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*Research Article*

# Impact of Working Capital Management on Business Performance: Case Study of Listed Companies in the Food and Beverage Industry in Vietnam

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**Abstract:** This study examines the impact of working capital management on firm performance, particular in Food and Beverage Industry in Vietnam from 2012 to 2019. The research mainly used secondary data from financial statements of 30 listed companies in the Industry. The result of this study shows that working capital management plays an important to role on firm performance. Each components of working capital would affect differently in firms' business performance.

## 1. Introduction

Financial management includes long-term investment decisions, working capital management, capital structure and other financial related decisions. Among those, capital working management (WCM) is short-term operation, and it demonstrates how to manage cash, inventory, receivables, and payables but still help the companies sell a lot of goods while minimizing risks. In addition, WCM helps firms stay away from insolvency situations. It is WCM that has a great impact on firms' business performance. Currently, how to manage working capital in an efficient way is a big question for Vietnamese enterprises. Therefore, the question needed answering is to quantify the relationship between WCM and the business performance. From that, the firms' managers would have a specific and accurate decision in order to run the companies effectively.

Food and Beverage industry accounts for about 15% of GDP in Vietnam (Thang, 2018), and it tends to increase in the future. There are many advantages to these two categories to grow strongly and will continue to grow in the future. With the increasing proportion of the young population (estimated to be over 50% of Vietnam's population under 30 years old), the income level is improved and the habit of shopping for ready-to-eat foods is increasing in popularity. With the abundance of agricultural products - the source of raw materials for food and beverage processing are the advantages for businesses in the industry to diversify categories and meet the constantly changing needs of consumers. Additionally, the world is dealing with the Covid-19 epidemic, and this is the period that demands for necessary products most. With the expectation of the economy recession after the Covid-19 epidemic, many enterprises have to stop running business or even go to bankruptcy. In order to successfully compete, manufacturers must find ways to adapt and target efficiency in the future. Food and beverage manufacturers would be forced to innovate due to the volume of orders, increased product variety and rapid product development and distribution. The supply chain is becoming more complex and the companies that succeed would be those that simplify it. As a result, in order to "survive" and enhance the operating activities, it is crucial that these companies have deep researches on the relationship between WCM and firm performance.

## 2. Literature Review

Effective WCM is one of the main targets of each enterprise worldwide. Therefore, the past twenty years have seen an increasingly number of researches in the field of working capital, particularly in how to manage it efficiently.

Pirttila et al (2019) had investigated the relevance of transaction cost theory (TCE) for supporting WCM in their study (particular in the Russian automotive industry supply chain). The research mainly used the cash conversion cycles (CCC) model to study about return on assets (ROA). After analyzing and comparing, it had illustrated that compared to Western Europe, Russian automotive firms had different elements of WCM and they tend not to collaboratively manage working capital. Additionally, researchers stated that effective WCM in Russian automotive firms is influenced by liquidity, efficiency, profitability, and risk management; and these

have different strategies to approach. In their ultimate discussion, the study had demonstrated that inventory is tied up strongly with working capital.

Using three elements to assess WCM in small and medium enterprises (SMEs), namely in Performance Index, Utilization Index and Efficiency Index results from Kasiran et al (2016) shown that if performance index and efficiency index are greater than 1, it means that working capital is managed properly. In addition, most SMEs have a low index of performance (less than 1). According to indexes built in this study, SMEs in Malaysia have a *"poor level of efficiency in managing their working capital"* (Farrah Wahieda Kasirana, Noredi Azhar Mohamadb, Othman Chinc, 2016). However, Malaysian SMEs utilize the current asset effectively.

A study by Russell P. Boisjolya, Thomas E. Conine Jrb and Michael B. McDonald IV (2019) had clearly shown that four components of working capital: days payables outstanding (DPO), CCC, inventory turns (INV turns) and accounts receivable turns (AR turns) are *"highly correlated with one another"*. It means that if firms perform well on one component, the other components would be improved accordingly.

Research studied about net working capital (NWC) management in listed Polish construction enterprises by Jędrzejczak-Gas (2016) had pointed out the significant impact of NWC in enterprises operating. This study investigated categories of NWC, different strategies for NWC management to show how managers of the companies choose a strategy to follow. Also, in this journal of research, a question arose: *"During the global crisis, what strategies of NWC management that listed construction companies on the New Connect Market would choose?".* Jędrzejczak-Gas (2016) used both qualitative and quantitative methods in his study. In particular, he surveyed 12 listed companies and stock turnover (in days), receivables turnover (in days) and current liabilities share would be calculated in the financial indicators sector. After investigating and testing, current assets strategies dominated by 53%, while short-term liabilities were 82%. Most of the companies tended not to use only one strategy, but they preferred alternatively to switch to the other. In the final conclusion of the research, during the crisis, companies tended to decide on a *"relative high share of short-term liabilities to acquire capital at a low cost"* (Jędrzejczak-Gas, 2016).

