

## Impact of Working Capital Management on the Performance of the Firms Listed on the Tehran Stock Exchange

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**Abstract** *The world economy has changed rapidly. The rise of economic and technological variations featured by the incremental global competition has made the directors more accountable in carrying out their operations. Decision making is one of the significant roles played by the directors. Making decisions sheds lights on the whole financial affairs. This is not exceptional in working capital management. Designing and developing working capital management impact the improvement of the firms' operations. This study intends to find empirical evidence about the effect of working capital management on the firm's performance. The performance evaluation measures include refined economic value added and market value added. In doing so, a sample composed of the firms listed on the Tehran Stock Exchange for a five year period including 2006 to 2010 has been considered. The regression results represent that there is no significant relationship between working capital management and refined economic value added. However, the variables of working capital management and market value added are significantly associated. As a whole, the managers might enhance the firm's performance through declining the liquidity cycle.*

**Key words** Working Capital Management, Refined Economic Value Added, Market Value Added, Tehran Stock Exchange

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### 1. Introduction

Capital is the fundamental means of financial management so that it might be declared that the whole business operations require investments. Capital includes the financial resources utilized by the firms. In doing so, financial management identifies the framework of the relationship between the capital and the firm. Based on the significance of the capital in organizational processes, its management has been highly considered. Working capital management, however, holds a great share of the organizational capital in all organizations and specifically in small firms. Working capital management based on the elements of the supply chain is therefore significant. There is a close direct relationship between the sales growth and finance of the current assets. Increasing sales usually leads to increasing investments in the inventories, accounts receivables and cash. All these requirements should be financed. The variations in these elements are so quick and that is why the financial manager should be coconscious about the changes (Mohammadi, 2007). Working capital director of a business should select proper strategies in terms of different situations in order to handle the current assets and liabilities more effectively and contribute to economical financing. By doing so, the return of the firm is improved and the wealth of the shareholders is maximized (Rahnema RoudPoshti, 2009). Shareholders, however, look for those ways by which they could evaluate the performance of the managers in terms of creating wealth for the firms. Practically, it is shown that the improper information and measures are interpreted

in the judgments of the managers. Lack of the proper measures for performance evaluation and value creation lead the stock prices not to get close to their real values. This phenomenon typically discomposes the balance and causes some firms to benefit from excess profits while the other one loses huge amounts. On the other hand, lack of compensation of the directors for their performance in maximizing the shareholders' wealth creates a gap between the interests of the managers and shareholders. This is the primary means of the conflict of interests among the agencies and the owners. Therefore, the present paper examines the impact of level of working capital management on the firm's performance by using the measures of refined economic value added and market value added. In other words, this study seeks to find an answer to a question concerning whether working capital management impacts the performance of the Tehran listed firms?

The next section reviews the prior literature and the theoretical bases are subsequently provided. The appropriate methodology is recognized in section four and is followed by the findings in the next section. Finally, the conclusion and discussions are provided.

## 2. Research Background

In this section, the prior studies either conducted in Iran or other foreign countries are provided.

