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| Measuring the Relationship between Working Capital Management and the Profitability of the Pharmaceuticals Industry in Bangladesh |
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**Project Report**

**On**

**Measuring the Relationship between Working Capital Management and the Profitability of the Pharmaceuticals Industry in Bangladesh**

**Supervised By:**

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**DATE OF SUBMISSION: June 20, 2021**

**Letter of Transmittal**

June 20, 2021

Muhammad Enamul Haque

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Subject: Submission of Project report on “Measuring the Relationship between Working Capital Management and the Profitability of the Pharmaceuticals Industry in Bangladesh

Dear Sir,

This is my pleasure to present my project report “Measuring the Relationship between Working Capital Management and the Profitability of the Pharmaceuticals Industry in Bangladesh

 During the preparation of this report, I find it is beneficial and knowledgeable for me and which will definitely enhance to build my career in the near future. I want to thank you for your earnest support and forgiving me for any grammatical mistakes.

Sincerely

…………………………………

Masrul Akhand

111 162 102

Acknowledgement

First of all, I am immensely grateful to my respective course teacher *Mr. Muhammad Enamul Haque*, for his guidance, valuable & thoughtful comments, and suggestions. I am very grateful to him for giving me inspirations and encouragement throughout my study. His untiring patience & attention to details enabled me to complete this dissertation and get it into its present form. He sincerely helped me and has given necessary suggestions in preparing my report. Without his supervision and encouragement this report would not be possible for taking such an attempt to enhance my practical knowledge about the real situation.

However, all its limitations are considered.

Secondly, I would like to convey my thanks to the people who provided me with valuable information that was very much needed for the completion of this report.

Finally, my sincere gratitude goes to my friends and classmates who helped me whenever I needed.

Despite my sincere efforts, there may appear some shortfalls in the report. I apologize for any such unintentional errors.

**Abstract**

This study has been initiated as an effort to understand and show the working capital management practices of the Pharmaceutical Industry in Bangladesh. The objective of the study is to measure the relationship between working capital management and the profitability of the Pharmaceuticals industry in Bangladesh. I applied a panel regression model to identify the effects of working capital variables on firm profitability. Profitability is measured by the return on assets(ROA) and the return on equity(ROE). Results indicate that, in the case of both fixed effects and random effects panel regression models, only payables turnover ratio(PTR)and the current ratio are statistically significant whether we use ROA or ROE as profitability indicators. The conclusion can be made that none of the working capital components can influence the earnings of the Pharmaceuticals industry in Bangladesh except the payable turnover ratio and current ratio.

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# **Chapter 1: Introduction**

## **1.1 BACKGROUND OF THE STUDY**

The report was produced to investigate the applications and employments of Working Capital Management in the Pharmaceutical business and their comparability. This report incorporates effects and viability of Working Capital Management and their monetary uses applied by the Pharmaceutical organizations.

## **1.2 ORIGIN OF THE STUDY**

This report is being submitted to the School of Business and Economics, United International University as an incomplete necessity for the satisfaction of Bachelors of Business Administration Degree. This report was delivered as the obligation for a mandatory course for fulfilment of BBA under the oversight of Assistant Professor (Finance) Muhammad Enamul Haque. The subject of the report was found in conversation with the project supervisor with proper direction on content in its methodology, organization, and substance.

## **1.3 OBJECTIVE OF THE STUDY**

The goal of the report is to measure the relationship between working capital management and profitability of the Pharmaceutical industry in Bangladesh. For this, I have determined and contrasted their monetary exhibitions related with Working Capital Management by utilizing some regular investigation methods applied by the industry.

## **1.4 METHODOLOGY OF THE STUDY**

Research methodologies comprises of various techniques to ultimately analyze information about a specific topic. Information gathered in the process might be from one or the other essential or auxiliary sources, and the final analysis might be qualitative or quantitative.

For this report, I have gathered the information from secondary sources which were utilized to deliver a qualitative analysis on this report topic. This report is set up to give a working capital management outline of the Pharmaceutical organizations and how they are utilizing this procedure in their pertinent organizations.

