

The Impact of Efficiency of Working Capital Management on Financial Performance An applied study on Libya's Industrial Sector

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Abstract

The policies the companies follow in managing the working capital have an impact on their financial performance all well as on their liquidity, therefore; this study came to identify the relationship between the efficiency of working capital management and the financial performance of the industrial companies in Libya. It is a modern study to be conducted on developing countries such as Libya. The study revealed that there is a relationship between the efficiency of working capital management (as represented in the average inventory period, average collection period, and average payment period) and the financial performance represented in the returns of assets and net profit margin. Forty Libyan industrial companies selected as a sample for the period (2015-2020). The statistical tests are carried out to examine the hypotheses of the study by using the multiple regression equation in order to identify the impact between the independent variables and dependent ones, a set of results were detected as follows:

1. There is a statically significant impact at ($\alpha \leq 0.05$) for the efficiency of working capital management on the financial performance measured to the returns of assets and net profit margin of Libyan industrial companies in the sample object of this study.
2. There is a statically significant impact at ($\alpha \leq 0.05$) with negative relationship for the average inventory period on the financial performance measured to both returns of assets and net profit margin of Libyan industrial company in the sample studied.
3. There is a statically significant impact at ($\alpha \leq 0.05$) with negative relationship for the average collection period on the financial performance measured to both returns of assets and net profit margin of Libyan industrial company in the sample studied.
4. There is a statically significant impact at ($\alpha \leq 0.05$) with positive relationship for the average payment period on the financial performance measured to both returns of assets and net profit margin of Libyan industrial company in the sample studied.
5. The study concluded with the following recommendations:
6. The industrial companies in Libya need to reduce the average inventory and collection periods so as to increase their working capital and, accordingly; their financing needs, by using practical modern methods in production, and reduce the production cost by applying economic order quality (EOQ) and Just in Time (JIT) approaches, then; to decrease the storage costs and to control the credit policies.
7. To seek to bettering the conditions of payment, and to managing well the credit policies by tightening the relationship between suppliers and industrial companies in Libya.

Introduction

The working capital management is a crucial component of the company's finance, considering its definite and direct impact on the liquidity and profitability. As the working capital is formed from the current assets and the current. Working capital management has substantial significance in the financial studies and research so that the current assets is form more than the half total of the assets in the industrial companies and distribution companies (Al-Amry, 2007) (Nasr, 2007). To maintain an excessive level of current assets undoubtedly leads the company to gaining a non-yielding revenue in return of total short-term investments. But; from the other hand, it is noticed that if the company maintain relatively few current assets make it susceptible to difficulties and problems (Wachowiczetal, 2000), accordingly fails to fulfill its current short-term financial obligations, and makes its vulnerable to liquidity risks. The efficient management of working capital includes to plan and control the current assets and liabilities in a method or by means that mitigate the risks of short-term financial obligations and credits, from one hand, and to avoid excessive investments in the current assets, from the other hand (Elgaly, 2004).

Many applied studies point out that the financial managers spend much more of their official time in dealing with the daily problems their companies pass through, amongst such problems is the working capital-related decisions, that is; the current assets represent short-term investments in no time transform to other forms of assets (Eljezrawi, 1998). The company is bound to pay its short-term current obligations, therefore, the cash liquidity required to secure the continuity of the company in performing its daily activity is not relying on the net value of the assets only, but, to a great extent, on the cash flow generated from operating these assets (Schoenen, 1993).

Notwithstanding the foregoing, the working capital management includes some decisions related to the extend and combination of a set of element of the current assets and the mechanisms of funding them. This makes the working capital management to be one of the components that affect noticeably the company's profitability. Thus; the objective of maximizing the profitability is a priority to the company, while to maintain the liquidity is also equally crucial objective. Therefore; profitability maximization at the expense of liquidity may cause serious problems that necessitate sort of inconsistency or trade-off between the goals of profitability and liquidity.

First Topic: The Methodology and Previous Studies

First: Methodology of the Study:

1. The Problem of the Study

As the challenges and problems Libya's industrial companies encounter increase due to the surrounding local and regional situations, the most apparent of them is the stringency of banks over credit facilities, rise of exchange rates, it is become necessary Libyan companies to seek to follow the ways suitable to betterment the efficiency of working capital management in order to maximize its financial performance, and, in return; its profitability. Thus; the company needs to identify the means that enable its financial department to follow to maximize the impact of the basic components of working capital reflecting on improving the performance. Subsequently; the problem of the study can be formulated in the following main question:

Is there any impact on the working capital management on the financial performance of Libya's industrial companies? The following sub-questions can be raised:

1. Is there any impact for the period average of maintaining inventory on the financial performance of Libya's industrial companies?
2. Is there any impact for the period average of collecting liabilities on the financial performance of Libyan industrial companies/?
3. Is there any impact for period average of liabilities payment on the financial performance of Libya's industrial companies?

2. Study's Objectives:

1. To test the impact of the working capital components on the profitability of a sample of Libyan industrial companies.
2. To come to a set of solutions and suggestions about the working capital components, and their impact on the financial performance of a sample of Libyan industrial companies.

3. The Significance of The Study:

1. the significance of the working capital management and its main role in enhancing the liquidity and stability of the companies, then, in its survival and continuity in the long term.
2. Testing the relationship between profitability, working capital management and profitability of Libyan industrial companies, in itself; gives this study a special significance, considering that there are differences between the environment where the previous studies took place and that of Libyan industrial companies, in terms of market efficiency, size and type of information available to researchers, and the amount of disclosure by means of financial and accounting statistical test in the annual reports.
3. its significance in measuring the relationship between the financial performance and working capital management to some determinants, such as company's liquidity and its size, the ratio of leverage/gearing, and between financial assets ratio to the total assets of the company.