Enayati (2004) investigated the current position of the working capital of the selected firms during 2008 to 2012. The findings of this study revealed that there is a significant association between the cash management methods and the methods of managing receivables with the firm's liquidity. Khorram Nezhad (2007) segregated the financial and operational policies of the firms and analyzed the working capital management of the medical firms listed on the Tehran Stock Exchange. He concluded that the financial policies of the medical firms are generally aggressive while their operational policies are conservative. Moreover, Rahnema Roud Poshti and Kiyayi (2009) conducted a study titled "examining the impact of working capital management strategies on the firms listed on the Tehran Stock Exchange". They collected the six year data of the selected firms operating in two categories of chemical and food industries. They found that the working capital management strategies and liquidity and solvency are significantly associated. Izadi Niya and Taaki (2010) selected a sample composed of the big and small Iranian firms to find empirical evidences about the impact of working capital management on the profitability. The regression results indicated that the cash conversion cycle and return on asset are significantly and inversely related. Additionally, they showed that investment of huge amounts in inventories and accounts receivables decreases the profits. Yaghoub Nezhad et al (2010) tested the relationship between the working capital management and profitability of the Tehran listed firms. Their findings implied that the variables of the working capital management and profitability are inversely associated. Reza Zadeh and Heydarian (2010) explored the effect of working capital management on the profitability of the firms listed on the Tehran Stock Exchange. They concluded that the managers can decrease the inventory level and the average collection period for creating wealth for the firm. Fathi and Tavakkoli (2009) studied about the relationship between the working capital management and financial performance of the economic entities. They interpreted that deferring the average collection period, inventory turnover and average payment period are significantly related. They also concluded that shorter cash conversion cycle and firm's profitability are associated. Assar Zadeh (2011) examined the elements of working capital management and their relationship with the three measures of performance including economic value added, return on assets and Tobin's Q ratio. He documented that the working capital management and economic value added are significantly linked to each other; however, there was no significant relationship observed between return on assets and Tobin's Q and working capital management. Anand and Pracash Guptha (2002) considered the performance of the firms over the years from 1991 to 2001 in terms of their performance in working capital management. The results showed that the selected measures for performance evaluation of working capital management are useful in evaluating the performance of the working capital and they contribute to analyzing the risk and return of the firms. Howorth and Westhead (2003) studied the position of working capital management of small firms. They indicated that those firms using less working capital have lower growth rates, less external financial resources, less credit purchases, shorter manufacturing cycles and less cash sales. Negarbo (2006) selected 250 firms as the sample to test the working capital management in them. The conclusions showed that predicting cash flows and growth rate of the firms are the major indicators of working capital management. They also found that changing the size and compound of the assets are not significantly affected by the cash flows prediction and sales growth. They are highly influenced by some factors such as the

business nature of the firms, sales, firm size and profitability. The impact of working capital management on the value of 150 firms during 1990 to 2004 was examined by Laplent (2005). It was found that the trends of the firms, size and future sales growth affect the efficiency of the working capital management. Padachi (2006) considered the relationship between the working capital management and performance of the small Mauritian firms for a six year period covering 1998 to 2003. The positive relationship between working capital management and firms' performance was confirmed by the authors. Samiloglu and Demirnes (2008) tried to find whether the profitability and working capital management of a sample of Turkish listed firms are related. Their study involved 1998 to 2007 and they documented that average collection period, inventory turnover, leverage and profitability are in significant inverse relationships. However, it was found that growth and profitability are directly associated. Gill et al (2010) showed that the cash conversion cycle and profitability are related and this is identified through gross operational earnings. Their study concerned the working capital management and the profitability of the American firms. Raheman et al (2010) selected some firms in Pakistan during 1998 to 2007 in order to seek the impact of working capital management on the organizational performance. They argued that cash conversion cycle and inventory turnover significantly affect the operations of the firms. Enqvist et al (2011) documented that there is a negative relationship between cash conversion cycle and profitability. Nobanee and AlHajjar (2011) found that the managers might increase the profitability and operating cash flows through shortening the cash conversion cycle and average collection period.

### 3. Theoretical Background

Working capital is sometimes substituted by capital circulate because it includes a portion of the firm's capital which is an essential element. Working capital is defined as the investment of the firm in the current or short-term assets such as cash, short-term securities, accounts receivable and inventories (Ghahderijani, 2006). Working capital management refers to the whole aspects of managing the current assets of the firms. Working capital requires handling different current assets and liabilities and is also composed of decisions related to the finance of the current assets through current debts or equity. Significance of the capital in the organizational processes made its management having essential importance. In general, working capital holds a large proportion of the capital in all organizations and specially the small ones. Managing capital based on the mechanisms of managing the elements of supply chains are also very important (Fathi and Tavakkoli, 2009). Financial affairs of the firms might be classified into three main sections of capital budgeting, capital structure and working capital management. Managing long-term capital is related to capital budgeting and capital structure; while management of the current assets and liabilities deals with the working capital management (Chion and Chen, 2006). Working capital of a firm is defined as the amounts invested in the current assets of the organization. Skilling (1996) believes that working capital represents the investments in the current assets and liabilities, cash, short-term securities, accounts receivable and inventories. From his point of view; working capital is determining the volume and compound of the resources so that the shareholders' wealth is maximized. The policies of the working capital include those principles and plans dealing with the tasks of current assets and liabilities. Many authors and scholars referred to three types of working capital: aggressive, mediator and conservative. The major difference between these policies is the level of net working capital management which is equal to the difference between current assets and liabilities (Fathi and Tavakkoli, 2009).

