Operational Liquidity in Thai Listed Corporations

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Abstract

    Operational liquidity management explicitly demonstrates material influences on the decision making of executives, especially for the emerging markets, which are featured as the financial mechanisms with insufficient and immature capital flows. The study explores the importance and contributions of working capital management in the case of Thailand, which represents one of the typical emerging markets, by employing 104 listed companies in three different sectors covering the period of year 2002 to 2011 on a quarterly basis, through the incorporation of, working capital management ratios, leverage ratios, and profitability ratios. It results that, the inventory and credit management do contribute to the efficiency of working capital management and therefore impact the basic earning power, rather than financial leverage and profitability.

Keywords: _working capital, liquidity, operating efficiency, financial leverage_

1. Introduction

    Starting with the terminology definitions of working capital by, Shin & Soenen (1998) who consider working capital as the result of the time lag between the expenditure for the purchase of raw materials and the collection for the sale of finished product, and Fazzari & Petersen (1993) who define working capital as current assets (chiefly accounts receivable, inventories, and cash) less current liabilities (primarily accounts payable and short-term debt), the crucial roles of working capital management in a enterprises' operation and the relationships to operating and finance, have been initially explored by Padachi (2006) and John (1993), whose studies both express the subjection of working capital management to the higher financial distress costs under the malfunction cases. It is further emphasized in the studies of, Shin & Soenen (1998) who show that the efficient working capital management is an integral component of the overall corporate strategy to create shareholder value, and Brigham & Ehrhardt (2008) who suggests that superior working capital management can dramatically reduce required investments in operations, which in turn, leads to the larger free cash flows and greater firm value. Therefore, following fore-mentioned researches, pertaining to the remarkable essences of working capital management, the numerous studies have been the contributions seeking the appropriate working capital management, among which, Smith (1973) cites the eight distinct approaches for working capital management, Gallinger & Ifflander (1986) recommend a scrutinized work on accounts receivable management by developing variance analysis model, while Gentry & De La Garza (1987) focus their interest toward the relationship between accounts receivables and accounts payables, and Gentry, Vaidyanathan, & Hei (1990) give a deeper appreciation in cash conversion cycle by identifying a weighted cash conversion cycle.

    In addition, Shin & Soenen (1998)'s work shows the existences of strong negative associations, between firm's net trade cycle and its profitability, and the firms' liquidity and profitability for the developed market. Nevertheless, it also results the diverse findings, from the studies of, Chudson (1945) that cash-to-assets ratio tends to be higher among profitable companies, and Padachi (2006) that the operating efficiency of small firms is achieved when the cash conversion cycle is low as total assets turnover ratio negatively relates to cash conversion cycle. Consequently, for clarifying the controversial debates and better understanding the working capital management in emerging markets, the study aims the exploration how working capital management relates to enterprise operation and financial leverage, i.e. firms' liquidity, operating efficiency, capital structure, and profitability in the case of Thailand.

Furthermore, in terms of degree of leverage, working capital management affects firms' source of funds internally and externally which are chosen for minimizing the cost of capitalization, due to the necessaries of the financially constrained firms to derive an optimal cash policy that trades off current investments against potentially profitable future investments. It is evident that the self-generated funds represent more crucial resource due to the constraint accessibility and relative higher cost, resulted from the studies of Faulkender & Wang (2006) and Opler, Pinkowitz, Stulz, & Williamson (1999).

The exploration of the WCM, was conducted by numerous researchers, among which, Appuhami (2008) and Napompech (2012) demonstrated the relevant updated discoveries. It results that both firms' capital expenditure and operating cash flow has a significant relationship with working capital management, according to Appuhami (2008). Furthermore, Napompech (2012) examines the effects of working capital management on profitability, from which it revealed a negative relationship between the gross operating profits and inventory conversion period and the receivables collection period. In other words, managers can increase the profitability of their firms by shortening the cash conversion cycle, inventory conversion period, and receivables collection period. Nevertheless, the firm will not be able to increase profitability by lengthening the payables deferral period.

