# Effects Of Working Capital Management On Firm's Bankruptcy Probability

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**Abstract:**

*In this study, we examine the effects of working capital management on firm's bankruptcy probability listed in Tehran Stock Exchange. Inefficient working capital management makes firms face with shortage or cash surplus and they can't pay the debts and reached commitments on time. On the other hand, they can't invest their cash surplus in appropriate time and due to this, it has an undesirable effect on financial situation of the firms. One of the inter-organization factors that might make an increase in probability of firm's bankruptcy is inefficient working capital management of the firms. To measure the working capital management in this study, we use cash conversion cycle criteria and to measure the probability of bankruptcy, Altman model is used. The results of this study along with the financial data of 54 firms listed in Tehran Stock Exchange during the years of 2002-2010 indicate that,there is a negative relationship between working capital management and the risk of bankruptcy, and this means that, whatever a firm's cash conversion cycle is longer, it will be in a worse situation of bankruptcy risk.*

**Keyword:**    working capital management,bankruptcy, cash conversion cycle, Altman model.

## Introduction

Today, rapid technological development and widespread environmental changes, makes the economics gain increasing velocity, and increasing institutions competition, make an advance in the probability of bankruptcy and limit the profit achieving. Therefore, financial decisions of the managers are more strategic than before and new control methods, are used more accurate and widespread. Usually, large corporation bankruptcy is happened due to lack of optimal working capital annual ongoing losses (Hajiha, 2009).

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Regard to this, working capital is one of the issues that financial manager and researchers have paid special attention to it. Importance of working capital is due to that, if a firm doesn't have enough working capital, it can't continue to its activities.On the other hand, all of activities of an entity have effects on firm's working capital. So, by using of proper planning and management of working capital, the firm will achieved great success, and on the other hand, by using of improper planning and management of working capital, the firm will faced a lot of problems. In fact, inefficient working capital management, with the lack of maintaining an optimal level of working capital, decrease the entity's ability to pay the commitments on time and increase the risk of firm bankruptcy which this will mar credit rank of the firm.Accordingly, the main objective of working capital management for a firm is accessing of a firm to enough cash when it needed and the firm isn't faced with shortage or cash surplus (Talebi, 1998).Maintain an optimal level of working capital for a firm, make the firm doesn't have trouble with paying the reached debts and be successful in using the short-term investment opportunities (Lazaryds and Trifondis, 2008) and access to raw material needed for producing and obviating the needs for customers (Konamakos, 2008). Two main components of working capital management are ongoing assets and debts. Inefficient working capital management means the fundsinvolved in inventory or the funds still owed to the firm by costumers and can't be used to pay the commitments of an entity. Excessive investments in fixed assets and cash balance make cash restriction and unavailable to fulfill other commitments. Given the importance of this point, financial managers should understand the causes of bankruptcy truly, because they can warn managers before bankruptcy occurs and provide preventive solutions. Therefore, in this study, we examine the effects of working capital management on firm's bankruptcy probabilitylisted in Tehran Stock Exchange.

## Review of Theoretical Literature And Research Background

### Bankruptcy

Newton (1998), divided the steps ofbecoming worse towardfirm's financial situation into incubation period, cash shortage, lack of ability to pay financial or business liabilities, lack of ability to pay the whole liabilities and finally, bankruptcy. Although, most bankruptcies will follow these steps, some firms might face with bankruptcy without following all the steps. Entity's situation doesn't lead to bankruptcy, unexpectedly. During the incubation period, entity might have one or more undesirable situation, without being identifiable immediately. For example, changes in product demand, continuing increase in overhead costs, obsolescence of production methods and ..., are some of these factors. Economic drawback often occurs in incubation period and return of

assets falls. The best condition for a firm is that, the problem discovered in this step. The second point is that, easier solution that is effective in this stepwill not be workable in next steps. And the third point is that, public trust will not be subject to uncertainty if the problem is discovered in this step and solved. Remove the problem in the next steps will decrease public trust and therefore, it will be difficult to access the funds, and maybe the firm forced to reject profitable projects. Cash shortage step is started when the entity didn't access cash to fulfill current commitments or an immediate need, for the first time; Though might have physical assets more than it needs and enough profitability experiences. The problem is that, assets aren't able to change into cash and capital is restricted. During the lack of ability to pay financial or business liabilities step, firm still able to obtain enough cash from consumption canals. Management has proper tools. For example, using financial or business professionals, credit provide committee and restructuring of financing techniques. Through these methods, the problem can still be indentified and resolved in this step. It's clear that, during the lack of ability to pay the whole liabilities step, firm has been destroyed. Total debts exceed the value of firm's assets and the firm can't avoid its absolute bankruptcy, anymore.

