CHAPTER FOUR

DETERMINANTS OF FINANCIAL PERFORMANCE OF THE POLYTHENE AND PLASTIC INDUSTRY; SPECIAL REFERENCE TO PRIMEX LANKA PLASTIC (PVT) LIMITED

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Abstract

The plastic and polythene industry in Sri Lanka is running with many challenges due to the negative natural environmental impact. Under the prevailing direct and indirect influences towards the industry, it has to gain financial returns by adjusting towards a sustainable existence. This study investigates the determinants of the financial performance of Primex Lanka Plastic (Pvt.) Limited, which is a leading polythene manufacturing company in Sri Lanka. The study focused on three specific objectives; (i) explore the behaviour of the firm-specific variables, (ii) identify the association between variables and (iii) rank the significant variables in each good model. The study employed the deductive approach using the secondary data from May 2012 to May 2017 monthly. Multiple regression model explored the best model out of the result of three tested models. Out of two dependent variables, Return on Assets (ROA) and Return on Equity (ROE), ROA have given significant results on three models. However, the selected model defines the results of the study. Results indicate that liquidity, leverage, management efficiency and interest expense are significant on ROA. Among the selected determinants, firm-specific factors highly influence the company's financial performance rather than the macro-economic factors. Empirical findings of this study may be helpful for policymakers and senior management of the Primex Lanka Plastic (Pvt.) Limited to craft their strategic decisions highlighting the firm-specific determinists for the best performance.

Keywords: Plastic Industry, Financial Performance, Firm-Specific Variables, Macro-economic Variables.

1. Introduction

Manufacturing sector companies play a vital role in contributing to the economic growth. In the Sri Lankan context, private manufacturing firms dominate the market over the public sector among different manufacturing sectors. To achieve a higher level of business performance sustainably, they have to carry out their operations smoothly with continuous solid financial performance. Since track on the firms' performances indicates how the business runs healthy and manages the resources to gain competitive advantages (Iswatia & Anshoria, 2007).

Financial performance has been widely used as an indicator for business performance (Ezzemel, 1992; Ezzemel & Hart, 1989; Rappaport, 1986). Proper performance measurement derives valuable information to efficiently utilize the funds and other assets efficiently and effectively towards the company's best decisions. When good financial performance rewards and motives, their stakeholders ultimately maximize the nation's wealth; on the other hand, weak financial performance can lead to firm failure and inside a crisis, which negatively affects economic growth.

However, the financial performance of a firm is influenced by external and internal factors. Macro-economic and firm-specifics are the two different influences that affect a firm's financial performance externally and internally. Most studies found that when firm-specific factors influence the management and director board (Hansen and Wernerfelt, 1989), such studies rarely have focused on the macro-economic impact.

Polythene Industry and Primex Lanka (Pvt.) Limited

Among the manufacturing sector, polythene and plastic-based manufacturing sector based on rubber and plastics, a vital production segment in Sri Lanka. Central Bank of Sri Lanka (2016) highlights the significant contribution identifying among the top ten income generation areas in Sri Lanka. In recent years, the polythene and plastic industry is influenced by the diverse challenges due to mainly the evidence of environmental pollution. Jayasekara (2017) highlighted that according to the National Environmental Act No. 47 of 1980, the production of polythene or any polythene product of 20 microns or below in thickness for in-country use and the sale is prohibited in Sri Lanka from 01 February 2016. Though producing polythene and plastic has become a criticized industry

in recent times, polythene and plastic manufacturing companies are performing their businesses with a considerable number of small-scale enterprises in Sri Lanka.

Primex Lanka Plastic is a Private Limited company that has undertaken a range of polythene products among the polythene and plastic industry in Sri Lanka. The company mainly focuses on the international market supplying 65% of the production and raw materials imported from the oil-producing countries. Since the local and international scenarios influence the company's financial performances, however, today, they have become the second runners of their market. However, the company's financial performances have shown a downward trend with huge unstable fluctuations in recent years, as shown in Table 1 below.