The evidence stated in the study's methodology was better WCM would lead to higher equity market valuations (Russell P. Boisjolya, Thomas E. Conine Jrb, Michael B. McDonald IV, 2019). Furthermore, they also stated that larger firms seem to be more certain in the enhance of WCM to improve their business performance. The same approach with Boisjolya' study, Sabri (2012) investigated how WCM influences small size and big size companies. In Sabir' research, it illustrated that no matter what size a business is, "a company' level of working capital is not constant, and the lowest proportion of working capital is not equal to zero in all cases". The large companies could have a greater assessment capacity to capital markets and meet the commitments of borrowing faster than smaller ones. It means that compared to large firms, WCM plays a significant role in small firms as it could maintain their liquid assets to "meet the daily operations and emergency situations" (Moss J., Stine B., 1993).

According to Strischek (2003), if an enterprise has more cash flow to repay bankers and more value to investors, its WCM is efficient. Lifland (2011), who studied about the impact of working capital efficiencies on Energy Sector, had stated that "a positive working capital position implies the ability of the firm to cover its current obligations while an increase in the levels of the working capital accounts can mean that too much money is tied up in the business". In this research, he tested three types of corporations: large-cap, mid-cap companies, and small-cap. According to Lifland' empirical results, there was a negative relation between enterprise value and days of inventor in large-cap companies; there was an inverse relationship between enterprise value and two components (days of inventory and days of receivables) in mid-cap companies; the small-cap illustrated mixed results. Most of the study's research, it is shown that CCC has a negative relationship with the cash flows of the company. Additionally, with large-cap and mid-cap enterprises in the energy sector, the NWC cycle and firms' value have a significant negative relationship.

Lai (2012) studied the relationship between WCM and firm value, specifically in the airline industry. This research was investigated whether firm value could have a negative relation to CCC. In Lai' research, WCM has four components: Cash Management, Inventory Management, Account receivable management, and Account payable management. As a result, according to Lai (2012), to improve firm value, the managers should reduce Days Inventory Outstanding (DIO), Day Sales Outstanding (DSO), CCC and increase Days Payable Outstanding (DPO). WCM impacts on firm' profitability and liquidity before its value.

According to Quy and Nguyen (2017), WCM plays a significant role in fisheries industry. The explanation for this was because of economy recession, many Vietnamese fishery companies stopped running business or went bankruptcy "due to the lack of working capital". In their study, WCM has two policies: working capital

investment policy (WCIP) and working capital financing policy (WCFP). Same results with Lifland (2011) study, by investigated on listed 21 fisheries firms on HOSE and HNX, Quy and Nguyen' study had shown that CCC, average inventory days (AID), account receivable days (ARD) and account payable days (APD) have negative influences to firms' ROA.

Similar to Quy and Nguyen' (2017) research, Bui Thu Hien (2017) also investigated four dependent variables which were DIO, DSO, DPO and CCC to study about the relationship between WCM and firms' business performance. In this study, Bui Thu Hien (2017) used ROA as a representative for firms' business performance. Her OLS results illustrated the negative signs of four above variables to ROA.

Another research from Dinh Ngoc Anh (2015) investigated the impact of WCM to ROA, ROS (Return on Sales) and ROE. In the study, besides four familiar variables which are AID, ARD, APD and CCC, the author added current ratio (CR), quick ratio (QR), working capital turnover (WCT) and cash ratio (CAR). The first OLS results shown that CR, CAR, APD and CCC had positive relationship with ROA; and the rest shown the opposite relationship. The second OLS results shown that AID and WCT had the positive impact with ROE, but other variables illustrated the negative signs. The last OLS results as ROS was an independent variable, it shown the positive impact of CR, CAR, WCT, AID and APD. However, many independent variables show the insignificant results. Beside, relating to macro impacts, Huy, D.T.N et al (2020) said Fluctuation of stock price in commercial banks in developing countries such as Vietnam will reflect the business health of bank system and the whole economy. Good business management requires us to consider the impacts of multi macro factors on stock price, and it contributes to promoting business plan, financial risk management and economic policies for economic growth and stabilizing macroeconomic factors.

Although different research shown different results, it could be seen that the previous experimental data are rather controversial, and it is undeniable about the observed correlation between WCM and firms' business performance.