Many specific factors affect working capital management. Obviously, the elements at different levels have changed the need to a proper working capital. Nature of the manufacturing (firms' operations) process, manufacturing period of the firm and its policy, credit guideline of the suppliers, growth and development affairs, facility in attaining the material, profit level and tax rate are among those factors affecting the level of working capital. Attitudes of the managers toward risk determine the level and compound of the working capital. Conservative managers tend to select the volume and compounds by which the risk is mitigated. However, some other managers intend to select the volume and compound of the working capital management which increases the return. Four strategies (independent variables) used in this study for identifying the working capital are introduced.

### **3.1.1. Average Collection Period**

This variable is defined as the number of the days which is needed to collect the receivables. In other words, it is the average period for which receivables are outstanding. The information about the net annual sales of the firm and the average beginning and ending receivables are used (Mohammadi, 2007):

$$\text{Average Collection Period} = (\text{Average Accounts Receivable} \times 365) / (\text{Net Sales}) \quad (1)$$

### **3.1.2. Average Payment Period**

This is the number of days a company takes to pay off the accounts payable. The average beginning and ending accounts payable are used to measure the average payment period (Deloof, 2003):

$$\text{Average Payment Period} = (\text{Average Accounts Payable} \times 365) / (\text{Purchases}) \quad (2)$$

### **3.1.3. Inventory Turnover in Days**

Inventory turnover is the period of time taken to sell the inventories. Average inventories at the beginning and ending of the period are used to calculate this variable.

$$\text{Inventory Turnover in Days} = (\text{Average Inventory} \times 365) / (\text{Cost of Goods Sold}) \quad (3)$$

### **3.1.4. Cash Conversion Cycle**

Cash conversion cycle is the time taken to convert the purchased material to the finished goods and receive the cash from the sales.

Cash conversion cycle = (Average Collection Period + Inventory Turnover) – Average Payment Period (Mohammadi, 2007). (4)

## **3.2. Theoretical Bases and Concepts of Financial Performance**

Investors always take performance evaluation of the firms into account for the purpose of identifying the desirable investment opportunities. The satisfactory performance of the industry is the factor which motivates the shareholders to invest their funds in a specific operation which would finally increase the firm value and shareholders' wealth. Optimum operation of a firm is handled by the managers and this ensures that giving the required incentives to the managers leads them to make the optimum decisions. Finally, it should be noted that by selecting the proper performance evaluation measures which are the bases for compensating the directors, the shareholders will make better decisions and align the interests of directors with themselves. This will finally accelerate the achievement to the goals. Today, performance measurement is one of the essential topics which have been much debated. Different performance evaluation methods might response to some questions concerning the degree to which the firms are trying to maximize the interests of the shareholders and also the indexes which are taken into account by the banks and financial institutes to grant facilities to the firms. Other issues also involve the dimensions which are regarded by the managers and the legal points considered by the governmental agencies. Performance evaluation is a necessity and accepted measures should be applied to consider the different aspects in terms of the limitations in the operations and utilization of the facilities (Rahneam Roud Poshti and Mahmoudi, 2009). The ultimate goal of establishing any economic entity is maximizing the intrinsic value for the shareholders during consecutive periods (value creation). Therefore, organizational strategies, resources and the performance evaluation systems should be completely concentrated on achieving this goal. The existence, implementation and development of the strategies of creating relative advantage and persistent value creation significantly impact the firm value and stock price. Capital market should attain the instruments and leverages of performance measurement for making sure that the management is capable of developing the mentioned strategies.

In this study, two measures of refined economic value added and market value added (dependent variables) are used. These measures are selected among the other well known measures in economic trends of performance evaluation considered by the managers, financial advisors, investors and researchers.

### **3.2.1. Refined Economic Value Added**

Refined economic value added (REVA) is an analytic framework for evaluating the operational performance and the amount of the created value for the shareholders. REVA is the same as the economic value

added (EVA); however, the difference is that the capital expenditures are computed by the market value of the firms' assets rather than the book value of the assets. EVA is a measure which facilitates the value creation for the shareholders, but REVA is an instrument for evaluating the prior financial performance of the firms. Generally, REVA is used to measure the external performance. Comparing REVA and EVA, it can be concluded that the changes in the market value lead to changes in the capital expenditures which are not the same as the changes in the net operation profit after tax (Atefat, 2010). The following equation is used to calculate REVA (Heydar Pour and Mostofi, 2009).

$$\text{REVA} = \text{NOPAT} - \text{WACC} (\text{Mcapital}t-1) \quad (5)$$

Where in it;

NOPAT: Net operating profit after tax at the end of period t,

WACC: Weighted average of cost of capital,

(Mcapitalt-1): Market value of the firms at the beginning of period t and end of period t-1.

