2005 to 2009. Using CCC, accounts receivables, inventory turnover, current liabilities, turnover cycles and return on assets their findings show that minimizing CCC result in increased rate of profitability for the food industry. It means that profitability is negatively affected by accounts receivables, inventory turnover in days and positively by current liabilities. Saghir, Hashmi, and Hussain (2011) studied the significance of WCM for profitability. Using ANOVA and Pearson correlation for 60 KSE listed textile sector firms from 2001-2006 it is found that profitability is negatively affected by both the account receivables and account payables in days.

Kulkanya (2012) tested WCM impact on profitability of 255 Thailand Stock Exchange listed corporations for 3 years from 2007 to 2009. The findings suggest that decreasing the time span of inventory conversion, receivable collection and CCC, leads to increased profitability. Muhammad, Ullah and Jan (2012) studied profitability and WCM relationship for Pakistani textile firms from 2001-2006. Their findings show that profitability has a strong direct association with cash, inventory and account receivables and exhibits an inverse

relationship with accounts payable. Ngwenya (2012) studied profitability-WCM nexus for 69 Johannesburg Stock Exchange listed firms from 1998-2008. Pearson correlation and regression analysis showed significant positive relationship of accounts payable and significant negative rapport of CCC with profitability. Pouraghajan and Emamgholipourarchi (2012) empirically analysed WCM effect on market evaluation and profitability of Tehran Stock Exchange listed companies from 2006 to 2010. Using return on invested capital and ROA ratios as proxies for profitability, Tobin-Q measuring firms' market value, against current ratio, CCC, total debt to total asset ratio, quick ratio and current liabilities to total assets ratio; a significant positive relation between profitability and effective WCM was found. They suggest that minimizing CCC and total debt to total asset ratio, helps the management to improve a firm's profitability. Sarbapriya (2012) assessed profitability and WCM rapport for 311 Indian manufacturing firms during 1996-1997 and 2009-2010. His analysis of ACP, APP, CCC, ITID, current ratio, debt ratio and company's size reflects strong inverse relation between these measures of WCM and corporate profitability. Usama (2012) extending the work of Raheman and Nasr (2007) analysed 18 KSE listed food sector firms to examine WCM and profitability association for 2006-2010. Regressions analysis showed a significant positive effect of WCM on liquidity and profitability. According to results, firm's size and financial asset to total asset ratio affect profitability positively while ACP influence it negatively. Vural, Sökmen and Çetenak (2012) examined WCM impact on profitability of 75 Istanbul Stock Exchange listed firms for 2002-2009. They observed inverse relation of CCC, debt ratio and receivable collection period with profitability. Regression analysis showed that Tobin-Q has a positive relation with CCC and an inverse one with debt ratio. Firm's size positively influences profitability.

Thuraisingam (2013) probed WCM effects on profitability for 47 firms listed at Colombo stock exchange from 2008-2011. Correlation and regression analysis showed direct significant association between profitability and working capital management. Zubair and Muhammad (2013) empirically studied WCM influence on corporate profitability for 21 KSE listed cement industry companies from 2004 to 2010. They found a negative WCM-firm's profitability connection. Agha (2014) studied the WCM-profitability relationship for Glaxo Smith Kline form 1996 to 2011. The results show that profitability is not affected by current ratio while working capital proxies such as average inventory turnover, average collection and payment period significantly influences it.

Similarly, Iqbal and Zhuquan (2015) empirically studied WCM-profitability link for 85 KSE listed companies from 2008 to 2013. They concluded that ACP, ITID, APP and CCC

have inverse relationship with ROA used as a profitability measure. While firm size and sales growth positively influences ROA meaning that bigger enterprises have higher return on assets as compared to small companies and growing sales usually lead to higher profitability. Muhammad, Jibril, Wambai, Ibrahim and Ahmad (2015) examined the WCM effect on profitability of 7 food product firms listed on Nigerian Stock Exchange for 2008-2012. Using descriptive statistics and regression analysis, they found that current ratio; firm's size and ACP showed positive relationship with profitability while ITID and APP showed negative relationship with profitability of food product firms. They suggested that high liquidity is costly for the firm. The firms should invest more in working capital to generate profit. Shah and Khan (2017) analysed the profitability of 14 Pakistani commercial banks for eight years from 2007-2014. Using pooled regression analysis it was found that equity to assets, debts to assets, deposits to assets, bank size and assets management have a significant influence on the commercial banks profitability in Pakistan.

3. Research Methodology

This section presents the hypothesis, the conceptual framework derived from the past literature, methods and model used for testing and analysing WCM effect on firm's profitability of Food & Personal Care Product firms listed at Pakistan Stock Exchange.

3.1 Hypotheses

Based on the past literature and theoretical knowledge of the subject, following hypothesis are set to answer the research question of the study.

