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Financial Performance of Selected IT Companies in India; *A Panel Data Approach*

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Abstract
Despite the global economy growing up, the Indian Information technology industry is maintaining a steady pace of growth. Financial analysis is an aspect of the overall business finance function that involves examining historical data to gain information about the current and future financial health of a company. IT has the great possibility of becoming an engine of accelerated economic growth, efficiency, improvement for all sectors of the economy, developing India's position in the export market, improving trade insufficiency, and means of efficient governance. It enhances the way into information, protects consumers, provides access to government services, makes skill creation and training more effective, improves the liberation of health services, and promotes simplicity. The inter-firm financial performance differential has been utilized to identify the factors that are critical in determining their financial performance. In this study, only the cross-sectional data of three countries over 10 years is collected. The cross-sectional samples are relatively small. Therefore, it is appropriate to use the LSDV Model. However, the pooled regression model will also consider for comparison. It is also convenient to Model the pooled regression Model, LSDV Model and uses R-squared, adjusted R-squared and pool ability Test to decide statistically on appropriate Model to be used The paper is structured as follows: it presents the scope of the study, a brief review of the literature dealing, followed by a description of the objectives, data, and methodology. Subsequently, it discusses the empirical results by two regression model and finally, offers the conclusion

Keywords: Ratio Analysis, Information technology industries, LSDV, Panel Data, Pooled Data, Probability test

Review of Literature

Giannarakis et al. (2014) investigated the effect of corporate governance and financial characteristics on the extent of corporate social responsibility disclosures. A sample of (100) companies listed in the US was studied for the year 2011. The variables used are CEO duality, board meeting, boards' average age, board composition, and women on board and board size as a proxy for the independent variable, while board commitment to CSR, profitability, and financial leverage was used as a dependent variable. The study employed a Multiple Linear Regression using the statistical package of E-views to test the effect of a dependent variable on the independent variable. The result of the study indicated that board commitment to CSR and profitability were found to be positively related to the extent of CSR disclosure, while financial leverage was negatively related to the extent of CSR disclosure. The study was conducted outside Nigeria, and the period covered was one year, which is seen as inadequate to give a valid result.

Kurawa and Kabara (2014) examined the impact of corporate governance on voluntary disclosure by firms in the downstream sector of the Nigerian petroleum industry. Secondary data obtained from the Annual Report and Accounts of the 7 sampled companies were used. The data were analyzed using descriptive statistics and Regression Analysis using the STATA package for the period 2001-2010. Board composition, managerial ownership, ownership concentration, and role duality were used as a proxy of the independent variable. The study revealed that ownership concentration was one of the major determinants of corporate governance and had a significant positive association with the extent of voluntary disclosure.

Rao et al. (2013) in their study entitled "An Empirical Analysis on Financial Performance of Public Sector Housing Corporation in India: A Case Study of HUDCO," stated that the main notion of their study is Profitability and liquidity management is of crucial importance in financial management decision. The most favorable financial performance could be achieved by a company that can trade-off between profitability and liquidity performance indicators. The purpose of this study is to find out the financial position and know the significance of them. Descriptive statistics disclose that the performance of the selected unit in terms of liquidity, solvency, and profitability position is very satisfactory, and a relatively efficient financial position is found in 36 all the cases. They suggested that both the institutions under the study should concentrate on financial profitability, particularly unexplained variables in the purpose of creating shareholders' wealth

Bortolotti et al. (2002) examined the financial and operating performance of thirty-one national telecommunication companies in twenty-five countries that were fully or partially privatized through a public share offering. Using conventional pre-versus post-privatization comparisons and panel data estimation techniques, they find that the financial and operating performance of telecommunication companies improves significantly after privatization, but a sizable fraction of the observed improvement results from regulatory changes-alone or in combination with major ownership changes-rather than from privatization.

Objectives

In the background of the above discussion, the following broad objectives are outlined to Study of the financial performance of selected Information Technology Companies in India

- To analyze the financial efficiency of the Information Technology companies
- To identify the determinants of profitability of selected companies

Research Hypothesis

The following Hypothesis have been taken to test

H01: The other ratio does not differ significantly impact on the race.

Scope of the Study

The study aimed at the financial performance of Information Technology industries in India. Hence, the present study is about Indian top three Information Technology Companies. The study has used the financial facts of the selected companies from 2005-06 to 2014-15.

Sample Design

Sampling Technique: The study is done with special reference to IT Industries in India. The reason is that data or financial statements are readily available. Apart from this, IT industries in India are bound to disclose all their facts and figures publicly. Thus, the technique of 'Convenience Sampling' is being adopted for the study.

Sample Size: A sample of three IT Industries in India viz., TCS, Infosys, and WIPRO is considering for analysis.

