Relationship between Working Capital Management and Profitability of the Real Estate Sector in India: Evidence from Panel Data Analysis

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ABSTRACT

Woking capital represents the amount of capital used by the businesses in its day to day activities to meet the short term obligation. Administering it is considered as one of the most crucial element of business management especially in a capital intensive sector. This attracts the attention towards exploring the working capital of real estate sector as most of the funds of these companies are invested in current assets and they take more time to get converted into cash. This paper examines the relationship between working capital management and profitability of 10 real estate companies representing the Nifty Realty Index (NSE) for the period 2007-2018. Earnings before interest and tax is considered as dependent variable for measuring the profitability and current ratio, quick ratio, debtor turnover ratio, inventory turnover ratio, creditor turnover ratio, working capital turnover ratio, cash sales to total sales, current asset to total assets, current liability to total asset, size of company are considered as independent variables for assessing the working capital management.

In order to establish the statistical relationship the study employed correlation and balanced panel data technique, the results were estimated using fixed effect and random effect models. Estimates of random effect model were considered for the analysis based on hausman test statistics. The results shows that current ratio, quick ratio, creditor turnover ratio, working capital turnover ratio, cash sales to total sales, current liability to total asset, and size of company are found to have significant impact on profitability of the selected companies. Creditor turnover ratio and cash to total sales are found to have significant positive impact of profitability. The study also revealed that the profitability of the firm decreases with increase in liquid assets. Hence, the results for the study recommends that companies should manage their short term finances efficiently to make sure a sound bottom line for the real estate companies.

JEL Classification: C23, R30, L25

Keywords : Working Capital Management, Profitability, Panel Data, National Stock Exchange, Real Estate Sector

INTRODUCTION

Globally, the real estate sector is one of the most recognised sectors. This sector is primarily divided in four sub sectors namely, housing, retail, hospitality, and commercial. The growing demand for residential and office space in urban and semi-urban locations contributes to the growth of this sector. In terms of direct, indirect

and induced effects in all sectors of the economy, the construction industry ranks third among the 14 major sectors (Chitnis, 2018) and it is one of the capital intensive sector.

Government of India has been taking lot of initiative to provided great support to the real estate sector in recent years. In the period of 2006-17, investments in retail projects in Tier 1 & 2 cities reached $6.19 bn. Since 2014, residential sector have attracted investment worth Rs. 59,000 crore, approximately 47% of the total invested money in real estate. During 2015, Union Cabinet approved 100 Smart City Projects in India and Government of India also approved 100 per cent FDI in real estate projects within the Special Economic Zone (SEZ). In 2017, private equity and debt investments in real estate increased by 12 per cent year-on-year across 79 transactions. The sector is found to be more organized post GST, making warehousing and logistics destinations of the country attractive for foreign investors (CREDAI-JLL, 2018). Pradhan Mantri Awas Yojana (PMAY), an initiative by Indian government had sanctioned 6,028,608 houses by September 2018. The scheme is expected to push affordable housing and construction in the country and give a boost to the real estate sector. During Jan-Sep 2018, office absorption in top Indian cities is observed to be increased to 26 per cent year-on-year to 36.4 million square feet (Bhasin, 2018). The warehousing space is expected to reach 247 million square feet in 2020 and see investments of Rs 50,000 crore (US$ 7.76 billion). With Delhi-NCR contributing the most to this demand, grade-A office space absorption is expected to cross 700 million square feet by 2022. By 2025, government of India's "Housing for All" initiative is expected to bring US$ 1.3 trillion investments in the housing sector (IBEF, 2018)

Every business requires money and investment; also it is a gradual process which keeps on increasing over a span of time. The value of these investment comprised of long term and short term assets which are finance using short and long term sources of funds. A comprehensive financial planning is required to make proper use of assets. To meet the day to day financial requirements and obligation companies need to focus on short term financial planning, considering this it was felt important to study the role of working capital in the companies.