## 3. Data and Methodology

### 3.1. Data

In this study, we use the information of 30 listed companies in the food and beverage industry in Vietnam stock exchange from 2012 to 2019. Following Dang (2011), we exclude financial firms from our sample because the characteristics of financial firms are substantially different from those in other industry sectors. The financial data is obtained from STOCKPLUS database. Industry Classification Benchmark (ICB) is used.

### 3.2. Hypothesis Development

Based on empirical studies in Vietnam and overseas, we formulated a hypothesis on the influence of WCM (through four indicators: AID, ARD, APD, and CCC) and the business efficiency of Food and Beverage enterprises listed on Vietnamese stock market in the period of 2012 – 2019.

Data from several sources have shown the negative relationship between AID and the business performance of the firms. This negative correlation shows that the shorter the number of days inventory turnover, the higher the profitability of the business. This could be explained as when the time storage of inventory is short, expenses incurred during storing would decrease, and the business performance of the company will increase. In contrast, there are some studies that have different views compared to the above researches. According to Mathuva (2011), AID has a positive relationship with firms' business performance because when these companies keep inventory, expenses incurred during the ordering process would decrease. However, the industry that we are investigating is the Food and Beverage industry, and a characteristic of these companies' products is a specific period of use. As a result, hypothesis 1 is being as below:

**H1: There is a possible negative relationship between Average Inventory Days and Food and Beverage enterprises' business performance**

The correlation between ARD and the business performance is confirmed in. The observed correlation between them might be explained by the shorter the time of collecting money from customers is, the faster companies could hold cash. It would increase the speed of investment to boost revenues, leading to improve the business performance of the companies. As a result, hypothesis 2 is as below:

**H2: There is a possible negative relationship between Average Receivable Days and Food and Beverage enterprises' business performance**

There are many arguments about the relationship between APD and business performance. Studies from Mathuva (2011) and Lazaridis and Tryfonnidis (2006) showed the positive relationship between these two variables. The reason could be explained is the longer time that companies hold debts, the more likely those companies could use those funds for investing, leading to higher profits. However, other authors think that the shorter the pay period, the better effect on business performance (Deloof (2003); Mansoori and Muhammad (2012)). Based on the principles of WCM, hypothesis 3 is as below:

**H3: There is a possible positive relationship between Average Payable Days and Food and Beverage enterprises' business performance**

### 3.3. Research Methodology

Based on the models of previous scholars, we study impact of WCM on the firms' business performance of Food and Beverage businesses listed on Vietnam' stock market in the period of 2012 and 2019 as follows:

$$\mathbf{ROA = \beta_1 + \beta_2 * AID + \beta_3 * ARD + \beta_4 * APD + \beta_5 * DR + \beta_6 * CR + \beta_7 * SIZE + u_i}$$

- Dependent variable:

ROA is a return on assets that measures firms' business performance. It is equivalent to Net Income over Total Assets (%).

- Independent variables:

AID is the average inventory days that measures how many days that inventory turnovers. It is equivalent to (COGS/Average inventories) * 365 (days).

ARD is the average inventory days that measures how many days that enterprises collect their receivables. It is equivalent to (Revenue/Average receivables) * 365 (days).

APD is the average inventory days that measures the speed of paying firms' debts. It is equivalent to (Revenue/Average payables) * 365 (days).

- Control variables:

DR is the debt ratio which measures a company's leverage. It is calculated by dividing total liabilities by total assets.

CR is the current ratio, and it measures the liquidity of current assets. It is equivalent to Current Assets over Current Liabilities.

SIZE is the scale of a company. It is calculated by the logarithm of Total Assets.

**Table 3.1.** Expected Signs of Dependent Variables

| | Variables | Expected sign |
|---|---|---|
| 1 | ROA – Returns on assets | |
| 2 | AID – Average inventory days | (-) |
| 3 | ARD – Average receivable days | (-) |
| 4 | APD – Average payable days | (+) |
| 5 | DR – Debt ratio | |
| 6 | CR – Current ratio | |
| 7 | SIZE – Firm' scale | |

## 4. Empirical Results

### 4.1. Summary Statistics

**Table 0.2.** Descriptive Statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| **ROA** | 240 | 8.35896 | 10.18136 | -26.5679 | 78.37 |
| **AID** | 240 | 72.89737 | 66.66277 | 4.1232 | 556.7479 |
| **ARD** | 240 | 27.32204 | 25.17596 | 0.0721 | 142.4439 |
| **APD** | 240 | 28.6981 | 29.22833 | 0.1874 | 192.5454 |
| **CR** | 240 | 2.212391 | 2.597599 | 0.2755 | 26.0381 |
| **DR** | 240 | 0.4472696 | 0.2160194 | 0.0422 | 1.5064 |
| **SIZE** | 240 | 13.99064 | 1.304375 | 11.3865 | 17.8465 |

Source: Stata

ROA: The dependent variable illustrates the business performance of listed Food and Beverage companies has the mean is 8.35%, and the fluctuation of the variable is relatively large with the largest value is 78.37% and the smallest value is -26.57%.

