

RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND PROFITABILITY: A CASE STUDY OF LISTED AQUACULTURE COMPANIES IN VIETNAM

Nhung Thi Hong Bui 

Department of Finance, Faculty of Accounting and Business Management,
Vietnam National University of Agriculture, Hanoi, Vietnam
nhungbui.hua@gmail.com

Yen Thi Hai Dang

Department of Finance, Faculty of Accounting and Business Management,
Vietnam National University of Agriculture, Hanoi, Vietnam

Anh Thi Hoang Dao

Department of Finance, Faculty of Accounting and Business Management,
Vietnam National University of Agriculture, Hanoi, Vietnam

Huong Thi Nguyen

Department of Finance, Faculty of Accounting and Business Management,
Vietnam National University of Agriculture, Hanoi, Vietnam

Abstract

The research examines how working capital management affects profitability in the Aquaculture Industry of Vietnam. In order to serve analysis, statistics of 45 Aquaculture Companies and 315 financial statements of these firms were gathered to build up a required data. The main finding denotes that working capital management measured by Number of Days Account Receivables, Number of Days Account Payables and Cash Conversion Cycle has significant impacts on Profitability performed by Return on Asset and Return on Equity. Base on that there are some recommendations suggested for these firms with a purpose of maximizing their profits as much as possible.

Keywords: Working Capital Management, Profitability, Aquaculture Companies, Vietnam

INTRODUCTION

Working capital management has been considered as one of the most important components affecting a business's performance. For example, a company lacking working capital can meet a number of obstacles to generate required goods as well as services due to liquidity inefficiency for making short-term payments. As a result, it will lead to a negative impact to profitability (Amalenu Bhunia, 2015). Working capital management can have effects on profitability of a firm as well as risk and firm value. If a company run an aggressive policy of working capital, it can conduct more risk but greater return for it (Soia Banos-Caballero, 2011, p.517 – 529). As found in Jose et al. (1996, p.33-46), the article studies about the relationship of corporate return and cash conversion cycle, the authors test a linear relation of a company's investment into working capital and its performance measured by profitability ratio. The research highlights about how a good working capital is important, the answer is because of the over-investment and under-investment cost of working capital. These authors suggest that financial managers should target to obtain an optimal level of working capital management by reaching close to optimal cycle as much as they can. Following Jyh-tay Su et al. (2010, p.59-66), the paper examines the relationship of working capital management and profitability with using a listed Vietnamese companies, they reveals that there is a negative impacts of cash conversion cycle on the firm performance measured by gross operating profit. Rejaul Karim et al. (2017, p. 121-128) notes that working capital management is an extremely importance in financial management in all sizes of firms. It is expected that a well-built design of working capital management can contribute significantly and positively to a firm value. Soia Banos-Caballero et al. (2011, p.517 – 529) shows a very striking paper when testing the above relationship with a non-linear association of two mentioned variables. Deloof (2003, p. 573-587) suggests that business organizations are possible to possess an optimal working capital level which is able to maximize firms value. Both elements of large inventory and good credit policy at trade can bring a bigger sale volume. A large number of available stocks can avoid or reduce stock-out risk, and trade credit gives purchasers chances to buy products before making payments. This paper is going to test relationship of working capital management and profitability by using a data of 45 firms focusing on Aquaculture companies in Vietnam. For years, Vietnam has been a country possessing a strong and ideal elements to develop both aquaculture and ocean fishing due to a huge coastline spanning with over 3000 km. It is noteworthy that the seafood output value have been increased gradually 5% per year regularly since 1985, performance of export is responsible for 20% per year in average. Vietnamese government has aimed to reach around 7 million tons of seafood and expected turnover is US\$11 billion by 2020 (Entzian, 2015). In order

to do that, these firms have to revitalize to gain more investment. One of the most attractive trait of a firm is a good financial health, and with aquaculture industry companies which often requires a good level of working capital due to high liquidity requirement. Therefore, the author has investigated relationship of working capital management and profitability. A case study of listed Aquaculture companies in Vietnamese.