Table 1: Behavior of Return on Asset ratio and Return on Equity Ratio of the Primex Lanka Plastic (Pvt.) Limited

Year	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
ROA	80.12%	25.45%	24.48%	20.79%	13.66%
ROE	93.29%	60.15%	52.99%	48.38%	33.72%

Source: Audited Accounts of Primex Lanka (Pvt.) Limited (2012-2017)

Though the firm performs in a market gaining higher market share, the symptoms of unpredicted financial performance behaviour have shown unexplored scenarios and relationships of internal and external sources influences. However, few studies investigating the relationship considering both macro and firm-specific factors on financial performance are very scarce in the manufacturing sector since the evidence and reasons for the company issue are also limited. Especially, the impact of different constraints devised on the polythene and plastic industry in Sri Lanka is also an unexplored area among researchers. Since the researcher aims to find the solutions on the behaviour of the firm-specific factors, the impact of both macro and internal environment on financial performance in the Primex Lanka Plastic (Pvt.) Limited. This would bring an idea of what would be the financial gain from the polythene productions even among these market conditions in Sri Lanka. Because producing polythene is still a criticized arena among the general society, it will also generate additional risk to the company that other manufacturing sector companies do not face.

2. Literature Review

The literature review, theoretical review and empirical review present different theories and concepts which give the light for this study to build up the flow on the determinants and influencing variables.

2.1 Theoretical Review

Performance can simply be defined as a result of an activity or action or process of performing a task or function. Company performance is essential to manage resources to gain a competitive advantage (Iswatia & Anshoria, 2007). Moreover, Walker (2001) investigated the three main dimensions to measure the performance: the company's productivity, profitability, and earning with its costs and market premium. However, most of the studies described the firm performance based on the financial performance, and it has been widely used as an indicator for business performance (Ezzemel, 1992; Ezzemel & Hart, 1989; Rappaport, 1986).

According to Havnes and Senneseth (2001), financial performance can express growth of sales, turnover, employment, or stock prices. Financial performance is measured through financial statements. There are various financial measures calculated based on financial statements data and return on asset, return on sales and equity, etc. Though there are different methods and criteria available to measure the performance, it should include multiple criteria analysis. This multi-dimensional view of performance suggests that additional models or patterns of relationship between business performance and its determinants will emerge to establish various relationships between variables in the established models (Ostroff and Schmidt, 1993).

Managing the association between firm's short-term assets and short-term liabilities can be identified as working capital management (Guthmann & Dougall, 1948). Further, balancing liquidity and profitability in an optimal way for trading and manufacturing organizations is critical if current assets are significant compared to the total assets. Though the firm is profitable, if trade receivable amounts are tied up, the firm has to borrow credit to finance inventory and then it will cause to increase the interest expense. Profitability and liquidity should be carefully managed to confirm the firm's going concern (Thuvarakan, 2013). Scholars found that because of high inventory days, high cash receivable days, and long cash operating cycles, most businesses fail due to inefficient management of working capital items (Rafuse, 1996).

Management can be defined as planning, organizing, leading, and controlling organizational resources efficiently and effectively to achieve the organizational goals. The lifestyle model explains that management efficiency and learning are the key factors for firm performance and growth (Jovanovic, 1982). Representing the management efficiency through the financial ratios is somewhat a complex scenario. The performance of management is often expressed qualitatively, including evaluation of management systems, control systems, quality of the staff and others; some of the financial ratios act as proxies for management efficiency (Ongore & Kusa, 2013).

The theory related to the optimal capital structure is known as the "irrelevance theorem". It suggested that, in perfect capital markets, capital structure choice does not affect a firm's market value. Absence of the corporate taxes, brokerage and symmetrical information imply that the investors and managers have the same information (Modigliani & Miller, 1958). Due perfect capital market is not a reality; a new idea brought by Modigliani and Miller (1963) as a tax benefit of the debt elaborating use of debt capital causes a minimizing of the firm's cost of capital and maximizing its profitability. It assumed that a firm's value is maximized when it employs more of debt in its capital structure than equity. Then the other three capital structure theories have been developed, such as the trade-off theory (Bradley, Jarrell & Kim 1984), agency cost theory (Jensen and Meckling, 1976) and pecking order theory (Myers and Majluf, 1984).

2.2 Legal Background of the Polythene and Plastic Industry in Sri Lanka

According to the Extraordinary Gazette Notification No. 1466/5 issued under section 23W of the National Environmental Act No. 47 of 1980, the manufacture of polythene or any polythene product of 20 microns or below in thickness for in-country use and the sale is prohibited in Sri Lanka from 01 February 2016 (Daily Mirror, 2016). Due to this act, polythene and plastic manufacturers might limit their production, which is a political influence on the industry.

