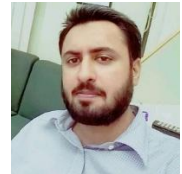


Corporate profitability-working capital management tie: empirical evidence from pharmaceutical sector of Pakistan

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ABSTRACT

The importance of working capital management in generating the corporate profitability cannot be disregarded. This study aims to empirically investigate the impact of working capital management on the profitability of pharmaceutical sector of Pakistan. The study has taken secondary data covering a period of six years from 2011 – 2016. Current ratio, cash conversion cycle and current assets to total assets were taken as independent variables to represent working capital management and return on the asset taken as the dependent variable to represent corporate profitability. Through panel regression analysis, this study has found a significant impact of current ratio and cash conversion cycle and current assets to total assets have an insignificant impact on corporate profitability. These results give an insight of managing corporate profitability by considering current ratio and cash conversion cycle. This study should be beneficial for the pharmaceutical sector of Pakistan as performance and survival of this sector is important for investor and for the health of the general public.

Keywords:

Working capital,
Profitability,
Cash conversion cycle

Contribution/ Originality

No such studies has been undertaken for the Pharmaceutical Sector Companies of Pakistan. This results of the study are quite aligned with the prior literature not only from Pakistani perspective but also from developing economies context.

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1. INTRODUCTION

1.1. Preamble

Operational efficiency is most essential for the survival and performance of the business. It is highly desirable for all businesses to sustain adequate capital requirements in a short run in order to improve operational efficiency. Management of capital is said to be, to meet the daily needs of businesses. Working capital management is basically maintaining a balance between firms' current assets and its current liabilities. The financial soundness in short-term can be maintained by the efficient and effective management of working capital and that can be measured & monitored by liquidity ratio. Working capital is a fundamental requirement for all businesses, as many businesses fail not due to unprofitability but short-term insolvency. Therefore it is a basic need for businesses that in order to perform day-to-day operations, they need to maintain adequate funds. To measure the short-term financial soundness we have liquidity ratio. Liquidity ratio is a basic metric to measure the working capital. Thorat (2015) stated that the "Working capital management involves the relationship between a firm's short-term assets and its short-term liabilities. The goal of working capital management is to ensure that a firm is able to continue its operations and that it has sufficient ability to satisfy both maturing short-term debt and upcoming operational expenses. The management of working capital involves managing inventories, accounts receivable and payable, and cash".

Working capital management is a process of managing current assets and current liabilities in order to achieve sustainability and efficient performances of businesses. There are many factors that affect the profitability of firms and working capital management is one of them. So profitability can be improved by efficiently managing working capital and it can be considered as key to success for business firms. Managing working capital efficiently required to manage its components i.e cash conversion cycle (short-term trade liabilities, short-term account receivables, and inventories). As these components play a vital role in the performance of firms and lead firms to strong liquidity position, expansion in business and increase in wealth of shareholders.

While exploring the correlation of working capital and firms' profitability, Anser and Malik (2013) had taken cash conversion cycle (CCC) to measure the inefficiency of working capital management and to gauge the profitability, return on total operating assets (ROA) and return on equity (ROE) considered as dependent variable. The study was carried on manufacturing companies listed on Karachi stock exchange during the period of 2007 to 2011 and results suggest a significant inverse relationship of CCC with ROA and ROE.

Working capital is one of the most fundamental requirements of any business for its performance & survival and it is also one of the indicators that measure the financial soundness of company in short run. Working capital is vitally an accounting strategy to maintain a balance between company's current assets and liabilities. It is correlated with profitability. However, the dimension of relation may vary from business to business, but the existence of relation cannot be neglected. Hence working capital management needs to be explored as to how it may affect the profitability of the firms. A declining trend of profitability indicates inefficiently management of working capital. The focus of this study will be to check the correlation between working capital and profitability variables in order to carefully plan the trade policies. In addition to that, this research will help management to identify the most important factors to be taken into account to make sound decisions for better management of working capital and profitability matters. The stakeholder of this research could be the pharmaceutical companies, shareholders, employees, me as a researcher & instructor and most importantly new emerging businesses in this sector can be beneficial from this research.