4. Study's Hypotheses

Under the light of problem and questions of this study, the following hypotheses are formulated:

a. First main hypothesis: there is no statistically significant effect at level $\leq \alpha 0.05$ for the working capital management on the financial performance measured against the returns of the assets of Libyan industrial companies.

This hypothesis subdivided as follows:

First sub-hypothesis: there is no statistically significant effect at level $\leq \alpha 0.05$ for average inventory period on the financial performance measured against the return of the assets of Libyan industrial companies.

Second sub-hypothesis: there is no statistically significant effect at level $\leq \alpha 0.05$ for average period to collecting the liabilities on the financial performance measured against the return of the assets of Libyan industrial companies.

Third sub-hypothesis: there is no statistically significant effect at level $\leq \alpha 0.05$ for average period to paying the liabilities on the financial performance measured against the return of the assets of Libyan industrial companies.

b. Second main hypothesis: there is no statistically significant effect at level $\leq \alpha 0.05$ for the efficiency of working capital management on the financial performance measured against the return of the assets of Libyan industrial companies.

This hypothesis subdivided into the following:

First sub-hypothesis: there is no statistically significant effect at level $\leq \alpha 0.05$ for average inventory period on the financial performance measured against the return of the assets of Libyan industrial companies.

Second sub-hypothesis: there is no statistically significant effect at level $\leq \alpha 0.05$ for average period to collecting the liabilities on the financial performance measured against the return of the assets of Libyan industrial companies.

Third sub-hypothesis: there is no statistically significant effect at level $\leq \alpha 0.05$ for average period to paying the liabilities on the financial performance measured against the return of the assets of Libyan industrial companies.

5. Sample and Population of The Study:

The population of this study formed from a group of Libyan industrial company between the period from 2016 to 2020.

6. Sources of Collecting Data.

The data needed to prepare this study collected from reports, annual financial statements of Libyan industrial companies, object matter of this study, as well as from secondary sources such as books relevant to capital management and financial performance, besides; scientific journals, published research works, university documents, and electronic sources.

7. Statistical Methods Used:

The following statistical methods have been used:

1. Descriptive statistical methods, such as arithmetic mean, standard deviation, skew index, and kurtosis.
2. Testing the hypotheses by using the multiple regression, testing the natural distribution, testing collinearity, Pearson correlation coefficient concerning the variables of the study.

8. Variables of Study:

The independent variables are the efficiency of the working capital management (average inventory period, average period for liabilities, average period for receivables).

Dependent variable is the financial performance which represents in the returns of assets (ROA), and the net profit margin (NPM).

Second: References of previous studies:

With study arrived at that there is a negative correlation between the total operational income, average period of collecting the accounts liabilities, inventory turnover ratio, average period for receivables (suppliers' accounts), in the Bulgarian companies (sample of the said study). Plus the managers of the companies can maximize the profitability of their companies by reducing the average period of liabilities and inventory turnover ratio to its reasonable minimum. The negative relationship between average period of accounts payable (suppliers' accounts) and profitability is completely identical with the view that indicates that the less profitability companies waits for long time to settle its payable commercial invoices.

2. The study (Teruel Solano, 2006), ((Effects of Working Capital Management on Profitability)) attempted to examine the provide a practical evidence in terms of the effect of working capital management on the profitability of Spanish companies with the period 1996-2002. In order to analyze such an effect, the study relied on the returns of assets as a dependent variable, as well as variables of average periods of receivables, inventory turnover ratio per day, and average period for payables as independent variables.

The study concluded that there is a negative relationship between the profitability of small-size companies and the average period of receivables and the inventory turnover ratio, besides; absence of significant relationship between the profitability of companies and the average period of payables, and finally; the shortening of the cash conversion cycle to its reasonable minimum degree can improve the company's profitability.

3. The study ((Trend in working capital management and its impact on firms performance)) (Patch, 2006) examined the attitudes in working capital management and its impact on the profitability of the companies, in order to identify the reasons lie behind the significant differences between the industries in (58) Mauritian small-size companies this study examined during 1998-2003. the main changes used in the analysis as independent variables were average inventory period, average collection period, average payment period, and period of cash conversion, while the returns relied on the total assets as a dependent variable. The study concluded with giving emphasis to what previous applied studies arrived at, in terms of existence of a strong significant relationship between working capital management and profitability. Also, the results revealed that there is an increasing tendency towards the short-term funding of the component of the working capital. There is an attempt to re-examine the impact of the variable of the previous studies models in Libyan environment of industries, which differs; to some extent, in its nature, components, and given facts from the advanced environments in which these studies applied in purpose of identifying to what extent the results of the current research agree with the results of the previous studies, as well as to explore the possibility of making use of the weakness of working capital management in Libyan companies in order to build up and rise their profitability.

Second Topic: Theoretical Frame Work:

The Concept of Working Capital Management:

it is the type of management that deals with the decisions related to the short-term assets and requirements necessary to secure the continuity of operational processes of the company, provision of sufficient cash flow to cover all short-term requirements and expected operational expenditures (Ahmed et al., 2014). Working capital management, in general, means the method of management current assets and requirements. (Filbeck, et al, 2005) defined the working capital management as the ((... the difference between sources of cash or easily convertible to cash (current asset), and the organizational obligations that may be soon required to be in cash (current liabilities that guarantee the effective management of working capital, planning, control of current assets, and the current payables in a way that keep from the risks of non-fulfillment of short-term obligations, from one hand, and avoidance of heavily investing in these assets, from the other hand. According to (Karaduman, et al, 2001) an effective working capital management can be obtained by managing its components: the inventory, credit account (receivables), and debit account (liabilities).