Research objectives

- (1) To discuss the existing literatures and works involving in working capital management and profitability
- (2) To analyze the effects of working capital management on profitability of listed Aquaculture firms in Vietnam.

LITERATURE REVIEW

Working capital management

In a simple term, working capital can be calculate by the amount of money which is required to cover operating cost in a firm (R. K. Gupta et al, 2015). Working capital is also known as net working capital measured by current asset minus current liabilities. The information of working capital shows the liquid asset in the short term staying maintaining after short-term liabilities are paid off (Sagner, 2014). Besides, working capital management is defined as a planning as well as controlling process in aspects of firm current asset and funding the assets(Garg, 2015). Management of working capital is the crucial field in finance theory. Many of works has studies to find out an optimal allocation of these kinds of funds (Jain, 2004). An example, if the company lacks working capital, they can run some discount policies to increase sale volumes. As a result, they can sell more products, then increase receivable (Agrawal, 1983). Following the book *Working Capital Management* (Jain, 2004, p.1-2), working capital may be showed by current assets. Lacking of money for working capital may lead to a several headache for companies, especially in small firm. In general, working capital displays that if the firm can have efficiency liquid asset to pay their bills. The current assets can include several components like cash and equivalent, inventory, amount of receivables and marketable securities(Mathur, 2007). For account receivables, they are unpaid bills of customers, so every companies expect that the account is a small amount. Whereas, current liabilities contains account payable, and loans in short-term, and accrued expenses. Working capital can be positive or negative which depends on each company. When a financial statement shows a positive working capital, it means that this is a good picture of financial health for this firm in short term(Joshi, 1997). In other words, the firm will have enough liquid assets to cover bills in short term. In contrast, if

there is a negative working capital in a firm at a certain time, the company will have to face with some difficulties in making payments for bills. Then, late payment will affect negatively to its credit rating (Beranek, 2010). In order to measure ratio of working capital, the *current ratio* will be used in this case or it can also be called *the working capital ratio*. *The working capital ratio* is measured by *current assets to current liabilities*. It can be seen as a good performance if this ratio is around 1.2 to 2.0. If this ratio is below 1.0, it means that there will have some liquidity problems, if the ratio is more than 2.0, the company seem not use capital effectively (V.K., 2014).

Empirical Evidences

As found in Marc Deloof (2003, p. 573 – 587), business organizations are likely to have huge amounts of payables in short-term and amounts invested in working capital. The National Bank in Belgium reported in 1997 that in average there were 17% and 10% of receivables and inventories respectively in most Belgium firms. Working capital management is popularly measured by the cash conversion cycle (CCC). In some cases, the longer of CCC is able to result in the higher profitability. In this study, the author uses a data of financial statement of 1637 firms with total 5045 observations in Belgium from 1991-1996. Whereas, profitability is examined by gross operating income. There is a significant negative impact of cash conversion cycle on profitability. Thus, the findings recommend financial managers that they should reduce the number of days accounts receivable as well as minimize the days of inventories, in order to enhance firm value for investors. Dr. Sanjay Rastogi et al. (2013, p. 490 – 493) discusses about the *working capital management and profitability* in the field of State Owned Companies relating to National Fertilizers Ltd in India. The research collects a data of financial statements of these companies from 2000-2012. Independent variable is working capital measured by Working Capital Ratio, Acid Test Ratio, Current Assets to Total Assets Ratio, and dependent variables are Return on Equity (ROE). The result shows that almost ratios of working capital management affect negatively to profitability. Similarly, in the case study of Pakistan pharmaceutical industry, there is a strong effect of working capital management and profitability (Agha Hina, 2014, p.374-3). Another work of the Sharma et al. (2011, p.159 – 173), who studies about how working capital management has effects on firm financial performance by employing a sample of 263 firms at the Bombay Stock (BES) from 2000 to 2008. The findings proves that working capital management have positive impact on profitability. According to Fatemeh et al. (2013, p.130 – 133), a panel of a large number of financial statements is used from stock companies in the time period 2005 -2011, in the methodology they test a regression of the fix investment and working capital investment which are considered as a function of cash flow. Following (Soia Banos-Caballero, 2011), the authors tests relationship between working capital management and