2.3 Empirical Review

There are plenty of studies in which there are many internal determinants of firm performance, out of which this capital structure, working capital management, managerial efficiency, and interest expense are vital. Gill, Biger, & Mathur (2011) seek to extend Abor's (2005) findings that positive relationship between short-term debt to total assets

and ROA, long-term debt to total assets and ROA, and between total debt to total assets and ROA in the manufacturing industry in the study of American manufacturing and service firms during 2005 to 2007. Further, Roden and Lewellen (1995) discovered a positive relationship between profitability and capital structure in the study of US firms during 1981-1990. However, Salim and Yadav (2012) found that ROA, ROE and earning per share (EPS) have a negative relationship with short-term debt, long-term debt and total debt in the study done for Malaysia during 1995-2011. Further, Obert and Olawale (2010) suggested that debt had a negative impact on the profitability of small manufacturing firms in the study of manufacturing firms in Zimbabwe.

Similarly, Thuvarakant (2013) found that working capital components by receivable days, payable days, inventory days, cash conversion cycle, and profitability showed no significant relationship between the manufacturing industries in the United States from 2007 to 2011. There was a significant positive relationship between firm profitability and the current ratio in Ukrainian firms (Ankintoye, 2000). Further, there was a significant relationship between the company's working capital management and profitability criteria in Iran (Pouraghajan & Emamgholipourarchi, 2012).

Quality of management is necessary for the success of every company. However, Almajali, Alamro and Soub (2012) found that leverage, liquidity, size, and management efficiency positively affected the financial performance in Jordanian companies during 2002-2007. Agiomirgianakis, Voulgaris and Papadogonas (2006) explored that size, age, exports, debt structure, investment in fixed assets, assets' profitability, and sales contribute significantly to firm profitability and employment growth in Greek manufacturing firms from 1995 to 1999. Further, Ongore and Kusa (2013) found that capital adequacy and management efficiency positively affect the performance while asset quality negatively affected the performance in Kenya commercial banks from 2001 to 2010.

Then, Odalo (2015) found a significant positive relationship between interest coverage ratio and financial performance, while size, sales growth, operating cost efficiency, liquidity and interest rate positively impacts on the financial performance. But, ownership structure negatively impacts the financial performance in the Nairobi securities exchange. Further, Bhunia and Khan (2011) found a significant positive relationship between interest coverage ratio with return on assets in Indian private sector steel companies.

Concerning macro-economic variables, Baggs, Beaulieu, and Fung (2007) found that the firm's probability of survival, sales and entry are negatively associated with appreciations in the Canadian dollar study for plastic producing companies during 1986 to 1997. However, in the Turkey context, Demir (2009) suggested that the real exchange rate uncertainty had a statistically insignificant positive coefficient with the profitability in the real sector.

Demir (2007) found that the real interest rates and capital flow volatility significantly affected the manufacturing firm profitability in Turkey manufacturing firms from 1993 to 2003. Moreover, Bekeris (2012) found that most of the selected macro-economic indicators such as inflation, average wages, oil price, the number of enterprises, and the monetary bases were not statistically significant with the corporate profitability in Lithuania and the European Union SME from 2000 to 2010. Further, Odalo (2015) found that interest rate significantly positively impacts the firm performance in the Kenyan context.

However, Gunaya, *et al*. (2005) explored that the profit margins positively impacted price inflation and real wage costs in Turkish manufacturing firms from 1980 to 1986. Then, Kose, Prasad, and Terrones (2003) found that the increase of consumption volatility and uncertainty of vital macro prices and capital flows in developing countries in the post financial liberalization era directly impacted the firm profitability. Further, Demir (2009) found that increasing macro-economic uncertainty and volatility significantly negatively affected Turkey's firms' profitability from 1993 to 2003. However, Bekeris (2012) explained that inflation does not impact corporate profitability.

Shah (1992) suggested significant positive relationships with public infrastructure and profitability and industrial production and profitability among Mexican manufacturing industries from 1970 to 1987. Further, Sayilgan and Yildirim (2009) found that the consumer price index and first difference of ratio of off-balance-sheet transactions to total assets negatively affect the profitability. The first differences of industrial production index, the ratio of budget balance to industrial production index and the ratio of equity to total assets affect profitability indicators positively in Turkey from 2002 to 2007.

According to Sri Lankan evidence, Sivathaasan et al. (2013) suggested that capital structure and non-debt tax shield significantly impact profitability. The remaining working capital, growth rate, and firm size have no significant effects on manufacturing companies' profitability from 2008 to 2012. Then, Niresh (2012) found no significant relationship

between liquidity and profitability among the listed manufacturing firms' period from 2007 to 2011. However, Samarakoon (1999) examined the determinants of leverage in a cross-section of quoted companies and the result found that profitability is reliably negatively correlated to leverage. Further, Pratheepan (2014) found that size shows a positive relationship with the profitability, whereas tangibility shows a negative relationship with the profitability for selected listed manufacturing companies from 2003 to 2012.