The variables used in preparation of the report are:

* Inventory Turnover
* Cash Conversion Cycle
* Average Collection Period
* Average Payment Period
* ROA
* ROE
* Cash Ratio
* Current Ratio
* Quick Ratio
* ROE Model
* ROA Model

## **1.5 LIMITATIONS OF THE STUDY**

Despite the fact that the specific analysis is extensive in nature, hard work and exertion were given to make the study advantageous and significant and still, at the end of the day there exists some constraint.

All information were research based and each data of the pharmaceutical organizations were gathered from the web.

# **Chapter 2: Background**

In our daily management of the firm, one of the most concentrated areas is managing the working capital. In all our current records of the firm, the working capital management covers all the anecdotal space. The connection of an organization's temporary resources and liabilities is included in the management of working capital. The core objective of Working capital management is to guarantee that a firm can proceed with its activities and that it has adequate capacity to fulfil both developing transient obligations and forthcoming operational costs. The fundamental goal of functioning capital management is to maintain a proper balance between all the functioning capital part members. If a firm wants, it can raise the proportion of investment in the short-term resources and minimize the monetary expenses.

This research focuses on fully unveiling the association of various practices used by the working capital board and the firms' execution on the premises with a test of 11 firms from the Pharmaceuticals businesses over the year 2015 to the year 2020. The study will be helpful for analysts, controllers, financial backers, and numerous more to comprehend the significance of ensuring a reasonable flow of working capital in a firm. The final result from this analysis will be eventually helping the whole industry recipients to understand more about the working capital investment and implementation and how they should maintain the appropriate level more effectively because holding a higher percentage of working capital than required will ultimately result in declined benefit and adversely holding less working capital will bring about absence of effectiveness. The main intention behind this paper is to explore and know more about the implications of working capital management by various firms in the Pharmaceutical Industry and their ways of practising it. Dealing with the assets more carefully is essential for the management of working capital as it shows us how a firm can meet the short-term obligations and its daily operating expenses. With time, many researchers have come up with various papers showing the convenient administration of firms regarding their working capital and their relativeness with profitability, efficiency, and many other concentrated areas. However, these areas are small in numbers regarding examines in regards to agricultural nations like our own. Even though there are some papers from Bangladeshi specialists as well, those concentrates, for the most part, cover rehearses in working capital management and, at times, its connection with firm productivity. This research analysis will improve the current information and add more bases to it while contrasting the firm's execution with the working capital management more vigorously for the pharmaceutical industry. This paper will also help the upcoming specialists in their future research.

To keep a sufficient degree of working capital in the firm,corporate superiors and other financial brokers/experts may likewise find support from this paper to understand more about working capital management and assist them in picking up firms for speculations based on profitability of the firm. Lastly, this research paper will immensely help the controllers and the ones who make the business's policies.

The study considers examining the relationship between working capital and profitability of the Pharmaceuticals industry in Bangladesh. The following companies are included in the study:

Renata Limited, Beximco Pharmaceuticals, Square Pharmaceuticals, ACI Limited, The ACME Laboratories Limited, Beacon Pharma, Orion Pharmaceuticals, Delta, Silco Pharmaceuticals, Advent Pharma Limited, Ibne Sina Pharmaceuticals.

# **Chapter 3: Literature Review**

Working Capital Management is conceivably the primary region in the ordinary organization of the firm. It is the deceptive space of Finance that covers an enormous part of the firm's current record. Working Capital Management fuses the relationship of the short-term asset and short-term liabilities.

Multiple scholastics have done various examinations concerning various techniques used in monetary administration in this assorted climate. Between the execution of a firm and the components of working capital, the most remarkable understandings define negative presence. In the research paper of "Mathura", the firms' effectiveness is considered by the effects of working capital components using 30 associations between the years 1993 to 2008 recorded as an example on the Stock Exchange of Nairobi (NSE). It has been revealed from the examination that the relation between the records variety product and the advantage is immensely negative; this illustrates that the accumulation of cash from their customers puts away the highly restricted exertion by the firms. An immense association with the stock change time frame and net benefit of a firm. This infers that associations that keep up a satisfactorily irrefutable stock level diminish the cost of likely breaks in the gathering cycle and loss of business on account of deficiency of things achieving limited stockpile expenses and assurances against value variances. The paper also tells us that the firm takes the additional time for paying its banks, the more beneficial it is for the firm.