The Concept of Working Capital

The current assets are called the working capital, they represent the part of investments that transforms from one shape to another according to the natural progress of business in the organization (Hadad, 2009). It could defined as (... the size of investment that exploit in the short-term current assets, including cash, short-term financial statements, , debit accounts (receivables), inventory ... etc., from the similar items (Elamri, 2007). The working capital can defined as (... the size of investment available for the short-term assets, i.e.; the current assets in the cash items, liabilities, inventory, and temporary investments) (Elzebaidi, 2004). The total working capital is (... the gross of current assets, it its different items, that the company used, which can be transformed quickly from one form to another within a short period of time not more than a year, also; the gross working capital is defined as (gross current assets, with its different items. It is known that these items should transform into cash within a short time not more than one year) (Gitman, 2009, p 638). While the net working capital defined as the surplus of the current assets over the current payables.

Net working capital = assets – current payables (Ganesan, 2007)

Further, we can say that working capital means the current assets and payables of the company. For the working capital, the company should have a good planning and controlling processes, as that has an impact on the short-term as well as the long-term. The working capital management aims, basically; at maintaining the ideal balance between the components of working capital management (Rehman, et al, 2007). The working capital management affects directly the liquidity and profitability of the company. The effective management of working capital is considered to be the main part of the company's strategy to enhance the shareholders' value. Therefore; it is necessary to understand the working capital and its impact on the company's profitability.

In general, there are two types of working capital management, (1) gross working capital, (2) net working capital. The gross working capital denotes the investment in the current assets.

Gross working capital = current asses

The current assets are a part from the total assets that can be transformed into cash during the accounting year. If the company manages its current assets effectively, this gives more growth and rise the value of the company in the market. Net working capital indicates to the current assets and liabilities or it is the difference between the current assets and current liabilities

The working capital in business is like blood to human body (Raddy & Patkar, 2004).

The current assets comprise the cash, receivables, inventory, and the negotiable financial statements ...etc. the current liabilities are formed from short-term financing by companies and their dates of maturity are less than a year or to be paid in one year. In order to succeed the company needs to gain the credit of creditors to skillfully deal with their suppliers as well as with the debtors.

Cash means that the money is crucial in handling the routine requirements. Inventory denotes that those commodities or raw materials in implementation or that finished commodities. The financial statements refer to the liquidated assets that could be easily converted to cash, for example; the treasury bonds, bank acceptance, negotiable instruments, ... etc. The debtor account refers to the payments of the company that sells commodities to persons against the credit. These elements have noticeable impact on the profitability, the impact of working capital management on profitability.

The Significance of Working Capital Management:

There are many reasons behind the significance of the working capital management for any company, the most significant reasons are the following (Agl, 2009, Al-Shawarda, 2013) (Rehmanetal, 2007).

1. The working capital forms large ratio of to total assets of the company, particularly; for the industrial companies that maintains working capital exceeds half the total of assets.
2. The much time consumed in the process of managing the working capital. It is well known that time has its cost and accordingly exhausting much time in managing the working capital definitely brings in benefits to the company equivalent to the time spent.
3. The working capital represents a sizable ratio of the company's assets, for instance, the working capital in the Jordanian companies may arrived at %40 from total assets, while in the trading companies it may hit %40.
4. The working capital affects by the in some way in the small-size companies. Although these companies can reduce their investments in the fixed assets by means of rent/lease, but they can avoid to investing in the accounts receivable or the stock of goods, besides, the poor long-time funding available to these companies forces them to rely on short-term sources of which the significance of working capital management maximized for such small-size companies.
5. The effective working capital management is important for the company in terms of making the necessary liquidity available to pay its obligations. The lack of cash will damage the fame of the credit company and afflict it in real financial falter.
6. The direct relationship between company's growth and the need to raise the working capital, as the growth of the company, by giving rise to the sales size, requires high level of working capital to support the growth in production and sales.
7. The net working capital is one of the measurements of risks the company encounters, affecting its ability to obtain loan for purpose of financing its investments.
8. The direct impact of working capital on liquidity and profitability is in the appropriate mix of the components of working capital to maintain the company's liquidity in terms of possibility of converting these components to cash without afflicting any losses, that is; to fund the rise of working capital makes the company bear the costs of the funding, including the interests.

The Policies of Working Capital Management:

According to Mathur (2003), many studies had analyzed the financial ratio as part of the working capital management, but few of those studies had discussed the policies of working capital in particular. Policies of working capital divided into three categories: conservative, aggressive, and moderate. The strictest policies of working capital associated with the highest revenues and risks, while conservative policies of working capital are associated with reduction of risks and revenues.

Conservative Policies for Working Capital:

Conservative approach (Dimitrios et al, 2005) uses the long-term financing to fund all fixed assets along with current assets. Also, it uses the short-term automatic debt to fund the outstanding current assets. With the conservative policy of working capital, the company will maintain sizable levels of stocks. While in order to reduce the risks, the seasonal industries companies, such as those engage in tourism, may adopt conservative policies for working capital to reduce the risks.

If the company follows conservative policy to manage the working capital, this means that there are much cash in the bank, high level of inventory, and creditor accounts, all of them are up to date. The conservatively managed working capital will help in reducing the risks of long-term shortage of cash, but it may harm the profitability in the long-term, considering the existence of excessive cash but without much revenues. Under the conservative policy (Tauringanaetal, 2013), the company maintains plenty of money and banking balances in current accounts or investment in easily marketable financial statements. Moreover, the company owns high stocks of raw materials and finished commodities, that is; to reduce the risks of exhaustion of inventory and loss of sales.