### **3.2.2. Market Value Added**

Stewart (1991) introduced another measure known as market value added for those firms which create value. If the total market value of the firm is more than the invested amount, then this firm is managed so that creates wealth for the shareholders. Once the market value of a firm is lower than the invested resources, the operations of the firm cause the shareholders' wealth to be lost. Market value added is caused by EVA because it is the result of the present value of the future economic values. Regardless of the fact that EVA is an internal measure for performance evaluation, this measure finally develops an external measure titled market value added. This measure shows the evaluation of the investors from the performance of the firms. Therefore, EVA is an internal measure of performance evaluation and market value added is the external measure for evaluating the performance (Hosseini Azan Akhari, 2006). This measure is computed by the difference between the market value and book value of the owners' equity (Azarbayjani et al, 2011).

## **4. Methodology of research**

The present study is conducted based on the real data and is classified as a semi-empirical study. The findings of this study might be useful for the users of the financial statements. That is why this is an applied study. Additionally, the present paper is a descriptive study in terms of analyzing the collected information by describing the relationship between the variables. The impact of working capital management on the performance of the listed firms on the Tehran Stock Exchange has been examined in this study. Consequently, the theoretical frameworks of the study are being studied to achieve the research objectives. The required data is collected by different methods including literature review for the theoretic discussions. The needed data for the research variables are gathered by software verified by Tehran Stock Exchange and the financial statements publicly issued. The collected data is also analyzed by EXCEL and SPSS software.

### **4.1. Population and Sample**

The population of this study is composed of the whole listed firms on the Tehran Stock Exchange. This population is selected since the financial statements of these firms are publicly available and the content information is homogenous which facilitates data analysis. Filtering technique is applied to select a proper sample for data analyses. Those firms which are qualified in terms of the following characteristics are merely selected. These specifications are:

1. The firms are listed on the Tehran Stock Exchange from the beginning of 2006 and their stocks are traded until the end of 2010.
2. This study considers the non-financial firms. Consequently, banks and all other investment institutions are excluded from the sample.
3. The end of the fiscal years should be consistent with the calendar year. Accordingly, those firms which have inconsistent ending of the fiscal year are excluded.
4. The detailed data about the annual financial statements and the stock prices at the end of the year should be available.

### Hypotheses Development

Based on the relationship between the research variables, two main hypotheses are developed and four subsidiary hypotheses are also provided for each main hypothesis:

The first main hypothesis (H1): There is a significant relationship between working capital management and REVA.

H1a: There is a significant relationship between average collection period and REVA.

H1b: There is a significant relationship between inventory turnover and REVA.

H1c: There is a significant relationship between average payment period and REVA.

H1d: There is a significant relationship between cash conversion cycle and REVA.

The second main hypothesis (H2): There is a significant relationship between working capital management and market value added.

H2a: There is a significant relationship between average collection period and market value added.

H2b: There is a significant relationship between inventory turnover and market value added.

H2c: There is a significant relationship between average payment period and market value added.

H2d: There is a significant relationship between cash conversion cycle and market value added.

## 5. Results

### 5.1. Examining the Normal Distribution of Research Variables

Investigating the statistical assumptions is the early step in examining the research hypotheses. Testing the normality of the variables distribution is one of the prerequisites considered in the parametric tests of Pearson correlation coefficient and multivariate regression. Table 1 shows that after converting the data, the normality test has been carried out for the distribution of the scores. The significant level obtained in K-S test for any of the six variables determined to be more than 0.05. Therefore, it can be interpreted that the variables in the sample are normally distributed and the hypotheses might be tested through parametric tests.

Table 1. Normality Test of the Variables Distribution

Index / Variable	Kolmogorov -Smirnov Z	sig
Average collection period	1.04	0.23
Inventory turnover	0.88	0.55
Average payment period	1.19	0.11
Cash conversion cycle	1.09	0.18
REVA	0.69	0.71
MVA	0.77	0.58

### Testing the First main Hypothesis

*The first main hypothesis:* There is a significant relationship between working capital management and REVA.