profitability for Spanish SMEs (small and medium-sized enterprises). Interestingly, the research investigates a non-linear relation of these elements with the independent variable to show working capital management is measured by Cash Conversion Cycle.

METHODOLOGY

Research Approach

The study applies “deductive approach”. The deductive approach is known as a method of researching to progress a certain hypothesis based on exist theory (Saunder, 2009)

Research Hypothesis

H1: there is a significant negative impact of number of days Account Receivables on profitability

H2: there is a significant negative impact of number of days Account Payable on profitability

H3: there is a significant negative impact of cash conversion cycle on profitability

Sampling

The research has sampled financial statements of a listed companies involving in aquaculture industry in Vietnam. The statements are gathered from 2006 to 2017 of 45 companies

Data collection

The research has used secondary data. Statistics has collected from 315 financial statements from 2006 to 2017 of 45 companies focusing on aquaculture industry

Research Variables

The research employs two dependent variables which are ROA (return on asset) = net profit to total assets, and ROE (return on equity) = net profit to total equity, in order to measure profitability of a firm. Whereas, there are 4 independent variables are AR (Number of days account receivable) = $365 \times \text{account receivable} / \text{Net sales}$, INV (number of days Inventory) = $365 \times \text{Inventory} / \text{cost of goods sold}$, AP (number of days payables) = $365 \times \text{Account Payable} / \text{cost of goods sold}$, CCC (cash conversion cycle) = $AR + INV - AP$. Besides, the author use three control variables are LEV, Size and GROWTH, while LEV is financial debt of a firm measured by total debt to total asset, SIZE is measure by logarithm of Assets, and GROWTH is measured by changes in total assets,

Modelling

The model is based on the research of (Amarjit Gill, Nahum Biger, Neil Mathur, 2010), (Deloof, 2003), (Dr. Sanjay Rastogi, 2013).

Performance 1:

$$ROA_{i,t} = \beta_0 + \beta_1 ARI_{i,t} + \beta_2 API_{i,t} + \beta_3 CCC_{i,t} + \beta_4 LEV_{i,t} + \beta_5 ASIZE_{i,t} + \beta_3 Growth_{i,t} + \epsilon_{i,t}(1)$$

Performance 2:

$$ROE_{i,t} = \beta_0 + \beta_1 ARI_{i,t} + \beta_2 API_{i,t} + \beta_3 CCC_{i,t} + \beta_4 LEV_{i,t} + \beta_5 ASIZE_{i,t} + \beta_3 Growth_{i,t} + \epsilon_{i,t}(2)$$

Where:

ROA is return on assets, ROE is return on equity, AR is Number of days account receivable), AP is Number of days Account Payables, CCC is Cash Conversion Cycle. LEV is financial debt ratio, Size is size of the firm, and GROWTH is changes in total assets, (For Year I, Company t), the error term is $\epsilon_{i,t}$

ANALYSIS AND RESULTS

Data description

Table 1: Descriptive Statistics of dependent variables (ROA, ROE)

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis			
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error			
ROA1	315	26.0%	-8.0%	18.0%	5.32%	.3097	5.4978	30.22	.620	.137	.051	.274
ROE1	315	44.6%	-12.5%	32.1%	9.61%	.5079	9.0152	81.27	.115	.137	.105	.274

The table 1 display descriptive statistics of dependent variables used in this research including ROA (return on Assets) and Equity (Return on Equity). Follow that, mean of ROA = 5.3% while of ROE = 9.61%. The highest ratio of ROA is 18% while that of ROE is 32%, the lowest point of ROA is -8%, and ROE is -12.5%. Moreover, figures of Skewness of ROA and ROE are 0.62 and 0.15 respectively, while Kurtosis of ROA is 0.051 and that of ROE is 0.105. They mean that ROA, ROE are normally distributed.