**Working Capital Management**

Entities always faced with increasing pressure from costs rising and financial needs growing because of increased competition in global markets. Because of this, they are looking for more efficient methods to operate. Working capital management is one of the methods that have been considered intensively in financial management literature. Working capital in all entities, accounts for large part of organization's wealth, and withregard to the cases that were mentioned, its management is very important (Evanova, 2007). Despite empirical researches done on limited aspects of working capital management, limited researches have been done on general aspects of working capital management (Rel, 2005)[2]. Likely, the most comprehensive concept of working capital management has been proposed byGitman (1974)[3]as the cash conversion cycle (Kieschnick, 2009)[4]. Cash conversion cycle represents time distance between buying raw materials and hoarding and collecting amounts of money from sailing the products. Cash conversion cycle is related to receivable accounts, payable accounts and bank balance. In other words, it's related to the concept of net liquidity (Hill, Kelly, Highfield, 2008)[5]. In this study, we emphasize on the concept of net liquidity, and according to this, compatible model was explained for working capital management. Cash conversion cycle is a good way for evaluating firm's cash flow, because it considers the time dimension of liquidity

and evaluates firm's liquidity overall ability. Working capital management decisions have an impact on entity's success (Kieschnick, 2009). Working capital management is the process of managing current assets and liabilities (Talebi, 2013). To evaluate working capital management, cash conversion cycle criteria is used.

**Research Background**

Michalski (2010) suggested in his study as an optimal planning from the view of creating firm's value that, financial assets management isvery complicated process. On the one hand, when a lot of funds involved in working capital, the firm will be faced with high costs of its maintenance. On the other hand, high level of current assets can help in increasing sales revenue. Firms, alsohold cash for various reasons (discretionary, speculation, trade, and transactional). The main financial objective of any firms is tocreate value for themselves. Liquidity management is very important to achieve this goal. Filbeck and Krueger (2005) suggested after analyzing the results of working capital management in all industries that, financing costs should be reduced to develop firm's activity oravailable funds need to increase; Meanwhile, the amount of current assets involved in working capital may reach to its optimal level (minimum possible level). Aziz and Lawson (1998), introduced the model of bankruptcy based on cash flows and concluded that, cash flows have high predictive power and this is the function of financial crisis definition. Izadinia and Taki (2010) studied the effect of working capital management on firm's profitability listed in Tehran Stock Exchange. In this study, to measure working capital management and profitability, cash conversion cycle criteria and return of assets (ROA) criteria are used, respectively. The results of study show that, there is an inverse and significant relationship between cash conversion cycle and return of assets and also, high investment in inventory and receivable accounts will lead to low profitability. Fathi and Tavakkoli (2012) studied the relationship between working capital management and financial performance of economic enterprises. They found that, many factors have influence on organization's working capital, such as cash management, risk controlling tools, debt ratio, operating cash flow, etc, that if they recognized well and used by the organizations, they can be helpful to improve organization's working capital operation.SoleymaniAmiri (2011) in a study to evaluate the predictive indicators of bankruptcy in Iran, used a model with working capital ratios to total assets, current assets ratio to current liabilities, earnings before interest ratio to total assets, and sales ratio to total assets, for predicting financial crisis. The results of his study showed strong predictive ability of the model in the short-time, but with the distance from the financial

crisis, the ability of the model will decrease. The results of this study are consistent with the findings of western researchers, such as Altman and Beaver. GhadiriMoghaddam et al (2013), examined the ability of bankruptcy predictive models of Altman and Ahelson topredict the firm's bankruptcy listed in Tehran stock exchange, in a study. Findings of the study indicate that, without changing the variables and coefficients of Altman and Ahelson "Z" model, and also multiple regressions and logistics methods to extract bankruptcy predictive model, based on the estimated accuracy of these models, overall, the model proposed by Altman and Ahelson (1986), and extracted model by logistic regression are more accurate to predict bankruptcies of the firms.

**Research Methodology**

Data Collection

Since we have used field research techniques and it dealing with real firm's data, several sources, such as Tehran stock exchange organization's CDs (devise processor software, Novin Rah Avard) and stock exchange informing site are used to provide the information of firms listed in Tehran stock exchange. Excel and SPSS software is used for information processing.