1.1.1. Working capital management & its importance

Managing liquidity is one of the most critical aspects of financial management domain because it requires to be vigilant for risks and returns associated with managing liquidity. If finance managers are engaged in managing sufficient level of cash, maintaining shortest possible cash conversion cycle, establishing wisely payment terms with vendors and maintaining an optimum level of inventory, it

means they are managing working capital (Edgar *et al.*, 2012). Importance of working capital management is very obvious as many businesses fail not due to unprofitability but working capital collapse. Therefore it is highly essential for any business to maintain optimum working capital position in order to run operations of business smoothly and prospective growth. Many studies consider Cash conversion cycle as one of the most widely used as metrics to gauge the risks and returns associated with liquidity management. It is also considered to measure the efficiency of working capital (Mehmet and Eda, 2009). Cash conversion basically depicts the efficiency in a number of days to utilize the available cash in order to generate more cash by quickly selling inventory (Padachi, 2006). “Cash conversion cycle define the time in which current assets transmitted in the most liquid form”. Deloof, (2003) suggests that as the number of days for converting inventory into cash increases, the more funds are to be devoted to working capital. When operating cycle increases, it increases sale as well, but this will also lead to increase in cost and at the end can affect the profitability. Many studies suggest that there is a significant inverse correlation between the profitability of a firm and cash conversion cycle (Shin and Soenen, 1998; Deloof, 2003; Raheman and Nasr, 2007; Teruel and Solano, 2007). To forecast and evaluate the cash flow is one of the most crucial tasks of finance managers. In order to run operations smoothly and to plan financing and investing strategies, it is highly desirable to identify the sources of cash inflows and outflows. This will also help businesses to formulate policy for creditors in order to overcome any risk associated with reputation and survival of the business. Performance of firm in terms of profitability can also be increased by decreasing the length of cash conversion cycle. For every business organization, the main objective of is to maintain and improve the profitability. So it is necessary for finance managers to be vigilant about the factors affecting it. Therefore, efficient working capital management can result in the firm being more profitable. Hence liquidity management is one of the most important factors of business performance and has an impact on the profitability of business so its importance cannot be neglected. This study is more focused on evaluating and measuring the change that working capital can have on the profitability of the Pharmaceutical companies listed on Pakistan Stock Exchange.

1.1.2. Profitability

Profitability is a parameter to compare the pace of performance of businesses to its competitors in the industry. Profitability is the metric used to determine the scope of a company's profit in relation to the size of the business (Malik, 2011). Through profitability efficiency and achievement of objectives can be measured. “Profitability can further be defined as the ability of a business to produce a return on an investment based on its resources in comparison with an alternative investment”. Profit in term of finance is the basic purpose of doing business i.e. maximizing the value of the firm. There are various tactics and strategies to achieve the value maximization objective, but here study will be focused on profitability with respect to working capital management. The main objective of a firm is to increase the market value. Bolek (2013) established an argument that profitability of the firms affected by working capital. So it can be inferred that managing working capital efficiently play a vital role in establishing strategy with the purpose of maximizing the market value (Howorth and Westhead, 2003; Deloof, 2003; Afza and Nazir, 2007). Enqvist *et al.* (2014) conducted research on effects of the business cycle on working capital and profitability. The study was conducted in recession conditions of the economy on Finish listed companies for the period of 18 years. They have noticed the impact of the business cycle on working capital – profitability relationship during an economic downturn is more strong compared to an economic boom. They also revealed the account receivables conversion period increased, thus the importance of efficient inventory management also increased in economic downturn conditions.

1.1.3. The relationship between financial profitability and working capital management

Before achieving any growth it is very necessary to survive, so working capital plays as a role of oxygen in the life of businesses. Better the oxygen more sustainability businesses can have and ultimately leads to achieving more financial profit. Studies suggest the positive relation between firms' profitability and working capital management. Iqbal *et al.* (2014) studied the analysis of working capital on profitability by using secondary data of Pakistani firms listed on Karachi Stock Exchange. They found that earnings before interest & tax are affected by the number of days of receivables,

