

Impact of Receivables on Profitability and Liquidity – Using Multi-Linear Regression Model-Nestle India

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ABSTRACT

Profitability and liquidity management of the company plays a pivotal role to the management. Management of working capital essential as it has direct impact on profitability and liquidity. An attempt has been made in this research paper to study the one of the main components of working capital, i.e., receivables on profitability and liquidity of Nestle India. The paper makes an attempt to study the relationship and influence between receivables and profitability and liquidity of Nestle India. The study is based on secondary data of Nestle for the period from 2006–2007 to 2015–2016. Multi-linear regression model and ANOVA were used to check the significant impact on the profitability and liquidity of receivables management.

Keywords: current ratio, debtors ratio, debtors to sales ratio, debtors to gross profit, net profit margin

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INTRODUCTION

Account receivables are the customers who have not paid yet the amount of goods and services bought and availed respectively. Account receivable (debtors) requires proper management regarding the collection of the receivables because the funds are tied up and may turn out doggy in future. Profitability refers to the difference between expenses and revenues of the company while liquidity refers to availability of cash or fund in the firm at any point of time. Sometimes profitable firm may not have enough liquidity because all funds are invested into different projects and firm with enough liquidity might not be profitable because of lack of proper opportunities. Profitability and liquidity are not same, and the firm has to maintain an equilibrium balance between the two.

Credit policy reflects that the credit time period given to debtors for the payment specifies collection procedure and

provides guideline to collect unpaid invoice that can reduce delays for the payments of goods and services and other outstanding dues by firm. If the account receivables rate is high then it has negative impact on the profitability of the business; also resulted into short of funds and it in turn lead to liquidity crunch.

Debtor's payment affects profitability and liquidity both because payment of the outstanding receivables increases the revenue and collection management helps firm to have fund the for liquidity purpose at any time.

LITERATURE REVIEW

The competition is a major challenge that every firm encounters during their working capital decision making process for optimum utilization of scarce resources. To examine the effects of receivables management, it is important to consider the effect of credit policy in order to manage the firm profitability and liquidity.

Academicians have studied accounts receivable individually, but mostly as a part of working capital management, from various points of view.

There is an immediate connection between an association's development and its working capital needs. As deals develop, the firm needs to put more in inventories and account holders. The back director ought to decide levels and arrangement of current resources, in particular, stock, receivables, money, and attractive securities, which will maintain the business easily [1].

Author has watched a negative connection between accounts receivables and corporate gainfulness and a positive connection between creditor liabilities and benefit. Thusly, it creates the impression that productivity directs how directors act regarding overseeing accounts receivables. Along these lines, the discoveries of his paper proposed that administrators can make an incentive for their investors by decreasing the quantity of days for accounts receivables. Likewise, the negative connection between accounts receivables and association's benefit recommend that less beneficial firms

should seek after a decline of their records receivables trying to diminish their trade hole out the money change cycle [2].

Bougheas et al. (2009), for example, focuses the research on the response of accounts receivable to changes in the cost of inventories, profitability, risk and liquidity. The other authors explore the impact of an optimal receivables management, i.e. the optimal way of managing accounts receivables that leads to profit maximization. Researches realized by Deloof (2003), Lazaridis and Tryfonidis (2006), Gill et al (2010), García-Teruel and Martínez-Solano (2007), Samiloglu and Demirgunes (2008) and Mathuva (2010) done in Belgium, Greece, USA, Spain, Turkey, and Kenya respectively, all point out to a negative relation between accounts receivables and firm profitability (Table 1). In other words, having an accounts receivable policy which leads to a lower level of accounts receivables has as a result the highest profitability. Contradicting evidence is found by Sharma and Kumar (2011), who find a positive relation between ROA and accounts receivables.

Table 1. Summary of selected past researches.

Researcher	Sample, period	Type of relation
Deloof (2003) [3]	1009 Large Belgian non-financial firms for the 1992-1996 period	Significant negative relation on profitability
Lazaridis and Tryfonidis (2006) [4]	131 Companies listed in the Athens Stock Exchange (ASE) for the period of 2001-2004	Significant negative relation on profitability
Gill et al (2010) [5]	88 American firms listed on New York Stock Exchange for the period 2005 - 2007	Significant negative relation on profitability
García-Teruel and Martínez-Solano (2007) [6]	8,872 Spanish SMEs for the period 1996-2002	Significant negative relation on profitability
Samiloglu and Demirgunes (2008) [7]	Istanbul Stock Exchange (ISE) listed manufacturing firms for the period of 1998-2007	Significant negative relation on profitability
Mathuva (2010) [8]	30 Firms listed on the Nairobi Stock Exchange (NSE) for the periods 1993 to 2008	Significant negative relation on profitability
Sharma and Kumar (2011) [9]	263 Non-financial BSE 500 firms listed at the Bombay Stock (BSE) from 2000 to 2008	Significant positive relation on profitability
Baveld (2012) [10]	37 Large firms in The Netherlands, during the non-crisis period of 2004–2006 and during the Financial Crisis of 2008 and 2009	Significant negative relation on profitability