Aggressive Policy of Working Capital

Brigham Ehrhardt (2004) assumes that this policy of working capital associated with the increase of revenues and risks. The aggressive policy of working capital is the one in which the company seeks to operate lesser amount of investment in current assets and intensive use of short-term trust. The goal behind that is to lay much more cash in business so as to reduce the time necessary for production of products or delivery the inventory or provide the services. Accelerating the business cycle leads to grow of company's sales and revenues. In the aggressive, or restrictive, policy of working capital, all non-current assets and part of the permanent/durable assets are to be financed by long-term debts. The outstanding permanent debts become a temporarily fluctuating assets on the short term. The aggressive approach finances all current assets by means of short-term automatic debts, while funds the fixed assets by long-term unspontaneous money. For reducing the costs, the company will maintain low level of inventory in accordance with the aggressive policy of working capital that may lead to losses due to taking risks of exhaustion the stocks and loss of production and sales, besides the negative effect on the company's profitability. According to Smith (1980) the company may follow an aggressive policy to managing the working capital with low level of current assets as a percentage of the total assets, or this policy can be used in making decisions of funding the company according to the high level of current payables as percentage of the total payables. Following powerful approach in managing the working capital to manage the liquidity leads to lesser cash conversion by reducing the period average of inventory and receivables along with extending the period average of payables. The aggressive policy of assets leads to reduce the capital in the current assets in return of the long-term investments. This may lead to higher profitability but with bigger risks of liquidity. As alternative, the more conservative approach lays much more invested capital in form of liquidated assets, but on account of some profitability (Afrifaetal, 2016).

Moderate Policy of Working Capital

The compatibility of maturity or the self-liquidation approach compatible with the maturity o assets and liabilities. The moderate policy occurs somewhere between conservative and aggressive approaches. In the moderate approach the level of working capital will be neither very high nor very low, but quietly appropriate. All non-current assets and permanent assets will be funded by long-term finance, while the temporarily fluctuating assets will be funded by short-term finance (Padachi, 2006). That is why the financial managers seeks t guarantee the daily management of the capital invested in different items of current assets necessary for businesses, including the inventory, debtors, and other current assets such as loans, borrows by third parties (Afzaetal, 2007). Thus, the financial managers in modern trading activities try to find the basic motives of working capital, especially; to maintain a mix, that is little too ideal; between profitability and liquidity in order to maximize the company's value.

Determinants of Financial Performance:

(Howorth et al, 2003) points out that the literature related to the practices of working capital management determine the efficiency of cash management and efficiency of managing the competence of inventory management as determinants of the financial performance. Thus, the financial performance can improved if building up the efficiency of collecting money, cash, and inventory management, besides; the good management of current assets being vital in generating value for the shareholders. (Charitouet al, 2010) believes that if the company capable of reducing its investments related to the current assets to minimum, then it can invest the resultant money in projects of added-value, as that will rise the revenues of the shareholders' investment as well as it will be an opportunity for the company to grow. From the other hand, if the capital invested in cash, receivables, or inventory, was not sufficient, then, the company will encounter difficulties in carrying out its trading operations today.

The Cash Money:

Cash is the lifeline for any company (Bort, 2004), and it can represent a problem for businesses. There are many basic factors to successfully manage the cash, including controlling the collection operations, expenditure, scheduling the real expectation, and laying out an effective measure for invoicing/the collection and observance of the standards of balance sheet. By experiment and observation (Gitman, 2009) sets forth theoretical attitudes to explain the fact that the company can improve its efficiency in managing the cash by collecting the accounts receivable as fast as possible.

The most patent approach to push the cash flows forward is to exert pressures on debtors to pay as early as possible although this may eventually lead to some problems with the clients. Also (Gitman, 2008) advocates another tool of managing the cash, i.e., the cash budget, which the companies use to estimate their short-term requirements especially due to lack of liquidity and to plan the cash surplus. Further, (Kirkman, 2006) added that a cash flow statement, which called the cash budget; as an element of executing an effective program to managing cash. (Adeniji, 2008) assumes that the money invested in current assets will keep turning over quickly, and continuously converted to cash, as cash flows once again in return of the other current assets. One of the basic principles for financing is to collect money as soon as possible and make the payments as late as possible. This is the most significant part of managing the working capital, to plan and control the cash. The ability of the company to fulfill its obligations relevant to cash and cash flows at the time of maturity as entered, or not; in the financial position statement (Ross et al, 1988). Usually; managing the cash relies on the Cash Conversion Cycle, i.e., the time period from paying to purchase raw materials needed to manufacturing the product up to collection the receivables related to selling that product (Bissilli & Brigham, 2000). The long cycle of cash conversion leads to reduce the company's profitability, while the longer cycle leads to block the cash and subsequently; the profitability drop. They noticed that one of the most effective methods to measure the liquidity is by cash conversion cycle, which is carried out by measuring the time between cash purchasing of stocks and collecting the receivables. In comparison with the liquidity measurements; such as quick ratio and current ration, the cash conversion cycle is the most effective measurement of daily liquidity management.

The Inventory:

Conventionally, the stocks of raw materials, the components of the current work, the finished commodities, are served as a pillow against the exhaustion of the required elements. Nevertheless; the buffer stocks consume valuable resources and generate latent costs (Fullerton et al, 2003). (Falope et al, 2009) found that there is a negative impact on the company's profitability if there is great number of stocks for the days within which they are kept in the company. (Mathuva, 2010) detected a positive impact, explaining that is due to the fact that the company of high inventory level reduces the costs by avoiding shutting down the production with the high level of inventory. (Chen et al, 2005) sheds light upon the just-in-time inventory system (JIT), which is a system designed to managing the inventory; led to reduce the inventory of the companies, and became the main objective for them. the JIT is the place where the raw materials and parts is purchased or produced in due time so as to be used in every stage of the production process. By applying JIT to manage the inventory, the administration will be capable to cut the costs through guaranteeing the minimum of the inventory at any time. This approach resulted in making the inventory falls down in many companies. Fullerton et al (2003) says that the companies that apply JIT system shall have the power comparing to the competitors who don't. he continues that there is a positive relationship between company's profitability and the degree of executing the production practices to limit the wastes, such as reducing the times of preparation, uniform burdens of work, and the protective maintenance programs.