Table 2: Descriptive Statistics Independent variables (AR, INV, AP, CCC, SIZE, LEV, GROWTH)

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis			
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error	
AR	315	171.42	.0000	171.42	65.3990	2.52311	44.780772	2005.3	.798	.137	-.271	.274
AP	315	106.92	.0000	106.92	32.8409	1.49687	26.566864	705.79	.800	.137	-.232	.274
CCC	315	373.31	-74.49	298.82	118.016	3.87484	68.77157	4729.5	.056	.137	-.515	.274
LEV	315	.9250	.0420	.9670	.512919	.011921	.2115901	.045	-.238	.137	-.883	.274
GROWTH	315	154.%	-66.9%	87.1%	12.1%	2.23%	39.7460%	1579.7	.210	.137	-.547	.274
SIZE	315	6.8119	23.949	30.761	27.2502	.070271	1.2471918	1.555	.410	.137	.317	.274

The table 2 shows information of descriptive statistic of independent variables AR (number of days Account Receivables), AP (number of days Account Payables), CCC (Cash Conversion Cycle), LEV (Debt ratio), SIZE (Size of the firm), GROWTH (Growth of the firm). As can be seen from the table, in average, the listed companies have 65.9 days of Account Receivables (Mean of AR is 65.3), 32.8 days of Account Payables (Mean of AP is 32.8), 118 days of Cash Conversion Cycle (Mean of CCC is 118). Moreover, Skewness of AR, AP, CCC, LEV, GROWTH, SIZE are 0.79, 0.61, 0.8, 0.05, -0.2, 0.2, 0.4 respectively, Kurtosis of AR, AP, CCC, LEV, GROWTH, SIZE are -0.27, -0.23, -0.51, -0.88, -0.54, -0.31 one by one. They mean that all dependent variables are normally distributed.

Correlation Results

Table 3: Correlations between ROA, ROE (dependent variables) and AR, AP, CCC, SIZE, GROWTH, LEV (independent variables)

		AR	AP	CCC1	LEV	GROWTH	SIZE	ROA1	ROE1
AR	Pearson Correlation	1	.190**	.610**	-.016	-.144*	.100	.008	.010
	Sig. (2-tailed)		.001	.000	.783	.011	.076	.888	.861

	N	315	315	315	315	315	315	315	315
AP	Pearson Correlation	.190**	1	-.027	.240**	-.049	.203**	-.256**	-.217**
	Sig. (2-tailed)	.001		.637	.000	.383	.000	.000	.000
	N	315	315	315	315	315	315	315	315
CCC	Pearson Correlation	.610**	-.027	1	.032	-.051	.073	-.062	-.064
	Sig. (2-tailed)	.000	.637		.568	.364	.197	.270	.257
	N	315	315	315	315	315	315	315	315
LEV	Pearson Correlation	-.016	.240**	.032	1	.133*	.111*	-.500**	-.14*
	Sig. (2-tailed)	.783	.000	.568		.019	.048	.000	.017
	N	315	315	315	315	315	315	315	315
GROWT H	Pearson Correlation	-.144*	-.049	-.051	.133*	1	.327**	-.013	.073
	Sig. (2-tailed)	.011	.383	.364	.019		.000	.820	.196
	N	315	315	315	315	315	315	315	315
SIZE	Pearson Correlation	.100	.203**	.073	.111*	.327**	1	-.028	-.013
	Sig. (2-tailed)	.076	.000	.197	.048	.000		.618	.819
	N	315	315	315	315	315	315	315	315
ROA	Pearson Correlation	.008	-.256**	-.062	-.466**	-.013	-.028	1	.749**
	Sig. (2-tailed)	.888	.000	.270	.000	.820	.618		.000
	N	315	315	315	315	315	315	315	315
ROE	Pearson Correlation	.010	-.217**	-.064	-.135*	.073	-.013	.749**	1
	Sig. (2-tailed)	.861	.000	.257	.017	.196	.819	.000	
	N	315	315	315	315	315	315	315	315

Table 3...

