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# "Working Capital Dynamics and Profitability: An Empirical Study of Food Manufacturing Firms in Maharashtra"

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**Abstract**

Efficient financial management plays an acute role in maintaining cost-effectiveness and long-term growth in built-up industries. This study follows the empirical investigation of the relationship between working capital management practices and profitability among the selected food manufacturing companies functioning in Maharashtra. Using secondary data acquired over a five-year period (2019-2024), the impact of important working capital indicators (Average Collection Period, Inventory Conversion Period, Average Payment Period and Cash Conversion Cycle) on profitability (measured by Return on Assets) is studied. Control variables like current ratio, debt ratio are also included. Descriptive statistics and regression analysis have been used to assess the nature and strength of these relationships. The results indicate that profitability has a negative relationship on inventory holding period, collection period, cash conversion cycle and liquidity ratio and a positive relationship exists between profitability and payment period. The study underlines the significance of optimizing the elements of working capital in order to improve financial performance and offers practical insights for financial managers in the food manufacturing industry. The results also provide basis for further research on sector-specific financial efficiency in emerging economy.

**Index Terms:** Working Capital Management, Profitability, Food Manufacturing Industry, Return on Assets, Maharashtra

## 1. Introduction

Financial enactment assessment is an unchangeable module of corporate administration, which can help organizations judge their working efficiency, liquidity condition and overall long term sustainability. Financial statement analysis helps in making informed decisions by interpreting financial results of the past and present to project future performance. In a rapidly changing and competitive business environment, it is essential for firms to manage their financial resources effectively in order to ensure profitability and growth. The food manufacturing is a strategic industry in the economic structure of India especially in Maharashtra, as it plays a major role in employment generation, industrial output, and development of the region. Despite its economic importance, the sector is plagued by persistent problems in inventory management, credit policies and inefficiency in cash flow. These challenges have direct impacts on profitability and operation stability. Working capital management - including receivables, inventories, payables, and cash cycles - has become an important factor in the firm's performance. Poor working capital decisions can result in the company having liquidity issues, higher financing costs, and lower profitability. While a number of empirical studies have been done to test this relationship in various industries, little attention has been paid to food manufacturing firms in the state of Maharashtra. This research gap is covered in the current study by examining the compositional relationship between working capital elements and the profitability of this sector.

## 2. Review of Literature

Previous empirical studies have focused on the importance of working capital management in determining the profitability of corporations. Research results across industries (manufacturing, telecom, metal industries) show a positive association between liquidity management and firm performance. Several scholars have found a negative relationship between excessive inventory holdings, increase in receivables period and profitability while efficient payables management has been found to improve returns. However, results differ on an industry and economy basis, demonstrating the need for industry specific studies. This research adds

value to the existing literature by expanding the research to food manufacturing firms in Maharashtra to provide regionally specific understanding.

**3. Objectives of the Study**

1. To analyse the financial performance of some food manufacturing companies in Maharashtra
2. To probe the affiliation between the working capital management components and profitability.
3. To determine to what extent liquidity and payment policies affect return on assets.
4. To give managerial insights in improving financial efficiency in the food manufacturing sector.

**4. Research Methodology**

The research design used is quantitative research design based on secondary data. Financial information for five selected food manufacturing companies in Maharashtra was obtained from the CMIE Prowess database from the period 2019-24. Profitability is used in terms of Return on Assets (ROA) and Working capital management is represented as Average Collection Period (ACP), Inventory Conversion Period (ICP), Average Payment Period (APP) and Cash Conversion Cycle (CCC). Current ratio and debt ratio is used as control variables. Descriptive statistics and simple regression analysis are used to assess the relationships between variables.

**Variable Formulas and Abbreviations:**

| Variables | Abbreviation | Measurement |
|---|---|---|
| **Dependent Variable** | | |
| Return on Assets | ROA | Net income/ Total Assets |
| **Independent Variable** | | |
| Average Collection Period | ACP | (Account Receivables/Net Sale )* 365 |
| Inventory Conversion Period | ICP | (Inventory/ Cost of Sales)*365 |
| Average Payment Period | APP | (Account Payables/Cost of Sales)*365 |
| Cash Conversion Cycle | CCC | ACP+ICP-APP |
| Debt Ratio | DR | Total Liabilities/Total Assets |
| Current Ratio | CR | Current Assets/Current Liabilities |

**5. Scope of the Study**

The scope of this research is limited to some food manufacturing companies located in Maharashtra. The analysis is limited to financial performance and efficiency of working capital using 5 years of secondary data. The study does not take macroeconomic variables or non-financial performance indicators into consideration.

**6. Hypotheses**

- $H_{01}$: Current ratio has no significant impact on Return on Assets.
- $H_{02}$: Average Collection Period has no significant impact on Return on Assets.
- $H_{03}$: Inventory Conversion Period has no significant impact on Return on Assets.
- $H_{04}$: Average Payment Period has no significant impact on Return on Assets.
- $H_{05}$: Cash Conversion Cycle has no significant impact on Return on Assets.