AID: The independent variable illustrates the number of days inventory turnovers, and it measures the inventory management efficiency has an average value of 72.8 days. Hence, on average, every about 2.5 months, the inventories would turnover. The average inventory days have maximum value is 557 days and the minimum value is 4 days. The standard deviation is 66.6 days.

ARD: The independent variable represents the average days of collecting money from customers, and it measures the effectiveness of receivables management has a mean of 27.3 days. It could be said that the listed Food and Beverage companies recover their debts from their customers on a monthly average. The fluctuation of this variable is relatively large as the maximum value is 142.4 days and the minimum value is 0.07 days. The standard deviation is 25.17 days.

APD: The independent variable represents that the average number of payment days is 28.6 days. This Table indicates that the average days that an enterprise could use other parties' funds could reach 28.6 days. The maximum value is 192.54 and the smallest value is 0.18 days. Additionally, the standard deviation is 29.2 days.

CR: The variable represents the companies' liquidity showing the average Table at 2.2. As a result, most listed Food and Beverage businesses are able to pay well their debts. The maximum value of the variable is 26 while the smallest value is 0.27. The standard deviation is 2.5.

DR: The independent variable illustrating the financial leverage has large fluctuations ranging from 0.04 times to 1.5 times. The mean is 0.442 showing that averagely, companies' debts would take about 44.2%. The standard deviation is relatively low, at 0.2 times.

SIZE: The average size of the firms is 13.9. The largest value is 17.8 and the minimum value is 11.3. The standard deviation of the variable is 1.3.

### 4.2. Correlation Analysis

**Table 0.3.** Correlation of Variables

| | ROA | AID | ARD | APD | CR | DR | SIZE |
|---|---|---|---|---|---|---|---|
| **ROA** | 1 | | | | | | |
| **AID** | -0.2112 | 1 | | | | | |
| **ARD** | -0.0277 | 0.382 | 1 | | | | |
| **APD** | -0.0072 | 0.5394 | 0.3792 | 1 | | | |
| **CR** | 0.0402 | 0.0509 | 0.0122 | -0.1951 | 1 | | |
| **DR** | -0.3714 | 0.048 | 0.006 | 0.269 | -0.5108 | 1 | |
| **SIZE** | 0.2947 | -0.2496 | -0.21 | -0.0204 | -0.2196 | 0.1451 | 1 |

Table 4.2 shows that ROA has a possible negative relationship with AID, APD, ARD, and DR; and has a possible positive relationship with CR and SIZE.

The negative correlation among AID, APD, and ARD with ROA shows that an increase in these components would reduce profitability as well as ROA of the firms. As long as companies extend the time of AID, APD, and ARD, costs like storage costs or credit costs would lead to the decrease in firms' profitability. In theory, the

longer average time for paying debts would bring benefits for enterprises. However, in actual situations, if companies extend their payment period, their reputation would decrease. As a consequence, investors would require a higher interest rate to ensure their investment, and firms' financial expenses would rise. The debt ratio also has a negative relationship with ROA because when this ratio increases, it means more debts incur, and it would increase the financial expenses and reduce firms' business performance.

The increase in short-term solvency will prolong the increase in ROA and firms' business performance. As when firms' liquidity is ensured, the companies' prestige would increase, and interest expense and operating cost would decrease. The scale of the enterprises is also positively related to ROA. It demonstrates that the greater scale the companies are, the higher ability to access low-cost capital and take advantage of investments. As a result, ROA or firms' business performance would increase.

### 4.3. Data Testing Results

**Table 0.4.** Collinearity Test with VIF

| Variable | VIF | 1/VIF |
|---|---|---|
| **APD** | 1.69 | 0.593416 |
| **AID** | 1.61 | 0.621372 |
| **CR** | 1.42 | 0.704205 |
| **DR** | 1.42 | 0.704548 |
| **ARD** | 1.27 | 0.786504 |
| **SIZE** | 1.16 | 0.864418 |
| Mean VIF | 1.43 | |

Table 4.3 illustrates the VIF factor of each dependent variable in the model. As can be seen in the table above, the range of VIF factor is between 1.16 and 1.69 (smaller than 10). This shows that the model **does not exist collinearity error** or the relationship among dependent variables.