Population and Statistical Sample

Statistical sample is determined with following restriction for population and adjustment it. The study sample is consists of firms that have met following conditions:

1) Financial information for the period of study should be available.
2) Their financial year shouldn't pass by the end of Esfand (March).
3) Firms that were accepted in Tehran stock exchange up to 2002-01-01 (it means, they were accepted before 2002), and the name of the firm hasn't been removed from the firms listed in Tehran stock exchange.
4) It shouldn't be an investment or intermediation firm, and also insurance or the bank.
5) It shouldn't have fiscal period changed during the study period.
6) The firm should be open for at least 4 month in a year, and its monthly returns should be available for this period.

Following above restriction, during the years of 2002-2010, 54 firms had those conditions and given that, sampling wasn't performed and all of the firms were selected for the study, accordingly.

**Research Hypothesis**

$H_1$:There is a significant relationship between working capital management and on firm's bankruptcy probability listed in Tehran Stock Exchange.

**Research Variables**

Dependent Variable

Bankruptcy based on Altman model: Altman is the first person who proposed multivariate predictive models. He used multi-discriminant analysis method and financial ratios as independent variables to predict bankruptcies of enterprises. He presented his well-known model as the Z-score model[6] that is famous for predicting bankruptcy. In this method, he selected five ratios that in his opinion, they were the best ones for predicting bankruptcy among twenty-two financial ratios. Some criticisms like exclusive applicability of this model for public institutions suggested by analysts and managers in the following years.To eliminate these criticisms, Altman was successful to remove the problems of initial model and presented new model entitled Z' in 1983 as follows:

$$Z^{'} = \alpha_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5$$

In which:

1) Working capital ratio to total assets ($X_1$)
2) Retained earnings ratio to total assets ($X_2$)
3) Earnings before interest and tax ratio to total assets ($X_3$)
4) Book value of the equity ratio to book value of liabilities ($X_4$)
5) Sales ratio to total assets ($X_5$)

Whatever Z' is lower in this model, degree of financial crisis will be higher. This means that, the firms with Z' above 2/9, will enter to normal firms category, and firms with Z' below 1/23 will be classified as bankrupt firms, and Z' between 1/23 and 2/9 treated as an uncertainty area and should be interpreted with caution. Altman's model correctly predicted 94%, respectively.

Independent Variable

Independent variable is a feature of social or physical environment that received values after selection and interference or manipulation by researcher to be observed its impact on other variables. Research independent variables are as follows:

**Working Capital Management** – Cash conversion cycle criteria is used to evaluate working capital management. Cash conversion cycle is a good way to evaluate working

capital management, because it considers the time dimension of working capital and evaluates overall firm ability about working capital. Cash cycle consists of three variables:

Debtor conversion period: Demands collection period is calculated as follows:

$$RCP = \frac{RA}{Sale \div 365}$$

In which:

RCP: average of Collection Period from debtors

RA: average of Receivable Accounts

Sale: annual sales

Also, the average of receivable accounts is obtained from dividing the sum of receivable accounts at the beginning and end points of the period by two.

**Inventory Conversion Period**–The inventory conversion period is calculated from the following ratio:

$$ICP = \frac{IA}{COGS \div 365}$$

In which:

ICP: Inventory Conversion Period

IA: Inventory Average

COGS: Cost Of Goods Sold.

Also, inventory average is obtained is obtained from dividing the sum of inventories at the beginning and end points of the period by two.

**Period of Debits Postponement** – Period of debits postponement is calculated from the following ratio:

$$PDP = \frac{PA}{COGS \div 365}$$

In which:

PDP: Period of Debits Postponement

PA: Payable accounts Average

COGS: Cost Of Goods Sold.