**7. Results and Discussion**

**7.1. Descriptive Analysis**

Table below presents descriptive statistics of selected food industries in Maharashtra for a period of five years from 2019 to 2024.

**Table: 1 Descriptive Analysis**

| Variable | Mean | Medium | SD | Min | Max |
|---|---|---|---|---|---|
| ROA | 0.055623 | .0568 | .04546 | .00 | .15 |
| ACP | 29.8763 | 21.0875 | 25.56353 | 8.07 | 86.42 |
| ICP | 43.5135 | 36.8724 | 24.72244 | 4.93 | 92.08 |
| APP | 20.4580 | 22.4932 | 13.28537 | .66 | 43.83 |
| CCC | 52.9318 | 49.0313 | 31.29337 | -1.09 | 102.14 |
| Debt Ratio | 1.0000 | 1.0000 | .00000 | 1.00 | 1.00 |
| Current Ratio | 1.2930 | 1.3270 | .52972 | .62 | 2.51 |

As per the above table mean value of firms return on assets is 5.55 percent of total assets with median value 5.68 percent and variance value is 4.54 percent. It implies that estimation of productivity can fluctuate from each side by 5.55 percent. Its minimum value is 0.00 percent and a maximum of 1.5 percent.

Average Collection Period (ACP) This appraisal is use for a measurement of collection policy. ACP average value is averaged to 29.87 days for the sampled firms. The interpretation for the typical of the typical Collection Period is that, organizations within the sample wait 29.87 days on average to collect cash from credit sales. The minimum and hence the maximum value of ACP in the case of the sampled firms is 8.07 and 86.42 days respectively.

The Inventory conversion period is use as proxy for inventory policy. The average value for inventory conversion period is 43.51 days. This suggests, firms within the sample needs on the average 43.51 days to sell inventory. Because it is demonstrate within above table, the quality deviation of inventory holding period is 24.72 days. To the sample firms the inventory holding time- frame varies within a range of 4.93 to 92.08 days as minimum to maximum values respectively.

The typical payment period is use as proxy payment policy. The average value of accounts payable period is 20.45 days. The quality deviation of indebtedness period of the sample firms is 13.28 days. The range of amount is between 0.66 days and 43.83 days respectively.

In addition to this, Cash conversion cycle, is 52.93 days on the average and therefore variance is 31.29 days. The minimum value of -1.09 days show that firm notes a less inventory turnover / cash collection from credit sales. It means that the average collecting time and holding time of inventories - frame are long. On other hand the time for cash conversion period is 102.14 days.

## 8.0 REGRESSION ANALYSIS

Regression analysis or Multivariate analysis is employed to estimate the causal relationship between profitability and therefore the otherchosen dependent variables.

### 8.1Relationship between CR and ROA:

**Table 2. Relationship between CR and ROA**

**SUMMARY OUTPUT**

| Regression Statistics | |
|---|---|
| Multiple R Square | 0.198 |
| R Square | .039 |
| Adjusted R Square | -0.003 |
| Standard Error | 0.04552 |
| Observation | 25 |

**ANOVA**

| Model | Ss | Df | Ms | F |
|---|---|---|---|---|
| Regression | .002 | 1 | .002 | .934 |
| Residual | .048 | 23 | .002 | |
| Total | .050 | 24 | | |

| | **Coeff** | **Std.error** | **t stat** | **p-val** |
|---|---|---|---|---|
| Intercept | 0.034 | .024 | 1.379 | 0.181 |
| X variable 1 | 0.017 | .018 | .967 | 0.344 |

The above Regression table shows that there is negative relationship between CR and ROA. In above table P value is bigger than significance level = 0.05. So we're going to accept the null hypothesis and reject the choice hypothesis. Thus, there's nothing to do with CR and ROA.

### 8.2. Relationship between ACP and ROA:

**Table. 3 Relationship between ACP and ROA**

**SUMMARY OUTPUT**

| Regression Statistics | |
|---|---|
| Multiple R Square | 0.119 |
| R Square | 0.014 |
| Adjusted R Square | -0.028 |
| Standard Error | 0.046 |
| Observation | 25 |

**ANOVA**

| Model | Ss | Df | Ms | F |
|---|---|---|---|---|
| Regression | 0.001 | 1 | 0.001 | 0.331 |
| Residual | 0.048 | 23 | 0.002 | |
| Total | 0.050 | 24 | | |

| | Coeff | Std.err | T stat | p-val |
|---|---|---|---|---|
| Intercept | 0.062 | 0.014 | 4.317 | 0.000 |
| X variable 1 | 0.000 | 0.000 | -0.576 | 0.570 |

The above regression table shows that there's negative relation between ACP and ROA. The P-value is superior than the significance level of 0.05. So, we're going to accept the null hypothesis and reject the choice hypothesis. There's thus no relationship between ACP and ROA.

