Scitech
Research
Organisation

Journal of Research in Business, Economics and Management
Vol 18, 1 - 2023
E-ISSN: 2395-2210

Investigating the Effects of Working Capital Management on Firm's Profitability: An Empirical Evidence from Egyptian Firms.

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Received: December 26, 2022; Accepted: January 5, 2023; Published: January 13, 2023

Cite this article: Nagy, H. (2023). Investigating the Effects of Working Capital Management on Firm's Profitability: An Empirical Evidence from Egyptian Firms. *Journal of Research in Business, Economics and Management, 18*(1), 1-14. Retrieved from http://scitecresearch.com/journals/index.php/jrbem/article/view/2183

Abstract.

To run the company successfully, the fixed and the current assets play a commendable role. Managing the working capital is mandatory because it has a major significance on profitability and liquidity of the business concern. Usually, it is observed that, if a firm wants to take a bigger risk for bumper profits and losses, it minimizes the dimension of its working capital in relation to the revenues it generates. If it is willing to improve its liquidity, that in turn raises the level of its working capital.

This research has analysed the impact of working capital on the profitability of a sample of 25 Egyptian companies listed in the Egyptian stock exchange for a period of 10 years from 2012-2021. The various components for measuring working capital management include the Receivable days, Current ratio, and Quick ratio on the Net operating profitability of Egyptian companies. The controlled variables like; Fixed assets on total assets, the Debt ratio, and the size of the firm (measured in terms of the natural logarithm of assets) have also been used for measuring working capital management. Descriptive Statistics, Pearson's Correlation, and Regression Analysis are used for analysing this research. All these tests are used to correlate the theories contributed by the literature by several authors with the statistical results.

The results depict that, there is a positive relationship between the components of the working capital management and the profitability ratios of the Egyptian firms which indicate that, as the receivable days increase it would tend to reduce the profitability of the company. It is also observed that the negative relationship between the liquidity and the profitability of Egyptian firms. There is a positive relationship between the size and the profitability of the firm. This indicates that, as the size of the firm increases the profitability of the firm also increases. Finally, a negative relationship is observed between the debt and profitability of the Egyptian firms. The results derived from this research signify that the managers might be able to raise their profits by reducing the time for the debtors and inventories so that, time for payables would increase.

.**Keywords:** Egyptian Stock Exchange (EGX); Working Capital Management; Profitability.

1. Introduction

The efficiency of the accounting and finance department or function is one of the primary factors in modern firms that determine their ability to survive and experience long-term corporate growth (Eljielly, 2004). Working capital management (WCM) is one aspect of accounting and finance that influences, among other things, the effective operations of commercial organizations in general (Eljielly, 2004; Shin & Soenen, 1998; Tauringana & Afrifa, 2013). The management of current assets and current liabilities has been defined as WCM (Agyei & Yeboah, 2011; Tauringana & Afrifa, 2013). The concept of WCM addresses companies‟ management of their short-term capital, which is an important component of corporate financial management, and directly affects the profitability and liquidity of both small and large firms (Agyei & Yeboah, 2011; Tauringana & Afrifa, 2013).

The transition to profit maximization maintains the trade-off between liquidity and profitability (Ani, Okwo, & Ugwunta, 2012). An efficient working capital management strategy that allows the company to continue with operations and solvency influences the company's ability to survive (Evci & Ak, 2018). From this vantage point, the goal of our study is to evaluate how working capital management affects a firm's profitability.

In this study, working capital management has been represented by parts of working capital that have an impact on the firm's profitability, just like in earlier research.
Additionally, the factors selected are based on findings from empirical literature that were employed in earlier investigations. The five indices used in this analysis are therefore the current ratio, debt ratio, quick ratio, receivable days, and firm's size.

2. Theoretical and Empirical Development of Literature:

The results of the research conducted by **(Mohammad Alipour 2011)** suggest that there is a significant relationship between working capital management and profitability in the examined firms. The cash conversion cycle has a negative significant relationship with operating profit. In addition, besides the Average Payment Period, there is a negative significant association between the cash conversion cycle, Inventory Turnover in Days, and Average Collection Period. Working capital management, he concludes, has a significant impact on profitability. **Hasan Abdul-Hadi (Hasan Abdul-Hadi, 2018)** Overall, he highlights the importance of focusing on the intersection of working capital structure theory, managerial decision-making theory, and managerial communication theory to create an efficient working capital management framework. Otherwise, even the best-designed working capital system can be ruined by bad financial decision-making and communication. Between 1988 and 2019, **(Olaniyan 1, Olufemi 2, Dominic 3 2020)** examined the impact of working capital management on profitability in manufacturing firms in Nigeria. The research found that cash and bank balances (CBB), trade payables (TAP), and trade receivables (TAR) all had a positive and significant impact on manufacturing firm profitability in Nigeria, but inventory had no such impact. **Shrivastava et al. (2017), Altaf & Shah (2017), Afrifa et al. (2014), and Gill et al. (2014)** all support **the Keynesian** Liquidity Preference Theory **(2010).** This suggests that working capital management has a positive effect on Nigerian industrial companies. According to **(Irfan Aryawan and Astiwi Indriani 2020)**, most manufacturing companies in Indonesia have large amounts of cash on hand to sustain liquidity and invest in working capital. The analysis concludes that the CCC has a minimal negative impact on profitability. The ICP has no significant negative link with profitability, according to this study. The effect of working capital management on the profitability of Tanzanian non-financial firms listed on the Dar es salaam stock exchange. **(Wakara Ibrahimu 2020)** He discovered that the Average Collection Period regression coefficient is inversely related to the profitability of the company. In this study, the regression coefficient for inventory turnover in days is adversely connected with company profitability. The conversion period regression coefficient of average payables is negatively connected with company profitability. The cash conversion cycle is as follows: The profitability of the company is directly related to CCC. Control variables (debt ratio, firm size) have a large negative impact on company profitability, but the Current Ratio has a big positive impact. The effect of WCM on profitability was discussed in this paper by **(PHAM, Kien Xuan NGUYEN, Quang Ngoc, NGUYEN, Cong Van 2020)** for the Steel Industry businesses listed on the Vietnamese stock market from 2010 to 2019. The profitability of Steel Industry firms is positively correlated with the three independent variables (DPO, DIO, and DSO). The higher the number of DPO, DIO, and DSO days, the better for these companies' profitability. CCC, on the other hand, has a negative relationship with profitability, meaning that a shorter CCC leads to higher profitability. WCM has a significant impact on the profitability of Indian businesses, according to another researcher **(Saswata Chatterjee 2012)**. For Indian businesses, there is a negative association between liquidity and profitability. It's also clear that liquidity measures like CR, QR, and CCC have a significant impact on profitability. To be successful, a trade-off between profitability and liquidity must exist so that neither the profitability nor the liquidity objectives are damaged. As a firm grows, its profitability grows as well. When a company's debts are increased, the company's profitability suffers. All the conclusions reached are consistent with the findings of other scholars such **as Rahman and Nasr (2007), Deloof (2003), Eljelly (2004), and others (Shin and Soenen 1998)**. They also discovered a negative link between WCM variables CCC, CR, RD, PD, ITR, and QR, as well as profitability as measured by NOP. **(Rafathunnisa Syeda 2021)** his research is conducted on a sample of 15 trading companies during five years from 2015 to 2019. These companies were chosen at random from all the New York Stock Exchange's listed companies (NYSE). The association between Net Profitability and many working capital management factors such as average collection period, average inventory turnover in days, average payment period, and cash conversion cycle was investigated in this study. The finding showed that profitability and average collection period had a negative relationship, with the lower the average collection period, the better the profitability. The average payment period and profitability have a positive connection, meaning that as the payment term gets longer, so does profitability. It has been discovered that when the cash conversion cycle lowers, the firm's profitability increases, and managers can create a positive value for shareholders, indicating that it has been maintained. The findings of this research reveal that there is a substantial link between working capital and firm profitability. It suggests that if financial managers keep an eye on liquidity, profits will follow. From 2011 to 2015, **(Jeyan Suganya S. N 2016)** evaluated the influence of working capital management on the profitability of listed companies on the Colombo stock exchange in Sri Lanka. It was examined utilizing five years of data from 20 Standard & Poor's index companies chosen as a study sample. The cash conversion cycle, current ratio, and quick ratio were used to assess working capital management. The firm's profitability was measured using Return on Total Assets. Previous research, such as **Hina Agha (2014), Koperunthevi (2010), and Lingesiya & Nalini (2011)**, has