*the inventory is measured by measuring the inventory rate using the following equation:

$$\text{Average inventory} \div \text{Sales cost} = \text{inventory turnover rate}$$

This ration measures the speed in which the inventory converted to sales or the extent of the capability of the goods in the warehouse to generate sales, accordingly; whenever the rate heightens it is better from the loaners' viewpoint as well as better liquidity position for the company. From the administration's perspective, this denotes the improvement of the efficiency of inventory management.

$$\text{Inventory turnover rate} \div 360 = \text{average inventory period}$$

Average inventory period refers to a number of days in the rate during which the inventory stays in the warehouses before the it is sold (Ayneshet, 2019).

The Accounts Receivable:

Collecting the credit forms the book costs associated with granting the trust. The costs include the cash deductions and costs of credit management. The costs directly get high when the payable amounts rise. The lost sales resulted out of not granted a credit form the alternative chance cost which decreases when the payable amounts of money increase. Dimitris et al, 2005) argues that in order to the company raises its profitability, it should increase its accounts receivable to optimum. Increasing the accounts receivables lead to raise the level of sales and quotas in the market. (Sushma et al, 2007) emphasizes, also; that setting the right policy to managing the credit guarantees collection of the appropriate debts, which is important to maximize the efficiency of managing payables, and accordingly; the company's performance. The receivable turnover rate is measured as follows:

$$*\text{average A/R} \div \text{net deferred sales} = \text{A/R turnover rate}$$

This ratio measures the speed of collecting the company's debts and converting them to cash.

Whenever this ratio is high accordingly the degree of liquidity in the accounts receivable is higher. This denotes the

high efficiency of collecting accounts receivable as well as the efficiency of the fund invested in them. Therefore; the average period of collection measures according the following equation:

$$\text{Receivables Turnover} \div 360 = \text{average collection period}$$

This measures the average of the time period the company awaits from selling process up to the time of collection, in cash; the price of commodities. Whenever the period is shorter the liquidity degree in the account's receivable is higher. In order to judge the efficiency of the company in terms of collecting its debts and managing the accounts receivable, this ratio should be compared with the credit period the company gives to its customers. In increasing the average collection period than the credit period the company gives to the customers, could noticeably be an index that there is a problem in collecting the accounts receivable (Ayneshet, 2019).

The Accounts Payable:

According to Falope&Ajilore(2009) the accounts payable can be defined as a short-term obligation payable to the suppliers in return of purchases carried out by means of trust. Rehman (2007) found that the accounts payable have negative impact on the company's profitability. Deloft (2003) argues that this is attributed to the fact that the less-profitability companies pay their invoices earlier, and in this case, the profitability affects the policy of accounts payable not vice versa. He discussed a second reason, that is; the companies used to pay their invoices late, accordingly; they have no chance to obtain discount when paying earlier. Yang (2011) also found that there is an evidence denotes that commercial credit is an alternative for the bank loan, he furthermore detected a positive relation between collection and bank loan, meaning that they are completing each other. Moreover, he found that the accounts payable increase directly during the crisis. The experimental evidences indicate that the financial-restricted companies are likely to affect negatively by the crisis, and that they probably duct their account payable and increase using the commercial trust. The accounts payable turnover rate is measures as follows (Ayneshet, 2019):

$$\text{Average accounts payable} \div \text{Sales cost} = \text{payables turnover rate}$$

While the average payment period of accounts payable measured as thus:

$$\text{Accounts payable turnover rate} \div 360 = \text{average payment period of accounts payable}$$

Theories of Working Capital :

There are four main theories of working capital: operating cycle, cash conversion cycle, transaction cost, and net trade cycle.

Operating cycle:

In order to shorten the operating cycle, the company needs to calculate the accumulative days per inventory cycle rate and accounts receivable. This indication will give more reality to the company's cash for the period of current asset conversion (Weston et al, 1979), the accounts receivable cycle rate shows the repetition with which the receivables is converted into cash. To grant more liberal conditions to the credit's clients leads to less-investment liquidity in the payables. The low receivables cycle rate and extension of the collection period of receivables reflects the deterioration of the liquidity. While the inventory cycle processes reflects the repetition the company undertakes by converting the accumulative inventory of raw materials, continuing work, and finished commodities into sales. Further, Weston argues that merging the accounts receivables and inventory cycle into the concept of operating cycle, allows more convenient vision to managing liquidity considering that they are aware that the average age expected for some working capital components depends on the extent of the production.

Cash conversion cycle:

The cash conversion cycle (CCC) used as an inclusive measurement for the working capital in terms of explaining the time interval between spending to purchase raw materials and finished-commodity sales (Padachi, 2006). The cash conversion cycle focuses on the length of the time period between getting raw materials and other inputs and cash flow from finished-commodity sales. The length of time refers to number of days the operation needs to be funded. Cash conversion cycle is calculated by adding the inventory period to the receivables period, then, to subtract the payables from it. By rounding off these three periods by financial ratios of the inventory days and receivables days and payables days, the length of the cash conversion cycle is determined (Singh et al, 2017) by the following formulas:

$$\text{CCC} = (\text{Inventory conversion period} + \text{average collection period}) - \text{average payment period} \text{ (Gitman,2009).}$$

By shortening the CCC, the cash flows of the company will have a higher net present value, that is; the cash will be collected/received faster.

The short CCC will lead to reducing the investment in the working capital the company needs, while the rise of CCC, from the other hand; means a higher profitability by increasing the sales cycle through the longest-period accounts receivable. Nevertheless, this can give rise to the investment faster and with higher benefits (Kirkman, 2006).

Net trade Cycle:

this theory depends on the cash conversion cycle, as the CCC components is expressed as a percentage of the sales. Other study conducted by (Shin et al, 1998) pointed out that the net trade cycle is the best measurement of the efficiency of the working capital comparing to the and probable cash conversion cycle, as it refers to number of daily sales the company has to fund. The working capital manager can easily estimate the funding needs of working capital expressed as a simple part of the expected sales growth.