Stressed in the study, it is the significant role working capital management plays in a business operation, that the daily liquidity management determines the short term and long term operation efficiency and target capital structure, on the basis of synthesized framework rather than isolated discoveries. In differences from previous research, the study explores the synthetic relationship between working capital management with, not only the capital structure, but also the various aspects of firm's operation, addition to which, the decomposition of working capital management does elaborate how the contribution to management efficiency can be made for overall profitability. It addresses the comprehension of working capital management and integration of working capital management into overall business operation. In the study, there are four hypotheses of working capital management are stated to test the relations of working capital management with, firms' liquidity, operating efficiency, degree of leverage, and profitability. The conceptual framework relies on a proposition that firms, possessing an efficient working capital management, do have high liquidity, operating efficiency, low debt, and hence, are profitable. The multiple regression models are used to test the hypotheses, with the panel data from the audited financial statements that covers 104 listed companies in the Stock Exchange of Thailand in different sectors, for the period from year 2002 to 2011 on a quarterly basis. The study seeks to result the explanation about, how efficient working capital management links to firms' liquidity, operating efficiency, degree of leverage, and profitability.

The linkage of an efficient working capital management to firms' liquidity, operating efficiency, degree of leverage, and profitability should provide a deeper understanding for corporate management, the investors, and financial professionals. Corporate management may use it to notify the changes in firms' liquidity, operating activity and degree of leverage that may caused by working capital management, which in turn associate with internal and external fund raising allocation. It is the differentiated source of funds that deviates the valuation of firm's equity through diverse costs of capital resulting from the liquidity circumstance. The insight exploration of the linkage among working capital management and the considerable factors does not only dedicate to the facilitation to the decision makings of enterprises' operation by the executives, but also to the wise selection and valuation of equity investment for the investors through comprehension of the relationship of the elements.

2. Conceptual Framework

Working capital management (WCM) is the management of current assets and current liabilities, which involves especially cash, accounts receivable, inventory, and accounts payable management. The management of these accounts is implemented to generate internal financing which is relevant to serve the main operating purposes. It is not only about the capacity for a firm to serve its short-term debt obligations but also the ability to support the available investing opportunity through sufficient funds. It is worth to remind, an efficient WCM results a healthy financial status and contributes to the growth potential. Additionally, a diminishing required investment in working capital due to an efficient management can also increase the firm's value and definitely increase shareholder wealth due to the decreasing costs of capital.

The efficiency of WCM can be alternatively evaluated by three traditional ratios i.e. accounts receivables turnover days (AR days), inventory turnover days (INV days), and accounts payable turnover days (AP days), as cited by John (1993). According to the principles of working capital management, the executives of a firm do the best effort to minimize the AR days and INV days and lengthen AP days, meaning that the cash collection should be done fast while the cash payment is to be prolonged as far as a firm can. Managing a daily operation by employing this concept should help a firm to generate a consistent internal cash flow. However, a manager should be aware of a declining profitability that may occur from the tightened credit term granted to the customers. A penalty from a late accounts payable payment should also be taken into consideration before implementing such concept. In order to have an efficient WCM, a cost of losing sales and penalty of late payment should not exceed a benefit of internal cash flow generated.