demonstrated that the cash conversion cycle has a negative significant impact on a firm's profitability. The research discovered a negative significant relation between cash conversion cycle (CCC) and Return on Total Assets (ROTA), as well as a positive significant influence of current ratio and quick ratio on ROTA. The cash conversion cycle, rather than the current and quick ratios, has a greater impact on profitability, according to the study. As a result, listed company finance managers might aim to reduce the days in the cash conversion cycle in attempt to reach the organization's major goal of maximum of shareholder wealth by maximizing the profitability of listed firms in Sri Lanka. Further research is expected to describe e variables affecting the firm's profitability, as there may be some other variables that have a greater impact on the business's profitability than the cash conversion cycle, current ratio, and quick ratio. **(Tirngo Dinku 2013)** was used to investigate the influence of firms' working capital management and its components on the profitability of Ethiopian micro and small businesses from Bahir Dar to 2003, using a cross-sectional analysis of 67 businesses. The study's conclusion is that the effectiveness of working capital management has a substantial impact on an organization's performance. The number of days account payable was found to have a positive link with return on asset in the study. However, there is a strong negative correlation between profitability and the number of days accounts receivables are outstanding. A negative relationship exists between the number of days account receivables, days of inventory, and the number of days accounts payable as evaluated by the cash conversion cycle period. Overall, this analysis found a strong negative association between WCM and profitability [as evaluated by the cash conversion cycle, a comprehensive measure of working capital]. It demonstrates that decreasing the cash conversion cycle can help micro and small businesses become more profitable. **(Thair A. Kaddumi, Imad Z. Ramadan 2012)** used panel data cross-sectional time series to investigate the impact of working capital management on the profitability of Jordanian industrial enterprises, using two alternative measures of profitability as substitutes for performance and two regression models. Working capital has a significant impact on the performance of Jordanian industrial enterprises, and it plays a critical role in increasing shareholder wealth by decreasing the cash conversion cycle and net trading cycle. The negative relationship between the average collection period, average inventory age, and profitability, as well as the positive relationship between the average payment period and profitability, suggest that keeping less inventory and shortening the collection period while extending the payment period will increase profitability for Jordanian industrial firms. The significant positive effect of the current assets to total assets ratio on profitability suggests that Jordanian industrial firms have a traditionalist working capital investment policy, while the significant negative effect of the current liabilities to total assets ratio on profitability indicates that Jordanian industrial firms have a less effective capital financing policy. According to **Abdul Basit (2016),** inventory turnover ratio, collection period, and working capital turnover ratio have no significant impact on firm profitability, indicating that quick dispatch of inventory stock has no impact on the profitability of the sample consumer product companies listed on Bursa Malaysia. On the other hand, the cash conversion cycle has a substantial positive impact on return on asset, indicating that quick cash conversion has a big impact on the profitability of a consumer goods company listed on the Bursa Malaysia stock exchange. **Ahmed SU, Mahtab N, Islam, and Abdullah M (2017)** investigated how Bangladeshi textile companies manage their working capital. The study gave researchers, strategy makers, investors, and professionals a general agenda to guide future research. After analyzing eight years of data from 22 Bangladeshi garments companies listed on the Dhaka stock exchange, the authors concluded that among the various components of working capital management, current liability to total asset and current ratio have significant effects on profitability of Bangladeshi garments companies, and that effective working capital management has a significant impact on profitability of Bangladeshi garments companies. Working capital management that is effective has a positive impact on the clothes' profitability. As a result of this research, it was discovered that effective working capital management can improve the profitability of all clothes in Bangladesh's textile sector. Only textile companies listed on the Dhaka Stock Exchange were included in this analysis. The study's conclusions may only be beneficial to textile or comparable businesses. Future study should look beyond the textile companies listed on the Dhaka Stock Exchange. Further research could focus on working capital management, as well as the company's size and sales growth. **(Joseph Mbawuni, Mercy Hawa Mbawuni, and Simon Gyasi Nimako) (2016)** looked at the influence of WCM on the profitability of selected PRFs in Ghana from 2008 to 2013.Their study indicated that there is positive or favorable net working capital for the firms in the PRFs in Kumasi Metropolis, as well as a positive networking capital to total assets ratio, based on objective analysis of the facts and conclusions. Average days payable is the most crucial WCM component that drives the firm's profitability, as assessed by ROA (ADP). CCC, ADI, and ADR, the remaining WCM components, have no meaningful link with profitability is positively related to ROA, according to the findings.and that Average number of days inventory (ADI) is negatively associated with ROA.ADR is positively associated with ROA, but the relationship is not significant. The results of CCC, ADI and Average number of days accounts receivable (ADR)are similar for these two firms and suggest that the relationship between ADR and profitability might be significant in some firms and non-significant in others.

3. Research Questions, Objective, and Goals:

This research is mainly based on the factors which influence working capital management (WCM) by companies listed on Egyptian stock market as it affects corporate’s profitability, risk and consequently its value.