Transaction Cost theory:

In order to be able to compete, the companies need to reduce their costs. This can be done by maintaining the storing costs of inventory at reasonable minimum level. There are several drives for higher or lower inventory mainly rely on the businesses the company runs. According to Lemire and Marquis (2011) the most simple and common drive to manage the inventory is the cost, which mostly depends on the transaction cost economies theory (TCE). Including the costs of inventory conversion and order costs. The order costs associated with the obtaining of inventory the includes costs of purchasing order or order form, collecting, examining, and registering the received goods. Nevertheless; the load costs are included in the maintenance or inventory load. Due to the inventory storage an alternative-chance cost will arise.

The relationship between working capital management and financial performance:

According to the prevailing economic theory, it is generally accepted that the main objective every company seeks to achieve is to maximizing profits. The working capital management aims at enhancing the company's profitability, and to ensure that the company have sufficient liquidity so as to fulfill its short-term obligations on due time, and to keep doing business (Parachi, 2006). The investment in the working capital shouldn't be too little or too much, as to be too little may lead to lack of liquidity and exhausted of inventory and losing the sales, while the to be too much results in loss of much amounts of money. Liquidity management includes management of both cash and credit, where the shortage of cash to be avoided, and that allows a period of credit to the clients and suppliers and enough time for payment. The level of investment in working capital and financing such investment, at certain level of production, involves a tradeoff between the risks and revenues (Madura et al, 1988).

The high ratios of cash turnover enable the managers to reduce the short-term investments which their revenues are relatively low comparing to long-term investments, and; subsequently, maximize the profitability. The surplus investment in working capital has a negative impact on the company's profitability and positive impact on the liquidity. The higher amount of money of the working capital enables the company to easily fulfill its short-term obligations. This accordingly results an increase in the capability in getting loans, reduce the risks of falling behind in payment, and subsequently reducing the cost of capital and maximizing the company's value. According to (Filbeck et al, 2005) the success of the company relies on the capability of the finance managers to manage the payables, inventories and obligations. The company needs to invest enough in the current assets to gain; in return, maximum profitability. High investment in the current assets denotes drop in the revenues of the investments leading to deterioration of profitability, as it is noticed that the small investment in current assets leads to exhausting the inventory of sales, which results in incapability to settle and defining the financial strengths and weaknesses of the company can be realized by means of financial analysis which can be done by establishing a proper relationship between the items of the balance sheet and loss and profit account. The financial analysis can be made by the company's administration, owners, creditors, investors and others.

One of the powerful tools of financial analysis is the ratio analysis, which is defined as the which referred to as a mathematical notation or a relationship between two (or more than two) things. The ratios help in summarizing the great quantities of financial data to make a specific judgement on the company's financial performance. The financial data used in calculating the different ratios help us understanding well the working capital management of organizations. The basic variables used in the analysis are: inventory days, receivables' days, payables' days, and cash conversion cycle. These ratios compared with industry's standards to get better view on the nuisances in the organization's business (Emery et al, 2011). By analyzing the policies of working capital management of non-financial industries in the USA, (Failback et al, 2005) shed light on the importance of efficiently managing the working capital. According to their study, there are noticeable differences between industries in terms of additional working capital practices. Moreover, the working capital practices remarkably change the additional industries. Therefore, the efficiency of working capital management doesn't affect the profitability only, which represents in the short-term financial performance, but; also, in maximizing the company's value, i.e., the long-term financial performance of the company.

Indications of financial performance:

The financial indexes used in measuring the financial performance are:

1. Gross profit margin: it measures the company's capability to generate profits from sales, which calculated as follows:
2. $\text{Sales} \div \text{gross profit} = \text{Gross Profit Margin}$
3. Net profit margin: is the index of measuring the company's capability to generate profits after deducting the interests and taxes, it is calculated as follows:
4. $\text{Sales} \div \text{net profit after tax deducted} = \text{Net Profit Margin}$
5. Revenues of assets: it is the index of measuring the capability of the company in achieving the revenues from all internal and external investments, its calculated as follows (Dinh, 2019):

$\text{Total assets} \div \text{net profit after tax deducted} = \text{Revenues of Assets}$

Third Topic: Applied Aspect of Study:

This topic tackles with the results of study's hypotheses through discussing the results of the statistical relationship, as follows:

First: Descriptive Statistics of Study and its variables:

Table (1): The descriptive analysis results of the study's variables.

Variables	Minimum	Maximum	Mean	St. Deviation	Skewness	Kurtosis
AIP	65	288	166	122.88	0.46	2.90
ACP	95	257	111	94.40	0.65	1.88
APP	15	360	89	78.26	0.67	1.24
ROA%	46.48-	42.29	1.99	9.88	0.42-	1.75
NPM%	38.08-	67.20	3.66	34.12	0.38	2.85

It is noticed, from the table above, that the average value of inventory was (288) and less value was (65), this indicates that there is a relative dispersion in the average inventory period in the study's sample. This is confirmed by the standard deviation of the average inventory, as its value amounted to (122.88), and the median of inventory period hit (166) of the study's sample, while the higher value of collecting receivables amounted to (257), and lesser value (95). This led to standard deviation of the average collection period of receivables (94.40), this denotes that there is a relative dispersion in the average of the study's sample. The median of the average collecting receivables is (111), as the above table shown that the higher value of the average payment period of payables is (360), the lesser value is (15), and the standard deviation of this period is (78.26). this pointed out to relative dispersion in the average of the sample, and that the average payment period of payables amounted to (89). While in the financial performance the median of the returns of the assets in this study's sample is (1.99%). This value reveals the efficiency of the companies of this study's sample in achieving profits through their assets, as the median of net profit margin hit (34.12%) indicating the efficiency of the total sale revenues in generating profits, and the table also shows that the skewness and kurtosis coefficient occur within the level ranges between (-1) and (+1) for skewness and between (-3) and (+3) for kurtosis, this was proved by (Hair et al, 2003)