Also, payable accounts average is obtained from dividing the sum of payable accounts at the beginning and end points of the period by two. Following equation is used for evaluating cash conversion cycle:

$$ICP\text{-}PDP\text{+}CCC= RCP$$

Control Variables

The effects of all variables on each other can't be studied simultaneously in one study. Therefore, the researcher will control the effects of some variables or nullify them. We have used some control variables that may affect firm's bankruptcy to investigate the effect of working capital management on the probability of bankruptcy.According to the literature on the risk of bankruptcy in the studies of Homburg (2005)[7], Campbell et al (2008)[8] and Eberhart et al (2008)[9], the control variables are presented as follows: Leverage ratio ($LEV_{i,t}$), firm size ($SIZE_{i,t}$), returns of overall assets ($ROA_{i,t}$), cash changes ($\Delta CASH_{i,t}$), retained cash before the end of period ($CASH_{i,t}$), standard deviation of firm's return ($STD\_RET_{i,t}$), and the rate of risk-free return ($RATE_t$). These studies predicted that, there is a direct and significant relationship between the risk of bankruptcy with lever and the return volatility that has an inverse and significant relationship with the returns of overall assets, liquidity, cash flow, firm size, and the rate of risk-free return (Biddle et al, 2010).

**Introduction of Research Model**

According to research hypothesis and cases mentioned above, the model used in this study is presented as follows:

$$BR_{i,t}$$
$$= \gamma_1 CCC_{i,t} + \gamma_2 LEV_{i,t} + \gamma_3 ROA_{i,t} + \gamma_4 SIZE_{i,t} + \gamma_5 \Delta CASH_{i,t}$$
$$+ \gamma_6 CASH_{i,t} + \gamma_7 STD\_RET_{i,t} + \gamma_8 RATE_t + \varepsilon_{i,t}$$

In which:

$BR_{i,t}$ : Bankruptcy Risk of a firm, and

$CCC_{i,t}$ :working capital management and other presented variables, are control variables that were introduced above.

**Methodology**

Descriptive Statistics

Data analysis using central index such as the mean and median and indexes of standard deviation distribution[11], skewness[12], and kurtosis[13] is performed in descriptive statistics.The mean value shows data average. The median represent that, 50% of data are lower, and 50% of data are higher than the middle number of the set. Close values of the mean and median represent data symmetry.Standard deviation shows dispersion and

finally, skewness and kurtosis are data symmetry index and reflect their position toward normal distribution. The following table shows descriptive statistics:

**Table 1.1: Descriptive Statistics**

| Variable | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|
| **CASH** | 99031.29 | 328817.988 | 6.027 | 40.300 |
| **ΔCASH** | 12787.18 | 142697.046 | 2.027 | 32.047 |
| **ROA** | 0.2907 | 0.29288 | 1.468 | 2.182 |
| **SIZE** | 5.8202 | 0.63686 | 0.862 | 1.071 |
| **LEV** | 0.6719 | 0.15135 | -0.078 | 0.596 |
| **STDR** | 12.3825 | 8.88562 | 1.930 | 4.887 |
| **RATE** | 0.1600 | 0.000 | - | - |
| **CCC** | 206.5692 | 138.10689 | 1.851 | 7.740 |
| **BR** | 1.7573 | 0.81682 | 0.678 | 1.658 |

As it's clear, the skewness and kurtosis values are mostly close to zero. This suggests the symmetry of research variables and their closeness to normal distribution (one of the main defaults of using regression).

**Bankruptcy Model Analysis**

As mentioned in the third chapter of study, Altman $Z_{score}$ model has used to identify and classify firms into health status, between bankruptcy, and bankrupt status:

$$Z' = \alpha_0 + a_1 X_1 + a_2 X_2 + a_3 X_3 + a_4 X_4 + a_5 X_5$$

The entity is totally bankrupt if $Z' < 1.2$, between bankruptcy if $1.2 < Z' < 2.9$ and in perfect health if $Z' > 2.9$. The results of applying the above model and separating firms into three categories mentioned are described in the table ofnext page.

|  | Classification of firm's bankruptcy | Number of firms-years |
|---|---|---|
|  | **Bankrupt firms** | 103 |
|  | **Firms with intermediate status** | 297 |
|  | **Firms with health status** | 32 |
| **Total** |  | 432 |

As it can be seen here, near 24 % of 432 firms of study sample (54 firms in 8 years= 54*8) is consisted of bankrupt firms, and 69% is consisted of firms with intermediate

status (between bankruptcy and health) and the firms with health status, constituted the remainder (7%).