3.1 Research Background and Problem Statement:

Maintaining proper liquidity means that funds are restricted to liquid assets, putting them unavailable for operational use or for larger investments. As a result, there is an opportunity cost associated with the maintenance of those liquid assets, which may have an impact on the firm's overall profitability.

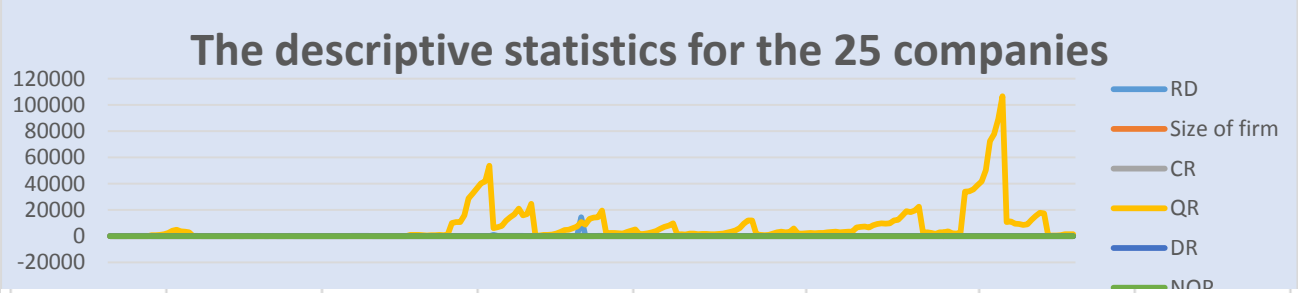
To put it another way, increasing profitability tends to lower firm liquidity, and focusing too much on liquidity tends to impact profitability.
As a result, any firm's aim is to maximize profitability while retaining liquidity. However, growing profits at the expense of liquidity could put the company in considerable danger, and this dilemma could lead to financial bankruptcy.
As a result, an effective WCM would be required to find a balance between the firm's two fundamental aims. The liquidity of the company should not be excessively high or too low. On the one hand, excessive liquidity refers to the building of funds that do not generate any benefit for the company.
Insufficient liquidity, on the other hand, may harm the firm's goodwill, decrease its credit rankings, and result in the forced liquidation of the firm's assets. Following that, issues such as bankruptcy and insolvency may arise. To conclude, a corporation that is unable to earn profits is considered sick, but a company that lacks liquidity may cease to exist.

3.2 The Goals/Objectives of This Research Are:

1- The association between the efficient WCM and profitability of the Egyptian firms.
2- The relationship between liquidity and profitability for the Egyptian firms.
3- The relationship between size of the Egyptian firms and their profitability.
4- The relationship between the debt used by the Egyptian firms and their profitability.

4. Research Model:

This study is based on secondary sources of information. Others that have used secondary data include Lazardis and Tryfonidis (2006), Raheman and Nasr (2007), Deloof (2003), Narware (2004), Zariyawati et al. (2007), Uyar (2009), Sing and Pandey (2008), and others. Moreover, due to the nature, quantity, and complexity of a company's financial information, it is difficult for an individual to collect data from many corporations.
There are primarily two forms of data analysis used in this study: quantitative and descriptive analysis.
Descriptive statistics depict the mean the standard deviation from the mean as well as the maximum and the minimum values for the chosen variables. This is helpful because, it gives a clear idea about the variables. Now, why is descriptive statistics important? It is used to describe the basic features of the data set. It is a snapshot of the samples and their measures. Along with the graphical representation it becomes clearer for every quantitative analysis of data. Descriptive statistics is different compared to the inferential statistics. The Descriptive statistics on one hand shows the exact position of the data whereas, in the inferential statistics a researcher tries to reach the conclusion that extends ahead of the immediate data itself. The Appendix-1 below gives a clear picture about the descriptive statistics.



	RD	size of firm	CR	QR	DR	NOP
Mean	88.6674	3.6198	1.7137	7256.3593	.6123	.2017
Std. Deviation	942.32042	1.15593	2.36023	14241.02990	.40525	.19370
Minimum	1.03	-2.52	-1.41	-10.80	.08	-.62
Maximum	14335.23	5.14	32.19	106575.69	3.90	.71

Figure 1 Graphical Representation of the Descriptive Statistics for 25 Egyptian Companies

The descriptive statistics for 232 observations that is 25 different companies in 10 years show that: The mean value of NOP for all the Firms is 20.17% with a maximum of 71% profit and a minimum of -62%. The standard deviation also shows a 19.37% of deviation from the mean. The average debt ratio (DR) is 61.23% with a minimum of 8% debt for certain firms and a maximum of 390% of debt to some followed by the standard deviation of 40.53%. Of the liquidity indicators firstly, the current ratio shows a mean of 1.71:1 a maximum value of 32.19:1 and a minimum value of -1.41:1. The standard deviation for CR is 2.36. Secondly, the QR has -10.80:1 as minimum, 106575.69:1 as maximum, 7256.36:1 as an average and 14241.03 as standard deviation, the RD has a maximum value of 14335.23 days, a minimum of 1.03 days and a mean of 88.67 days followed by a standard deviation of 942.32. The size of firm has a maximum of 5.14, a minimum of -2.52 and a mean of 3.62 with a standard deviation of 1.16.
The 25 firms are classified into 14 industries company, 7 service company and 4 real estate company.