Working capital management plays an important role in maintaining the financial health of the firm. Working capital management helps to maintain an appropriation proportion of current assets and current liabilities in the firm. . A good working capital ratio is considered anything between 1.2 and 2.0. A ratio of less than 1.0 indicates negative working capital, with potential liquidity problems, while a ratio above 2.0 might indicate that a company is not using its excess assets effectively to generate maximum possible revenue.

Supervision of Working capital is particularly vital for capital concentrated company, as a significant part of their working capital is parked in their rolling task, which may take time to convert into cash, as result companies may confront a dearth of swift money. It is very crucial for them to maintain an appropriate amount of working capital in business in order to meet up their regular obligations. Against this background, this study aims examining the relationship between working capital management and profitability of 10 real estate companies.

LITERATURE REVIEW

Working Capital Management is among the one of the most crucial financial decisions for any company. It primarily deals with procurement of short term finances from various sources and usage of it in an effective

manner in order to minimize the cost and enhance the liquidity. Post financial crisis many companies have faced lot anguish, due to which WCM has gained significant attraction from the researchers. In the literature, there are many studies focusing on analyzing the relationship between WCM and firm performance. Below presented are the researches which have been found to be extremely helpful in our research:

The research by Deloof (2003) highlight that using working capital is controlled in an efficient way certainly impacts the profitability of Belgian firms, explaining that by ensuring the certain level of working capital enhances the profitability. This finding of Deloof (2003)are similar to the study accrued out by Lazaridis and Tryfonidis (2006), who focused on analyzing the relationship between the working capital and profitability of firms listed in Athens Stock Exchange. They have used cash conversion cycle, accounts receivables and accounts payables days and inventory days as proxy for measuring working capital and then were regressed with gross operating profit.

A similar study by Azhagaiah Ramachandran and Muralidharan Janakiraman (2006), analysed the relationship between working capital management efficiency and earnings before interest and taxes of 30 companies listed on Bombay stock exchange during 1997-1998 to 2005-2006. For ascertaining the relationship between cash conversion cycle, account payable days, account receivable days, inventory days and fixed financial asset ratio, financial debt ratio and size were regressed with EBIT. The finding revealed that adequate amount of working capital is essential to have a direct impact on EBIT and liquidity.

Another study by Kesseven Padachi (2006) examined the trends in working capital management and its impact on 58 small manufacturing firm's performance using return on total assets as dependent variable and inventories days, accounts receivables days, accounts payable days and cash conversion cycle as independent variable. The findings proved that high investment in inventories and receivables is associated with lower profitability. The study carried out by Zubair Arshad and Muhammad Yasir Gondal (2013) to examined the impact of working capital management on profitability of Pakistani cement sector with 21 listed companies of Karachi stock exchange during 2004-2010 highlighted that profitability of the undertaking may be increased by shortening of inventory periods.

Zbigniew Gołaś, Dorota Czerwińska-Kayzer and Anna Bieniasz (2011) in their study examined the effect of working capital management on the manufacturing companies in Poland during two sub periods: 2001-2008. The results revealed that having enough working capital for an increasingly long period have a positive impact on working capital management.

Pankaj K. Agarwal and Sunil Kumar Verma (2013) and Nobanee, H. E., Ellili, N. O. (2015) both expressed that large firms are efficient in managing its working capital which in turn reduces the need of costly external financing. An increase in operating cycle affects is negatively while profitability increases with lengthening the creditor's payment period. Another study by Steven Lifland (2011) revealed the same results by examining the impact of working capital upon the Enterprise Value Option of 222 firm during 2004-2009.The study concludes that there was a significant negative relationship between the net working capital cycle and the enterprise value for both long-cap and mid-cap firms.