number of days of inventory, number of days of payables and cash conversion cycle. After analyzing through correlation the effect of account receivable, account payables & inventory have a positive relationship with profitability. However, profitability can increase by reducing cash conversion cycle, financial debt, and financial assets. Shrivastava *et al.* (2017) attempted Bayesian analysis of working capital management on corporate profitability: evidence from India. – “It is found that longer cash conversion period has a detrimental influence on profitability. Financial soundness indicators are playing a significant role in determining firm profitability. Larger firms seem to be more profitable and significant as per Bayesian approach.” Banos *et al.* (2014) attempted to study the between working capital and corporate performance. By applying GMM method of estimation, they found that between working capital and firm performance is nonlinear, so it can be inferred that it is highly desirable to invest at an optimal level so maximized value of the firm can be achieved by minimizing the cost. Therefore finance managers will be willing to invest at an optimum level in working capital in order to strengthen the liquidity position but after a certain point that investment begins to reduce benefits because of increase in cost. This can also expose firms towards the risk of bankruptcy. So in order to avoid any risk, the optimum level of working capital should keep in mind.

1.2. Problem statement

It is essential for every business to maintain adequate working capital in order to meet the “day-to-day operations and survival in today’s competitive business environment.” Identifying the working capital requirement is not an easy task practically; it’s difficult to identify the core working capital drivers and to maintain the sufficient level of working capital. The need for working capital varies from industry to industry even two companies of same industry have a different working capital requirement. This is due to the difference in policies of account receivables, account payables, inventory management and tactics of reinvesting retained earnings. If any business fails to maintain enough working capital to cover its liabilities, can lead to winding up. Therefore it is very important for all businesses to have sufficient management of working capital. Businesses can easily pay its current obligations without losing profit, only if they have strong working capital. This will lead to efficient allocation of on-hand resources in order to increase profit by reducing risk. “*The study aims to analyze the impact of working capital management on the profitability of firms*”.

1.3. Objectives of the study

This study will be focused on checking the impact of working capital management on the profitability of the firm. In addition to that study will be focused on to find the relation between working capital management and profitability of pharmaceutical companies of Pakistan.

1.4. Limitations

This study will only take into account the Pakistani Pharmaceutical firms have been taken for the period of 2011 - 2016 to achieve the research objective. The beneficiaries of research will be existing and potential firms in Pakistan. In order to check the impact on profitability, Return on Assets has been taken as a measure of profitability. There could be other variables may be considered to measure the profitability. Further study also lacks economic factors in analyzing the profitability of companies.

1.5. The scope of the study

This study will help management to carefully drive the trade policies. In addition to that, this research will help management to identify the most important factors to be taken into account to make sound decisions for better management of working capital and profitability matters. This study will help the company to address the issues that are creating the working capital problem. The management will be more vigilant in assessing working capital requirements in order to avoid firms’ exposure to survival and profitability risk. This research will also be beneficial in learning the working capital management for new emerging businesses in this sector.

2. LITERATURE REVIEW

Many scholars have focused primarily on working capital management effects on firms' profitability. Studies provided evidence that the return on assets or equity considered as metric to measure the profitability of a firm. In short, the profitability of a firm is inversely related to its cash conversion cycle (Shin and Soenen, 1998; Deloof, 2003, Teruel and Solano, 2007; Enqvist *et al.*, 2014; Iqbal *et al.*, 2014; Banos *et al.*, 2014). Further studies suggest that it is essential for businesses to maintain adequate funds to meet short-term obligations. Failing in managing working capital can lead to loss and ultimately survival will also be at risk. "Working capital is defined as the difference between operational current assets and current liabilities. It usually compares to cash, receivable accounts, and inventory minus payable accounts and delayed accounts." In order to perform routine operations smoothly, an optimum level of working capital is required (Harris, 2005). If firms fail to give due consideration for management of working capital, that it can leads firm towards failure and bankruptcy (Filbeck and Krueger, 2005).