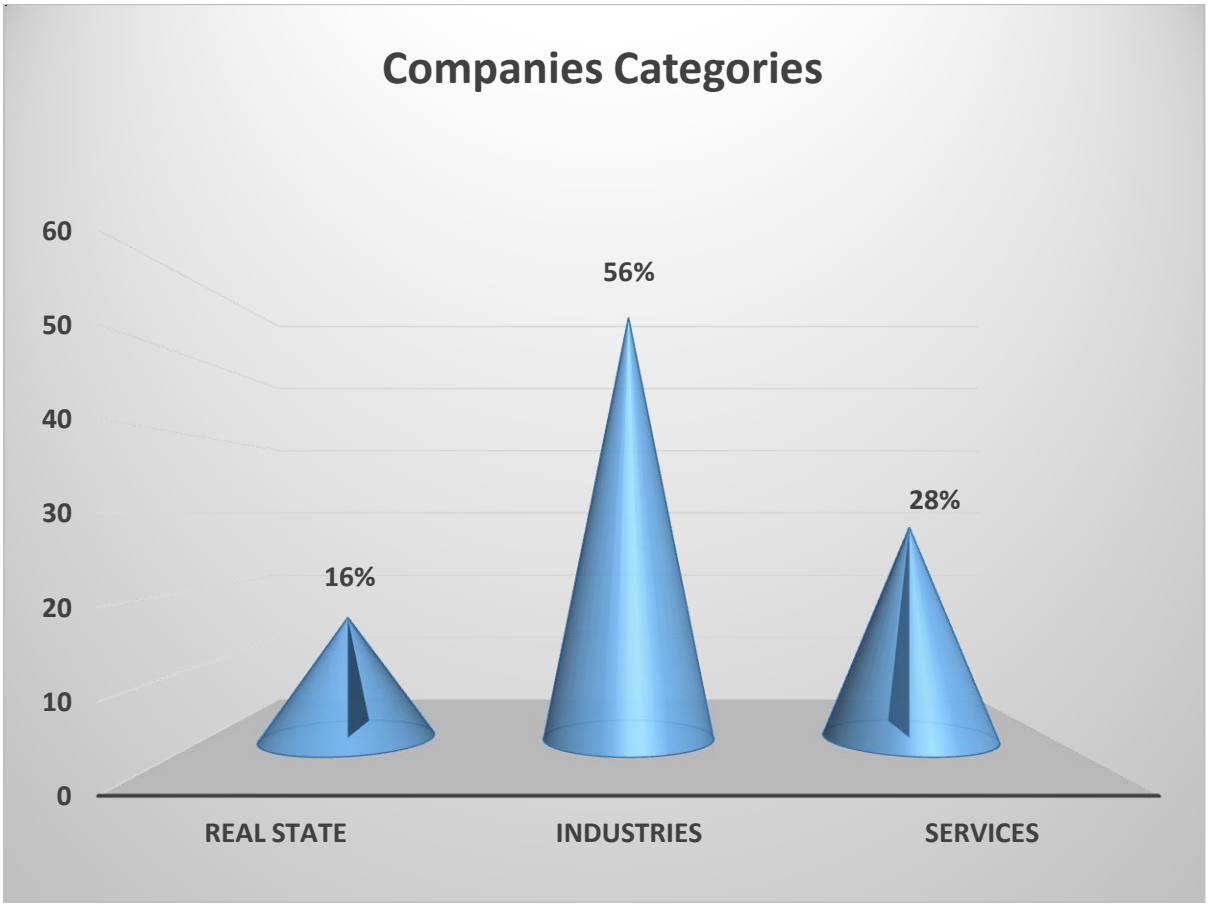
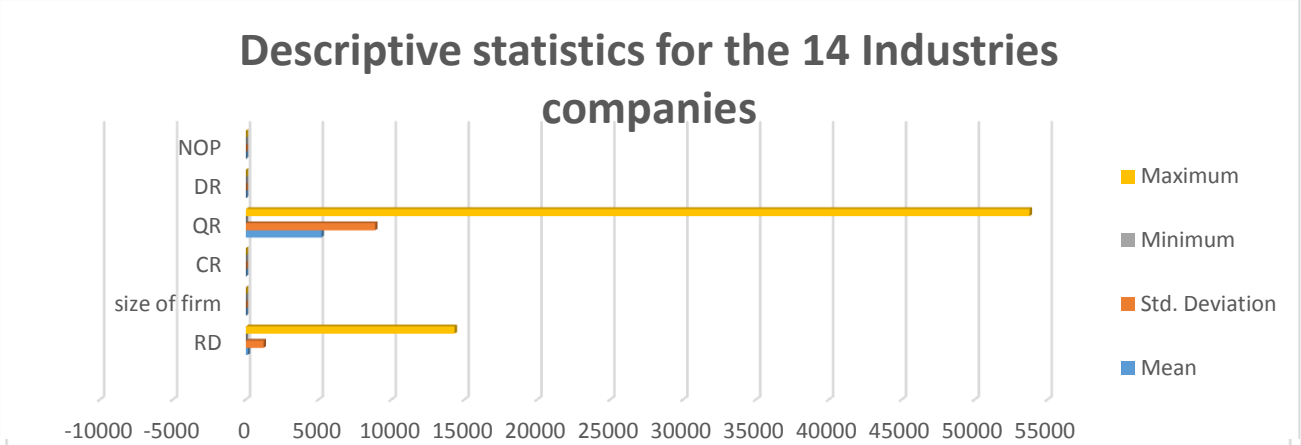


Figure 2 Categories of Companies

Industries Company

The descriptive statistics for 136 observations that is 14 Industries companies in 10 years show that: The mean value of NOP for the Industries companies is 19.46% with a maximum of 69% profit and a minimum of -9%. The standard deviation also shows a 17.27% of deviation from the mean. The average debt ratio (DR) is 51.76% with a minimum of 8% debt for certain company and a maximum of 121% of debt to some followed by the standard deviation of 21.62%. Of the liquidity indicators firstly, the current ratio shows a mean of 1.73:1 a maximum value of 8.80:1 and a minimum value of 0.23:1. The standard deviation for CR is 1.39. Secondly, the QR has -0.22:1 as minimum, 53765.89:1 as maximum, 5195.61:1 as an average and 8874.94 as standard deviation, the RD has a maximum value of 14335.23 days, a minimum of 1.79 days and a mean of 142.39 days followed by a standard deviation of 1229.67. The size of firm has a maximum of 4.83, a minimum of 2.75 and a mean of 3.84 with a standard deviation of 0.47.

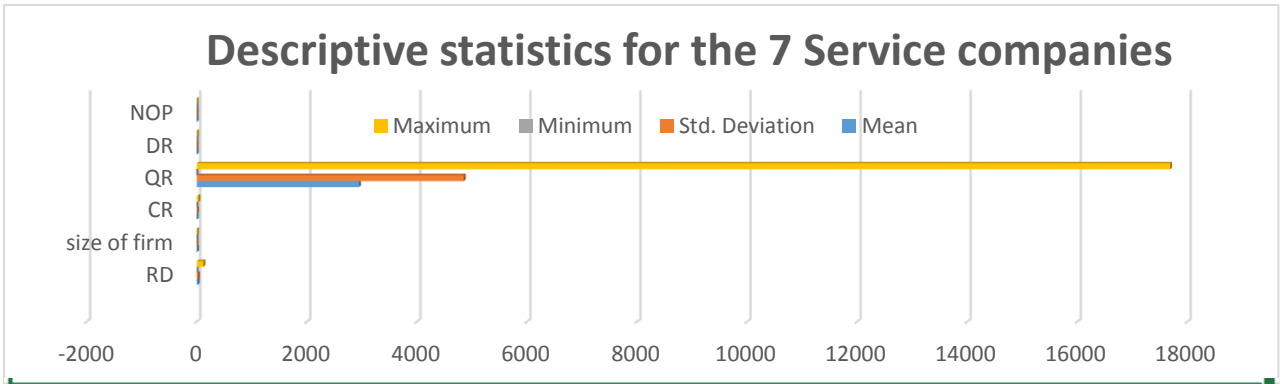


	RD	size of firm	CR	QR	DR	NOP
Mean	142.3956	3.8443	1.7280	5195.6063	.5176	.1946
Std. Deviation	1229.66768	.47362	1.38993	8874.93968	.21618	.17273
Minimum	1.79	2.75	.23	.22	.08	-.09
Maximum	14335.23	4.83	8.80	53765.89	1.21	.69