Objectives and Theorization

The objectives of study are as follows:

- To determine the relationship between accounts receivable and profitability of the firm.
- To determine the relationship between accounts receivable and liquidity of the firm.

This study focuses on the receivable management and profitability. It examines the interrelationships between profitability and liquidity.

To attain the above objective, the researcher will theorize the relationship between receivables management, profitability and liquidity.

Theorization

The review of this study includes theoretical understanding and classification of variables taken for the purpose of the analysis. The variables are divided into two parts that is dependent variable and independent variable. Dependent variable includes net profit margin ratio (P_{ts}) (to measure the profitability) and current ratio (I) (to measure the liquidity). Independent variable includes ratios such as debtors ratio (θ) (days), Debtor to sales (ξ), debtors to gross profit (ġ), debtors to net profit (ñ), debtors to working capital (ŵ) and gross profit ratio (Ω). The α₀ indicates the constant in each model.

Dependent Variables

Dependent variables are those which are affected during the experiment. The dependent variable affected due to independent variable. It is affected because it “depends” upon the independent variable. Following are the dependent variables:

Net Profit Margin Ratio (P_{ts})

When doing a simple profitability ratio analysis, net profit margin is the most often used ratio. The net profit margin

shows how much of each rupee of sales shows up as net income after all expenses are paid. The net profit margin measures profitability after consideration of all expenses including taxes, interest, and depreciation.

$$\text{Net Profit Margin} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$$

Current Ratio (I)

Current proportion is a standout amongst the most principal liquidity proportion. It quantifies the capacity of a business to reimburse current liabilities from inside the present resources. Current resources are resources that are required to be changed over to money inside ordinary working cycle, or one year. Cases of current resources incorporate money and money reciprocals, attractive securities, here and now ventures, records of sales, here and now bit of notes receivable, inventories and here and now prepayments. Current liabilities are commitments that require settlement inside ordinary working cycle or next a year. Cases of current liabilities incorporate records payable, compensations and wages payable, current duty payable, deals impose payable, collected costs, and so forth. Current proportion is figured utilizing the accompanying equation:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Independent Variables

Independent variables are those variables which can be controlled or can be manipulated. The independent variable can affect to the dependent variable. In this case following are the independent variables,

Debtors Ratio (Days) (θ)

Debtors’ ratio or average collection period indicates the ability to collect the cash from the debtors in a year. It is calculated with the help of the following formulae:

$$\text{Debtors ratio: } \frac{\text{Average Debtors}}{\text{Credit Sales}} \times 365$$

Debtors to Sales Ratio (ξ)

It indicates the proportion of total debtors to total sales. It is calculated with the help of the following formulae:

$$\text{Debtors to Sales: } \frac{\text{Debtors}}{\text{Total Sales}}$$

Debtors to Gross Profit ($\acute{g}$)

It indicates the proportion of debtors to gross profit. It is calculated with the help of the following formulae:

$$\text{Debtors to Gross Profit: } \frac{\text{Debtors}}{\text{Gross Profit}}$$

Debtors to Net Profit ($\grave{n}$)

It indicates the proportion of debtors to net profit. It is calculated with the help of the following formulae:

$$\text{Debtors to Net Profit: } \frac{\text{Debtors}}{\text{Net Profit}}$$

Debtors to Working Capital ($\hat{w}$)

It indicates the proportion of debtors to working capital of the firm. It is calculated with the help of the following formulae:

$$\text{Debtors to Working Capital: } \frac{\text{Debtors}}{\text{Net Working Capital}}$$

Gross Profit Ratio (Ω)

When doing a simple profitability ratio analysis, gross profit ratio is the most often used ratio. The gross profit margin shows how much of each rupee of sales shows up as trading profit after all trade expenses are paid.