### 4.4. Empirical Results

**Table 0.1.** Original OLS Results

```
. reg ROA AID ARD APD CR DR SIZE
```

| Source | SS | df | MS | Number of obs | = | 240 |
|---|---|---|---|---|---|---|
| | | | | F(6, 233) | = | 18.85 |
| Model | 8096.93692 | 6 | 1349.48949 | Prob > F | = | 0.0000 |
| Residual | 16677.8102 | 233 | 71.5785845 | R-squared | = | 0.3268 |
| | | | | Adj R-squared | = | 0.3095 |
| Total | 24774.7471 | 239 | 103.66003 | Root MSE | = | 8.4604 |

| ROA | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| AID | -.0384942 | .0104144 | -3.70 | 0.000 | -.0590126 | -.0179758 |
| ARD | .0185366 | .0245107 | 0.76 | 0.450 | -.0297544 | .0668276 |
| APD | .0826581 | .0243058 | 3.40 | 0.001 | .034771 | .1305453 |
| CR | -.3921865 | .2510562 | -1.56 | 0.120 | -.8868168 | .1024438 |
| DR | -24.41165 | 3.018175 | -8.09 | 0.000 | -30.35805 | -18.46525 |
| SIZE | 2.336976 | .4512613 | 5.18 | 0.000 | 1.447902 | 3.22605 |
| _cons | -12.62304 | 6.788748 | -1.86 | 0.064 | -25.99821 | .7521396 |

The original OLS results in Table 4.3 illustrate that AID has a **negative relationship** with the business performance of Food and Beverage businesses listed on the Vietnamese stock market in 2012-2019. This relationship is statistically significant at the 1% level (p-value is 0).

The results in Table 4.3 represent the **positive relationship** between ARD and ROA. P-value of the dependent variable – ARD is 0.450. This shows that this coefficient is insignificant at 10% level.

The results in Table 4.3 illustrate the **positive relationship** between APD and ROA. In this original OLS results, the p-value of the dependent variable – APD is 0.001. This shows that this test is significant at 1% level. In addition, the control variable - SIZE is positively related to business performance, statistically significant at 1% (p-value is 0).

However, the two control variables (CR and DR) are negatively related to the business performance. The relationship between DR and ROA is significant at 1% (p-value is 0). The control variable CR also shows a negative relationship with ROA. However, this finding shows an insignificant result at 10% level.

As mentioned in the previous section, this model has two errors: autocorrelation and heteroskedasticity. Therefore, the above OLS model and indicators are considered to be no longer significant.

Therefore, we have handled the above errors with Drsicoll – Kraay estimator on Stata. According to Hoechele (2010), Driscoll and Kraay' methodology applied *"a Newey-West type correction to the sequence of cross-sectional averages"*. Their approach eliminated the heteroscedasticity and autocorrelation up to some lag. On Stata, this approach is demonstrated as "xtscc" command. This program is suitable for the pooled OLS model which is heteroscedastic and autocorrected.

**Table 0.2.** Transformed OLS Results

```
. xtscc ROA AID ARD APD CR DR SIZE

Regression with Driscoll-Kraay standard errors   Number of obs      =       240
Method: Pooled OLS                               Number of groups   =        30
Group variable (i): NAME                         F(  6,    29)      =     93.49
maximum lag: 2                                   Prob > F           =    0.0000
                                                 R-squared          =    0.3268
                                                 Root MSE           =    8.4604
```

| ROA | Coef. | Drisc/Kraay Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| AID | -.0384942 | .0090752 | -4.24 | 0.000 | -.0570551 | -.0199333 |
| ARD | .0185366 | .0175977 | 1.05 | 0.301 | -.0174548 | .054528 |
| APD | .0826581 | .0219121 | 3.77 | 0.001 | .0378428 | .1274735 |
| CR | -.3921865 | .2143733 | -1.83 | 0.078 | -.8306292 | .0462562 |
| DR | -24.41165 | 3.337221 | -7.31 | 0.000 | -31.23703 | -17.58627 |
| SIZE | 2.336976 | .34085 | 6.86 | 0.000 | 1.639859 | 3.034092 |
| _cons | -12.62304 | 3.769583 | -3.35 | 0.002 | -20.3327 | -4.913374 |

After correcting two errors in the model, the results have been changed in standard deviations and p-value of each independent variable. If we look back at the OLS results table above, we can see that the standard deviation of the AID, ARD, APD, CR, and Size variables in the new OLS results table was smaller than the old OLS table. In contrast, the DR variable produces a larger standard deviation. In addition, p-value also varies. If in the old OLS table, the value at CR variable does not make sense at 10%, then in the new OLS table, we have p-value = 0.078 (significant level at 10%). Remaining, indicators like R squared as well as coefficients have not changed.