Anupam Mehta (2014) emphasized on investigating the Working Capital Management and Profitability Relationship in real estate and construction companies listed on Abu Dhabi stock exchange during 2007-2010 by employing correlation and regression. The study concludes that there is a significant negative relationship between the profitability and the firm's cash conversion cycle. The findings suggests that UAE's real estate and construction companies can significantly increase their profitability by giving due focus on management of the working capital and shortening the length of the cash conversion cycle by effectively managing the working capital components especially the payables and Inventories. John Kwaku Menash Mawutor (2014) analysed the relationship between Cash Conversion Cycle, Average Collection Period, Average Payment Period, Inventory Turnover Days and the profitability of listed trading companies on 4 companies listed on the Ghana Stock Exchange for a period of 2006 and 2010. The results presented that there is a negative correlation between the average collection period and return on assets, while it is positively associated with growth. The study concludes a negative relationship between the working capital management and its profitability.

Research work done by Jeena Ann John (2015), Sukhmani Bhatia and Navdeep Barwal (2015), Jyoti Mahato and Uday Kumar Jagannathan (2015), Sukhmani Bhatia and Navdeep Barwal (2015) and Sumathi A and Narasimhaiah T (2016) emphasized on establishing the relationship between working capital management and profitability. The results highlighted that the companies with high percentage of current assets and the inventory have highly negative impact on the profitability of the firms.

Basman Al Dalayeen (2017) emphasized on analysing the relationship between working capital management and profitability of real estate industry in Jordan during 2000-2015 using correlation coefficient and regression analysis. The sample consist of three companies namely Jordan Decapolis Properties, Al-Tajamouat for Touristic Projects Co Plc, Real Estate Development of Jordan. Debtors turnover ratio in case of Jordan Decapolis Properties and current ratio in case of Al-Tajamouat for Touristic Projects Co Plc is found to be positively correlated with profitability and having a significant impact. However, it is also found that rate of inventory turnover is very low in all the companies. Navena Nesa Kumari and M. Victor Louis Anthuvan (2017) studied the impact of the working capital management on profitability of 10 automobile companies listed on S&P CNX 500 during 2006-2012. The results of regression analysis highlighted that net operating profit of the firms is mainly affected due to the inventory turnover period. Overall the results reflected that the automobile companies should concentrate in managing and reducing the inventory turnover days in order to maximize profitability and to survive the competitive market.

Jakpar S, Tinggi M, Siang TK, Johari A, Myint KT and Sadique MS (2017) analysed the effect of working capital management on firm's profitability based on a sample of 164 manufacturing firms listed on the Main Board of Bursa Malaysia, during 2007 to 2011 using correlation and regression analyses. The empirical evidence found that there is existence of significant positive relationship between independent variables, the average collection period, inventory conversion period and firm's size and its dependent variable, which is firm's profitability. Simranjeet Kaur and Harwinder Kaur (2017) examined the relationship between working capital management components and profitability of 40 steel manufacturing companies in India during 2004-2016 by employing correlation and regression analysis. The results from regression analysis reflected working capital variables have significant impact on net profit and return on asset. The study also reveals that steel manufacturing companies should reduce their Cash Conversion Cycle keeping working capital components at an optimum level, since

cash conversion has significant negative relationship with net profit by shortening the receivable collection period and expediting the process of converting the inventory into sale.

Joseph Kwadwo Tuffour and John Adjei Boateng (2017) in their study analysed the effect of working capital management on performance of six manufacturing firms in Ghana listed on the Ghana stock exchange during 2008-2014. The study reveals that current ratio, financial leverage, firm size, growth in sales, financial asset to total assets have negative impact on profitability. Both inventory conversion and cash conversion cycle have a significant negative effect on performance.

Shah B and Arif M. (2018) analysed the association between working capital firm value of 49 registered firm on Karachi Stock Exchange during 2004-2016 using regression Analysis. The results from analysis observed that constrained firms pay higher dividends on average and investment in working capital is more sensitive. The results also highlight the importance of efficient working capital in the evaluation of the firm. The study concludes that FC forms are found to have true association between working capital management and firm value where it is insignificant in non-constraint firms.