3. Methodology

As this study focuses on the financial performance of Primex Lanka Limited, the sample consists only of the firm. The data has been gathered on the firm's profitability, macro-economic and firm's specific variables, which are considered from the literature on production firms. However, data are included for 61 months over the years from May 2012 to May 2017 of the company's financial performances. However, data are sourced from the Annual reports of the Central Bank of Sri Lanka, Sri Lankan Economic and Census Department's monthly reports, and the company's management accounts. In addition to that, to identify the political influence, data are obtained from Sri Lankan public newspapers reports and the previous articles regarding polythene and plastic, which the Sri Lankan Parliament passed. Then, data on relevant variables representing return on assets (ROA), return on equity (ROE) for firm's profitability, current ratio (CR), cash conversion cycle (CCC), debt ratio (DA), debt to equity ratio (DE), long term debt to equity ratio (LDE), Operating profit to income ratio (ME), Interest Coverage Ratio (IC) for firm's specific variables and exchange rate (EX), oil price (OI), interest rate (IR), inflation (IN), factor industrial production index (FIPI), political influences (PI) are for the macro-economic variables.

The study explores the impact of firm-specific and macro-economic variables on financial performances with two models for ROA and ROE. Since the data are a time series pattern for 61 months for each variable relating to one entity, a multiple linear regression procedure is applied. Using the SPSS computer software, multicollinearity among the variables was tested using the Variance Inflation Factor (VIF).

The study examines the impact of the firm-specific and macro-economic variables on the financial performance of Primex Lanka Limited, highlighting the polythene and plastic industry. In addition to the primary analysis, descriptive statistics and correlation

coefficient were utilized to identify the behaviour of the variables and its association among the variables based on previous studies. The following two models were developed to explore the expected financial performance results on return on assets (ROA) and return on equity (ROE).

Model - I

$$ROA = \beta_0 + \beta_1 CCC + \beta_2 CR + \beta_3 DA + \beta_4 DE + \beta_5 LDE + \beta_6 ME + \beta_7 IC + \beta_8 EX + \beta_9 lnOI + \beta_{10} IN + \beta_{11} CCPI + \beta_{12} FIPI + \beta_{13} PI + \varepsilon \quad (3.1)$$

Model - II

$$ROE = \beta_0 + \beta_1 CCC + \beta_2 CR + \beta_3 DA + \beta_4 DE + \beta_5 LDE + \beta_6 ME + \beta_7 IC + \beta_8 EX + \beta_9 lnOI + \beta_{10} IN + \beta_{11} CCPI + \beta_{12} FIPI + \beta_{13} PI + \varepsilon \quad (3.2)$$

Where,

ROA is the return on assets, ROE is the return on equity

CCC is the Cash conversion cycle

CR is the Current ratio

DA is the Debt ratio

DE is the Debt to equity ratio

LDE is the Long-term Debt to equity ratio

ME is the Operating profit to total income ratio

IC is the Interest coverage ratio

EX is the Nominal dollar exchange rate

lnOI is the Natural log value of oil price

IN is the Three months treasury bills' interest rate

CCPI is the Colombo Consumer Price Index

FIPI is the Factory industrial production Index

PI is the Dummy variable/political influence

β_0 is the intercept of the regression, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10}, \beta_{11}, \beta_{12}, \beta_{13}$ are the coefficients of CCC, CR, DA, DE, LDE, ME, IC, EX, lnOI, IN, CCPI, FIPI, PI and ε is the error term.

4. Results and Discussion

The descriptive statistics of the 16 variables, including macro-economic and firms-specific factors, are given below in Table 2 for 61 observations. However, descriptive statistics provide a detailed understanding of the features of macro-economic and firm-specific variables that have influenced the firm's financial performance.