Assuming that the firm operates with the efficient WCM, it is expected that the liquidity of the firm should be improved, with the traditional assessments of firms' liquidity of current and quick ratios. Therefore, the study cites the current ratio as the liquidity indicator. As mentioned earlier that an efficient WCM implies a low level of both accounts receivable and inventory with a high level of accounts payable, it contradictorily results that current ratio does not produce an intuitive presentation of firms' liquidity. Consequently, the cash conversion cycle does represent the better benchmark for firms' liquidity. Furthermore, the differences in firms' characteristics and industrial sectors imply it to be relatively subjective to identify an optimal level of cash conversion cycle for all enterprises. Therefore, current ratio is still applied to indicate firms' certain level of liquidity. At this point, the management of the corporate finance may have to face with the conflict between the dual goals of efficient WCM and a firm's liquidity. Despite a low liquidity being signified by a low current ratio, the management comprehends that the short-term debt obligation still can be met as long as the firm pursues an efficient WCM, which means that the firm prolongs the length of payment to their suppliers and fastens the cash collections to service short-term debts. The liquidity of a firm may be low in a point in time (current ratio is calculated in a-point-in-time basis) but should be high in terms of daily operation (operating liquidity). Therefore, it is expected that AR days and INV days should have a positive relation with current ratio while AP days should establish an opposite relationship. In terms of operating efficiency, it is expected that efficient WCM can help increase an operating efficiency of a firm. The basic earning power (BEP) is used to prove the hypothesis in the framework, in which the BEP is considered as the idea indicator due to the exclusion of the leverage and tax effects, in evaluating a firm's operating efficiency. In contrast, Return on Equity measures the combined effect of operation, finance and tax, which losses comparison intuitive in the case of differentiated tax and financial leverage across industries. It is hypothesized that AR days and INV days should have a negative relation with BEP while AP days should establish a positive relation with BEP. It is assumed that an appropriate credit term is granted to the customers and it does not affect the sales of the company. This means that a low AR days and INV days still produce generous sales with a certain amount of total assets. By taking extended AP days into consideration, a firm may prolong the payment term and uses the fund to subsidize a loosen credit term of accounts receivable. With this rationale, a firm will be able to generate additional sales.

In terms of the firms' degree of leverage, as mentioned earlier that firms need to serve two main purposes in their business survival i.e. servicing debt obligation and pursuing firm growth, it is evident that firms usually tend to rely firstly on the internal financing rather than the external financing that is considered as the last resort due to its cost of capitalization. Faulkender & Wang (2006) also emphasize that corporate liquidity enables firms to make investments without having to seek the external capital markets, and thereby to avoid the both transaction costs on either debt or equity issuance and information asymmetry costs that are often associated with equity issuance. It implies that an efficient WCM may lead to firms' improved liquidity and results the reduction of external financing necessaries. In the framework of study, it is assumed that firms choose to use debt financing instead of equity financing when external financing is truly needed due to the information asymmetry costs. Additionally, firms with operating efficiency can generate consistent sales where internal cash flows can be retrieved with an efficient WCM. This consistent cash flow from sales should help the firm to reduce the need of external funding.

In a summary, it hypothesizes that the firm with, efficient WCM, high operating liquidity and operating efficiency, tends to have a low debt to equity ratio. Therefore, AR days and INV days should have

a positive relation with debt to equity ratio while AP days express negatively with debt to equity ratio. It means that low AR days, low INV days, and high AP days result a low debt to equity ratio. Last but not least important, the framework incorporates the firms' profitability, which is measured by the return on equity (ROE), assuming that the consistent self-generated internal cash flows guarantee firms capital demand for the profitable investment opportunity with the positive net present value. In addition, with self-generated fund, firms do not seek for an external funding to fulfill its growth opportunity, as the result that the cost of capital of any certain project decreases. It implies that the net present value of the invested project should be higher compared to that of the project with a high external leverage. The positive net present value projects signal the profitability of the firms, i.e. ROE is expected to be high. It is presumed that AR days and INV days have a negative relation with ROE while AP days has the positive one with ROE, meaning that low AR days, low INV days, and high AP days give a high ROE.

3. Research Methodology

Conditioning on the efficient working capital management that is demonstrated in the low AR days, low INV days, and high AP days, firms are able to generate relatively high operating liquidity with a consistent level of internal cash flows. It consequently generates the operating efficiency, as firms are able to increase sales through simultaneous extending the accounts payable payment, from which to subsidize their accounts receivable and inventory investments. In addition, the firms that can exploit all opportunities to invest in positive net present value projects should be able to make a profitable income streams. Although the other variables do express the degree of firm's profitability, ROE nets of effects of financial leverage and tax, in addition, the purpose of working capital management serves the firm's business goal. Therefore ROE well represents finalized profitable capacity. The study employs the regression analysis to testify the relationship between working capital measures and other different variables related to corporate finance. The conceptual framework highlights four different determinations that stress the hypothesized relationship with working capital management. They are firms' liquidity, operating efficiency, degree of leverage, and profitability. Additionally, dummies for technology and agro industries are added into the model to neutralize the industry difference effect.