Multivariate regression is used to test this hypothesis according to the specific characteristics of the collected data. The statistical description of this hypothesis is as follows:

$$H_0 : \rho = 0$$

$$H_1 : \rho \neq 0$$

In the above hypothesis,  $\rho$  is the regression coefficient between the elements of working capital management and REVA.

Table 2. Findings of the regression coefficient for predicting REVA through the elements of working capital management

index variable	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	(P)
REVA- elements of working capital management	0.09	0.008	0.001	0.43

As shown above, by using the multivariate regression coefficient, the linear significant relationship between REVA and elements of working capital management doesn't exist. Additionally, the independent variables of working capital management can merely predict 80 percent of the variations in the dependent variable. The significant level is also computed to be 0.43 which is higher than the intended significance level of 0.05 and it confirms that there is no significant linear relationship between these variables. The regression analyses are provided about the independent variables.

Table 3. Results of analyzing the regression of coefficients of any of the independent variables in the first main hypothesis

Explanatory Variable	B	SE <sub>b</sub>	Beta	t	p-value	VIF
Residual value	83067/29	106516.14		0.78	0.43	
Average collection period	-448.65	952.30	-0.040	-0.471	0.638	0.415
Average payment period	-557.19	628.78	-0.066	-0.886	0.37	0.522
Cash conversion cycle	180.83	529.85	0.032	0.34	0.73	0.34
Inventory turnover	-8.15	325.22	-0.012	-0.20	0.86	0.85
F	0.916					
p-value	0.434					
Durbin-Watson	1.75					

The above mentioned findings related to VIF index and Durbin-Watson statistics represent that the assumption of nonlinearity of the independent variables is confirmed. As shown in table 3, t statistics of the working capital management are not significant at the level of 0.05. This is because the significance levels of any of the working capital management variables are greater than the intended level of 0.05. Additionally, f statistics is 0.916 and P-value is 0.434 which rejects the significance of these statistics at the level of 0.05. Therefore, the significant relationship between working capital elements and REVA is rejected and H<sub>0</sub> is then confirmed.

*H1a: There is a significant relationship between average collection period and REVA.*

Pearson correlation coefficient is used to test this hypothesis according to the specific characteristics of the collected data. The statistical description of this hypothesis is as follows:

$$H_0 : \rho = 0$$

$$H_1 : \rho \neq 0$$

In the above hypothesis,  $\rho$  is the correlation coefficient between the average collection period and REVA.

Table 4. Results of testing the correlation in the relationship between average collection period and REVA

Index Variable	R	R <sup>2</sup>	(P)
Average collection period and REVA	-0.071	0.005	0.187

Table 4 indicates that by using Pearson correlation coefficient, the linear relationship between the average collection period and REVA is not confirmed. Additionally, the independent variable can predict 50 percent of the changes in the dependent variables of REVA. This is because the significance level (0.187) is more than the intended level of 0.05. Consequently, the first subsidiary hypothesis is rejected and H0 is confirmed.

*H1b: There is a significant relationship between inventory turnover and REVA.*

The same as the prior subsidiary hypothesis, Pearson correlation coefficient is used to test this hypothesis according to the specific characteristics of the collected data. The statistical description of this hypothesis is as follows:

$$H_0 : \rho = 0$$

$$H_1 : \rho \neq 0$$

In this hypothesis,  $\rho$  is defined as the correlation coefficient between the inventory turnover and REVA.

Table 5. Results of testing the correlation in the relationship between inventory turnover and REVA

index variable	R	R <sup>2</sup>	(P)
Inventory turnover and REVA	-0.091	0.008	0.089

Applying Pearson correlation coefficient in the above hypothesis, the significant linear relationship between the two variables of inventory turnover and REVA is not confirmed. According to the above table, the independent variable of inventory turnover only predicts 80 percent of the variations in the dependent variable of REVA. Based on the analyses, this hypothesis is rejected and H0 is confirmed.

*H1c: There is a significant relationship between average payment period and REVA.*

Pearson correlation coefficient is applied to examine this hypothesis according to the specific characteristics of the collected data. The statistical description of this hypothesis is as follows:

$$H_0 : \rho = 0$$

$$H_1 : \rho \neq 0$$

In this hypothesis,  $\rho$  is the correlation coefficient between average payment period and REVA.