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$$

RESEARCH METHODOLOGY

This study is based on secondary data. The data required for this study have been extracted from the annual reports of Nestle

India. Nestle India is a subsidiary of Nestle S.A. of Switzerland and has presence across India with 7 manufacturing facilities and four branch offices spread across the region. The study covered a period of ten years starting from 2006–2007 to 2015–2016.

Hypothesis

The two main types of hypothesis are developed, with respect to Profitability and Liquidity.

Hypothesis developed with respect to impact on profitability on account of receivable management, is as under.

Null Hypothesis with Respect to Profitability

H_{p0}: There is no statistically significant relationship between accounts receivable and profitability.

Alternate Hypothesis with Respect to Profitability

H_{p1}: There is statistically significant relationship between Accounts Receivable and Profitability.

Hypothesis developed with respect to impact on liquidity on account of receivable management, is as under.

Null Hypothesis with Respect to Liquidity

H_{l0}: There is no statistically significant relationship between accounts receivable and liquidity.

H_{l1}: There is statistically significant relationship between accounts receivable and Liquidity.

Multi-Linear Regression Model

The study is based on multi-linear regression analysis in which two multi-linear regression models have been developed which is based on profitability and liquidity.

Regression Model for Profitability

$$P_t = \alpha_0 + \alpha_1 \xi + \alpha_2 \acute{g} + \alpha_3 \grave{n} + \alpha_4 \hat{w} + \alpha_5 \Omega$$

Regression model for liquidity

$$\hat{Y} = \alpha_0 + \alpha_1 \hat{w} + \alpha_2 \vartheta$$

Analysis and Interpretation

Research tools are statistical techniques used for the data analysis and to arrive at a

certain conclusion and for that purpose SPSS software is mainly used.

Following data, as per Table 2, have been used for the purpose of this research study.

Table 2. Required ratios of nestle India.

Year	DS (ξ)	ARR(ϑ)	DG ($\acute{g}$)	DN ($\grave{n}$)	NP (Pts)	DW ($\hat{w}$)	CR ($\acute{r}$)	GP (Ω)
2015-16	0.01069	3.51	0.01745	0.10569	10.05%	0.05949	2.00832	61.27%
2014-15	0.00965	3.99	0.01581	0.13922	6.89%	0.07812	1.68026	61.08%
2013-14	0.01011	3.41	0.01768	0.08365	12.11%	0.16293	1.44872	57.16%
2012-13	0.00930	3.46	0.01603	0.07543	12.27%	0.08828	1.70855	58.02%
2011-12	0.01055	4.46	0.01822	0.08200	13.21%	0.24211	1.32052	57.88%
2010-11	0.01541	4.35	0.02864	0.12004	13.56%	-0.65143	0.87927	53.80%
2009-10	0.01011	3.72	0.02194	0.07731	13.08%	-0.10148	0.62648	46.08%
2008-09	0.01248	3.90	0.02567	0.09800	12.74%	-0.11345	0.60220	48.63%
2007-08	0.01053	4.18	0.02187	0.08536	12.34%	-0.11786	0.67350	48.17%
2006-07	0.01528	5.70	0.03150	0.12926	11.82%	-0.16571	0.66398	48.50%

Source: Published Annual Reports of Nestle India. (Calculated by researcher).

Regression Model for Profitability

Table 3 indicates the impacts of independent variables on Net Profit

Margin of Nestle are shown with the help of multi-linear analysis.

Table 3. Results of multi-linear regression with respect to profitability model based on coefficients.^{a,b}

Model		Unstandardized coefficients		Standardized coefficients	T	Sig.
		B	Std. error	Beta		
1	α_0	.347	.110		3.159	.034
	ξ	28.231	9.564	3.186	2.952	.042
	ϑ	.004	.003	.125	1.223	.288
	$\acute{g}$	-11.283	5.332	-3.134	-2.116	.102
	$\grave{n}$	-.862	.085	-.999	-10.146	.001
	Ω	-.439	.209	-1.279	-2.096	.104
Model	R	R square		Adjusted R square		Std. error of the estimate
1	.993 ^a	.987		.970		.00343693

^aDependent variable: NP.

^bPredictors: (constant), GP, DN, ARR, DS, DG.

From the above table the regression model is made as follows,

$$Pts = 0.347 + 3.186\xi + 0.125\vartheta - 3.134\acute{g} - 0.999\grave{n} - 1.279\Omega$$

The significant level of 5% has been taken in order to generate this model. As per the above table the significant level of debtor to sales (DS) and debtors to net profit (DN) is 0.042 and 0.001 which is below the significant level i.e. 0.05 and hence

these two variables will vary significantly. However, the remaining variables which are ARR, DG, and GP will not vary significantly as their significance level are above 0.05.