Table 2: Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
ROA	2.760	1.360	-0.720	6.220
ROE	6.530	3.890	-1.800	19.900
CCC	12.382	16.557	-20.325	58.056
CR	1.176	0.207	0.770	1.619
DA	58.090	4.480	52.600	78.760
DE	142.360	37.910	110.970	370.880
LDE	16.690	18.690	0.410	58.390
ME	8.590	5.830	-15.200	17.480
IC	9.365	8.656	-1.724	52.056
EX	135.988	7.891	126.030	152.334
OI	10,076.910	3,365.737	4,306.680	14,410.320
IR	8.101	1.695	5.740	11.967
CCPI	179.928	8.262	162.100	195.200
FIPI	129.770	14.358	94.300	152.400

Source: Audited Financial Statements of Primex Lanka Limited (2012-2017) and Central Bank of Sri Lanka (2017)

ROA indicates that the firm has generated an average return of 2.76% on existing assets while ROE recorded its averages return from existing investments by equity at 6.53% during the last 61 months. However, the return has deviated by 1.36% and 3.89% for ROA and ROE, respectively. It showed a minimum return of -0.72% and a maximum return of 6.22% for ROA. Further, a maximum return of 19.90% and minimum return of -1.80% is indicated for ROE. Then results of CCC suggests the firm’s liquidity based on pay for and generate cash from sales of its inventory. It shows that an average of 12 days has taken on

CCC while it has varied by 16 days. However, the payment and receivable on inventory recorded a maximum of 58 days. Then the company's average current ratio (CR) stood at 1.17 which meant that the ability to pay short-term obligations. Two or more current ratios are recommended for a manufacturing company by professionals. However, it can be reduced due to lower buffer stock towards lower working capital. However, the times of current assets on current liabilities has varied by 0.20 times while it has taken a minimum of 0.77 times to a maximum of 1.61 times. Then, DA, DE, and LDE represent the nature of the company's average capital structure stood at 58%, 142%, and 16%, respectively. The total debt ratio indicates the portion of total assets financed by firm creditors. The debt used to generate the profit has varied by 4.48% while recording its minimum and maximum at 52.60% and 78.76%. DE meant that the portion of debt relating to the equity of a firm. As per the results, the average DE of 142% alarm a higher portion of the company's controlling power in the hands of creditors.

Further, it has varied by 37.91%, recording minimum and maximum values of 110.97% and 370.98%, respectively. Next, LDE indicates its long-term Debt against the equity capital. However, the result indicates that LDE has varied by 18.69%. Then, the long-term Debt to equity has taken a minimum of 0.41% and a maximum of 58.39% in particular months. However, the capital structure ratios volatility is not particularly high since variability is below the respective averages in the two proxies. But, the long-term debt-equity ratio has a high volatility as the standard deviation is above its average. Then ME represents the efficiency of the management towards better financial performance. However, it is tracked as the higher the operating profits to total income (revenue), the more efficient management is in operational efficiency and income generation. Results indicate that the average of ME was 8.59% dispersed during the months by 5.83%. Then, the minimum and maximum ME stood at -15.20% and 17.48%. Results indicate that management has changed over time without sustainable operation among the firm. Finally, interest expenses representing interest coverage ratio recoded as 9.3 times which meant as 9.3 times, the company can pay their interest expense from profit before interest and taxes. However, it has varied by 8.6 times, taking the minimum and maximum -1.7 and 52.05 times, respectively.

Then, the results of the macro-economic variable indicate its behaviour. EX represents the average rupee value for one American dollar as the exchange rate. However, the average EX is recoded as Rs. 135.987 during the 61 months. However, EX has varied by Rs.7.891 while fluctuated to a minimum of Rs 126.304 and a maximum of Rs. 152.030. However, the changes of the EX significantly impact the firm's profitability due to its production based on imported raw materials. Then, the oil price (OI) highlights its importance, as the raw materials are by-products of the crude oil. However, the average crude oil drum rupee stood at Rs.10,076.91, while the minimum and maximum values were Rs. 4,306.680 and Rs. 14,410.32, respectively. But, the OI has varied during the period by Rs. 3,365.736. The three-month Treasury bill rates represent the interest rate (IR) which has recorded the average rate of 8.10% while recording minimum and maximum of 5.7 % and 11.97%. However, the interest rate has deviated by 1.694%, showing a somewhat constant rate. Colombo Consumer Price Index represents inflation, and it lay down the range between 162.1 and 195.2. However, the average index was 179.92 for a particular month but varied by 8.262. However, Factory Industrial Production Index (FIPI) represents the nature of the rubber and plastic sector. The minimum and maximum FIPI lay between 94.3 and 152.4 while the average of 129.77. However, the dispersion of the index during the period was at 14.358. It means the average of this index in a particular month can vary on both sides by 14.358. However, it measures the short-term changes in the volume of industrial production from the manufacturing sector in Sri Lanka.