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

In the term of presenting results correlation tests between dependent variables measured by ROA, ROE and independent variables measured by AR, AP, CCC and control variables SIZE, LEV, GROWTH in table 3. Firstly, *With ROA* it seem has no significant relationship between AR, CCC, GROWTH, SIZE and ROA and with $r = 0.008$, $r = -0.062$, $r = -0.013$, $r = -0.028$, all $n = 315$, $p = 0.8800$, $p = 0.27$, $p = 0.82$, $p = 0.6$ and 0.86 (all $p > 0.1$) one by one. There is a negative

and strong relationship of AP and ROA $r = -.256, p=0.000 < 0.05, n = 315$. Similarly, Debt ratio and ROA seems have a negative and significant association $r = -0.50, n=315, p=0.000 < 0.005$. Secondly, *With ROE* the result displays that non-correlation are found between dependent variable ROE and these variables AR, CCC, GROWTH, SIZE with $r = 0.01, r = -0.064, r = 0.073, r = -0.013, n = 315, p = 0.86, p = 0.25, p = 0.19, p = 0.819$ correspondingly. Besides, there are strong and negative relationships between AP and ROE, to be more details $r = -0.256, n = 315, p = 0.000 (< 0.01)$. a similar trend, a negative relationship of LEV and ROE is recorded with $r = -0.13, n = 315, p = 0.017 (< 0.05)$.

Regression Results

Output for regression of dependent variable ROA and independent variables AR, AP, CCC.

Table 4: Regression of AR, AP, CCC and ROA

Model	Unstandardized		Standardized	t	Sig.	95.0% Confidence		Collinearity	
	Coefficients		Coefficients			Interval for B		Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
Constant	7.036	6.375		1.104	.271	-5.508	19.580		
AR	.014	.008	.112	1.709	.088	-.002	.030	.566	1.765
AP	-.039	.011	-.187	-3.451	.001	-.061	-.017	.830	1.204
CCC	-.010	.005	-.124	-1.942	.050	-.020	.000	.599	1.670
LEV	-11.014	1.342	-.424	-8.208	.000	-13.655	-8.374	.910	1.098
GROWTH	.004	.007	.029	.541	.589	-.011	.019	.840	1.190
SIZE	.199	.238	.045	.837	.403	-.269	.668	.831	1.203

a. Dependent Variable: ROA

Table 4 illustrates results of the regression test between ROA as dependent variable and AR, AP, CCC as independent variables. After using three control variables SIZE, GROWTH, LEV, there is no impacts of Number of Days Account Receivable (AR) on Return on Asset (ROA) with the $B = +0.014$ but $\text{Sig. } 0.088 > 0.05$ on equal terms with confident level less than 95%. Regarding AP, there is a negative impact of Number of Days of Account Payables on Return on Assets with $B = -0.039, \text{Sig.} = 0.001 < 0.05$, Confident level at 99%. It means that if the firm increase 1 day of Number of Days Payables, Return on Asset can reduce 0.039%. Turning on CCC, a negative relationship is recorded between Cash Conversion Cycle and Return on

Assets with $B = -0.01$, $\text{Sig.} = 0.05$, confident level at 95%. In other words, when Cash Conversion Cycle raise 1 day, Return on asset will decrease 0.01%.