Hypothesis 1: An efficient working capital management will decrease firms' liquidity

$$Current\ ratio = \beta_0 + \beta_{AR}AR + \beta_{INV}INV + \beta_{AP}AP + D_{Tech} + D_{Agro} + u \qquad (1)$$

Hypothesis 2: An efficient working capital management will increase firms' operating efficiency

$$BEP = \beta_0 + \beta_{AR}AR + \beta_{INV}INV + \beta_{AP}AP + D_{Tech} + D_{Agro} + u \qquad (2)$$

Hypothesis 3: An efficient working capital management will decrease firms' level of debt

$$DE\ Ratio = \beta_0 + \beta_{AR}AR + \beta_{INV}INV + \beta_{AP}AP + D_{Tech} + D_{Agro} + u \qquad (3)$$

Hypothesis 4: An efficient working capital management will increase firms' profitability

$$ROE = \beta_0 + \beta_{AR}AR + \beta_{INV}INV + \beta_{AP}AP + D_{Tech} + D_{Agro} + u \qquad (4)$$

Where, AR is AR days, INV is INV days, AP is AP days, D_{Tech} is dummy for Technology industry, D_{Agro} is dummy for Agro industry.

The data selected to run the regression models comes from the audited financial statements of 104 listed companies in three different sectors, covering the time period of year 2002-2011 and are retrieved on a quarterly basis. Energy, technology, and agro sectors are selected because their market capitalizations represent a major combination of the total market capitalization of all the firms listed in the stock exchange of Thailand. Financial and property & construction sectors are not included in this data despite their huge market capitalization due the constraint nature of business that is inappropriate for WCM analysis. The companies that are manufacturing-oriented tend to be more appropriate for WCM analysis. Furthermore, some industries that have a larger market capitalization than those of the selected industries are excluded due to the dispersion of their sub-sectors. Figure 1 demonstrates the market capitalizations categorized by industrial sectors. Figure 2 shows the dispersion of sub-subsector in different industries and figure 3 illustrates the number of companies in each selected sectors.
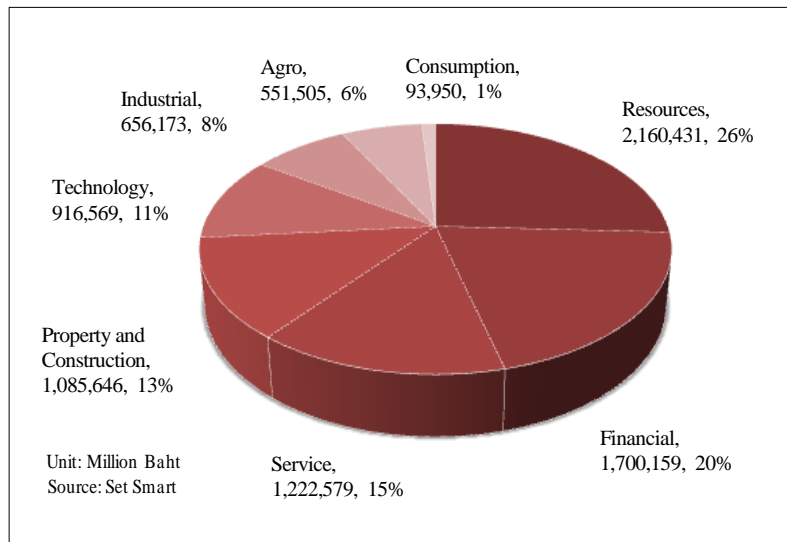
Figure 1 Industry categorized by market capitalization
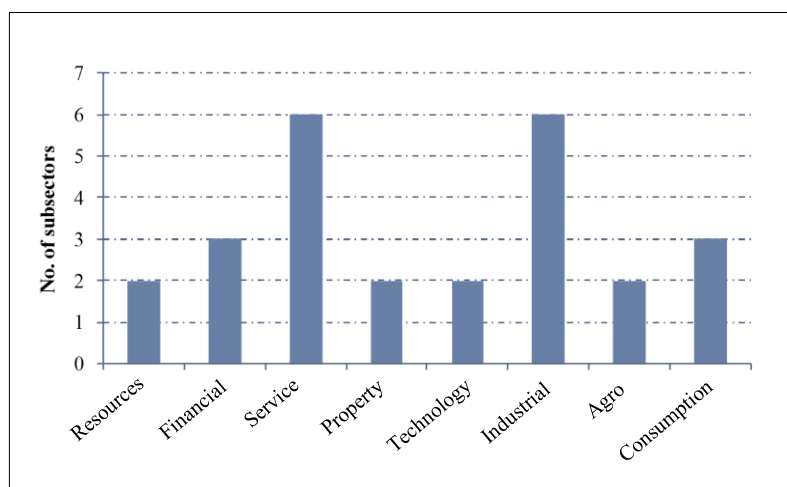
Figure 2 Number of sub-sector in each industry
Source: www.set.or.th
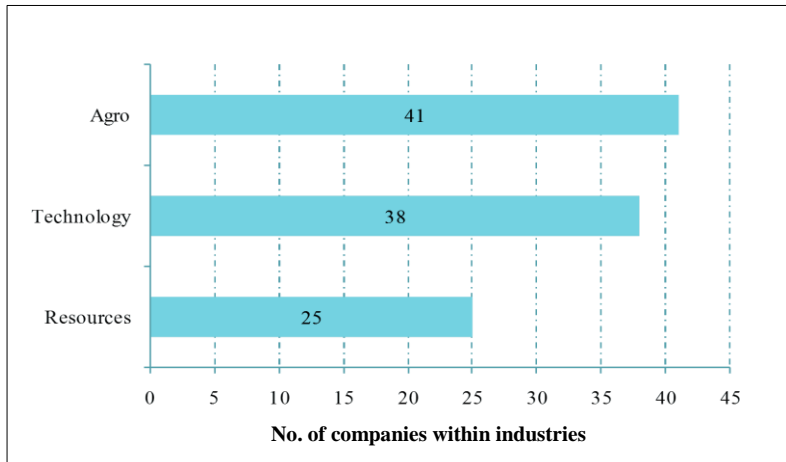
Figure 3 Number of companies in selected industries
Source: www.set.or.th