Figure 3 Graphical Representation of the Descriptive Statistics for 14 Industries Companies

Service Company

The descriptive statistics for 58 observations that is 7 Service companies in 10 years show that: The mean value of NOP for the Service companies is 14.28% with a maximum of 45% profit and a minimum of -62%. The standard deviation also shows a 20.08% of deviation from the mean. The average debt ratio (DR) is 77.44% with a minimum of 13% debt for certain company and a maximum of 390% of debt to some followed by the standard deviation of 70.37%. Of the liquidity indicators firstly, the current ratio shows a mean of 1.81:1 a maximum value of 32.19:1 and a minimum value of -1.41:1. The standard deviation for CR is 4.21. Secondly, the QR has -10.80:1 as minimum, 17688.72:1 as maximum, 2948.27:1 as an average and 4850.93 as standard deviation. The RD has a maximum value of 120.94 days, a minimum of 1.23 days and a mean of 19.74 days followed by a standard deviation of 24.08. The size of firm has a maximum of 4.96, a minimum of -2.52 and a mean of 2.74 with a standard deviation of 1.88.

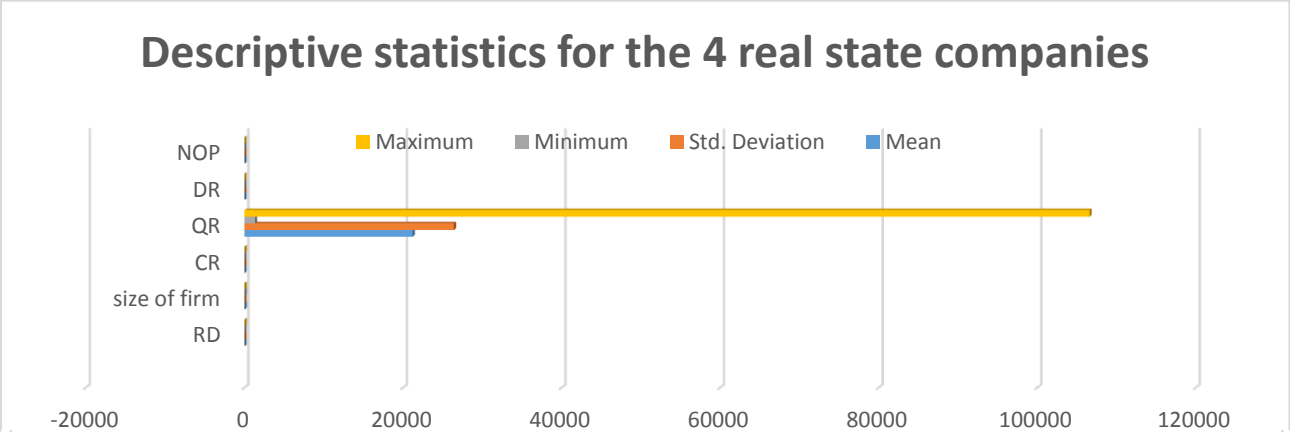


	RD	size of firm	CR	QR	DR	NOP
Mean	19.7412	2.7445	1.8080	2948.2747	.7744	.1428
Std. Deviation	24.08206	1.88470	4.21308	4850.93823	.70366	.20084
Minimum	1.23	-2.52	-1.41	-10.80	.13	-.62
Maximum	120.94	4.96	32.19	17688.72	3.90	.45

Figure 4 Graphical Representation of the Descriptive Statistics for 7 Service Companies

Real Estate Company

The descriptive statistics for 38 observations that is 4 real state companies in 10 years show that: The mean value of NOP for the real state companies is 31.72% with a maximum of 71% profit and a minimum of -50%. The standard deviation also shows a 20.96% of deviation from the mean. The average debt ratio (DR) is 70.42% with a minimum of 51% debt for certain company and a maximum of 87% of debt to some followed by the standard deviation of 9.59%. Of the liquidity indicators firstly, the current ratio shows a mean of 1.52:1 a maximum value of 3.30:1 and a minimum value of 0.89:1. The standard deviation for CR is 0.58. Secondly, the QR has 1325.40:1 as minimum, 106575.69:1 as maximum, 21207.18:1 as an average and 26418.72 as standard deviation. The RD has a maximum value of 3.18 days, a minimum of 1.03 days and a mean of 1.58 days followed by a standard deviation of 0.39. The size of firm has a maximum of 5.14, a minimum of 3.15 and a mean of 4.15 with a standard deviation of 0.61.



	RD	size of firm	CR	QR	DR	NOP
Mean	1.5803	4.1521	1.5185	21207.1833	.7042	.3172
Std. Deviation	.39393	.61167	.57613	26418.72220	.09585	.20959
Minimum	1.03	3.15	.89	1325.40	.51	-.50
Maximum	3.18	5.14	3.30	106575.69	.87	.71

Figure 5 Graphical Representations of the Descriptive Statistics for 4 Real State Companies

Research Hypothesis Analysis

Analysis Hypothesis one:

"There is a statistically significant relationship between WCM and the profitability of the Egyptian firms"
1/1 measuring the strength of the relationship between the WCM and the profitability of the Egyptian firms (correlation coefficient).

The following table number (1) shows the Pearson correlation coefficient of the WCM and the profitability of the Egyptian firms

Table (1) Pearson correlation coefficient between the WCM and the profitability of the Egyptian firms

Independent variable	Person Coefficient	Sig.
WCM	0.211	.001

Through the previous table, we can clear that:

- The existence of a correlation between the WCM and the profitability of the Egyptian firms has a significant level of less than 1% and this indicates that there is a relation between the WCM and the profitability of the Egyptian firms.

- There is a link direct correlation (positive) between WCM and the profitability of the Egyptian firms where the signal correlation coefficient is positive, and this means that there was a positive relationship.

➢ Measuring the impact of the WCM on the profitability of the Egyptian firms (simple regression)

The following table number (2) shows the simple regression analysis between the profitability of the Egyptian firms (dependent variable) and the WCM (independent variable)

Table (2) Model results and tests of the impact of the WCM on the profitability of Egyptian firms.