4.2 Results of the Correlation among the Variables

The following table results indicate the association among the firms-specific and macro-economic variables between the financial performance proxies of ROA and ROE.

Table 3: Correlation Coefficient among Variables

Variables	ROA	ROE
CCC	0.028 (0.832)	0.176 (0.175)
CR	0.255* (0.048)	0.216 (0.094)
DA	-0.266* (0.039)	-0.060 (0.644)
DE	-0.251 (0.051)	-0.037 (0.778)
LDE	-0.266* (0.038)	-0.303* (0.018)
ME	0.561* (0.000)	0.457* (0.000)
IC	0.694* (0.000)	0.700* (0.000)
EX	-0.341* (0.007)	-0.294* (0.022)
lnOI	-0.335* (0.008)	-0.287* (0.025)

IN	0.114 (0.383)	0.285* (0.026)
CCPI	-0.479* (0.000)	-0.567* (0.000)
FIPI	-0.136 (0.296)	-0.309* (0.015)
PI	-0.418* (0.001)	-0.415* (0.001)

Note: Parenthesis are p-value in 5% significant level

Initially, a positive correlation between ROA and CR of the firm indicates that meeting the short-term obligations has improved the return generated from the company's existing assets (r = 0.255, p =0.048). However, the association between firms' liquidity and ability to generate returns from their equity is insignificant. Moreover, CR has explained the firms' ROA only by 6.5% (0.255^2) during the period. Existing results on the negative correlation between DA and ROA indicates that the higher the total assets financed by creditors, the lower the return earned from assets. According to the results, a negative correlation between LDE between ROA and ROE says that higher the long-term debt out of company equity has reduced the return earned on assets of the company (r = -0.266, p = 0.038). In contrast, it has reduced the ROE (r = -0.303, p = 0.018). However, it evidenced that long term and short-term debt of the company has gone up, which ultimately caused to reduce the return of the company.

Then, the positive association between ME and ROA, ROE indicates that higher operating profits generated through changes taken placed through management changes has improved the return generated on assets (r = 0.561, p = 0.000) and the company's equity (r = 0.457, r = 0.000). Therefore, the improvement of ROA is explained by the ME by 31.4% (0.561^2). The improvement of ROE has explained the ME by 20.8% (0.457^2). Then there is a positive correlation between IC and ROA, ROE, respectively. According to the results, more the interest pays out of company profit before interest and tax, improve the return on assets (r = 0.694, p = 0.000) and the impact of interest expenses explained the return on assets by 48% (0.694^2). Results further say that more interest pays out of its profits has improved the return generated from equity (r = 0.700, p = 0.000). However, ROE is also explained by the interest income by 49% during the period (0.700^2). Again, the results highlight that long-term debts included in the firms' operations have improved their return.

When considering the macro-economic variables, the negative correlation between EX and ROA, ROE indicates that the Sri Lankan rupees paid against US dollars has discouraged the return generated from company assets (r = -0.341, p = 0.007) and return generated from the company equity (r = -0.294, p = 0.022) during previous months. The exchange rate has

explained the ROA by 15% (-0.3912) and ROE by 8.6% (-0.2942), respectively, evidencing the impact of exchange rate company return due to materials being solely imported. Furthermore, the negative correlation between lnOI and ROA and ROE highlight that when prices on a barrel of crude oils go up, firms' ROA (r = -0.335, p = 0.008) and ROE (r = -0.287, p = 0.025) has gone down. The reason behind that is that the oil price increment may also affect the increment of their basic raw material prices because their basic raw materials are the by-product of the petroleum extraction process. Thus, it will cause to increase in their production cost. The positive correlation between IR and ROA indicates that more the interest rate on three months treasury bills has gone up, return of the company from equity has also improved (r = 0.285, p = 0.026). The negative correlation between CCPI and ROA, ROE respectively indicates that increment of the country's inflation rate has discouraged the ROA (r = -0.479, p = 0.000) and ROE (r = -0.567, r = 0.000). Further, it depicts that the inflation rate has explained the ROA by 22.9% (-0.479^2) and ROE by 32.1% (-0.567^2), respectively. However, the negative correlation between FIPI and ROE indicates that changes in the volume of industrial production from the manufacturing sector have decreased the ROE of the firm (r = -0.309, p = 0.015). Finally, the negative correlation between PI and ROA, ROE respectively indicate that more political decisions regarding the polythene industry in Sri Lanka have reduced the ROA (r = -0.418, p = 0.001) and ROE (r = -0.415, p = 0.001). Therefore, it is clear that government decisions in respect to the polythene industry were influenced negatively.