4. Empirical Results

It results from the regression for hypothesis 1 that the regression coefficients of AR days, INV days, and AP days have both the similar opposite movements with current ratio. By holding other independent variables constant, an increase in AR days by 1 unit will cause a decrease in current ratio by 0.7181 units. In terms of INV days, an increase in INV days by 1 unit will cause an increase in current ratio by 1.4938 units, holding other factors constant. By holding the influence of AR days and INV days unchanged, an increase in AP days by 1 unit will cause a decrease of current ratio by 1.8928 units. A p-value of nearly zero of INV days and AP days suggests that, holding other independent variables constant, either INV days or AP days will have an influence on the current ratio so that the null hypothesis can be rejected. In contrast, the insignificant value of p-value of AR days, 0.2143, indicates that the null hypothesis may not be rejected and hence, implying that AR days will not have an impact on current ratio holding other independent variables constant. The adjusted R-squared of approximately 25.3% indicates that AR days, INV days, and AP days have a relatively moderate explaining power to for the variation on current ratio even though there are additional independent variables to be added into the model. In addition, when the model is run on the fixing the time-period, the result suggests that the time-period is not significant in terms of model explanation. It is demonstrated in a slight incremental in R-squared value of 0.0298 (0.2940 to 0.2642). The restricted F-test confirms the insignificance of the time-period effect as the f-value is 1.5924. The regression results of hypothesis 2 illustrates that the regression coefficient of AR days, INV days, and AP days also have both the same and opposite movements with basic earning power (BEP). Holding other independent variables constant, an increase in AR days by 1 day causes a decrease in BEP by 0.0832 units. In terms of INV days, an increase in INV days by 1 day will also cause a decrease in BEP by 0.0400 units. Holding the influences of AR days and INV days unchanged, an increase in AP days by 1 day will cause an increase of BEP by 0.0035 units. The magnitude of change toward BEP caused by the changes in AR days, INV days, and AP days tends to be lower than that of current ratio.