Table 6. Results of correlation test in the relationship between average payment period and REVA

Index Variable	R	R <sup>2</sup>	(P)
Average payment period and REVA	-0.141	0.019	0.009

Table 6 represents that there is a linear significant association between average payment period and REVA. This table also asserts that the independent variable predicts 1.90 percent of the variations in the dependent variable. Additionally, the significant level documents that these two variables are negatively associated. Consequently, the third main hypothesis is confirmed and H0 is rejected.

*H1d: There is a significant relationship between cash conversion cycle and REVA.*

In this section, Pearson correlation coefficient is used to examine this hypothesis based on the specific characteristics of the collected data. The statistical description of this hypothesis is as follows:

$$H_0 : \rho = 0$$

$$H_1 : \rho \neq 0$$

In this hypothesis,  $\rho$  is the correlation coefficient between cash conversion cycle and REVA.



Table 7. Results of correlation test in the relationship between cash conversion cycle and REVA

Index	Variable	R	R <sup>2</sup>	(P)
	Cash conversion cycle and REVA	-0.009	0.0001	0.86

Table 7 shows that by using Pearson correlation coefficient, there is no significant linear association between the two variables of cash conversion cycle and REVA. The statistics documented in the table above reveal that cash conversion cycle only predicts 1 percent of the variations in the dependent variable. Based on the significance level and its comparison with the intended level of significance, the fourth subsidiary hypothesis is rejected and H0 is confirmed.

### 5.2. Results of the Second Main Hypothesis

The second main hypothesis (H2): There is a significant relationship between working capital management and market value added.

In order to test this hypothesis, multivariate regression is performed according to the specific characteristics of the collected data. The statistical description of this hypothesis is as follows:

$$H_0 : \rho = 0$$

$$H_1 : \rho \neq 0$$

In this hypothesis,  $\rho$  is the regression coefficient between the elements of working capital management and market value added.

Table 8. Results of multivariate regression coefficient for predicting MVA by the elements of working capital management

index	variable	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	(P)
	MVA and working capital elements	0.25	0.062	0.054	0.0001

Consistent with the prior hypotheses, by using the multivariate regression coefficient, the linear significant relationship between MVA and elements of working capital management is confirmed. Furthermore, the independent variable of working capital management predicts 6.20 percent of the variations in the dependent variable of MVA. Considering the above findings, it can be concluded that the variables are significantly associated. The regression analyses about the independent variables are examined in the following section.

Table 9. Results of multivariate regression analyses for the coefficients of any of the independent variables

a + cash conversion cycle + $\beta_1$ inventory management + $\beta_2$ payment period + $\beta_3$ collection period = $\beta_1$ MVA						
Explanatory variable	B	SE <sub>b</sub>	Beta	t-statistic	p-value	VIF
Residual value	154382.91	170883.29		0.90	0.36	
Average collection period	-4831.98	1527.77	-0.25	-3.16	0.002	2.41
Average payment period	-4223.71	1008.75	-0.304	-4.18	0.0001	1.91
Cash conversion cycle	-1789.56	850.02	-0.193	-2.10	0.036	3.04
Inventory turnover	-9.96	325.22	-0.023	-1.13	0.25	2.85
F	7.53					
p-value	0.0001					
Durbin-Watson	1.76					

The findings related to VIF and Durbin-Watson statistics verify the nonlinearity association between the independent variables. Table 9 documents that t statistics of the average collection period, average payment period and cash conversion cycle are negatively significant. The significance level of any of the variables are less than 0.05 and 0.01 and F-statistics is equal to 7.53 and p-value of 0.0001 confirms that his is significant at a significance level less than 0.01. Therefore, the second main hypothesis is confirmed and H0 is rejected.

*H2a: There is a significant relationship between average collection period and market value added.*

According to the specific characteristics of the collected data, Pearson correlation coefficient is used to test the hypothesis. The statistical description of this hypothesis is as follows:

$$H_0 : \rho = 0$$

$$H_1 : \rho \neq 0$$

In this hypothesis,  $\rho$  is the correlation coefficient between average collection period and market value added.

Table 10. Results of the correlation test for the relationship between average collection period and MVA

Index	Variable	R	R <sup>2</sup>	(P)
	Average collection period and MVA	-0.182	0.033	0.001

The findings disclosed in the table above confirm that there is a significant linear relationship between the two variables of average collection period and MVA in a negative form with the value of -0.182. Additionally, the results reveal that the independent variable of average collection period predicts 3.30 percent of the variations in the dependent variable of MVA. Taking the significance level of 0.01 into account, it is concluded that this hypothesis is accepted and H0 is rejected.