4.3 Results of the Multiple Linear Regression

After meeting the linearity and multivariate normality assumptions, the variance inflation factor (VIF) investigated the multicollinearity among the variables. Initially, two models were developed, including all the variables and variables taken VIF value more than ten is excluded from the exsisting model of multicollinearity among the variables. However, VIF values of 12.439, 11.942, 7,387.7, 7,105.9 and 16.375 recorded for debt ratio (DA), debt to equity ratio (DE), the exchange rate (EX), oil price (OI) and inflation (CCPI) were excluded, respectively. Then, the two models are tested with another assumption of whether residuals are independent of each other called autocorrelation. Durbin-Watson statistics indicate an autocorrelation problem in the model of ROE, recording the statistics of 0.917 as in Table 4.

Further progression of the analysis model of ROA is considered. However, the results of the model ROA indicates that return on assets is explained by the firm-specific factors and macro-economic factors by 64.2%. In contrast, the overall model is significant according to the ANOVA results (0.000).

Table 4: Regression results of the ROA and ROE

Variables	ROA			ROE		
	Unstandard. Coefficient (β)	P-value	VIF	Unstandard. Coefficient (β)	P-value	VIF
Constant	-0.031	0.140		0.020	0.632	
CCC	0.000	0.007	2.141	0.000	0.090	2.141
CR	0.014	0.151	2.878	-0.003	0.875	2.878
LDE	0.001	0.940	2.031	-0.005	0.802	2.031
ME	0.109	0.003	1.462	0.146	0.046	1.462
IC	0.002	0.000	2.603	0.004	0.004	2.603
IN	0.001	0.243	2.397	0.004	0.049	2.397
FIPI	0.001	0.544	1.829	0.000	0.552	1.829
PI	-0.003	0.599	4.625	-0.013	0.232	4.625
	Model Summary			Model Summary		
R^2	0.642			0.576		
DW	2.372			0.917		
	AVOVA			ANOVA		
Regression (Sig)	0.000			0.000		

Then, the researcher developed three models based on ROA, including the variables of DA, DE, EX, ln OI and CCPI, which are more important concerning the previous literature, which are excluded due to multicollinearity issue. However, the summary of three models developed on ROA is given in Table 5.

Table 5: Summary of regression models developed on ROA

Variables	Model I (ROA)			Model II (ROA)			Model III (ROA)		
	β	Sig.	VIF	β	Sig.	VIF	β	Sig.	VIF
Constant	0.014	0.806		-0.109	0.673		0.121	0.122	
CCC	0.000	0.003	2.261	0.000	0.003	2.259	0.000	0.001	2.176
CR	0.024	0.015	3.445	0.024	0.015	3.458	0.020	0.032	3.316
DA	-0.162	0.003	1.520	-0.162	0.003	1.516	-0.151	0.005	1.549
LDE	0.002	0.821	2.089	0.002	0.819	2.081	0.006	0.502	2.300
ME	0.095	0.006	1.510	0.095	0.006	1.510	0.101	0.003	1.486
IC	0.002	0.001	2.734	0.002	0.001	2.729	0.002	0.003	3.009
EX	0.000	0.580	8.128	-	-	-	-	-	-
lnOI	-	-	-	0.031	0.559	7.931	-	-	-
IN	0.003	0.019	2.904	0.003	0.019	2.902	0.002	0.210	4.595
CCPI	-	-	-	-0.701	0.560	2.516	0.000	0.263	9.182
FIPI	0.000	0.505	1.917	0.000	0.508	1.916	0.000	0.233	2.207
PI	-0.006	0.385	7.768	-0.006	0.374	7.691	0.000	0.952	6.702
	Model Summary			Model Summary			Model Summary		
R^2	0.701			0.701			0.706		
Adj.R^2	0.641			0.641			0.648		
DW	2.516			2.519			2.408		
	ANOVA			AVOVA			AVOVA		
Regression	0.000			0.000			0.000		

Results indicate that all three models are significant, as shown in the AVOVA result (0.000). Moreover, in three models, ROA is explained by the predictors by 70.1%, 70.1% and 70.6%, respectively. However, the autocorrelation result of the Durbin-Watson statistic indicates 2.4 compared to other slightly lower models. Further, the adjusted R^2 of the third model of ROA indicates a somewhat higher figure of 64.8% compared to other of 64.1%, which means that by including one variable to model, the third model can secure its explained power than the other. The model is discussed as follows.