Variable	Coefficient	T-test	Sig.	R^2
Constant	0.198	15.816	0.00	0.045
the WCM	0.043	3.274	0.001	
F test = 10.722 Sig.=0.001 d.f = 1, 230 Std. error of the estimate = 0.190				

The above table shows the following:

- The results of the previous table emphasized the moral of the simple linear regression model which emphasized the value of the test (F calculated = 10.722), which emphasizes the significance of statistically significant at the level of 0.01 by degrees of freedom (1,230).
- An indication of a positive regression coefficient for the independent variable, means that the relationship between the profitability of the Egyptian firm and the WCM is, a positive relationship, in the sense that the increase in the WCM leads to the increase in profitability of the Egyptian firm.
- The increase in the WCM by one unit leads to a change in direction in the profitability of the Egyptian firm by about 0.043 units.
- The significance level to test T-test for the independent variable with the dependent variable is 0.001, which is lower than 5% and this indicates the existence of a correlation significant between the WCM and the profitability of the Egyptian firms.
- Coefficient of determination R^2 shows the percentage of the explanations that can explain the WCM for the profitability of the Egyptian firm's changes which is 4.5%.
- The value of the standard error of the estimate (0.922) that there were no significant differences between the real value of the profitability of the Egyptian firms and the values predicted by a simple linear regression model where the value of the standard error of the estimate is relatively limited.

➢ Determination of model parameters:
using the method of least squares (Ordinary Least Square) In light of the results of proliferation in the previous step has been reached that the model is as follows:

$$NOP_{it} = 0.198 + 0.043\ RD_{it} + \varepsilon$$

The results also confirmed the proportional relationship between the receivable days (independent variable), and net operating profit (dependent variable). There is a direct relationship between the impact of receivable days on net operating profit.

Clear from the above, the truth of the first hypothesis that says:
" There is statistically significant a positive relationship between WCM and the profitability of the Egyptian firms"

Analysis Hypothesis Two:

Hypothesis Two:

"There is a statistically significant relationship between the liquidity of Egyptian firms and their profitability"
1/1 measuring the strength of the relationship between the liquidity of Egyptian firms and their profitability (correlation coefficient).
The following table number (3) shows the Pearson correlation coefficient of the dimensions of liquidity of Egyptian firms and their profitability

Table (3) Pearson correlation coefficient between the dimensions of liquidity of Egyptian firms and their profitability

Independent variable	Person Coefficient	Sig.
Current Ratio	- 0.650	0.00
Quick Ratio	- 0.367	0.00

Through the previous table, we can clarify that:

- The existence of a correlation between the dimensions of liquidity (Current Ratio, Quick Ratio) and the profitability of the Egyptian firms as the significance level of less than 1% indicates that there is a relation between the dimensions of liquidity (Current Ratio, Quick Ratio) and the profitability of the Egyptian firms.
- There is a link direct correlation (negative) between dimensions of liquidity (Current Ratio, Quick Ratio) and the profitability of the Egyptian firms where the signal correlation coefficient is negative, and this means that there was an inverse relationship.

➢ Measuring the impact of the dimensions of liquidity (Current Ratio, Quick Ratio) on the profitability of the Egyptian firms (Multiple Regression)
The following table number (4) shows the Multiple regression analysis between the profitability of the Egyptian firms (dependent variable) and the dimensions of liquidity (current ratio and quick ratio) as (independents variables)

Table (4) Model results and tests of the impact of the dimensions of liquidity (current ratio and quick ratio) on the profitability of Egyptian firms.

Variable	Coefficient	T-test	Sig.	R^2
Constant	0.299	24.701	0.00	0.436
current ratio	-0.049	11.058	0.00	
quick ratio	-0.020	2.343	0.02	
F test = 88.428 Sig.=0.00 d.f = 2, 229 Std. error of the estimate = 0.146				

The above table shows the following:

- The results of the previous table emphasized the moral of the Multiple linear regression model which emphasized the value of the test (F calculated = 88.428), which emphasizes the significance of statistically significant at the level of 0.01 by degrees of freedom (2,229).
- An indication of a negative regression coefficient for the independent variable means that the relationship between the profitability of the Egyptian firm and the dimensions of liquidity (current ratio and quick ratio), is an inverse relationship, in the sense that the increase in the dimensions of liquidity leads to the decrease in profitability of the Egyptian firm.
- The increase in the current ratio by one unit leads to a change in direction in the profitability of the Egyptian firm by about (- 0.049) units.
- The increase in the quick ratio by one unit leads to a change in direction in the profitability of the Egyptian firm by about (-0.020) units.
- The significance level to test T-test for the independent variable (current ratio and quick ratio) with the dependent variable is (0.00, 0.02), respectively, which is lower than 5% and this indicates the existence of a correlation significant between the dimensions of liquidity and the profitability of the Egyptian firms.
- Coefficient of determination R^2 shows the percentage of the explanations that can explain the dimensions of liquidity for the profitability of the Egyptian firm's changes which is 43.6%.
- The value of the standard error of the estimate (0.146) that there were no significant differences between the real value of the profitability of the Egyptian firms and the values predicted by a simple linear regression model where the value of the standard error of the estimate is relatively limited.

➢ Determination of model parameters:

using the method of least squares (Ordinary Least Square) In light of the results of proliferation in the previous step has been reached that the model is as follows:

$$NOP_{it} = 0.299 - 0.049\ CR_{it} - 0.020\ QR_{it} + \varepsilon$$

The results also confirmed the proportional relationship between the dimensions of liquidity (current ratio and quick ratio) (independent variables), and net operating profit (dependent variable). There is a direct relationship between the impact of dimensions of liquidity (current ratio and quick ratio) on net operating profit.

Clear from the above, the truth of the Second hypothesis that says:
" There is statistically significant a negative relationship between the liquidity of Egyptian firms and their profitability

Analysis Hypothesis Three:

"There is a statistically significant relationship between the size of the Egyptian firms and their profitability"

1/1 measuring the strength of the relationship between the size of the Egyptian firms and their profitability (correlation coefficient).

The following table number (5) shows the Pearson correlation coefficient of the size of the Egyptian firms and their profitability

Table (5) Pearson correlation coefficient between the size of the Egyptian firms and their profitability

Independent variable	Person Coefficient	Sig.
size of the Egyptian firms	0.777	0.00

Through the previous table, we can clear that:

- The existence of a correlation between the size of the Egyptian firms and their profitability has a significant level of less than 1% and this indicates that there is a relation between the size of the Egyptian firms and their profitability.
- There is a link direct correlation (positive) between the size of the Egyptian firms and their profitability where the signal correlation coefficient is positive, and this means that there was a positive relationship.