**8.3. Relationship between ICP and ROA;**
**Table.No.4 Relationship between ICP and ROA**
**SUMMARY OUTPUT**

| **Regression Statistics** | |
|---|---|
| Multiple R Square | 0.315 |
| R Square | 0.099 |
| Adjusted R Square | 0.060 |
| Standard Error | 0.04406 |
| Observation | 25 |

**ANOVA**

| **Model** | **Ss** | **Df** | **Ms** | **F** |
|---|---|---|---|---|
| Regression | 0.005 | 1 | 0.005 | 2.541 |
| Residual | 0.045 | 23 | 0.002 | |
| Total | 0.50 | 24 | | |

| | **Coeff** | **Std.error** | **T stat** | **p-val** |
|---|---|---|---|---|
| Intercept | 0.080 | 0.018 | 4.463 | 0.000 |
| X variable 1 | -0.000 | 0.000 | -1.594 | 0.125 |

The above table shows that there's negative relationship between ICP and ROA. The P value is bigger than significance level 0.05. So, we'll accept the null hypothesis and reject the choice hypothesis. Thus, there's no relationship between ICP and ROA.

**8.4 Relationship between APP and ROA:**
**Table. 5 Relationship between APP and ROA**
**SUMMARY OUTPUT**

| **Regression Statistics** | |
|---|---|
| Multiple R Square | 0.663 |
| R Square | 0.440 |
| Adjusted R Square | 0.415 |
| Standard Error | 0.0347 |
| Observation | 25 |

**ANOVA**

| Model | Ss | df | Ms | F |
|---|---|---|---|---|
| Regression | 0.022 | 1 | 0.022 | 18.085 |
| Residual | 0.028 | 23 | 0.001 | |
| Total | 0.050 | 24 | | |

| | **Coeff** | **Std.err** | **T stat** | **p-val** |
|---|---|---|---|---|
| Intercept | 0.009 | 0.013 | 0.709 | 0.485 |
| X variable 1 | 0.002 | 0.001 | 4.253 | 0.000 |

The above table shows that there's positive relationship between APP and ROA. The coefficient value of APP is positive and P value is bigger than significance level 0.05. So, we are accepting the null hypothesis and rejecting the choice hypothesis. Thus, there's a relationship between APP and ROA.

**Relationship between CCC and ROA:**
**Table. 7 Relationship between CCC and ROA**
**SUMMARY OUTPUT**

| Regression Statistics | |
|---|---|
| Multiple R Square | 0.628 |
| R Square | 0.395 |
| Adjusted R Square | 0.368 |
| Standard Error | 0.0361 |
| Observation | 25 |

**ANOVA**

| Model | Ss | Df | Ms | F |
|---|---|---|---|---|
| Regression | 0.020 | 1 | 0.020 | 14.95 |
| Residual | 0.030 | 23 | 0.001 | |
| Total | 0.050 | 24 | | |

| | Coeff | Std.err | T stat | p-val |
|---|---|---|---|---|
| Intercept | 0.104 | 0.014 | 7.209 | 0.000 |
| X variable 1 | -0.001 | 0.000 | -3.872 | 0.001 |

The above table shows that there's negative relationship between CCC and ROA. The P value is not as much of than the significance level 0.05. So, we are rejecting null hypothesis and accepting alternative hypothesis. Thus, there's relationship in between CCC and ROA. The negative coefficient of CCC means that lower the CCC the higher the ROA.

The descriptive analysis shows moderate degrees of profitability for the sampled firms and a large variation in the working capital practices. Regression results show that when inventory holding period is long, receivables collection period is long, liquidity level is high, and cash conversion cycle is long, the effect on profitability is negative. On the other hand, a long payment period is indicative of a positive impact on return on assets, indicating that companies tend to benefit from a strategic management of trade credit. These findings support the importance of efficient working capital control in improving the performance of firms.

**8. Conclusion**

The study concludes by stating that the working capital management plays vital role in determining the profitability of food manufacturing firms in Maharashtra. Efficient management of the inventory, receivables and cash cycles have a significant impact on the financial performance, too much liquidity can negatively affect the returns. The positive relationship between payment period and profitability shows the strategic importance of supplier's credit management. Financial managers working in the food industry need to pay attention to optimizing the working capital elements to maximize efficiency and profitability. The work adds to the existing literature by providing sector specific evidence and forms the basis for future empirical research.

**9. Limitations**

- The research is only limited to a small number of firms that are in the same industry.
- The analysis is based only on secondary data of a five-year period.
- External economic and firm specific qualitative factors are not considered.

**10. Future Research Directions**

Forthcoming studies may extend the scrutiny to other built-up sectors, include unpublicized firms or consider macroeconomic variables. Comparative studies between different states or countries and advanced econometric techniques may give more insight into the practices of financial efficiency and capital management.

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