Results indicate that though there is a significant influence by cash conversion cycle (CCC), improvement in ROA is very low. **Since**, **when one-unit change in CCC**, **has improved the ROA by 0%** ($r = 0.000$, $p = 0.001$). Scholars found a negative relationship between CCC and firm performance (Zariyawati *et al*., 2009; Nobanee *et al*., 2011), but the result of positive relationships tally with the findings of Gill et al. (2010) and Sharma and Kumar (2010) who suggested a significant positive relationship between cash conversion cycle and firm performance.

Then results indicate that one unit change in the current ratio (CR) has improved the ROA by 2% (r = 0.020, p = 0.032) while other predictors in the model are constant. Further, Ankintoye (2000) found a significant positive relationship between the current ratio and firm performance.

Debt ratio (DA) is a proxy used to represent the capital structure and found that one unit change in DR has decreased the ROA 15.1% (r = -0.151, p = 0.005) while other predictors in the model are constant. This result is also consistent with pecking order theory which suggested a negative relationship between leverage and firm performance. Further, Salim and Yadav (2012), Shubita and Alsawalhah (2012) revealed some similar findings with this study. However, the above finding is inconsistent with the capital structure theory by Modigliani and Miller (1963). Whether the coefficient of LDE shows a positive relationship with firm performance in regression analysis is insignificant for all of the above models.

Then results denote that when one unit changes in management efficiency (ME), it has improved the ROA by 10.1% (r = 0.101, p = 0.003) while other predictors in the model are constant. If a firm can increase the efficiency of their management, it directly may impact control their costs and generate economies for the company. Hence, finally, this overall process may positively impact their financial performance. That is consistent with the lifestyle model (Jovanovic, 1982), which suggest a positive relationship between management efficiency and firm performance. Agiomirgianakis *et al*. (2006), Almajali *et al*. (2012), and Ongore and Kusa (2013) found a significant positive relationship between the above variables.

The interest coverage ratio is the proxy that is used to represent the interest expense. Results indicate that when one unit change in IC has improved the ROA by 0.2% (r = 0.002, p = 0.003) while other predictors in the model are constant. A higher interest coverage ratio means a company can easily cover their interest expense from their profit. If they have sound financial performance, they can easily cover the interest expense. This result agrees with developing countries like Bhunia, *et al.* (2011) in the Indian context. Odalo (2015), in the Kenyan context, found a significant positive relationship between interest coverage ratio and firm performance.

Further, the three-month Treasury bill rate is the only macro-economic factor that shows the significant relationship with the financial performance of Primex Lanka Plastic (Pvt) Limited. Results show a significant positive relationship between interest rate and financial performance. When it was investigated whether this result is inconsistent with Amarjit, G. et al. (2010) and Demir (2007), Odalo (2015) found that interest rate showed a asignificant positive impacts on firm financial performance. According to the company view, they borrow loans continuously to invest whether the interest rate is high. Their investment returns are more than the cost of the loans. Hence this may be a possible reason for showing a positive relationship between interest rates and firm performance.

Most of the selected macro-economic variables, CCPI, FIPI and PI, do not indicate significant relationships with the financial performance of Primex Lanka Plastic (Pvt) Limited. Bekeris (2012) explained that most macro-economic variables like oil price and inflation do not impact corporate profitability.

5. Conclusion, Implication and Suggestions

The result suggested that liquidity, leverage, management efficiency, interest expenses and interest rate are the most important determinants of the financial performance of Primex Lanka Plastic (Pvt) Limited. However, the cash conversion cycle and current ratio have a significant positive impact on ROA through liquidity. Leverage represented by debt ratio shows a significant negative relationship with ROA. Management efficiency has significantly impacted ROA to improve. Then, interest coverage is also a significant positive impact on ROA. Among all the selected macro-economic variables, the Treasury bill interest rate is the only significant macro-economic variable that positively impacts ROA in the two models. However, in other models, the Treasury bill interest rate is not a significant variable in the Primex Lanka Plastic (Pvt) Limited. Results indicate the behaviour of determinants against the profitability in the plastic and polythene industry.
In recommendations, producing polythene and plastic government must bring rules and regulations for a win-win situation for the entrepreneurs and the general public.

In future studies, areas concerning the quality of the products, innovations, quality of the supply chain, goodwill of the company, social barriers, etc., can be considered to increase the awareness of both management and regulatory bodies.

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