**Table 1.2 : The results of overall research regression model estimation**

| Coefficients | Nonstandard coefficient | | Standardized coefficient | t- statistics | Significant level | Collinear statistics |
|---|---|---|---|---|---|---|
| Model | Beta | Standard Error | Beta | | | |
| **Fixed value** | 5.224 | 0.393 | - | 13.248 | 0.000* | - |
| **Working capital management** | -0.001 | 0.000 | -0.227 | -5.753 | 0.000* | 1.131 |
| **Financial leverage** | -2.413 | 0.223 | -0.447 | -10.796 | 0.000* | 1.240 |
| **Profitability** | 0.558 | 0.117 | 0.200 | 4.756 | 0.000* | 1.281 |
| **Firm size** | -0.302 | 0.062 | -0.236 | -4.845 | 0.000* | 1.719 |
| **Liquidity changes** | -4.806 | 0.000 | -0.008 | -0.200 | 0.841 | 1.272 |
| **Cash balance at the end of period** | 2.425 | 0.000 | 0.098 | 1.864 | 0.063 | 1.983 |
| **Standard deviation of monthly stock returns** | 0.000 | 0.003 | 0.004 | 0.100 | 0.920 | 1.025 |
| **Coefficient of determination** | 0.414 | **F- statistics** | | **Significant level of F- statistics** | | |
| **Adjusted coefficient of determination** | 0.404 | 42.766 | | 0.000** | | |
| **Durbin-Watson statistics** | 1.556 | | | | | |

*significant at 5% level, **significant at 1% level

Table 1-2- shows the results of overall research regression model estimation. According to this table, it can be found that, 'sig' value (significant level), working capital management variable as an independent variable (the main research variable) is equal to 0/000 and this means that, the above null hypothesis (ie, coefficient of this variable is equal to zero) is rejected at 95% significant level, that means, it has a significant impact on research independent variable (risk of bankruptcy). As it can be seen in the above table, there is a negative relationship between working capital management and the risk of bankruptcy, and it means that, whatever working capital management is greater (ie, longercash conversion cycle), the risk of bankruptcy will be more. According to the

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content, there is a significant relationship between variables of working capital management and the risk of bankruptcy, and research hypothesis is confirmed at 95% of confidence level, and there is a significant relationship between working capital management and the risk of bankruptcy. According to results above, the estimated coefficientsof research model are as follows:

$$BR_{i,t}$$
$$= -0.227\ CCC_{i,t} - 0.447\ LEV_{i,t} + 0.200\ ROA_{i,t} - 0.236\ SIZE_{i,t}$$
$$- 0.008\ \Delta CASH_{i,t} + 0.098 CASH_{i,t} + 0.004\ STD\_RET_{i,t}$$

Other results obtained from above table are as follows:

- The amount of cash maintenance (CASH) has a positive effect on the risk of bankruptcy, but it's statistically insignificant.

- Cash changes variable ($\Delta$CASH) has a negative effect on the risk of bankruptcy, but it's statistically insignificant.

- Returns of assets variable (ROA) have a positive and significant effect on the risk of bankruptcy.

- Firm size variable (SIZE) has a negative and significant effect on the risk of bankruptcy.

- There is a negative and significant relationship between the firm's leverage ratio (LEV) and the risk of bankruptcy.

- Standard deviation returns variable (STD-RET) has a positive effect on the risk of bankruptcy, but it's statistically insignificant.

We will investigate the state of working capital management among different groups of firms (in terms of bankruptcy) in further research analysis using ANOVA and Duncan test (Duncan).

### ANOVA Test

Null hypothesis and its contrasted one are as follows:

$H0: \mu1 = \mu2 = \mu3$

*H1: atleast, the mean of both groups doesn't the same.*

The results of this test are shown in the following tables:

**Table 1.3: ANOVA**

| x | Sum of Squares | df | Mean Squares | F | Sig. |
|---|---|---|---|---|---|
| **Between Groups** | 315732.468 | 2 | 157866.234 | 8.567 | 0.000** |
| **Within Groups** | 7904951.814 | 429 | 18426.461 | | |
| **Total** | 8220684.283 | 431 | | | |

**significant at 1% leve

According to the results from the test, $H_0$ is rejected, since significance level (sig) is below 5%. In other words, there is a significant difference between the mean of populations (different groups). We will use additional test in the following since this test doesn't specify that which variables are different.