With 240 observations in the panel data, the transformed OLS results in Table 4.4 illustrate that AID has a **negative relationship** with the business performance of Food and Beverage businesses listed on the Vietnamese stock market in 2012-2019. The correlation coefficient of AID and ROA is -0.038 and the p-value is 0. This implies that a decrease by 1 day in average turnover days of inventory would lead to an increase in firms' business performance by 0.038%. This relationship is statistically significant at the 1% level, which shows that the shorter the turnover of the inventory period is, the higher the firms' business performance is. One of the characteristics of the Food and Beverage industry is that finished, and on-the-process goods have the period of usage, as a result, Food and Beverage companies listed on the Vietnamese stock market should pay more attention to speeding up the inventory turnover period. Reducing inventory turnover time would decrease the cost of warehousing and avoid the finished products being damaged or expired. This leads to a positive impact on net income as well as these companies' business performance. This result confirmed the H1 hypothesis and consistent with the results of most previous studies (Deloof (2003); Lai (2012); Vo Thi Quy and Le Thi Minh Nguyen (2017)).

The results in Table 4.4 represent the **positive relationship** between ARD and ROA. This implies that an increase by 1 day on average days of collect debts would lead to an increase in firms' business performance by 0.018%. This relationship is consistent with previous studies of Kiarie (2014). However, according to the theory of WCM, the ease of credit policy would lead to an increase in receivables. Hence, listed Food and Beverage companies would face the difficulties in recovering their fund and debts for reproduction. As a consequence, operating costs, financial costs, and uncollected debts would increase. This makes the profits and business performance of these companies decline. In the contrary, in reality, extending the time of collecting debts could enable enterprises to earn profits from interests and take advantage of the appreciation of currency as time pasts. However, in this transformed OLS results of the model, the p-value of the dependent variable – ARD is 0.301. This shows that this coefficient is insignificant at 5% level. As a result, I could not confirm hypothesis H2 and the accurate results of the impact of ARD to listed Vietnamese Food and Beverage enterprises from 2012 to 2019.

The results in Table 4.4 represent the **positive relationship** between APD and ROA. This implies that an increase by 1 day on average days of payment would lead to an increase in firms' business performance by 0.082%. It can be seen that this result is similar to the results of many other studies (Mathuva (2011); Lazaridis and Tryfonnidis (2006); Lai (2012)). It is consistent with the theory that the companies should extend the time of payment. In fact, compared to assets, liabilities of listed Food and Beverage firms in the period of 2012 and 2019 were at the average level, so these companies do not have too many difficulties in raising funds to maintain production. Extending the repayment period would help firms to take advantage of this extension time to invest in other projects and thereby could increase their profits as well as business performance. In this transformed OLS results, the p-value of the dependent variable – APD is 0.001. This shows that this test is significant at 1% level. As a result, hypothesis H3 is confirmed about the impact of APD to listed Vietnamese Food and Beverage enterprises from 2012 to 2019.

The R-squared of the model is above 0.326, indicating that the significance of the variables in the model is average. It shows that 32.6% of the dependent variable (ROA) could be explained by independent variables.

In addition, the control variable - SIZE is positively related to business performance, statistically significant at 1% (p-value is 0). In the model, an increase of 1 unit in the scale of the enterprises would lead to an increase of ROA by more than 2.3%. Similar to research of Dinh Ngoc Anh (2017), large enterprises with bigger market share would have a broader business mindset, therefore, they would gain more trust and attract more investors and customers than SMEs, resulting in decreased costs and increased profits and business performance.

However, the two control variables (CR and DR) are negatively related to the business performance. The relationship between DR and ROA is significant at 1% (p-value is 0). In the model, a decrease by 1 unit in debt ratio would lead to an increase of ROA by more than 24%. This could be understood that a great deal of interest expenses would cause a negative influence on ROA.

The control variable CR shows a negative relationship with ROA. In fact, Food and Beverage enterprises in the Vietnamese stock market in 2012-2019 tend to increase current liabilities to reduce interest expense (Dinh Ngoc Anh, 2015), this would decrease CR but would increase ROA or firms' business performance. According to the model, a decrease of 1 time in CR would lead to an increase of 0.39% in ROA. This finding shows a significant result at 10% level.