H_0 = No relationship exists between WCM and profitability of Food & Personal Care Product firms in Pakistan.

H_1 = A significant relationship exists between WCM and profitability of Food & Personal Care Product firms in Pakistan.

3.2 Regression model

For the purpose of testing the above hypothesis the following regression model is used:

$$ROA_{it} = \beta_0 + \beta_1 ACP_{it} + \beta_2 APP_{it} + \beta_3 ITID_{it} + \beta_4 CR_{it} + \beta_5 SG_{it} + \varepsilon_{it}$$

Where,

ROA means Return on Assets. ACP is Average Collection Period. ITID is Inventory Turnover in Days. APP means Average Payment Period. CR represents Current Ratio. SG is used for Sales Growth and ε is the error term. All of them are discussed below one by one.

3.3 Sample Size

Data for the variables included in the study is collected from the annual reports of 8 out of 20 Food & Personal Care Product companies listed at PSE for a time period of six years, that is, from 2010 to 2016. Firms' selection is subject to data availability (Shah, 2014).

3.4 Dependent or Criterion Variable

Return on Assets (ROA)

Return on assets measures the profitability of a firm with respect to its assets. It shows how efficiently a firm utilizes its assets. ROA is the variable most commonly used by previous researchers. It is obtained through dividing the net income by total assets of an organization.

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

3.5 Independent or Predictor Variables

3.5.1 Average Collection Period (ACP)

It is important for measurement of working capital efficiency. It is the average time for collecting the short term receivables from debtors. It can be expressed as:

$$\text{ACP} = \frac{\text{Account Receivables}}{\text{Sales}} \times 365$$

3.5.2 Average Payment Period (APP)

This indicates the average time for paying the debts to the creditors. Usually, this time period is more than the previous one. It is expressed as:

$$\text{APP} = \frac{\text{Account Payable}}{\text{Sales}} \times 365$$

3.5.3 Inventory Turnover in Days (ITID)

It shows how much time is required for the inventory to be converted into cash or account receivables. It is very useful for assessment of inventory management. In order to obtain ITID, divide the inventory on cost of sold goods and multiply it by 365.

$$\text{ITID} = \frac{\text{Inventory}}{\text{Cost of Goods Sold}} \times 365$$

3.6 Control Variables

3.6.1 Current Ratio (CR)

Current ratio is selected as control variable because it has an important relationship with profitability of firms as it shows their liquidity position. It indicates the organization's capability to pay its short term liabilities from current assets. It is calculated as given below.

$$\text{CR} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

3.6.2 Sales Growth (SG)

Sales growth shows yearly growth of firm sales. It is obtained by subtracting last year sales from the sales of current year and then dividing it by previous year sales.

$$SG = \frac{\text{Sales of Current Year} - \text{Sales of Previous Year}}{\text{Sales of Previous Year}}$$

3.1 Conceptual Framework

Figure one gives the conceptual framework summarising the relationship between the dependent and all the independent and control variables (Shah & Afridi, 2015).