While studying the research of Raheman and Nasr (2007), results suggest profit after tax is negatively related to working capital. The studies were conducted on Pakistani firms listed on Karachi Stock Exchange. They considered the number of days of accounts receivable, number of days of payable and number of days of inventory to tackle the working capital. Another study also advocates the same idea of the inverse relation between profit and working capital. Shareholders' value can also be increased by managing working capital efficiently. The study was conducted to analyze the impact of working capital on profitability and the results suggest the inverse relation between net operating cycles and profitability of businesses (Shin and Soenen, 1998). Impact of working capital on profitability was also checked by Ajanthan (2013); Alavinasab and Davoudi (2013); Bolek (2013); Haq *et al.*, 2011); and Rahman (2011). All of them generated an argument that current ratio is directly related with return on assets. It can be inferred that those businesses who have strong working capital will less expose to any risk and perform better than those who have not strong working capital. One of the studies were found mixed effects of liquidity on profitability. The study was made on the top four Steel companies in India. Mixed results were found, for Tata Steel Ltd current ratio directly related with profitability, for Lloyds Steel Ltd current ratio is inversely related with profitability, for Kalyani Steels Ltd current ratio of is inversely related with profitability and the for JSW Steel Ltd current ratio of is directly related with profitability (Bhunja *et al.*, 2011). Kaur and Silky (2013) examine the effect of working capital management on profitability and study was applied on all the companies listed on the National Stock Exchange of India. The study suggests that current ratio and return on assets are inversely related. Agha (2014) and Afeef (2011) established an argument that current ratio has no significant impact on the profitability (ROA). Ajanthan (2013); Egbide *et al.* (2013); Nimer *et al.* (2013); Haq *et al.* (2011) and Rahman (2011) they founded a positive relationship between quick ratio and return on assets and cash ratio is also directly related with profitability. Most of the time, majority scholars suggested the inverse relation between cash conversion cycle and return on assets. Performance and productivity can be increased by shortening the cash conversion cycle. (Alavinasab and Davoudi, 2013; Anser and Malik, 2013; Bolek, 2013; Egbide *et al.*, 2013; Makori and Jagongo, 2013; Manyo 2013; Ajao and Small, 2012; Ogundipe *et al.*, 2012; Uremadu *et al.*, 2012; Azam and Haider, 2011; Saghir *et al.* (2011); Vijayakumar, 2011; Karaduman *et al.*, 2010; Padachi, 2006).

Afeef (2011) conducted a study on forty small and medium enterprises listed on Karachi Stock Exchange for the period of 2003 – 2008. The purpose of the study was to inquire the impact of working capital management on the profitability of the firms and results suggest an insignificant relationship between cash conversion cycle and ROA. Another study was made for Fast Moving Consumer Goods companies of India for the ten years period of 2000 – 2010 in order to investigate the impact of working capital on profitability. The results suggest the inverse relation between cash conversion cycle and return on assets by applying Pearson's analysis method. However, on contrary to the traditional results, Spearman's correlation coefficient and regression analysis depicted a positive relationship between cash conversion cycle and return on assets. (Bagchi *et al.*, 2012). Another aspect of managing working capital in order to improve the profitability by improving credit policy and inventory management,

because the investment allocated to current assets represents an important proportion of a firm's assets, while the major source of funds for most of the firms is trade credit. Cunat (2006) found that about 41% of the total receivables and about half the short-term debt in UK medium-sized firms is the credit sales. The importance of credit policy and inventory management is also supported by various scholars. Schiff and Lieber (1974); Sartoris and Hill (1983); Kim and Chung (1990) suggested taking into account the interactions between the various working capital elements (i.e. receivable accounts, inventories and payable accounts) as an integral part of profit maximization. While reviewing the literature regarding the impact of working capital management and profitability of businesses, the majority of scholars focused on considering carefully the elements of working capital like account receivables, account payables and inventory, in order to sustain and improve firms' profitability.

3. RESEARCH METHODOLOGY

3.1. Research design

The study aims to analyze the impact of working capital management on profitability, so from the aspect of purpose, this study is casual. Quantitative method will be applied to execute research by working mainly on secondary data obtained from financial reports. The positivist type of research philosophy will be considered to carry out studies primarily by applying the quantitative method in order to investigate the working capital management impact on profitability.

3.2. Procedure

The secondary data used to analyze the impact of working capital management on profitability. The source of data will be Pakistan Stock Exchange, from where financial reports can be taken to consider required data. Sample period will be of 6 years i.e. from 2011 – 2017. Based on detailed literature review, multiple regression model will be used for analysis purpose in order to achieve research objective.

3.3. Population

The study is intended to empirically figure out the working capital management impact on the profitability of Pharmaceutical firms listed on Pakistan Stock Exchange. There are eleven Pharmaceutical companies are listed on Pakistan Stock Exchange and six of these are taken into account to conduct the study due to non-availability of data.