Though a number of studies have been carried out in this area but in relation to working capital few researches are available on the real estate industry in Indian context. Majorly ROA have been used as the dependent variable, whereas the current study used EBIT as a dependent variable. EBIT have been chosen as the proxy of profitability as it highlights the profit earned by the business from its core operation line. Without considering the presence of heterogeneity among the companies, most of the reviewed studies have used regression analysis to assess the relationship between working capital and profitability. It is indispensable to select a suitable methodology for the pragmatic estimation. Keeping this in mind, the present study employs panel data regression to estimate the statistical relationship between working capital component and EBIT, which is more apt while having a sample of large number of companies which are heterogeneous in nature.

Data and Methodology

The main objective of current study is to examine the relationship between working capital management and profitability of 10 real estate companies for the period 2007-2018. The period is selected mainly because real estate sector in India has been highly volatile during the study. The selected companies represent the Nifty Realty Index (NSE), which are resulting in great margins of real estate sector of the economy. Out of 43 real estate companied listed on NSE, ten companies representing the Nifty Realty Index are selected as sample, as they represents 75.64% of total real estate sector listed companies as on 20th Jan 2019[1], making the sample more comprehensive. Secondary data have been used to carry out the analysis and the relevant data has been sourced from CMIE Prowess, NSE website, audited financial reports, research reports, journals etc.

Methodology - Panel Data

Existence of heterogeneity is quite possible while studying large number of companies over a span of time. Panel data regression, which considers both cross sectional and time series data, is more suitable to deal with such heterogeneity. Keeping this in mind, the current study employs panel data model to estimate the

[1] Based on the author's calculation using market capitalization of real estate companies listed on NSE.

relationship between working capital components and profitability of companies. Panel data set represents of both time series and cross section data.

Panel data equation can be written as:

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} ..... + \beta_n X_{nit} + \upsilon_{it}$$ ---------- Eq. 1

Where *'i'* stands for cross-sectional unit and *'t'* for the t[th] time period and it is assumed that the *X's* are non-stochastic and the error term follows, $E(\upsilon_{it}) \approx N(0, \sigma^2)$. The above model is known as the fixed effect model (FEM). The term 'fixed effects' indicate that, intercept may differ across banks, each bank's intercept does not vary over time; that is, it is time invariant.

Fixed effects model can be inconclusive if there are several cross-sectional units. If the intercept of different cross-sectional unit represents a lack of knowledge about the original model, it can be observed through disturbance term υ_{it}. This approach is called error components model (ECM) or random effect model (REM).

Instead of treating β_{1i} as fixed, it is assumed that it is a random variable with a mean value of β_1.

Intercept value for a cross section unit is represented as, $\beta_{1i} = \beta_1 + \varepsilon_i$, where ε_i is the random error term.

Therefore, the random effect model is represented as,

$$Y_{it} = \beta_1 + \beta_2 X_{2it} ..... + \beta_n X_{nit} + \varepsilon_i + \upsilon_{it}$$ ---------- Eq. 2

$$Y_{it} = \beta_1 + \beta_2 X_{2it} ..... + \beta_n X_{nit} + \omega_{it}$$ ---------- Eq. 3

where $\omega_{it} = \varepsilon_i + \upsilon_{it}$

The Equation 3 assumes that the individual error values are not correlated with each other and there is no auto-correlation. Hausman test statistics used to choose between fixed and random effect model. The null hypothesis under the Hausman test statistics is that there is no significant difference between random effect and fixed effect estimator. Fixed effect model is considered to be more appropriate over the random effect model, if the null hypothesis is rejected.