Table 1 Regression result for hypothesis 1

Variable	Random		Fixed Time Period Effect	
	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	3.5840	3.4502	3.9347	3.7833
Accounts receivable days	-0.7181	-1.2442	-0.7682	-1.3385
Inventory turnover days	1.4938	5.3406	1.4478	5.2025
Accounts payable days	-1.8928	-5.2474	-2.0070	-5.5436
$Dummy_{Tech}$	-0.0797	-0.2362	-0.1339	-0.3987
$Dummy_{Agro}$	-0.0840	-0.2143	-0.1344	-0.3449
R-squared	0.2642		0.2940	
Adjusted R-squared	0.2532		0.2636	

Table 2 Regression result for hypothesis 2

Variable	Random		Fixed Time Period Effect	
	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	0.2617	5.1203	0.2645	5.1063
Accounts receivable days	-0.0832	-2.9303	-0.0831	-2.9058
Inventory turnover days	-0.0400	-2.9075	-0.0410	-2.9557
Accounts payable days	0.0035	0.1981	0.0025	0.1398
$Dummy_{Tech}$	-0.0110	-0.6641	-0.0111	-0.6635
$Dummy_{Agro}$	0.0280	1.4540	0.0279	1.4386
R-squared	0.0993		0.1142	
Adjusted R-squared	0.0858		0.0760	

Table 3 Regression result for hypothesis 3

Variable	Random		Fixed Time Period Effect	
	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	-1.6588	-0.1305	-1.2501	-0.0976
Accounts receivable days	-3.9180	-0.5547	-4.1792	-0.5913
Inventory turnover days	2.2063	0.6446	2.2088	0.6446
Accounts payable days	4.7070	1.0664	4.7366	1.0625
$Dummy_{Tech}$	-0.3661	-0.0887	-0.4406	-0.1065
$Dummy_{Agro}$	5.6831	1.1850	5.5824	1.1633
R-squared	0.0136		0.0417	
Adjusted R-squared	-0.0012		0.0005	

Table 4 Regression result for hypothesis 4

Variable	Random		Fixed Time Period Effect	
	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	0.0058	0.0119	-0.0332	-0.0675
Accounts receivable days	0.0628	0.2314	0.0744	0.2742
Inventory turnover days	-0.1019	-0.7753	-0.1012	-0.7694
Accounts payable days	0.0175	0.1034	0.0277	0.1617
$Dummy_{Tech}$	0.1227	0.7740	0.1312	0.8263
$Dummy_{Agro}$	-0.0199	-0.1079	-0.0119	-0.0644
R-squared	0.0042		0.0342	
Adjusted R-squared	-0.0107		-0.0074	

A low p-value of 0.0036 and 0.0039 of AR days and INV days, being lower than 5% suggests that, holding other independent variables constant, either AR days or INV days will have an influence on BEP as the null hypothesis can be rejected. In contrast, a significant value of p-value of AP days, 0.8431, indicates that the null hypothesis may not be rejected and hence, implying that AP days will not have the statistic impact on BEP holding other independent variables constant. The adjusted R-squared of approximately 8.6% indicates that AR days, INV days, and AP days have a relatively low explaining power for the variation on BEP even though there are additional independent variables to be added into the model. Additionally, when the model is run as fixing the time-period, the result suggests that the time-period is not significant in terms of model explanation. It is proved by a slight incremental in R-squared value of 0.0149 (0.1142-0.0993). The restricted F-test also confirms the insignificance of time-period effect as the f-value is only 0.6343. Given other independent variables constant, an increase in AR days by 1 day will cause a decrease in DE by 3.9178 units. In terms of INV days, an increase in INV days by 1 day will also cause an increase in DE by 2.2063 units, other things being equal. Holding the influences of AR days and INV days unchanged, an increase in AP days by 1 day will cause an increase of DE by 4.7070 units. The magnitude of change toward DE caused by the changes in AR days, INV days, and AP days, so far, has been the highest comparing to that of current ratio and BEP. High p-values of AR days, INV days, and AP days, indicate that the null hypothesis may not be rejected, and hence, imply that none of AR days, INV days, and AP days, have the significant influence on DE. The adjusted R-squared of approximately 0.1% indicates that AR days, INV days, and AP days have a very low explaining power to explain the variation on DE even though there are additional independent variables to be added into the model. It implies that working capital management does not demonstrate the significant influence on the firm's degree of leverage. Furthermore, when the model is run as fixing the time-period, the result suggests that the time-period is not significant in terms of explanation power, which can be observed by a slight incremental change in R-squared value of 0.0282 (0.0417 to 0.0136). The restricted F-test also confirms the insignificance of time-period effect. Holding other independent variables constant, an increase in AR days by 1 day will cause an increase in ROE by 0.0628 units. In terms of INV days, an increase in INV days by 1 day will also cause a decrease in ROE by 0.1019 units, other things being equal. Given the influences of AR days and INV days unchanged, an increase in AP days by 1 day will cause an increase of ROE by 0.0175 units. The high p-values of AR days, INV days, and AP days which are greater than 0.05 show that the null hypothesis may not be rejected and hence, implying that none of AR days, INV days, and AP days can have an statistic influence on ROE. The adjusted R-squared of approximately 1.1% indicates that AR days, INV days, and AP days have a very low explaining power to the variation on ROE. It implies that working capital management may not have any influence on a firm's ROE. Finally, when the model is run as fixing the time-period, the result suggests that the time-period is not significant in terms of model explanation. It is proved by a slight incremental in R-squared value of 0.0300 (0.0342-0.0042).