3.4. Variables

After studying detailed literature review, Return on assets, measure of profitability is considered as the dependent variable and independent variables include current ratio, net current assets to total assets ratio and cash conversion cycle. The dependent and independent variables are defined as follows:

ROA used as a dependent variable. Profitability is measured by Return on Assets (ROA). Return on assets (ROA) is an indicator of how profitable a company is relative to its total assets. ROA gives a manager, investor, or analyst an idea as to how efficient a company's management is at using its assets to generate earnings. The current ratio is a liquidity ratio that measures a company's ability to pay short-term and long-term obligations. To gauge this ability, the current ratio considers the current total assets of a company (both liquid and illiquid) relative to that company's current total liabilities. Normally, the high current ratio is considered to be a sign of financial strength. The cash conversion cycle (CCC) is a metric that expresses the length of time, in days, that it takes for a company to convert resource inputs into cash flows. The cash conversion cycle attempts to measure the amount of time each net input dollar is tied up in the production and sales process before it is converted into cash through sales to customers. This metric looks at the amount of time needed to sell inventory, the amount of time needed to collect receivables, and the length of time the company is afforded to pay its bills without incurring penalties (Ismail, 2016). The value of net current assets, or working capital, helps to gauge a company's short-term financial health. The formula for net current assets is total current assets minus total current liabilities (Mehmet and Eda, 2009).

3.5. The hypothesis of the study

- H₁: There is no significant impact of Current Ratio on ROA.
- H₂: There is no significant impact of [NCA / TA] Ratio on ROA.
- H₃: There is no significant impact of CCC Ratio on ROA.

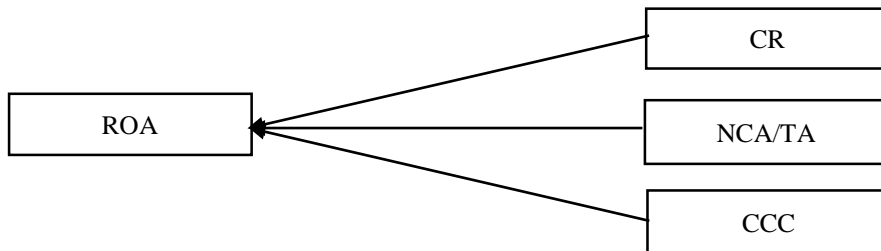
3.6. Conceptual framework

The purpose of the study is to analyze the impact of working capital on firms’ profitability. Based on detailed literature review following variables were identified to achieve the research objective. Following equation aims to analyze the relationship between working capital management and profitability.

Equation Model

$$ROA(it) = \beta_0 + \beta_1 CR(it) + \beta_2 NCA/TA(it) + \beta_3 CCC(it) + \varepsilon$$

Where ROA is the return on assets ratio, CR is a current ratio, NCA/TA is net current assets to total assets and CCC is cash conversion cycle. Where ROA is dependent and the remaining are independent variables.



3.7. Data analysis and findings

This research has attempted to empirically check the impact of working capital on profitability, following are the results given.

Table 1: Showing descriptive statistics of pharmaceutical companies in PSX for the sample period from 2011 to 2016

Table 1: Descriptive statistics of pharmaceutical firms

Variables	Count	Mean	Std. Dev.
RAO	36	0.160	0.078
CR	36	2.711	1.233
CCC	36	86.889	39.436
CA/TA	36	0.627	0.156
All	144	22.597	42.065

Table 1 presents the results of descriptive statistics of the Pharmaceutical Firms listed on Pakistan Stock Exchange. The table depicts the number of observations, mean and standard deviation. The descriptive results are showing that average ROA of pharmaceutical companies is 16%, the current ratio is above two means firms have twice of current assets as compare to their current liabilities, out total assets 62.7% are current assets. However, the industry has 86 number of days for cash conversion cycle.