The paper written by Rahman et al. in the year 2010 confirmed that the cash-to-cash cycle, internet trade cycle, and inventory turnover days essentially affect company execution. The assembling institutions are in normal dealing with troubles with their collection and instalment strategies near the financial effect, offer improvement and company length, and all of those segments also affect the organization's gain. This exam relied upon the Pakistani angle and except advocates that power management and financing of running capital could make the functioning gain of accumulating corporations upward thrust and for this, specific people inside the fields of the report must be used by the institutions for an ace course on running the capital organization with inside the collecting region. Plumb (2005) noticed similarly massive hassle of conveying and analyzing intermediates is the price of looking after running capital and coping with the stable intermediates (paintings costs). Chowdhury et al. (2018) drove an evaluation to discover the viable results of the chiefs of running capital assets at the gain of institutions inside the Bangladeshi Pharmaceutical region. Nine remedy institutions recorded with Dhaka Stock Exchange (DSE) have been determined for 2001-15. Return on Asset (ROA), Return on Equity (ROE), and Earnings per share (EPS) have been used because the proportions of advantage and Average collection period (ACP), average payable period (APP), inventory transformation duration (ICP), cash conversion cycle (CCC) crammed in because of the portions of running a capital organization. As indicated via way of means of the evaluation, if the normal mixture period, stock change duration, and cash cycle may be focused to a prudent stage with the development of common element duration, an extraordinary gain of the institutions may be refined. As a rule, the variables of running capital organization had proven some conspicuous brief effects besides did not have suited manage as time is going on. In the paper of Chowdhury and Amin on primary stage surveyed the chiefs of running capital as penetrated institutions of the Pharmaceutical region explicitly. The research helped analyse one-of-a-kind practices for steering coins and techniques for supervising inventories, receivables, and payables. The assessment of ideas became an idea of, but effects of political and financial additives at the functioning capital organization have been dismissed. Ultimately, it became determined that Bangladeshi pharma institutions might functionally manipulate their functioning capitals reliant on the liquidity and idea inclinations inferable from the breaking factor project inside the business. In the paper of Islam and Ara, they explored the general connection among the pursuits in running capital and financing practices of five chose, recorded drug groups in Bangladesh over five years. It became visible that the medication has nearly equal preparations regarding the running capital challenge adjusting to the essential subsidizing. The effects upheld a massive comparison with inside the running capital challenge and financing strategies amongst the medication and had proven an interrelation among the forceful running capital hypothesis approach evaluating to traditionalist financing approach of the medication over the research time body and the opposite manner around. The exam moreover observed a reasonably forceful challenge approach adjusted via way of usual traditionalist financing approach of the drug region of Bangladesh. It became deduced inside the exam that if reasonably forceful running capital challenge techniques are followed, they're balanced out via means of usually culture listing running capital financing preparations inside the selected, recorded drug groups of Bangladesh. In his paper, Agha tried to look at the affiliation among company execution and running capital via way of means of collecting optionally available statistics from Glaxo Smith Kline drug organization enrolled in Karachi inventory change for the years 1996-2011. In this exam, the variable of going back on assets share has been applied to quantify the organization’s advantage, and elements like report receivable turnover, bank turnover, inventory turnover, and cutting-edge share have been applied for the measures of running capital. The effects confirmed that the impact of the board of running capital on the advantage of a drug organization is massive. This way, chiefs might also boom the buying pressure in their groups via means of lessening the inventory turnover, account receivables share, and means of diminishing creditors' turnover proportions. Still, no massive effect of gathering or lowering the cutting-edge share became visible on advantage. In the paper of Bhunia and Das explored the drug groups of India to differentiate the hidden connection among the exhibition of corporations and affiliation of running capital. The research results upheld that a success running capital management livened up corporations' obtaining pressure and liquidity position, and sooner or later growing the company's pretty envisioned worth. Different relapse assessments authorized a decrease stage of connection among the running capital management and advantage below exam.

An evaluation of going before concentrates moreover allots that scientists have associated with various go-betweens to check working capital organization. These go-betweens include cash transformation cycle, stock turnover, normal instalment period, current proportion, and networking capital proportion, anyway pass on clashing consequences.