Second: Pearson correlation matrix for study's variables:

The researcher used Pearson correlation matrix to evaluate the correlative relationship between the independent variables and the dependent ones, as follows:

Table (2): the results of Pearson correlation matrix for the study's variables

Variable	ROA	NPM	AIP	ACP	APP
ROA	1				
NPM	**0.415	1			
AIP	**0.179-	**0.644-	1		
ACP	**0.195-	**0.613-	**0.499	1	
APP	*0.035	**0.651	**0.498	**0.497	1

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

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

Whereas ROA, as dependent variable, is the financial performance measured by the returns of assets, NPM, the dependent variable is the financial performance measured by the net profit margin, however; the independent variables are the average inventory period (AIP), average collection of receivables (ACP), average payment period (APP) of payables. From the previous table, we notice that there is a statistically significant relationship between APP, ACP, AIP and the efficiency of working capital management. While there is a difference between power of the correlation of each other, that is; the strongest correlation coefficient, i.e., (0.799), is between average inventory period (AIP) and average collection period of receivables (ACP), while the minimum correlation coefficient was between the average collection period of receivables and average payment period of payables (APP).

Also; there is a positive relationship of statistically significant for the correlation coefficient between the dependent variables net profit margin (NPM), as representing the financial performance and the independent variables average payment period, average collection period, and average inventory period that representing the efficiency of working capital management, whereas the strongest correlation coefficient was between the financial performance measured by the net profit margin and the average inventory period is (-0.644), while the minimum correlation was between the financial performance measured by the returns of assets and average payment period of payables is (0.035).

Third: testing the hypotheses of study:

The multi-regression method is used at level 0.05, according to the following table:

Table (3): the results of multi-regression test for the efficiency of working capital on returns of assets (ROA)

Model	B	STANDARDIZED Coefficients	T	sig
Constant	6.499	6.998	0.000
AIP	0.021-	0.466-	4.450-	0.000
ACP	0.020-	0.479-	4.759-	0.000
APP	0.005	0.802	7.001	0.000
F test Model=15.994		Sig F=0. .000		
Adjusted R Square= 0.151		R=0.401		
F Distribution Table=4.150		T Distribution Table=1.599		
ROA= $\beta_0 + \beta_1 * AIP + \beta_2 * ACP + \beta_3 * APP + e$				

It is noticed from table (3) about the first hypothesis ((there is no statistically significance at level $\alpha \leq 0.05$ for the efficiency of working capital management on the financial performance measured to the returns of assets of the companies included in the sample).

It is obvious that Sig F, i.e. 0.000; is less than the testing level 0.05, and accordingly; the first hypothesis is rejected and the alternative hypothesis is accepted meaning that there is an impact of the working capital management efficiency on the financial performance measured to the returns of assets of the sample studied, and the value of correlation coefficient R is 0.401. This indicates that there is a positive relationship between the working capital management efficiency in the industrial companies included in the sample studied (AIP, ACP and APP) and the returns of assets. Also; the value of determination coefficient R² is 0.151. this means that only 15.1% of the fluctuations the returns of assets experiences, in the sample of study, can be explained by the variables occur in the elements of working capital management efficiency. We notice that B-value, i.e. 6.449, indicates the value of the fixed regression equation in the forecast model of ROA value in terms of the independent variables of working capital efficiency AIP, ACP and APP. Concerning the first sub-hypothesis; the negative hypothesis is rejected and the alternative hypothesis is accepted according to its Sig T result, i.e., 0.000, which is less than 0.05. This denotes that there is an impact for the average inventory period on the financial performance measured by the returns of assets in the sample studied and that the value 0.0466 expresses the correlation coefficient value between the two variables, and that indicates that the relation between them is adverse. Also, the second sub-hypothesis is rejected and the alternative one is accepted, meaning that there is an impact for the average collection period of receivables on the financial performance measured by the returns of assets, and that the correlation coefficient value between the two variables is an adverse relation with a value of -0.479. Further; the third sub-hypothesis is rejected and the alternative one is accepted, as there is an effect for the average payment period of payables on the financial performance measured by the returns of assets in the sample studied, and the relation between the two variables is a positive strong relation according to the value of the correlation coefficient 0.802. we notice that there is a relative relation between the independent variables, for each, with the dependent variable with relative weight in forming the following regression equation :

$$ROA=6.499-0.021*AIP-0.020*ACP+0.005*APP+e$$

Table (4): the results of multi-regression test of working capital management efficiency on the net profit margin (NPM).

Model	B	STANDARDIZED Coefficients	T	
Constant	18.025	4.012	0.002
AIP	0.088-	0.401-	4.890-	0.000
ACP	0.059-	0.199-	3.985-	0.031
APP	0.011	0.311	3.564	0.012
F test Model=80.767		Sig F=0.000		
Adjusted R Square= 0.545		R=0.568		
F Distribution Table=4.150.		T Distribution Table=1.599.		
NPM= $\beta_0 + \beta_1 * AIP + \beta_2 * ACP + \beta_3 * APP$				

From table (4), concerning the second main hypothesis, we notice that "there is no statistically significant impact at $\alpha \leq 0.05$ of working capital management efficiency on the financial performance measured by the net profit margin in the companies included in the sample of the study, whereas F-value is 0.000 less than the test level 0.05. therefore; the second main hypothesis is rejected and its alternative hypothesis is accepted, and this means that there is an impact for the working capital management efficiency on the financial performance measured to the net profit margin of companies included in the sample studied, and the correlation coefficient value R is 0.568. This denotes that there is a strong positive relationship between the working capital management efficiency in variables AIP, ACP, APP collectively and the financial performance measured to the net profit margin (NPM), and the determination coefficient R² is 0.545, denoting that about 54.5% of the fluctuations occur to the financial performance measured to the net profit margin of the companies in the sample studied can be explained by the variables that bring about in the elements of the working capital efficiency. We notice that the B-value, i.e. 18.025, indicates to the value of the fixed regression equation in the forecast model with net profit margin value proving by the independent variables of working capital efficiency (AIP, ACP, APP).