5. Conclusions

It results that current ratio is more relevant to INV days and AP days rather than to AR days. The operational increase in INV days is followed by the increase the current ratio while an increase in AP days will decrease the current ratio. The non-existing relationship between AR days and current ration may be due to the fact that most of the mature firms that have been established for at least 10 years tend to hold a constant level of accounts receivables. This may be due to the selective bias of the data as only well and long established survivor firms are selected for the empirical testing. It concludes that liquidity of the firm can be influenced by merely INV days and AP days, contradictory to the result for AR days.

In terms of operating efficiency, the empirical testing shows that only AR days and INV days have an influence on BEP. The result of AR days and INV days relative to BEP are similar to what is expected in the conceptual framework, which indicates a non-existing relationship between AP days and BEP. It may be caused by the fact that AR days and INV days can have an impact on sales and consequently on EBIT as well. However, accounts payables have more influence on the suppliers side instead of sales. In addition, the proportion of contribution from the delay in accounts payables, that generates the cash flows sufficiently for a daily operation, is immaterial to the overall investment in the total assets. Therefore, AP days expresses less impact on BEP and it can be concluded that only high AR days and INV days will lead to a firm's operating efficiency. Furthermore, the study indicates that none of the independent variables have a relationship with DE or ROE. It implies that efficient working capital management does not significant relevant to the degree of firm's leverage and firm's profitability in the case of Thailand. Considering the fact that working capital management is associated with the daily operation of the firm and the cash flows stream generated by an efficient working capital management is relative small in magnitude, the cash flows stream may not sufficient to contribute to an investment as well as returns. It is not wise to apply short-term generated fund for long-term financing, which results that the most of listed firms in Thailand tend to employ long-term finance in relative easier cases for listing firm comparing to non-listing ones.

It is worth to remind that the efficient working capital management relates mainly to the management of accounts receivables, inventories, and accounts payable, which results the impact on sales. Nevertheless, return on equity incorporates the overall determinations i.e. costs, selling and administrative expenses, interest expenses, and taxes, so that working capital management does not express decisive power on the profitability. Although the theoretical fundamentals provide the relative solid reasons that an efficient working capital management lead to a firm's degree of leverage and profitability, the empirical testing for the case of Thailand does not provide a confirmation for the concept, which is contradictory to the research of Napompech (2012). Napompech (2012) does address the importance of working capital management to gross profit. However, when the study examines overall resulted final profitability, it expresses insignificant relationships. Unfortunately, the lack of influences of working capital management on the leverage and enterprise profitability inexplicitly indicates the lag advancement in the managerial skills of Thai listing firms, which do not utilize the contribution of working capital management in a similar way in advanced economy.

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