# **Chapter 4: Data and Methodology**

All the pharmaceutical industry-specific data that have been examined in this study are collected from the annual reports of the respective companies in the pharmaceutical industry. The companies are: Reneta, Beximco, Square, Aci, Acme, Beacon, Orion, Delta, Silco pharma, Advent Pharma, Ibne Sina pharma which was disclosed in the Pharma database. The dataset comprises five years from the year 2015 to 2020. As there were data availability concerns, the analysis was done on only 11 pharmaceutical companies.

The study used two dependent variables ROA and ROE, and seven independent variables: Inventory Turnover, Cash Conversation Cycle, Average Collection Period, Average Inventory Period, Cash Ratio, Current Ratio, Quick ratio.

**Methodology:**

The main objective of this study is to analyze the association between working capital and the profitability of the pharmaceutical industry in Bangladesh. The study has used panel regression models to measure this relationship the following two-panel regression models to be estimated.

$$ROA\_{IT}=a\_{0}+a\_{1}IT\_{IT}+a\_{2}CCC\_{it}+a\_{3}ACP\_{it}+a\_{4}AIP\_{it}+a\_{5}CA\_{it}+a\_{6}CR\_{it}+a\_{7}QR\_{it}+e\_{it}$$

$$ROE\_{IT}=c\_{0}+c\_{1}IT\_{IT}+c\_{2}CCC\_{it}+c\_{3}ACP\_{it}+c\_{4}AIP\_{it}+c\_{5}CA\_{it}+c\_{6}CR\_{it}+c\_{7}QR\_{it}+u\_{it}$$

Where, IT = Inventory Turnover

CCC = Cash Conversation Cycle

ACP = Average Collection Period

AIP = Average Inventory Period

CA = Cash Ratio

CU = Current Ratio

QU = Quick Ratio

## **2.3 EXPLANATORY VARIABLES**

In this report, the accompanying 9 informative factors have been utilized as markers of working capital:

Inventory Turnover

Inventory Turnover alludes to the time that is required for crude materials to be changed over into deals. This informative variable estimates company's capacity to deliver with a lower volume of stock. This is determined as follows:

$$Inventory Turnover=\frac{Inventory}{Cost of Goods Sold} ×365$$

Cash Conversion Cycle

The cash conversion cycle measures the number of days needed by a firm to change its interests in stock into cash. The cash conversion cycle is determined by adding the stock change time frame and the receivable transformation time frame and deducting the payable deferral time frame.

$$Cash Conversion Cycle=ICP+RCP-PDP$$

Here, ICP = inventory conversion period

RCP = receivable conversion period

PDP = payable deferral period

Average Collection Period

 The average collection period tends to the normal number of days between the date a credit bargain made and the date the purchaser pays for that arrangement. An association's standard variety period is illustrative of the sufficiency of its records receivable organization practices. Associations ought to have the alternative to manage their normal combination period to ensure they work without any problem.

$$Average Collection Period= \frac{365}{Average Receivables Turnover Ratio}$$

Average Payment Period

The average payment period implies the standard time frame taken by the organization in making instalments to its lenders. It figured by partitioning the number of working days in a year by loan bosses' turnover proportion. For its calculation, the recipe given beneath:

$$Average Payment Period= \frac{Average Accounts Payable}{Total Credit Purchase/Days}$$

ROA

The Return on Assets shows to what percentage the company is profitable in generating revenue from their assets. It calculated by the formula given below:

$$ROA= \frac{ Net Income}{Total Assets} ×100 $$

ROE

The Return on Equity shows to what percentage the company is profitable in generating income from its equity. It calculated by the formula given below:

$$ROE= \frac{ Net Income}{Shareholders^{'}Equity} ×100$$

Cash Ratio

A money proportion shows the organization's liquidity capacity by contrasting money and money compared with the business's current liabilities. It is determined by:

$$Cash Ratio= \frac{ Cash and Cash Equivalent }{Current Liabilities}$$

Current Ratio

The current proportion is generally central to transient liquidity estimation factors utilized as an explanatory variable in the examination. It tests the capacity of an organization to take care of its present moment obligations. The current ratio is calculating by dividing current assets by current liabilities.$Current Ratio= \frac{ Current Assets }{Current Liabilities}$

Quick Ratio

The quick ratio measures the liquidity of the firms more explicitly compared to the current ratio. Quick proportion can be determined in an accompanying way.