**Table 1.4: Multiple Comparisons**

| Group 1 | Group 2 | Mean Difference | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower | Upper |
| **1** | 2 | 46.13870 | 15.52223 | 0.003* | 15.6296 | 76.6478 |
| | 3 | 106.10048 | 27.47225 | 0.000* | 52.1035 | 160.0974 |
| **2** | 1 | -46.13870 | 15.52223 | 0.003* | 76.6478 | -15.6296 |
| | 3 | 59.96178 | 25.25607 | 0.018* | 10.3207 | 109.6028 |
| **3** | 1 | -106.10048 | 27.47225 | 0.000* | -160.0974 | -52.1035 |
| | 2 | -59.10678 | 25.25607 | 0.018* | 109.6028 | -10.3208 |

*significant at 5% level

First, the sample firms are divided to three groups based on Z score, in this study. We've classified bankrupt firm within the group (1), firms between bankruptcy and health status within the group (2) and health firm within the group (3), respectively. In the test above (above table) if the significance level (sig) between the groups is below 5% (Their mean equality assumption is rejected), it represents that, there is a significant difference between the mean two groups. As can be seen in the above table:

1- There is a significant different between working capital management in the bankrupt firms (group 1) and intermediate firms (group 2), and as it can be seen from (Mean Difference) column, the mean of working capital management in bankrupt firms (group 1) is higher (difference about 46.138) than the mean of working capital management in the intermediate state firms (group 2).

2- There is a significant different between the mean of working capital management in the bankrupt firms (group 1) and firms with health state (group 3). As it can be seen from (Mean Difference) column, the mean of working capital management in bankrupt firms (group 1) is higher (difference about 106.100) than the mean of working capital management in the health state firms (group 3).

3- There is a significant different between the mean of working capital management in the firms between bankruptcy and health state (group 2) and firms with health state (group 3). As it can be seen from (Mean Difference) column, the mean of working capital management in the firms between bankruptcy and health state (group 2) is higher (difference about 59.96) than the mean of working capital management in the health state firms (group 3).

**The Duncan Pairs Test**

The results of the Duncan pairs test can be seen on the table below:

**Table 1.5: Duncan pairs test**

| Group | N | Subset for algha=0.05 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| 3 | 32 | 140.0483 | | |
| 2 | 297 | | 200.01101 | |
| 1 | 103 | | | 246.1488 |
| Sig. | | 1.000 | 1.000 | 1.000 |

As it can be seen in the above table, the mean of working capital management in the firms with bankrupt status (group 1) is higher than the mean of intermediate firms (group 2) and health firms (group 3), and the difference is statistically significant. Also, as can be seen, the mean of liquidity management and in group 2 is higher than in group 3. The results of ANOVA test and Duncan pair comparison (Duncan) as described above, and the results of above table showed that, as expected, the mean of working capital management in the Firms which classified into 3 groups (bankrupt, intermediate, and health) based on the risk degree of bankruptcy, are different. The mean of working capital management in bankrupt firms had the highest value and after that, the mean value in intermediate firms and health state firms had the lowest value, respectively. Therefore, the research hypothesis about the impact of working capital management on the risk of bankruptcy is confirmed at 95% confidence level. Meanwhile, other results of the study suggest that, there is s negative

relationship between working capital management and the risk of bankruptcy, and the mean of working capital management in the firms with higher risk of bankruptcy is greater.

## Conclusions

This study seeks to answer the question that, whether working capital management had been effective to reduce the firm's bankruptcy probability listed in Tehran Stock Exchange or not? In this study, information obtained from the firms reviewed, tests with 95% confidence level using statistical software of 'Spss' for each year-firm during the years of 1383_1390. The results of hypotheses suggested that, research hypothesis using both methods of ANOVA and Duncan pair test suggested is confirmed. In other words, efficient working capital management reduces the firm's bankruptcy probability listed in Tehran Stock Exchange. This conclusion is consistent with the interpretation that, inefficient working capital management means the funds which are involved in inventory or the funds that clients are still owed to the firms and can't be used to pay liabilities of the entity. Excessive investments in fixed assets and inventories cause funds restriction and its unavailability to fulfill other liabilities which make the firm faced with the risk of instability and increase the firm's bankruptcy probability, in addition to the inefficiency of firm's daily operation.

### Suggestions

1- It is suggested that to be dealt with the relation between liquidity ratio and probability of bankruptcy.
2- It is suggested that to be dealt with the factors influencing on bankruptcy risk of non-listed companies and its comparison with listed companies.
3- It is suggested that to be dealt with the effect of market competition on bankruptcy risk.
4- It is suggested that the current study be examined to each industry separately and is dealt with the obtained results in different industries.
5- It is suggested that to be dealt with the relation between institutional investors and probability of bankruptcy.

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