R indicates the multiple correlation coefficients which measures the relationship between dependent variable and other variables. The value of R lies between -1 to 1. Higher the value of R stronger the relationship between variable and more accurate will be the outcome of dependent variable. In this case the value of R is 0.993 which indicates that the relationship between the dependent and independent variable is strong.

R Square indicates the variation in the dependent variable. Higher the R square better the model fits your data. The value of R square is 0.987 which indicates that reliance on this model will account for 98.7% variations in the dependent variable (net profit margin) and hence the model fits this data.

Table 4 indicates the ANOVA and F Test with respect to profitability study.

Table 4. Profitability as dependent variables application of ANOVA.^a

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	.003	5	.001	59.099	.001 ^b
	Residual	.000	4	.000		
	Total	.004	9			

^aDependent variable: NP.

^bPredictors: (constant), GP, DN, ARR, DS, DG.

The Table 4 illustrates the variance analysis to test the significance level. The significance level is taken as 5% and as per the output generated the significance level is 0.01 which is lower than 0.05 and hence the regression model developed is significantly reliable. That means we can rely on model to predict the value of Net Profit Margin Ratio (NP).

Hence from the above analysis it can be said that the regression model formed to measure the profitability of the business varies due to change in account receivable of the company hence the company should be careful while forming credit policies for the debtors.

Regression Model for Liquidity

Table 5 indicates the impacts of independent variables on Current Ratio of Nestle are shown with the help of multi-linear analysis.

Table 5. Results of multi-linear regression with respect to liquidity model based on coefficients.^{a,b}

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
	α_0	2.337	.975		2.399	.048
	$\hat{W}$	.925	.652	.435	1.419	.199
	θ	-.277	.240	-.355	-1.158	.285
Model	R	R square	Adjusted R square		Std. error of the estimate	
1	.647 ^a	.418	.252		.46095738	

^aDependent variable: CR.

^bPredictors: (constant), ARR, DW.

From the above table the regression model is made as follows,

$$\hat{I} = 2.337 + 0.435\hat{w} - 0.355\theta$$

The significant level of 5% has been taken in order to generate this model. As per the above table the significant level of debtor to working capital ($\hat{w}$) and account receivable ratio (θ) is 0.199 and 0.285 which is above the significant level i.e. 0.05 and hence these two variables will not vary significantly.

R indicates the multiple correlation coefficients which measures the relationship between dependent variable and other variables. The value of R lies between -1 and 1. Higher the value of R stronger the relationship between variable and more accurate will be the outcome of dependent variable. In the above table the value of R is 0.647 which indicates that the relationship between the dependent and independent variable is moderate.

R Square indicates the variation in the dependent variable. Higher the R square better the model fits your data. The value of R square is 0.418 which indicates that reliance on this model will account for 41.8% variations in the dependent variable and hence the model does not fit this data.

Table 6 indicates the ANOVA and F test with respect to liquidity study.

Table 6. Liquidity as dependent variables application of ANOVA.^a

Model	Sum of squares	df	Mean square	F	Sig.
1 Regression	1.070	2	.535	2.519	.150 ^b
Residual	1.487	7	.212		
Total	2.558	9			

^aDependent variable: CR.

^bPredictors: (constant), ARR, DW.

The Table 6 illustrates the variance analysis to test the significance level. The significance level is taken as 5% and as per the output generated the significance

level is 0.150 which is higher than 0.05 and hence the regression model developed is significantly unreliable. That means one cannot rely on this model to predict the value of current ratio ($\hat{I}$).

Hence from the above analysis it can be said that the regression model formed to measure the liquidity of the business does not varies due to change in account receivable of the company which means that there are some other factors which might affect the liquidity of the company such as inventory, cash and bank balance, advance expenses or outstanding income, etc.

Therefore, the company need not have to focus on the credit policy when it comes to manage the liquidity of the company.

CONCLUSION

Variables such as Account receivable period, Debtor to Sales, Debtor to gross profit, Gross profit margin are used to reveal whether there is a significant relationship between account receivable and profitability and so to measure the significant relationship between account receivable and liquidity, variables such as Debtors to Working capital and Current ratio are being used.

Therefore, the above finding indicates clearly that the accounts receivable of the company has the significant relationship with the profitability of the company and does not have significant relationship between the liquidity of the company.

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