$$Quick Ratio= \frac{ Current Assets-Inventory }{Current Liabilities}$$

## **2.4 ROE MODEL**

Return on Equity which is otherwise called ROE estimates the rate of return on shareholders' equity. It’s a proportion of the proficiency of a corporation at generating profits by utilizing the equity of shareholders within the business. All in all, ROE means how well a corporation is utilizing its investment to get earnings growth. ROE is likewise regularly utilized as an objective for executive compensation, as ratios, for instance, ROE will generally give the executives a motivator to perform better. The formula for computing ROE is net divided by Total Shareholders' Equity. It’s expressed as a percentage. Returns on equity somewhere within the range of 15% and 20% are for the foremost part viewed as satisfactory.



ROE gives a straightforward and simple measurement for assessing investment returns which is by contrasting an organization's ROE with the industry’s average ROE. From this, the organization's upper hand might be pinpointed. ROE likewise gives understanding into how the organization management is utilizing its financing from equity to develop the business.

Throughout the time, a maintainable and expanding ROE can imply that an organization is acceptable at creating its investor esteem, since it realizes how its earnings ought to be reinvested wisely. This will eventually build organization productivity and profits. On the contrary side, if the ROE is declining or falling, it very well may be perceived that the organization management is settling on helpless choices in reinvesting capital in ineffective resources.

While the basic return on equity equation is net income divided by shareholder’s equity, we can separate it further into extra drivers. As you can find in the diagram underneath, the return on equity equation is additionally a function of a firm’s return on assets (ROA) and the measure of financial leverage it has. Both of these ideas will be examined in more detail underneath.



The disintegration of return on equity into its different variables presents different proportions helpful to organizations in crucial investigation. Furthermore, the act of breaking down return on equity is once in a while referred to as the "DuPont System."



### **2.5 ROA MODEL**

Return on Assets (ROA) is a kind of return on investment (ROI) metric that actions the profitability of a business according to its total assets. This ratio shows how well an organization is performing by looking at the profit (net income) it's producing to the capital it's invested in assets. The higher the return, the more efficient and productive management is in using economic resources. Underneath you will discover a breakdown of the ROA equation and computation.

Average total assets are utilized in ascertaining ROA on the grounds that an organization's total asset can shift over the long run because of the purchase or sale of vehicles, land or equipment, stock changes, or occasional sales uncertainties. Therefore, ascertaining the average total assets for the period being referred to is more precise than the total assets for one period. Ascertaining the ROA of an organization can be useful in looking at an organization's profitability over numerous quarters and years just as contrasting with comparable organizations.



The profit from resources (ROA) proportion created by DuPont for its own use is at present utilized by various firms to assess how adequately resources are utilized. It estimates the consolidated impacts of net revenues and resource turnover. The breakdown for ROA is shown below:



# **Chapter 5: Findings and Analysis**

## **The analysis begins with the description of summary statistics and correlation coefficients of variables used in the study to understand about the data set.**

**Table 1: Correlation of Coefficients**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **ITR** | **RTR** | **PTR** | **ROA** | **ROE** | **Cash Ratio** | **Current Ratio** | **Quick Ratio** |
| **ITR** | 1.0000 |  |  |  |  |  |  |  |
| **RTR** | -0.38 | 1.0000 |  |  |  |  |  |  |
| **PTR** | -0.44 | 0.52 | 1.0000 |  |  |  |  |  |
| **ROA** | 0.55 | -0.41 | -0.54 | 1.0000 |  |  |  |  |
| **ROE** | 0.58 | -0.35 | -0.48 | 0.91 | 1.000 |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Cash Ratio** | 0.18 | -0.19 | 0.01 | 0.38 | 0.13 | 1.0000 |  |  |
| **Current Ratio** | -0.16 | -0.13 | 0.10 | 0.11 | -0.17 | 0.43 | 1.0000 |  |
| **Quick Ratio** | 0.03 | -0.10 | 0.11 | 0.27 | -0.007 | 0.94 | 0.62 | 1.0000 |

The results from Correlation Coefficients from Model-1 shows that both the independent variables RTR and PTR are negatively correlated with ROE and ROA and only ITR is positively correlated with ROE and ROA also showing a moderate positive correlation with them at 95% confidence level. As a result, we can state that the independent variables are negatively correlated with our dependent variable.