*H2b: There is a significant relationship between inventory turnover and market value added.*

The specific characteristics of the collected data require performing Pearson correlation coefficient to test the hypothesis. The statistical description of this hypothesis is as follows:

$$H_0 : \rho = 0$$

$$H_1 : \rho \neq 0$$

In this hypothesis,  $\rho$  is the correlation coefficient between inventory turnover and market value added.

Table 11. Results of the correlation test for the relationship between inventory turnover and MVA

Index	Variable	R	R <sup>2</sup>	(P)
	Inventory turnover and MVA	-0.103	0.010	0.055

Table 11 shows that there is no significant linear relationship between the two variables of inventory turnover and MVA. Moreover, it is found that the inventory turnover predicts only 1.00 percent of the variations in the dependent variable of MVA. The obtained significance level is greater than the intended significance level (0.05) and it is an indicator that this hypothesis is rejected and H0 is confirmed.

*H2c: There is a significant relationship between average payment period and market value added.*

Pearson correlation coefficient is applied to test the hypothesis. The statistical description of this hypothesis is as follows:

$$H_0 : \rho = 0$$

$$H_1 : \rho \neq 0$$

In this hypothesis,  $\rho$  is the correlation coefficient between average payment period and market value added.

Table 12. Results of the correlation test for the relationship between average payment period and MVA

Index	Variable	R	R <sup>2</sup>	(P)
	Average payment period and MVA	-0.214	0.045	0.021

There is a negative linear relationship between the average payment period and MVA, as shown in table above. The independent variable of average payment period predicts 4.50 percent of the variations in the dependent variable of MVA. According to the test of significance which gives a value lower than the significance level (0.021), then the null hypothesis is rejected and this hypothesis is confirmed.

*H2d: There is a significant relationship between cash conversion cycle and market value added.*

For testing this hypothesis, Pearson correlation coefficient is applied. The statistical description of this hypothesis is as follows:

$$H_0 : \rho = 0$$

$$H_1 : \rho \neq 0$$

In this regard,  $\rho$  is the correlation coefficient between average cash conversion cycle and market value added.

Table 13. Results of the correlation test for the relationship between cash conversion cycle and MVA

Index	Variable	R	R <sup>2</sup>	(P)
	Cash conversion cycle and MVA	-0.140	0.019	0.009

Using Pearson correlation coefficient, the linear significant relationship between cash conversion cycle and MVA are negatively associated. Furthermore, the independent variable of cash conversion cycle predicts only 1.90 percent of the variations in the dependent variable. Based on the test of significance which gives a value lower than the significance level (0.009), then the null hypothesis is rejected and this hypothesis is confirmed.

## 6. Discussion, Conclusion and Suggestions

Working capital dealing with the current assets and liabilities has gained significant attention in the challenging economic environment of today. The optimal management of the working capital might impact the performance of the firms and considered as a competitive advantage. Working capital is the sum of the amounts invested in the current assets and working capital management is concerned with determining the volume and compound of the resources so that the shareholders' wealth maximized. There are numerous prior studies conventionally concentrated on the long-term finance decisions and the researchers have also analyzed the issues related to investment, capital structure, and dividend and organization assessment. However, it should be noted that the major items of balance sheet include the investments on the short-term assets and those resources matured earlier than one year. Considering the challenging economical environment, the international organizations look for new ways for enhancing their growth and performance. They are also trying to mitigate the involved risk. Working capital is a significant resource for improving performance. The main objective of this study is to examine the effect of working capital management on the firms' performance. Refined market value added and market value added have been used to evaluate the performance. Consequently, a sample composed of 70 listed firms on the Tehran Stock Exchange for a five year period covering 2006 to 2010 has been selected.