While in the first sub-hypothesis, the negative hypothesis is rejected and the alternative one accepted according to its sig T results, i.e. 0.000, which is less than 0.05. This points out that there is an impact of average inventory period on the financial performance measured by the net profit margin (NPM) in the studied sample, and that the value -0.401 expresses that correlation coefficient value between two variables which denotes that the relation between them is reverse, also the second sub-hypothesis is rejected and its alternative one is accepted meaning that there is an impact of average collection period of receivables on the financial performance measured by net profit margin (NPM), and the correlation coefficient value between the two variable is an adverse relation of -0.199. moreover; the third sub-hypothesis is rejected and the alternative hypothesis is accepted denoting that there an impact of average payment period of payables on the financial performance measured by net profit margin (NPM) in the sample of study and that the relationship between the two variable is a strong, positive relation according to the correlation coefficient value of 0.311. we notice that there is a relative relation between the independent variables, singly, and the dependent variable with disproportionate relative weight in forming the following regression equation:

$$\text{NPM}=18.025-0.088*\text{AIP}-0.059*\text{ACP}+0.011*\text{APP}+e$$

The most significant results of study:

The aim of this research was to identify the relationship between the working capital efficiency and the financial performance of industrial companies in Libya. To achieve such a goal, data collected, qualitative and quantitative analysis carried out, as returns of assets and net profit margin used as dependent variable for each company, while accounts receivable, accounts payable, inventory, cash turnover cycle used as independent variables. A descriptive, statistical analysis is conducted for all variables to give the general behavior of the auto companies in terms of elements of working capital and returns of assets (ROA). Further; Pearson Correlation Coefficients used to identify the relationship between the variables, the relation between the dependent variables ROA and NPM and other variables examined by using the general regression model. In order to determine if the elements of working capital have a significant relation with the dependent variables ROA and NPM, two models of regression are separately applied between the two dependent variables and the independent ones at 0.05. correlation coefficient analysis revealed a statistically significant impact for the working capital efficiency on the financial performance measured by the returns of assets (ROA) of Libya's industrial companies which is detected by (Samiloglu et al, 2016), (Akoto et al, 2013) and (Qurashi et al, 2017). Moreover, there is a negative statistically significant relationship at 0.05 between the average inventory period and the financial performance measured by the returns of assets (ROA) in Libyan industrial companies (Radhi, 2009), (Samillogu et al, 2016) and (Shaza, 2017), also for the independent variable, i.e., average collection period of receivables and its impact on the financial performance measured by the returns of assets (ROA) with a negative relation between them.

The relationship between average payment period of payables and the financial performance measured by the returns of assets (ROA) it is positive which is agrees with (Akgun, 2016). The impact between the working capital management efficiency and the financial performance measured by NPM in Libyan industrial companies included in the studied sample was of statistically significant at 0.05. there is a negative significant impact between average inventory period and the financial performance measured by NPM in Libyan industrial companies included in the studied sample and this agrees with (Ray, 2012). Also, the relationship between average collection period of receivables and the financial performance measured by NPM was negative at 0.05 which agrees with (Mbithi et al, 2015). While the relationship between average payment period of payables and the financial performance measured by NPM in Libyan industrial companies included in the sample was positive at 0.05. in regard to the relationship between the elements of working capital management efficiency, in whole, and the financial performance measured by ROA was positive with the correlation coefficient value of 0.565 which higher than the value of the relationship between the elements of total working capital management efficiency and the financial performance measured by NPM where the correlation coefficient value was 0.401.

Recommendations:

There is a negative reverse relation between the average inventory period and financial performance measured by returns of assets and net profit margin. Therefore; the financial managers of Libyan industrial companies included in the studied sample have to reduce the inventory turnover rates that is to increase the average inventory period. Simultaneously; they should maintain sufficient inventory to ensure the sales to not drop due the consumption of the inventory.

There is a negative relation between average collection period and financial performance of Libyan industrial companies the research studied, this means that to increase this period will lead to reduction of profitability, and subsequently; the companies seek, as far as possible, to reduce the collection period of payables from their customers.

There is a positive relation between the average payment period of payables and the financial performance measured to returns assets and net profit margin in Libyan industrial companies under this study, which means that any increase in the payment period may lead to increase of performance. The average payment period is the number of days during which the company is capable to delay the payment to its suppliers against the raw materials. The delay in payment is viewed as an internal financing that helps the company to save the costs related to the external financing such as the bank loans.

Considering the reality of variables of the working capital is closely associated with the profitability, the companies should use a strict method of funding such as the commercial credit, short-term loans to meet the requirements of the working capital.

The period of receivables is relatively long, therefore; the companies can manage different mechanisms so as to reduce this period to minimum, as far as possible.

The relation between the inventory turnover and the company's profitability is negative too, meaning that any reduction in the days of inventory turnover may lead to increase the profitability. Inventory turnover is the number of days required for ordering the raw materials and sell the products. The advantages of the companies that reduce the inventory includes the reduction of the warehouses area, the shelf time, consumption, the costs of heavy weight related to inventory such money hold by the raw materials or the work in progress which can form the profitability to be exploited in other area.

The company should engage in a relationship with the suppliers who allow a long time of credit, and customers who give short period of payment.

The administration should guarantee that there a tradeoff between the liquidity and profitability in order to maximize the efficiency of working capital investment management and funding policies.

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