In short, the empirical results are summarized in the table below:

**Table 0.5.** Summary of Empirical Findings

| Independent Variables | Theory | Results in this thesis |
|---|---|---|
| **AID** | (-) | (-) |
| **ARD** | (-) | Not significant |
| **APD** | (+) | (+) |
| **CR** | Influence | (-) |
| **DR** | Influence | (-) |
| **CR** | Influence | (+) |

## 5. Conclusion

Many studies in the world and Vietnam have shown that working capital management and business performance always exist with a strong correlation. An effective WCM policy could increase the firms' profitability or business performance. In contrast, an ineffective policy would reduce profitability and lead to bankruptcy. Therefore, conducting research to make relevant decisions is necessary, particularly for the Food and Beverage industry as the majority of its capital is used for current assets.

This study investigated 30 listed Food and Beverage companies from 2012 to 2019. By using the Pearson correlation coefficient and linear regression analysis, the research results confirmed the relationship between working capital management and firms' business performance. Shortening the inventory turnover time and lengthening the payment period could increase the profitability of the businesses. The research also shows that the scale of the companies and debt structure has a strong impact on the firms' profitability or business performance.

Working capital management has a significant effect on the firms' business performance. Hence, before making any decisions related to WCM, managers need to understand the companies' situations and orientation.

It is no doubt that WCM plays an important role in each firm' business performance. Hence, a priority task for managers is how to adjust the working capital components appropriately in order to maximize profits and minimize costs.

Based on the theory of WCM and data analysis results in 30 listed Food and Beverage companies on the Vietnam stock market, we would like to make suggestions in managing working capital, which greatly enhance firms' business performance:

- Appropriate credit selling policy: as mentioned earlier, the credit selling method has a great influence on the business performance of many enterprises. In the current fierce market competition, if sellers issue credit selling policies, they would attract investors, expand network with customers and reduce inventories. Hence, credit selling is becoming an indispensable trend in the development of the market. However, if this selling method is not strictly controlled, businesses would have to face bad debts or bankruptcy. Therefore, the credit selling policy is a "double-edged sword", and it is essential not only to the Food and Beverage industry but also other fields in the economy.
- Enhance account payables management: In order to manage account payables in an appropriate way, firms' managers need to regularly check the companies' payments and liquidity. As a result, they could meet the payment requirements when the payment periods are expired. In addition, each enterprise should select a suitable payment method that is efficient and safe.
- Provision: When operating a company, the managers have to always be ready to cope with any complicated changes that may occur at any time. These changes could be the cases of inflation and an increase in price. Therefore, in order to reduce loss, the companies should prepare provisions so that when the business capital or working capital is depleted, they could continue their operation.
- Enhance costs management: Cost control is an important issue for every business. There are certain fluctuations in each period, so administrators need to conduct analysis and provide an optimal cost structure as well as fund mobilization for specific periods. In addition, managers need to control the usage of company assets to avoid wasting the capital source.

**References**

1. Anh, D. N., 2015. *The impact of working capital management to firms' profitability: Construction companies in Vietnamese stock market*, s.l.: Thang Long University.
2. D.E. Mansoori, D.J. Muhammad, 2012. The effect of working management on firm' profitability: Evidence from Singapore. *Interdisciplinary Journal of Contemporary Research in Business*, 4(5).
3. Deloof, M., 2003. Journal of Business Finance and Accounting. *Does working capital management effect the profitability of Belgian firms?*, 30(3), pp. 573-588.
4. Farrah Wahieda Kasirana, Noredi Azhar Mohamadb, Othman Chinc, 2016. Working Capital Management Efficiency: A Study on the Small Medium Enterprise in Malaysia. *Procedia Economics and Finance*, Volume 35, pp. 297-303.
5. Hac, L.D., Huy, D.T.N., Thach, N.N., Chuyen, B.M., Nhung, P.T.H., Thang, T.D., Anh, T.T. (2021). Hyperlink "http://jssidoi.org/jesi/article/782" Enhancing risk management culture for sustainable growth of Asia commercial bank-ACB in Vietnam under mixed effects of macro factors, *Entrepreneurship and Sustainability Issues*, 8(3).