Table 5: Regression of ROA

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	11.925	11.597		1.028	.305		
1 LEV	-3.567	2.441	-.084	-1.461	.145	.910	1.098
GROWTH	.019	.014	.084	1.412	.159	.840	1.190
SIZE	.082	.433	.011	.189	.850	.831	1.203
CCC	-.021	.009	-.164	-2.315	.021	.599	1.670
AR	.033	.015	.163	2.246	.025	.566	1.765
AP	-.078	.020	-.231	-3.845	.000	.830	1.204

a. Dependent Variable: ROE

Next, another main finding of regression analysis to investigate association of ROE as dependent variable and AR, AP, CCC as independent variables. After using three control variables SIZE, GROWTH, LEV, the result provides that Number of Days Account Receivables has a positive effect on Return on Equity with $B = 0.033$, $\text{Sig.} = 0.025 < 0.05$ equivalence with the confidence level at 95%. In simple words, when a firm enhances 1 day of Number of Days Account Receivables, the ratio of profitability ROE will go up 0.033%. Besides, it can be concluded that a growth of Number of Days Account Payables associated with a reduction in return on equity with $B = -0.078$, $\text{Sig.} = 0.000 < 0.05$ equivalence with the confidence level at 95%. The figure implies that an expansion of 1 day in Number of Days Account Payables can lead to a decline of 0.078% in return on Equity. Concerning Cash Conversion Cycle, it can be stated that Cash Conversion Cycle can affect negatively Return on Equity at $B = -0.21$, $\text{Sig.} = 0.021 < 0.05$, confident level at 95%. When there is 1 day of Cash Conversion Cycle increase, Return on Equity, Return on Equity may reduce 0.021%.

CONCLUSION

In terms of financial management, working capital is considered as a crucial element to build up a firm's fundamental financial health as well as contribute to its operational success. Thus, in order to gain achievements in financial management, managers need to concern about working capital. After considering and assembling an appropriate conceptual framework, the research

has developed the methodology concept to examine the project of testing How Working Capital Management affects Profitability with 315 observations as financial statements of 45 Vietnamese Aquaculture Companies. Following the results, Working Capital Management has impacts on Profitability of both return on Asset and Return on Equity. To be more details, it is denoted that there are negative correlations of Cash Conversion Cycle and both return on asset and return on Equity, while Number of Days Receivable seems to have positive effects on only Return on Equity and non-significant relationship with Return on Asset. Regard to Number of Days Account Payable, an upward trend of Number of Days Account Payables related with a decrease in both Return on Equity and Return on Asset. For the reasons, it can be explained that when a firm expand the days sales outstanding as a sale policy, it means that customers tends to raise the purchasing volume, thus the firm will increase revenues and then net income. However, when the firm delays on paying bill or get longer days of account payables, it will cause a low rating credit and negative effects on its reputation, thus they may not be easy to get its deal next times with its suppliers, so without that they cannot maximize its profits. Turning Cash Cycle, when firm have a long cash cycle, it can occurs several toughs in its daily operation for covering the unpaid-bills, especially with small firm where capital sources is always considered as a big headache for managers. Therefore, lacking of cash will probably lead a decrease income.

RECOMMENDATIONS

Based on above results, three recommendations can be suggested for these Vietnamese Aquaculture firms. Firstly, it is better for firms to shorten Number of Days Account Payables to gain more benefits of high reputation, then it brings finally nice pictures for profitability rather than occupying capitals but being low rating credit. Secondly, lengthening the Number of Days account Receivables are likely to conduct a slightly increase in Return on Equity. However, the policy of expanding the Days Sales Outstanding need to be consideration carefully with strict procedures, it should be applied only for loyal-customers or high credit rating customers in order to avoid cash flow problems. Thirdly, Cash Cycle length should be cut down to obtain more efficiently managing operations, then more profits can be generated. In order to do that, an element of Number of Days Inventory plays an important role, when inventory moves off fast, it means lower risk for a firm can be recorded and positive cash conversion cycle have big chance to be declined.

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