Using the regression and correlation analyses to test the hypotheses, the findings show that there is no significant relationship between the elements of working capital management and REVA. The results of the

statistical tests represent that there is no linear significant relationship between REVA and the elements of working capital management at the level of 0.09. In addition, it was found that the independent variables merely predict 0.80 percent of the variations in the dependent variable. Furthermore, given the significant level (0.43) which is greater than the intended level (0.05), it can be concluded that these variables are not significantly associated. On the other hand, the findings related to test the four subsidiary hypotheses reveal that the average collection period, cash conversion cycle and inventory turnover are not significantly related. However, the results confirmed the negative significant relationship between average payment period and REVA. That is, the firms can decrease the payment period to improve the performance of the shareholders. This requires the satisfactory management of the payments and application of the credit status of the creditors. Based on the statistical tests and regression and correlation analyses, it is found that the elements of working capital management and MVA are significantly associated. The other findings imply that MVA and the elements of working capital management are related at the level of 0.25. The independent variables, moreover, predict 6.20 percent of the variations in the dependent variable of MVA. Finally, the results of the four subsidiary hypotheses of the second main hypothesis revealed that average collection period, average payment period and cash conversion cycle are negatively associated with MVA. However, inventory turnover and MVA are not significantly related.

The following suggestions are provided for the further discussions. In addition, numerous questions arise about the working capital management and elements of financial performance measures. These questions might be regarded as the schemes for the future studies:

- The sample of this study is a limited sample. Future studies might extend the sample to achieve more comprehensive findings. Implementing the policies related to the privatization of the firms and listing more firms on the Tehran Stock Exchange provide the chance to increase the number of the firms as the sample.
- The time period of this study might be also extended. Future studies can be conducted in a longer time period.
- The further studies might be concentrated on the reasons for the lack of attention paid to the working capital management of the Tehran listed firms.
- The barriers of implementing JIT system in the manufacturing entities and its relationship with the working capital management might be further examined in the future studies.

The components of the working capital management might be examined independently, specially the cash conversion cycle, tradable securities in the market, accounts receivable and inventories.

## References

- [1] Izadi Niya, N, and Taaki, A. (2010), "Examining the impact of working capital management on the profitability of the Tehran listed firms", *Financial Accounting Journal*, 2th year, No.5. pp 120-139.
- [2] Azarbayjani, K, Soroush Yar, A. and Yarian Koupayi, S. (2011), "Seeking for the best performance measure", *Audit Journal*, No. 52, pp 1-7.
- [3] Hosseini Azan Akhari, M (2006), "The Relationship between REVA and EPS and P/E ratio", Thesis on Master of Accounting, Shiraz University.
- [4] Heydar Pour, F. and Mostofi, H (2009), "The Relationship between Tobin's Q and REVA in Tehran listed firms", *Financial Accounting Quarterly*, No 1, pp 20-37.
- [5] Khorram Nezhad, M. (2007), "Operational examination of working capital management and the effective factors", Master thesis of accounting, Ferdous University of Mashhad.
- [6] Reza Zadeh, J. and Heydarian, J (2010), "Impact of working capital management on the profitability of the Iranian firms" *Financial Researches Quarterly*, pp 1- 20.
- [7] Rahnema Roud Poshti, F. and Kiyayi, A. (2009), "Describing the strategies of working capital management on the Tehran listed firms", *Accounting Knowledge and Research*, Fourth Year, No 13, pp. 1-13.
- [8] Rahnema Roud Poshti, F. and Mahmoudi, M. (2009), "Evaluating EVA and MVA in managing sgarholders' added value", *Researcher*, No.7, pp 70-79.
- [9] Atefat, M. (2010), "Examining the information content of tEVA and REVA for earnings prediction of Tehran listed firms", Master Thesis on Accounting, Marvdasht Islamic Azad University.
- [10] Assar Zadeh, H. (2011), " Impact of working capital management on the performance of the firms", Master Thesis on Accounting, Yazd Islamic Azad University.

[11] Enayati, S. (2004), "Explaining the current position of working capital management on the Tehran listed firms", Master Thesis on Accounting, Shahid Beheshti University.

[12] Fathi, S. and Tavakolli, Y. (2009), "The relationship between working capital management and financial operation of the economic entities", Journal of Business Reviews, No 36, pp 104-116.

[13] Ghahderijani, M (2006), "Examining the working capital policies in the automobile listed firms on the Tehran Stock Exchange during 1998 to 2004", Master Thesis on Accounting, Shahid Bahonar University of Kerman.

[14] Mohammadi, M (2006), "The relationship between working capital management and its components with the firms' profitability", Master Thesis on Accounting, Mashhad Azad University.

[15] Yaghoub Nezhad, A.; Vakili Fard, H and Babayi, A (2010), "the relationship between working capital management and profitability of the Tehran listed firms", Financial engineering and Portfolio management, No 2, pp 117-137.