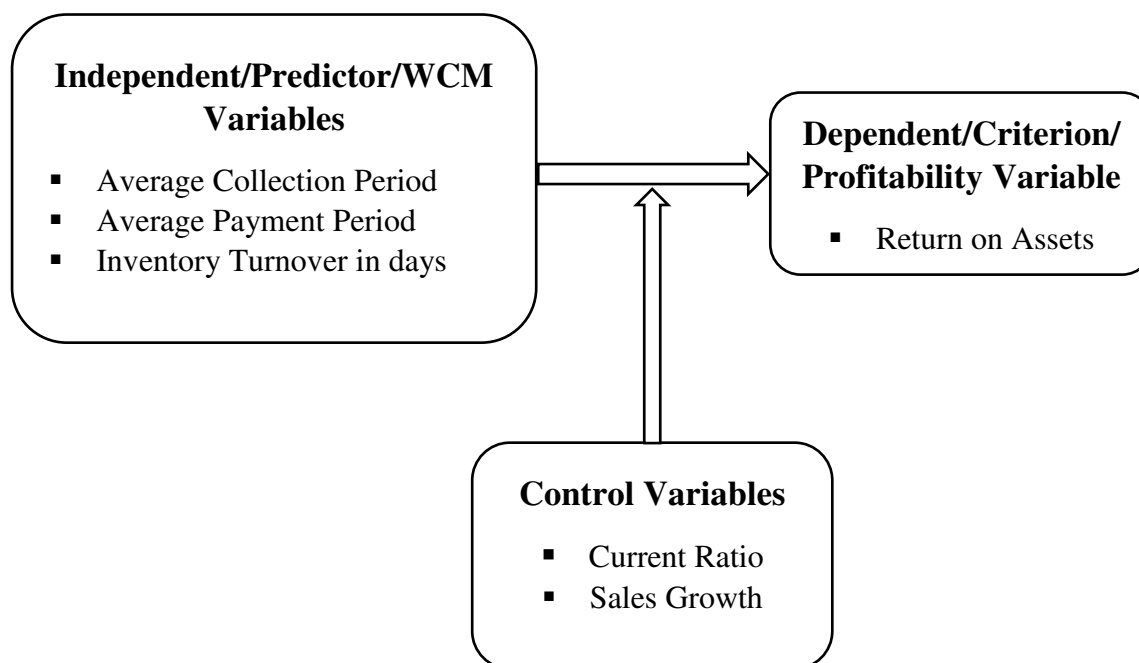


Figure- 1: Conceptual Framework

4. Data Analysis and Results

Initially we discuss the data and its related issues followed by results and analysis.

4.1 Descriptive Statistics

Descriptive statistics provides us with the summary of the basic information about the variables (Shah, 2011a). It shows the mean values, standard deviation, maximum, minimum values of the data and total number of observations (Shah & Samdani, 2015).

Table-1 provides descriptive statistics for the eight Food & Personal Care Products' firms included in the sample for the period of six years from 2010 to 2016. It is visible from the table that receivables, on average, take 14.38 days to be collected with the SD of 13.35 days. The lowest value of ACP is 0.40 days while the maximum value is 57.77 days which means that the quickest payer pays in less than a day whereas from the slowest it can take up to 58 days to collect receivables. The mean value of APP is 61.85 days with SD of 43.42 days. Industry's lowest value for paying short term debts is 15.33 days while it took 213 days on maximum to pay short term debt to suppliers. Normally, the longer a firm waits to pay short term bills, the higher will be profitability of firm. Moreover, industry took 81.42 days on

average to convert inventory into sales with standard deviation of 42.59 days. Minimum value for inventory turnover is 12 days and the maximum is 168.67 days.

Table 1 Descriptive Statistics

Variables	Mean	Std. Dev	Minimum	Maximum	No. of Observations
ROA	10.7000	10.06728	-10.01	29.84	48
ACP	14.3846	13.35611	0.40	57.77	48
APP	61.8590	43.42894	15.33	213	48
ITID	81.4254	42.59195	12	168.67	48
CR	1.4479	0.61032	0.67	3.04	48
SG	16.3238	13.45891	-25.03	44.64	48

The liquidity indicator i-e current ratio (CR) has a mean of 1.44 and SD is 0.61. Although, higher CR is good for a firm's liquidity but it also indicates that firm has surplus current assets which may be costly if remains unused. Furthermore, sales growth (SG) of the industry on average is 16.32% with the standard deviation of 13.45%. The industry is growing rapidly.

4.2 Correlation Analysis

Correlation analysis, specifically Pearson correlation, shows the interconnectivity amid the variables (Shah, 2015). Therefore, it is used for the purpose of testing the correlation between working capital and profitability (Shah, 2011c). Table 2 shows the correlation between all the variables included in the analysis. We found that average collection period (ACP) with a value of -0.105 has negative relation with return on assets (ROA). Firms with shorter ACP are likely to be more profitable. The average payment period (APP) shows significant direct relation with return on assets and the correlation coefficient is 0.240. It reveals that firms are more profitable with longer account payable period.

Table 2: Pearson Correlations Matrix

Variables	ROA	ACP	APP	ITID	CR	SG
ROA	1.000					
ACP	-0.105	1.000				
APP	0.240	0.317	1.000			
ITID	0.097	0.442	-0.017	1.000		
CR	0.192	0.420	-0.037	0.346	1.000	
SG	0.192	-0.295	-0.208	0.046	0.010	1.000

ITID has a direct relationship with ROA having the correlation coefficient of 0.097. This positive relation between ITID and ROA can be explained by virtue of the fact that firms holding excess level of inventory can overcome the cost of supplying goods. They don't face scarcity of merchandises, are protected from adverse future price fluctuations and the firms'

production process runs smoothly without interruptions (Blinder & Maccini, 1991). Current ratio (CR) shows a direct relationship with ROA meaning that an increase in CR increases profitability. Its correlation coefficient is 0.192.

Sales growth (SG), and ROA also exhibits a positive rapport with a correlation coefficient of 0.192. This means an increase in SG enhances the profitability of firms and vice versa. The correlations between the variables educate us about the extent of the relationship between them (Shah & Ali, 2016). However, excess linearity between the independent variables can lead to the multicollinearity problem during the regression analysis (Shah, 2011b). Therefore, to check for its existence we have to carry our certain diagnostic tests.