6. Hang, T.T.B., Nhung, D.T.H., Hung, N.M., Huy, D.T.N., Dat, P.M. (2020). HYPERLINK "http://jssidoi.org/jesi/article/download/521/Hang_Where_Beta_is_going__case_of_Viet_Nam_hotel_airlines_and_tourism_company_groups_after_the_low_inflation_period.pdf" Where Beta is going–case of Viet Nam hotel, airlines and tourism company groups after the low inflation period, *Entrepreneurship and Sustainability Issues,* 7(3).
7. Huy, D.T.N. (2015). The Critical Analysis of Limited South Asian Corporate Governance Standards After Financial Crisis, *International Journal for Quality Research*, 9(4): 741-764.
8. Huy, D.T.N. (2012). Hyperlink "https://scholar.google.com.vn/javascript:void(0)" Estimating Beta of Viet Nam listed construction companies groups during the crisis, *Journal of Integration and Development*, 15(1), 57-71.
9. Huy, D. T.N., Loan, B. T., and Anh, P. T. (2020). 'Impact of selected factors on stock price: a case study of Vietcombank in Vietnam', *Entrepreneurship and Sustainability Issues, vol.7, no.4*, pp. 2715-2730. Hyperlink "https://doi.org/10.9770/jesi.2020.7.4(10)"\t"http://jssidoi.org/jesi/article/_blank" https://doi.org/10.9770/jesi.2020.7.4(10)
10. Huy, D.T.N., Dat, P. M., và Anh, P. T. (2020). 'Building and econometric model of selected factors' impact on stock price: a case study', *Journal of Security and Sustainability Issues, vol.9*(M), pp. 77-93. Hyperlink "https://doi.org/10.9770/jssi.2020.9.M(7)"\t"https://jssidoi.org/jssi/papers/papers/journal/_blank" https://doi.org/10.9770/jssi.2020.9.M(7)
11. Huy D.T.N., Nhan V.K., Bich N.T.N., Hong N.T.P., Chung N.T., Huy P.Q. (2021). 'Impacts of Internal and External Macroeconomic Factors on Firm Stock Price in an Expansion Econometric model—A Case in Vietnam Real Estate Industry', *Data Science for Financial Econometrics-Studies in Computational Intelligence*, vol.898, Springer. Hyperlink "http://doi-org-443.webvpn.fjmu.edu.cn/10.1007/978-3-030-48853-6_14" http://doi-org-443.webvpn.fjmu.edu.cn/10.1007/978-3-030-48853-6_14
12. Hien, B.T., 2017. *The relationship between working capital management and firms' business performance: Pharmaceutical businesses listed on Vietnamese stock market,* s.l.: Foreign Trade University.
13. Hoechle, D., 2010. Robust Standard Errors for Panel Regressions with Cross-Sectional Dependence. vv(ii), pp. 1-31.
    I. Lazaridis, D. Tryfonidis, 2006. Relation between working capital management and profitability of listed companies in the Athens stock exchange. *Journal of Financial Management and Analysis*, Volume 19, pp. 26-35.
14. Jędrzejczak-Gas, J., 2016. Net Working Capital Management Strategies in the Construction: Enterprises Listed on the NewConnect Market. *Procedia Engineering,* Volume 182, pp. 306-313.
15. Kiarie, N. E., 2014. *The effect of working capital management on profitability of manufacturing companies listed at Nairobi securities exchange,* S.L.: university of Nairobi.
16. Lai, L., 2012. *The impact of Working Capital Management on Firm Value: Evidence from Airline Industry,* s.l.: Tilburg University.
17. M. Pirttiläa, V.M. Virolainena, L. Lindb, T. Kärria, 20189. Working capital management in the Russian automotive industry supply chain. *International Journal of Production Economics.*
18. Mathuva, D., 2011. The influence of working capital management components on corporate profitability: a survey on Kenyan listed firms. *Research Journal of Business Management.*
19. Moss J., Stine B., 1993. Cash converstion cycle and firm size: A study of retail firms. *Journal Managerial Finance*, 19(8), pp. 25-34.
20. Russell P. Boisjolya, Thomas E. Conine Jrb, Michael B. McDonald IVb, 2019. Working capital management: Financial and valuation impacts. *Journal of Business Research,* Volume 108, pp. 1-8.
21. Sabri, T. B., 2012. The impact of working capital on the value of the company in light of differing size, growth and debt. *Business and Economic Horizons,* 7(1), pp. 27-41.
22. Strischek, D., 2003. The impact of working capital investment on the value of a company. *Accounting Issues.*
23. Thang, V., 2018. *Food and Beverage industry potential in Vietnam.* [Online] https://www.brandsvietnam.com/16957-Tiem-nang-nganh-thuc-pham-va-do-uong-o-thi-truong-Viet-Nam
24. Vo Thi Quy, Le Thi Minh Nguyen, 2017. Effects of working capital management on firm performance and firm value - A study of the fisheries industry in Vietnam. *Journal of Science Ho Chi Minh City Open University*, 7(3), pp. 42-52.