**Table 2: Descriptive Statistics**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable  | ITR | RTR | PTR | ROA | ROE | Cash Ratio | Current Ratio | Quick Ratio |
| Mean | 3.1651 | 44.311 | 195.78 | 7.5889 | 11.949 | 0.72396 | 2.2808 | 1.9769 |
| Medium | 2.6400 | 42.980 | 226.36 | 5.7800 | 9.3500 | 0.13000 | 1.8400 | 1.1800 |
| Minimum | 0.54000 | 0.99800 | 36.320 | 0.45000 | 0.59000 | 0.013000 | 0.12000 | 0.33200 |
| Maximum | 11.470 | 169.70 | 364.42 | 28.870 | 50.960 | 9.9800 | 6.3500 | 12.760 |
| Variable  | **ITR** | **RTR** | **PTR** | **ROA** | **ROE** | **Cash Ratio** | **Current Ratio** | Quick Ratio |
| Std.Dev | 2.1267 | 33.844 | 103.68 | 5.8906 | 9.1994 | 1.9016 | 1.5748 | 2.2969 |
| C.V. | 0.6713 | 0.76379 | 0.52955 | 0.77621 | 0.76990 | 2.6267 | 0.69045 | 1.1619 |
| Skewness | 2.0539 | 1.1756 | -0.1262 | 1.1708 | 1.8134 | 3.9120 | 0.88493 | 3.2526 |
| Ex. Kurtosis | 5.0567 | 2.0960 | -1.5310 | 1.3717 | 4.6768 | 15.004 | -0.2680 | 11.321 |
| Variable  | **ITR** | **RTR** | **PTR** | **ROA** | **ROE** | **Cash Ratio** | **Current Ratio** | **Quick Ratio** |
| 5% per | 0.96400 | 1.7600 | 55.530 | 1.0060 | 1.5380 | 0.016400 | 0.64200 | 0.38320 |
| 95% per | 8.1940 | 114.27 | 3.4401 | 17.856 | 28.280 | 5.3940 | 5.5820 | 6.5040 |
| IQ range | 1.5400 | 48.330 | 204.66 | 9.1000 | 11.440 | 0.25500 | 1.8900 | 1.4700 |

The descriptive statistics from Model-2 clearly states that the ITR, Cash Ratio, Current Ratio and Quick Ratio have the lowest standard deviation while the highest is reported in PTR among the independent variables. Further this result reports that the standard deviation of dependent variables is poorer than the independent variables.

**Table 3: Results from Fixed Effect Model of ROE**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable  | Constant | ITR | RTR | PTR | ROA | Cash Ratio | Current Ratio | Quick Ratio |
| Coefficient | -0.611 | 0.245 | 0.0086 | 0.0153 | 1.707 | -0.282 | -1.55 | -0.420 |
| Std.Error | 1.632 | 0.191 | 0.0117 | 0.0060 | 0.0702 | 0.572 | 0.257 | 0.485 |
| t-ratio | -0.3754 | 1.282 | 0.7347 | 2.557 | 24.32 | -0.494 | -6.009 | -0.867 |
| p-value | 0.7099 | 0.2068 | 0.4665 | 0.0142\* | 0.001\* | 0.6237 | .0001\* | 0.3905 |

From above table, we can state that the null hypothesis is rejected as the p-value is less than 0.05. Accordingly, the results also prove that ITR and ROA are influential variables for ROE. According to the statistical analysis it can be said that for one percent change in ITR across time will lead to a positive change of ROE by 0.245668 percent while one percent change in ROA across time will lead to increase the ROE by 1.70786 percent. Further the result reveals that the model could jointly explain a 96.8305 percent variation in ROE and the intra-class correlation also known as rho shows a variation of 4.2302 percent.