Table 2: Correlation results of pharmaceutical firms

Variables	ROA	CR	CCC	CA_TO_TA
ROA	1.000			
CR	0.593	1.000		
CCC	-0.135	0.392	1.000	
CA_TO_TA	-0.014	-0.054	-0.364	1.000

Table 2 is showing the correlation among independent variables and with the dependent variable. Through correlation degree of relationship between dependent and independent variables can be analyzed. The intensity of the relationship between two variables can be check through a correlation matrix. Hence, the above data shows there is a strong positive relationship between return on assets and current ratio, which means ROA will increase if the company has an increasing trend in current ratio. Means better the current ratio will lead towards better firms' performance. However, CCC and CA to TA show a negative relation with return on assets. That means firms should reduce its CCC in order to improve the ROA and as large portion of amount is invested in current assets that should also be balanced as it would portray negative picture for firms as they are not investing excess cash efficiently in order to avail more growth opportunities and to sustain strong liquidity position in the market.

Table 3: Regression results by using panel least squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.1590	0.0543	2.9289	0.0062
CR	0.0490	0.0083	5.8820	0.0000
CA_TO_TA	-0.0759	0.0648	-1.1705	0.2504
CCC	-0.0009	0.0002	-3.4934	0.0014
R-squared	0.5305	Adjusted R-squared	0.4864	
F-statistic	12.0525		Prob(F-statistic)	0.000019

Table 3 is showing the empirical evidence of working capital impact on firms' performance.

Based on these results, hypothesis one and three have been rejected and hypothesis two failed to reject.

Regression results for the equation are as follows:

$$ROA = 0.159071 + 0.049019 CR - 0.000976 CCC - 0.0759540 CA_TO_TA + \varepsilon$$

Many researchers like (Akoto *et al.*, 2013; Agha, 2014; Sharif and Islam, 2018) consider current ratio as an important element to gauge working capital level. As the P value and t value that is less than 0.05 and greater than 2 respectively for current ratio, which is suggesting the current ratio has a significant impact on return on assets. These results are inconsistent with the studies of (Deloof, 2003; Arunkumar and Ramanan, 2013; Akoto *et al.*, 2013; Sharif and Isalm, 2018) however the study of Agha (2014) suggest different empirical evidence and consider current ratio has no significant impact on firms' profitability. The impact of cash conversion cycle also statistical found as significant, but it is inversely significant with return on assets. As in table 3, it can be seen that p-value is less than 0.05 with a negative coefficient of 0.098%. Bagh *et al.*, (2016) and Talreja *et al.* (2018) consider cash conversion cycle as an important factor for the profitability of the firms and both studies have statistically proven the cash conversion cycle has negative coefficient and it has a significant impact on profitability. Iqbal and Zhuquan (2015) statistically prove the negative relationship between CCC and ROA but it was not significant. Current assets to total assets consider by Kamau and Ayuo (2014) found that CA & TA is positively related with ROA but this does not significantly impact the firm's profitability, however, Arshad and Gondal (2013) found CA to TA as significant. This study has statistically found the CA to TA has negative relation and its impact is insignificant.

R-square is 53% which quite good in order to explain the variation caused by independent variables in the dependent variable.

4. CONCLUSION

The study is based on to check the impact of working capital management on pharmaceutical firms in Pakistan. This study has taken three factors of working capital current ratio, cash conversion cycle and current assets to total assets in order to see the impact of these on return on assets. It is statistically found that the current ratio and cash conversion cycle has a significant impact on firms' profitability while current assets to total assets have no a significant impact. These results revealed that for sustainability and profitability of every business, working capital management is one of the most fundamental dimensions of financial management. If any business fails to maintain enough working capital to cover its liabilities, can lead to winding up. Therefore it is very important for all businesses to have sufficient management of working capital. Having strong working capital position helps firms to pay its short-term obligations without compromising profitability (Enqvist *et al.*, 2014). It also helps in utilizing the all on hand inputs in a most efficient way to increase profitability by minimizing the risk. Shin and Soenen (1998) conducted a study on the large sample of American listed companies for the period of 1975–1994 and revealed the inverse relation between the cash conversion cycle and businesses profitability. The attempt was made to check the impact of working capital on profitability for firms listed on Karachi Stock Exchange by Rahman and Nasr (2007) and they came up with results that there is a strong inverse relationship between profit after tax and the number of days of receivables, number of days of inventory, number of days of payables, and net operating cycle. Managers of pharmaceutical firms should manage current assets and current liabilities in order to maintain the desired level of current ratio. Further, these results are suggesting that finance managers should keep an eye on cash conversion cycle, in order to efficient utilization of credit policies so that funds can be utilized at an optimum level which ultimately will lead towards profit maximization of the firms.

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