4.3 Variance Inflation Factor

Variance Inflation Factor (VIF) is used to measure the degree of collinearity between independent variables in regression analysis (Shah, 2017d). Correlation greater than 90% between predictors can lead to multicollinearity issue (Shah, 2011f). Multicollinearity can be a problem as it may cause high variance of regression coefficients which results in difficulty to interpret it and the findings may not reflect the true picture (Shah, 2016a). Table 3 shows the multicollinearity existing between the variables selected.

Table 3: Variance Inflation Factor		
Variable	VIF	1/VIF
ACP	1.82	0.548898
ITID	1.36	0.733720
CR	1.32	0.760279
APP	1.19	0.839433
SG	1.17	0.857340
Mean VIF		1.37

According to the above table, VIF of all variables are below the bench mark minimal multicollinearity of 5% or above (Shah & Khan, 2016). Therefore it is expected that the regression analysis is reflecting un biased true results.

4.4 Regression analysis

To further examine the causality relationship between WCM and profitability, multiple linear regression analysis is done for all the variables used in the study. Table 4 shows the regression analysis carried out by using the following regression model:

$$ROA_{it} = \beta_0 + \beta_1 ACP_{it} + \beta_2 APP_{it} + \beta_3 ITID_{it} + \beta_4 CR_{it} + \beta_5 SG_{it} + \varepsilon_{it}$$

The results in table four supports the findings of the Pearson Correlation Coefficients discussed earlier. The strong, negatively significant, coefficient of average collection period manifests that; shorter the collection time, higher will be the profitability of the firm.

Table 4: Regression Results

Number of Observations = 48				R-squared	= 0.2452	
F (5, 42) = 2.73				Adj R-squared	= 0.1553	
Probability > F = 0.0319				Root MSE	= 9.2526	
ROA	Coefficient	Std. Error	t	P> t	[95% Conf. Interval]	
(Constant)	-3.404	4.829	-0.705	0.485	-0.5734936	-0.0229906
ACP	-0.298	0.136	-2.187	0.034	0.0268818	0.163785
APP	0.095	0.034	2.811	0.007	-0.0362155	0.1130958
ITID	0.038	0.037	1.039	0.305	0.0837499	10.32003
CR	5.202	2.536	2.051	0.047	-0.106168	0.3309503
SG	0.112	0.108	1.038	0.305	-13.1485	6.341123

On the contrary Average Payable Period (APP) exhibit a positive significant coefficient indicating that firms are more profitable if they delay the payment to their suppliers and vice versa. Liquidity measured through current ratio (CR), has a significant positive coefficient, clearly showing that increase in CR will affect the ROA positively. In other words firms in Food & Personal Care Product may increase the profitability if they hold more current assets with respect to current liabilities.

Inventory Turnover in Days (ITID) and Sales Growth (SG), though, has positive coefficients but both fail to reach conventional significant levels. Therefore, their effect is immaterial. The overall explanatory power of the model as indicated by R squared is 24.52%, implying that the model or all the explanatory variables collectively explains a quarter of the variation in firms' profitability.

5. Conclusion and Recommendations

Working capital is an important factor for an organization because it enhances organisation performance in terms of profitability. Gross working capital is total short term assets of an organisation, while net-working capital is excluding the short term assets from short term liabilities. The difference between current liabilities and current assets also shows a firm's liquidity. The basic motive of the research was to explore the WCM and profitability Nexus in the Pakistani Food & Personal Care Product companies. Results of 8 firms for 6 years show that there is significant relationship between WCM and profitability.

Average Collection Period has significant negative relation with Return on Assets. In other words, firms can increase profitability by minimizing collection period. The faster they collect cash, higher will be profitability. On the other hand, Average Payable Period and Current Ratio has significant positive relation with profitability. This indicates that delaying

payment to suppliers and creditors improves the performance of the firm with the fact that firm has the cash for longer period and can utilize it for their needs. Furthermore, it is obvious that food sector need high current assets because it is the major part of their business, so the positivity in relation of CR with profitability is consistent with the fact that firms are more secure with the high liquidity ratio and protected from possible bankruptcy.

Contrary to earlier research and despite theoretical justification Inventory Turnover in Days and Sales Growth has insignificant positive relation with Return on Assets. This is alarming because stock of inventory can help continuity of production and smooth running of the business without any interruption. Firms are protected from the future rise and fall of prices. Similarly following the phenomena of economy of scale, sales growth should have exerted a strong significant positive influence. However, this is not the case.

The last two findings require the attention of contemporary researches working on WCM and firm's profitability. Based on data availability a longer time span and larger number of firms can lead to new insights on the subject and clears some muddy waters. Similarly, micro firm level data on aspects currently not studied will also produce innovative conclusions and set nouvelle dimensions to the phenomenon examined.

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