EBIT is considered as a proxy to measure profitability and the following model was estimated accordingly

$$EBIT_{it} = \beta_1 + \beta_2 CR_{it} + \beta_3 QR_{it} + \beta_4 ITR_{it} + \beta_5 DTR_{it} + \beta_6 CTR_{it} + \beta_7 WCTR_{it} + \beta_8 CSR_{it} + \beta_9 CATA_{it} + \beta_{10} CLTA_{it} + \beta_{11} Size_{it} + \upsilon_{it}$$ ------ Eq. 4

Where,

- Current ratio (CR) is calculated as current assets to current liability. A company with high ratio of current assets indicate that company is moderately liquid and able to payout its liabilities on time.
- Quick ratio (QR) is a ratio of liquid assets to current liabilities. It shows the company's liquid position to pay off its short term liabilities in a financial year.
- Inventory turnover ratio (ITR) is the ratio of cost of sales to average inventory of the year. A company with high ratio indicates that how efficiently inventory is used to generate sales during the period.
- Debtors turnover ratio (DTR) is the ratio of net credit sales to average debtors. It shows how well a company generates its sales by offering its finished goods on credit.
- Creditor turnover ratio (CTR) is the proportion of net credit purchases to average creditors. A higher payable turnover ratio is favourable to the company which purchases generally on credit.
- Working capital turnover ratio(WCTR) is the ratio of net sales to working capital. A company with good working capital turnover depicts company is efficiently using its working capital to generate enough sales.

- Cash to sales ratio (CSR) is the ratio of cash to sales. The ratio defines the cash generated from the sales made by the company. Enough of the cash shows the liquidity and effectiveness of the company.
- Current assets to total assets ratio (CATA) is the proportion of current assets to total assets. It indicates the level of current assets involved in the total assets of the company.
- Current liability to total asset (CLTA) is the proportion of current liabilities to total assets. The higher the ratio, the more the company employs its current liabilities to fund its total assets.
- Size is calculated by taking the natural log of total assets which is used as a measure of profitability.

EMPIRICAL RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics helps to define the basic structure of data. Table 1 represents the descriptive statistics for all companies considered in this study. Among all selected the predicting variables, the minimum value of current ratio and size is found to be positive, whereas maximum value of only current asset to total asset is negative. The mean value of quick ratio is 4.22 indicating that companies have high amount of liquid assets to pay off their short term debts. The average inventory turnover ratio of 0.203 indicates a significant scope of improvement. The average of ability to generate cash from the sales is negative depicting that selected companies are not able to make enough sales in cash.

Table 1: Descriptive Statistics

Variables	Min	Max	Mean	S.D.
EBIT	0	7.62	4.040	1.037
CR	.33	4.74	.784	.777
QR	-2.04	4.74	4.222	1.038
ITR	-3.22	6.61	.203	1.623
DTR	-1.26	4.47	1.482	1.432
CTR	-1.04	5.24	1.221	1.184
WCTR	-6.54	1.87	-1.368	1.758
CSR	-4.73	3.79	-1.759	1.614
CATA	-2.87	-.03	-.662	.538
CLTA	-5.38	2.53	-1.408	.964
Size	2.56	9.93	7.714	1.553

Source: Author's own calculation

Autocorrelation Test

Following the submission made by Wooldridge (2002), there is possibility of problem of autocorrelation in time series data. Autocorrelation represents the degree of similarity between a given time series data and a lagged form of same data over a span of time. The error of autocorrelation occurs mainly in the time series model where the influence of the error term from one period to other period is plausible. The current study uses the model which is based on using the residual from the regression in first differences to identify the existence of autocorrelation. Under this test the null hypothesis is that there is no autocorrelation.

Table 2: Wooldridge Test Results

Dependent Variable: EBIT

Wooldridge Test Score	2.086 (0.1825)

Source: Author's own Calculation using Stata 12

The results from table 2 represents that the p-value is 0.1825 explaining that there is no autocorrelation.

Heteroskedasticity Test

Heteroskedasticity refers to a situation when the variance of the residual term or error term is not constant. Thus, *heteroscedasticity* is the absence of homoscedasticity. The current study uses likelihood ratio test for accessing the presence of *heteroscedasticity. A significant chi-square statistics exhibits the presence of heteroscedasticity otherwise the model exhibits the assumption of* homoscedasticity.