➢ Measuring the impact of the size of the Egyptian firms on their profitability (simple regression)
The following table number (6) shows the simple regression analysis between the profitability of the Egyptian firms (dependent variable) and the size of the Egyptian firms (independent variable)

Table (6) Model results and tests of the impact of the size of the Egyptian firms on their profitability.

Variable	Coefficient	T-test	Sig.	R^2
Constant	0.270	10.207	0.00	0.604
the size of the Egyptian firms	0.130	18.727	0.00	
F test = 350.71 Sig.=0.00 d.f = 1, 230 Std. error of the estimate = 0.122				

The above table shows the following:

- The results of the previous table emphasized the moral of the simple linear regression model which emphasized the value of the test (F calculated = 350.71), which emphasizes the significance of statistically significant at the level of 0.01 by degrees of freedom (1,230).
- An indication of a positive regression coefficient for the independent variable, means that the relationship between the size of the Egyptian firms with their profitability is, a positive relationship, in the sense that the increase in the size of the Egyptian firms leads to an increase in their profitability.
- The increase in the size of the Egyptian firms by one unit leads to a change in direction in the profitability of the Egyptian firm by about 0.130 units.
- The significance level to test T-test for the independent variable with the dependent variable is 0.001, which is lower than 5% and this indicates the existence of a correlation significant between the size of the Egyptian firms and the profitability of Egyptian firms.
- Coefficient of determination R^2 shows the percentage of the explanations that can explain the size of the Egyptian firms for the profitability of the Egyptian firm's changes which is 60.4%.
- The value of the standard error of the estimate (0.122) that there were no significant differences between the real value of the profitability of the Egyptian firms and the values predicted by a simple linear regression model where the value of the standard error of the estimate is relatively limited.

➢ Determination of model parameters:

using the method of least squares (Ordinary Least Square) In light of the results of proliferation in the previous step has been reached that the model is as follows:

$$NOP_{it} = 0.270 + 0.130 \text{ Size of firm}_{it} + \varepsilon$$

The results also confirmed the proportional relationship between the size of the Egyptian firms (independent variable), and net operating profit (dependent variable). There is a direct relationship between the impact of the size of the Egyptian firms on net operating profit.

Clear from the above, the truth of the third hypothesis says:

" There is statistically significant a positive relationship between the size of the Egyptian firms and their profitability "

Analysis Hypothesis four:

"There is a statistically significant relationship between the debt used by the Egyptian firms and their profitability"

1/1 measuring the strength of the relationship between the debt used by the Egyptian firms and their profitability (correlation coefficient).

The following table number (7) shows the Pearson correlation coefficient of the debt used by the Egyptian firms and their profitability

Table (7) Pearson correlation coefficient between the debt used by the Egyptian firms and their profitability

Independent variable	Person Coefficient	Sig.
debt used by the Egyptian firms	- 0.842	0.00

Through the previous table, we can clarify that:

- The existence of a correlation between the debt used by the Egyptian firms and their profitability has a significant level of less than 1% and this indicates that there is a relation between the debt used by Egyptian firms and their profitability.
- There is a link direct correlation (negative) between the debt used by the Egyptian firms and their profitability where the signal correlation coefficient is negative, and this means that there was an inverse relationship.

- Measuring the impact of the debt used by the Egyptian firms on their profitability (simple regression)

The following table number (8) shows the simple regression analysis between the profitability of the Egyptian firms (dependent variable) and the debt used by the Egyptian firms (independent variable)

Table (8) Model results and tests of the impact of the debt used by the Egyptian firms on their profitability.

Variable	Coefficient	T-test	Sig.	R^2
Constant	0.448	35.961	0.00	0.709
the debt used by the Egyptian firms	- 0.403	23.697	0.00	
F test = 561.54 Sig.=0.00 d.f = 1, 230 Std. error of the estimate = 0.105				

The above table shows the following:

- The results of the previous table emphasized the moral of the simple linear regression model which emphasized the value of the test (F calculated = 561.54), which emphasizes the significance of statistically significant at the level of 0.01 by degrees of freedom (1,230).
- An indication of a negative regression coefficient for the independent variable means that the relationship between the debt used by the Egyptian firms with their profitability is, an inverse relationship, in the sense that the increase in the debt used by the Egyptian firms leads to a decrease in their profitability.
- The increase in the debt used by the Egyptian firms by one unit leads to a change in direction in the profitability of the Egyptian firm by about (- 0.403) units.
- The significance level to test T-test for the independent variable with the dependent variable is 0.00, which is lower than 5% and this indicates the existence of a correlation significant between the debt used by the Egyptian firms and the profitability of Egyptian firms.
- Coefficient of determination R^2 shows the percentage of the explanations that can explain the debt used by the Egyptian firms for the profitability of the Egyptian firm's changes which is 70.9%.
- The value of the standard error of the estimate (0.105) that there were no significant differences between the real value of the profitability of the Egyptian firms and the values predicted by a simple linear regression model where the value of the standard error of the estimate is relatively limited.

- Determination of model parameters:

using the method of least squares (Ordinary Least Square) In light of the results of proliferation in the previous step has been reached that the model is as follows:

$$NOP_{it} = 0.448 - 0.403\ DR_{it} + \varepsilon$$

The results also confirmed the proportional relationship between the debt used by the Egyptian firms (independent variable), and net operating profit (dependent variable). There is a direct relationship between the impact of the debt used by Egyptian firms on net operating profit.

Clear from the above, the truth of the fourth hypothesis says:
" There is statistically significant a negative relationship between the debt used by the Egyptian firms and their profitability "

- Measuring the impact of all dimensions (RD, CR, QR, DR, size of firm) on the profitability of the Egyptian firms (Multiple Regression)
The following table number (9) shows the Multiple regression analysis between the profitability of the Egyptian firms (dependent variable) and all dimensions (RD, CR, QR, DR, size of firm) as (independents variables)

Table (9) Model results and tests of the impact of all dimensions (RD, CR, QR, DR, size of firm) on the profitability of Egyptian firms.