**Table 4: Results from Fixed Effect Model of ROA**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable  | Constant | ITR | RTR | PTR | Cash Ratio | Current Ratio | Quick Ratio | ROE |
| Coefficient | 0.982 | -0.064 | -0.0072 | -0.0102 | 0.1430 | 0.8914 | 0.245 | 0.545 |
| Std.Error | 0.312 | 0.1099 | 0.00661 | 0.0032 | 0.3236 | 0.143 | 0.274 | 0.0224 |
| t-ratio | 1.077 | -0.584 | -1.088 | -3.125 | 0.4419 | 6.203 | 0.8940 | 24.32 |
| p-value | 0.287 | 0.5622 | 0.2827 | 0.0032\* | 0.6607 | 0.0001\* | 0.3763 | 0.0001\* |
| R Square: 0.868305Adjusted R: 0.85654 |

Results from above table, we can state that the null hypothesis is rejected as p value is less than 0.05. Accordingly, the results also prove that Current Ratio and ROE are influential variables for ROA. According to the statistical analysis it can be said that for one percent change in Current Ratio across time will lead to a positive change of ROA by 0.891468 percent while one percent change in ROE across time will lead to increase the ROA by 0.545859 percent. Further the result reveals that the model could jointly explain a 97.5293 percent variation in ROA and the intra-class correlation also known as rho shows a variation of 3.5444 percent.

**Table 5: Random Effect Model of ROA**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable  | Constant | ITR | RTR | PTR | Cash Ratio | Current Ratio | Quick Ratio | ROE |
| Coefficient | 0.8606 | -0.0681 | -0.00542 | -0.0099 | 0.204 | 0.884 | 0.211 | 0.547 |
| Std.Error | 1.035 | 0.1068 | 0.0063 | 0.0029 | 0.313 | 0.141 | 0.268 | 0.021 |
| z | 0.83 | -0.6382 | -0.8496 | -3.315 | 0.6530 | 6.240 | 0.7879 | 24.94 |
| p-value | 0.4060 | 0.5233 | 0.3955 | 0.0009\* | 0.5138 | 0.0001\*\* | 0.4308 | 0.0001\* |

The results clearly state that current ratio and retun on equity are influential variables for influencing firms’ earnings when we consider ROA. as dependent variable. According to the statistical analysis it can be said that for one percent change in Current Ratio will lead to a positive change in ROA by 0.884855 percent, while one percent change in ROE will lead to a positive change in ROA by 0.547588 percent. Additionally, the intra-class correlation also known as rho shows a variation of 3.5444 percent.

**Table 6: Random Effect Model of ROE**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable  | Constant | ITR | RTR | PTR | Cash Ratio | Current Ratio | Quick Ratio | ROA |
| Coefficient | -0.385 | 0.2562 | 0.0054 | 0.0147 | -0.374 | -1.528 | -0.368 | 1.636 |
| Std.Error | 1.789 | 0.185 | 0.0113 | 0.0054 | 0.5527 | 0.2541 | 0.4748 | 0.0682 |
| z | -0.216 | 1.381 | 0.4843 | 2.735 | -0.672 | -6.016 | -0.776 | 24.87 |
| p-value | 0.829 | 0.167 | 0.6282 | 0.0062\*\* | 0.4983 | 0.001\* | 0.4378 | 0.0001\* |

It is observed from random effects panel regression model that payable turnover ration and current ratio are statistically significant indicatingthat these two working capital component can impact the firm’s earnings in case of ROE. Other variables are not found significant in the model. According to the statistical analysis it can be said that for one percent change in ROA will lead to a positive change in ROE by 1.69654 percent. Additionally, the intra-class correlation also known as rho shows a variation of 4.3202 percent.

# **Chapter 5: Conclusion**

The primary aim of working capital management in a firm is to manage short term funds required for day-to-day business activity of a firm. The firm requires effective working capital management policy for a smooth uninterrupted production and sale activity. For analysis of the Pharmaceutical industry of Bangladesh, we have calculated and analyzed all the working capital ratios related to management.

The purpose of this study is to examine the relationship between working capital and profitability of the companies in the Pharmaceutical Industry in Bangladesh. Panel regression model is applied in the study to measure this relationship. Two profitablity varibles are used: return on equity and return on assets. The results indicate that in case of both ROE and ROA model only the payables turnover ratio and current ratio are sttaistically significant meaning that these two working capital components can positively influence the profitability of the companies in the Pharmaceutical Industry.No other working capital variables like receivables turnover ratio, inventory turnover ratio and cash cycle are not found significant and can not impact the firms’ profitability.

Results convey practicals implications for the management of The Pharrmaceutucals Industry that more concerntration should be given to the short-term management aspects to capitalize the other key variables which will ultimately contribute to the firms’s earnings.

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