Table 3: LR Test Results

Dependent Variable: EBIT	
LR Chi2	118.91 (0.4850)

Source: Author's own Calculation using Stata 12

The results of LR test from table 3 exhibits that the p-value is 0.4850 which is greater than 0.05 expressing that data set is free from *heteroscedasticity.*

Panel Regression Results

The estimated results of panel regression results are reported in table 4. The result from hausman test statistic suggests that fixed effect model is more appropriate for estimating the relation between components of working capital and profitability of selected companies.

The predicting variables in the model are able to capture the variance to the extent of 67.94% in the dependent variable. The result reveals that quick ratio, creditor turnover ratio, and cash to sales ratio are found to have significant positive impact whereas, current ratio, working capital turnover ratio, current liability to total asset and size are found to have significant negative impact on profitability of the firms. A siginificant positive relation between quick ratio and profitability indicate that companies are effectively using their highly liquid assets and a positive association between creditor turnover ratio and profitability indicates that the companies are paying their suppliers at a speedy pace; hence it is strengthening the financial position. Cash to sales ratio indicates the proficiencies of firm's credit and collection policies, the results from the analysis expressed that the selected real estate companies have sufficient cash as buffer for unexpected delays in cash collection.

Table 4: Panel Regression Results

Independent Variables	Fixed	Random
Constant	4.905	4.816
CR	-.804 (2.5)**	-0.998 (3.75)*
QR	.296 (1.33)	0.433 (2.63)**
ITR	.062	0.028

	(1.41)	(0.74)
DTR	.805 (0.90)	0.038 (0.84)
CTR	-.012 (0.16)	0.112 (2.11)**
WCTR	-.104 (1.42)	-0.203 (3.5)*
CSR	.180 (3.51)*	0.199 (4.17)*
CATA	-.044 (0.17)	-0.05 (0.25)
CLTA	-.475 (2.27)**	-0.535 (3.07)*
Size	-.130 (1.18)	-0.141 (3.01)**
R^2	.6228	.6794
No. of Obs.	120	120
No. of Companies	10	10
Time Periods	12	12
Hausman Test Statistics	**6.47 (0.7741)**	

Note: (i) Figures in parenthesis indicates t-statistics for fixed effect model and z-statistics for random effect model.

(ii) *, **, ***, indicates 99%, 95%, 90% significance level respectively

(iii) Figures in parenthesis corresponding to Hausman test statistics is prob>chi^2.

Current ratio is a relationship between current assets and current liability. It expresses the company's ability to meet its short term obligations. A significant negative relation between current ratio and profitability indicate that the company is not able to make productive use of their funds, hence their liquid funds are not put to best use which is adversely impacting the profitability. Working capital turnover ratio indicated the effectiveness of a company in employing its working capital, the results indicates that the companies are not able to use their short term funs efficiently which is in turn negatively impacting the profitability. CLTA maintain significant negative relation with profitability indicating that companies have used short term sources of funds to finance their assets. The regression result reflects that bigger companies are not necessarily having good working capital management. All other variable are found to be insignificant with profitability.

CONCLUSION AND SUGGESTION

Real estate sector is very impulsive and booming sector. Working capital management occupies an essential role in the day to day operations of this sector. Likewise, it becomes necessary for a company to oversee its working capital at a desired level where it can incur certain margins. Abundance of working capital may lead to

too much liquidity and vice-versa. The results concluded that there is significant relationship between components of working capital management and earnings before interest and taxes for the company. Collectively, the variance of 67% in EBIT is explained by the selected variables. Quick ratio, creditor turnover ratio, and cash to sales ratio are found to have significant positive association with EBIT. The study proposes that, in order to augment the working capital the companies should emphasis on enhancing the level of current assets.

Apart from the particular research area, there are many areas which need to be studied thoroughly for making out the best use of working capital. The sources of working capital can be considered as one of the research areas as internal working of the company which may or may not affect the profitability of the company. This study does not contain the non-listed or small companies prevailing in the real estate sector which can be surveyed in order to show the effectiveness of small companies on the entire sector of the economy.

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