Variable	Coefficient	T-test	Sig.	R^2
Constant	0.374	5.172	0.00	0.745
RD	0.260	3.673	0.00	
CR	-0.030	3.838	0.00	
QR	-0.023	3.700	0.00	
Size of firm	0.186	4.375	0.00	
DR	-0.456	8.906	0.00	
F test = 132.341 Sig.=0.00 d.f = 5, 226 Std. error of the estimate = 0.099				

The above table shows the following:

- The results of the previous table emphasized the moral of the Multiple linear regression model which emphasized the value of the test (F calculated = 132.341), which emphasizes the significance of statistically significant at the level of 0.01 by degrees of freedom (5,226). (RD, CR, QR, DR, size of firm)
- An indication of a positive regression coefficient for the independent variable (RD, size of firm), means that the relationship between the profitability of the Egyptian firm and the dimensions (RD, size of firm), is a positive relationship, in the sense that the increase in dimensions (RD, size of firm) leads to the increase in profitability of the Egyptian firm.
- An indication of a negative regression coefficient for the independent variable (CR, QR, DR), means that the relationship between the profitability of the Egyptian firm and the dimensions (CR, QR, DR), is an inverse relationship, in the sense that the increase in dimensions (CR, QR, DR) leads to the decrease in profitability of the Egyptian firm.
- The significance level to test T-test for the independent variable with the dependent variable is 0.00, which is lower than 5% and this indicates the existence of a correlation significant between all dimensions (RD, CR, QR, DR, size of firm) and the profitability of the Egyptian firms.
- Coefficient of determination R^2 shows the percentage of the explanations that can explain all dimensions (RD, CR, QR, DR, size of firm) for the profitability of the Egyptian firm's changes which is 74.5%.
- The value of the standard error of the estimate (0.099) that there were no significant differences between the real value of the profitability of the Egyptian firms and the values predicted by a simple linear regression model where the value of the standard error of the estimate is relatively limited.

- Determination of model parameters:

using the method of least squares (Ordinary Least Square) In light of the results of proliferation in the previous step has been reached that the model is as follows:

$$NOP_{it} = 0.374 + 0.260\ RD_{it} - 0.030\ CR_{it} - 0.023\ QR_{it} + 0.186\ SoF_{it} - 0.456\ DR_{it} + \varepsilon$$

The results also confirmed the proportional relationship between all dimensions (RD, CR, QR, DR, size of firm) (independent variables), and net operating profit (dependent variable). There is a direct relationship between the impact of all dimensions (RD, CR, QR, DR, size of firm) on net operating profit.

5. conclusion and recommendation

The results of the research show that in the studied companies there is a positive significant relationship between working capital management and profitability. There is also a positive significant relationship between the size of the firm and profitability. there is also a negative significant relationship between liquidity and profitability. Also, there is a negative significant relationship between debt ratio and profitability in the end we can conclude that working capital management has a great effect on the profitability of the companies and the managers must look for the methods that by means of them and correct management be effective on the profitability of the companies. Considering the results, research suggestions are this way.

Looking at the search result,
First, the company's objectives must be to increase investments and to increase the company's profits, the capital must be used in full, and in the event of an excess of liquidity, the surplus must around 2 % or 3 % of the value of the company's exploited capital, and the rest of the surplus capital must be used to purchase bonds, securities or shares until Providing the opportunity to make expansions in the company by exploiting the surplus capital to obtain the highest profits.

Second, to avoid the negative relationship between the debt ratio and profitability to reduce the debt ratio to the least risk to the company, companies must do Debt Restructuring
Restructuring debt provides another way to reduce the debt ratio. If a company is largely paying relatively high-interest rates on its loans, and current interest rates are significantly lower, the company can seek to refinance its existing debt. This will reduce both interest expenses and monthly payments, improving the company's profitability and cash flow and increasing its stores of capital.

Third, coming to the relationship between the size of the company and profitability it is believed that the size of the firm plays a major role in elevating the profitability of Egyptian firms. The growth in the size of the company could be due to the increase in investment in the assets. controls for effects of scale economies and market power associated with a firm's size.
The size of a firm has a positive relationship with profitability so as the size of the firm increases, the profitability of the firm also increases.

finally, Accounts receivable ratios are indicators of a company's ability to efficiently collect accounts receivable and the rate at which their customers pay off their debts. Although numbers vary across industries, higher ratios are often preferable as they suggest faster turnover and healthier cash flow. Businesses that get paid faster tend to be in a better financial position.

References

[1] Eljelly, A.M.A. (2004), "Liquidity - profitability tradeoff: An empirical investigation in an emerging market", International Journal of Commerce and Management, Vol. 14 No. 2, pp. 48-61. https://doi.org/10.1108/10569210480000179

[2] Alipour, Mohammad. (2011). Working Capital Management and Corporate Profitability: Evidence from Iran. World Applied Sciences Journal. 12. 1093-1099.

[3] Oladipo, O. N., Adegboyo, O. S., & Olugbamiye, D. O. (2020, November 24). Effects of Working Capital Management on Profitability in Manufacturing Firms in Nigeria | The Journal of Accounting and Management.

[4] Aryawan, I., & Indriani, A. (2020, June 30). Working capital management and profitability: evidence from Indonesian manufacturing companies | Aryawan | Diponegoro International Journal of Business.

[5] Nyabakora, Wakara. (2020). The Effect of Working Capital Management on Firm's Profitability (A Case of Tanzania). IOSR Journal of Business and Management. 22. 19-27. 10.9790/487X-2205081927.

[6] Quang Ngoc; NGUYEN Kien Xuan; NGUYEN PHAM, C. V. (2020, January 1). Effect of Working Capital Management on the Profitability of Steel Companies on Vietnam Stock Exchanges -The Journal of Asian Finance, Economics and Business | Korea Science.

[7] Chatterjee, S. (2012, August 8). The Impact of Working Capital on the Profitability: Evidence from the Indian Firms. by Saswata Chatterjee :: SSRN.

[8] Syeda, R. (2021, September 21). Impact of Working Capital Management on Profitability: A Case Study of Trading Companies| IntechOpen.

[9] Suganya, Jeyan. (2016). Working Capital Management and Firms" Profitability: The Listed Companies in Sri Lankan Context. International Journal of Emerging Research in Management &Technology. 5. 2278-9359.

[10] Dinku, Tirngo. (2013). Impact of Working Capital Management on Profitability of Micro and Small Enterprises in Ethiopia: The Case of Bahir Dar City Administration.

[11] Kaddumi, T. A., & Ramadan, I. Z. (n.d.). (2012). Profitability and Working Capital Management: The Jordanian Case | Kaddumi | International Journal of Economics and Finance | CCSE.

[12] Basit, Abdul. (2016). Impact of working capital management on firm's profitability: A case study on Consumer products firms in Malaysia. International Journal of Accounting & Business Management. 4. 227-241. 10.24924/ijabm/2016.11/v4.iss2/227.241.

[13] Ahmed, S. U., Mahtab, N., Islam, M. N., & Abdullah, M. (2018, April 29). Impact of Working Capital Management on Profitability: A Study on Textile Companies of Bangladesh.by Sarwar Uddin Ahmed, Naheem Mahtab, M. Nazmul Islam, Mohammad Abdullah: SSRN.

[14] Mbawuni, J., Mbawuni, M., & Nimako, S. (n.d.). The Impact of Working Capital Management on Profitability of Petroleum Retail Firms: Empirical Evidence from Ghana | Mbawuni | International Journal of Economics and Finance | CCSE.