Data and Variables

This study is based on secondary data and discussions with personnel concerned. The secondary data consists of the annual reports of three IT Industries and CMIE prowess ranging for the last 10 years.

Period of the Study

The study is conducted based on the audited financial statements of three selected companies of IT Industries for a period of 10years (2005-06 to 2014-15) The duration of the period is good enough

to cover the short term fluctuations and is sufficient to provide insights into the performance of the different selected companies.

Empirical Strategy

To achieve the above-mentioned objectives, the upcoming methodology has been adopted.

Methodology

The present study adopts an analytical Empirical research design. The data of the sample IT industries have been collected from the annual reports published by the IT industries and CMIE prowess. The following tools & techniques have been classified in the study.

Ratio Analysis

A Ratio is a figure showing the logical relationship between any two items taken financial Statement. Several ratios are used by financial analysis. They can be classified as profitability ratio, activity ratio, liquidity ratio, and solvency ratio.

Panel Data Analysis

To identify the significant determinants of the financial performance of companies in India, panel data regression has been explicitly estimated over the given study period. Different ratios have been used to measure the financial performance as well as the firm-specific characteristics of the sampled companies. The rationale behind choosing a particular variable as dependent or independent has been discussed in the upcoming section of this paper.

Choice of Variables

The dependent, as well as the Independent Variables used to study the objectives mentioned in the present paper, have been discussed in the approaching section.

Dependent Variable – Return on Capital Employed

The accounting-based measure used in this study is –Return on Capital Employed (ROCE) is best defined as operating profit divided by capital employed (net worth plus debt)

Explanatory Variables- Current ratio, Debtor Collection Period, Debt-Equity Ratio, Interest Coverage Ratio, Fixed Asset Turnover Ratio.

Thus, Panel data analysis has been used because the data set includes both cross-sectional as well as time-series data. Moreover, as each cross-sectional unit in the dataset has the same number of time-series observations, the study has used a balanced panel.

The following are the two type of panel analytic Model

1. Pooled regression Model
2. Fixed effect Model (LSDV)

Panel Data Analysis

For the financial performance of IT companies, the effect of six variables on ROCE of three IT companies will be analyzed in two different regression Models.

1. Pooled Regression Model
2. Least-Squares Dummy Variables Model

Pooled Regression Model

The Pooled OLS is a pooled linear regression without fixed and random effects. It assumes a constant intercept and slopes regardless of group and period. For the testing of the following hypothesis, pooled regression OLS has been applied to find out the impact of independent variables on dependent variables if intercept & slope are constant.

H0: There is no significant impact of an independent variable on the dependent variable.

The Mathematical Equation for Pooled Regression Model is given below:

$$y_{it}=\alpha+ \beta_1 x_{1it}+ \ldots+\beta_k x_{kit}+ u_{it} \quad \text{(i)}$$

where

y_{it} - the dependent variable;

x_{kit} - the k-th explanatory variable;

u_{it} - the error /disturbance term;

α – the intercept;

$\beta_1, \ldots, \beta_k$ – the structural parameters;

In this study, dependent variable (Y_1) is Return of Capital Employed (rose) and independent variable X_1, X_2 is Current ratio (cr), dependent collection (dcp), Dividend Payout Ratio (dpr), Debt to Equity Ratio (der), Interest Coverage Ratio (icr), Fixed Asset Turnover Ratio (fatr)

The Pooled Regression Model to be estimated is:

$$roce=\alpha+\beta_1 cr+\beta_2 dcp+\beta_3 dpr+\beta_4 der+\beta_5 icr+\beta_6 fatr+u \quad \text{(ii)}$$

α is the intercept Return on Capital Employed

β_1 is the slope of Current Ratio
β_2 is the slope of the Debtor Collection Period
β_3 is the slope of Dividend Payout Ratio
β_4 is the slope of the Debt Equity Ratio
β_5 is the slope of Interest Coverage Ratio
β_6 is the slope of Fixed Asset Turnover Ratio

The results of the above equation are as given in the following table

Table 1 Pooled Data Analysis

Table A: Summary Statistics (ANOVA)

Source	SS	Df	MS	
Model	2054.31845	6	342.386409	Number of obs = 30; F (6, 23) = 12.18
Residual	646.765211	23	28.1202266	Prob > F = 0.0000; R-squared = 0.7606
Total	2701.08367	29	93.140816	Adj R-squared = 0.6981; Root MSE = 5.3029

Table B: Estimate of Regression Coefficient

Roce	coef.	Std. Err	T	P>|t|	[95% Conf.	Interval]
Cr	-4.182567	2.162618	-1.93	0.066	-8.656282	0.2911486
Dcp	-0.3646419	0.2109147	-1.73	0.097	-0.8009522	0.0716683
Dpr	-0.1024854	0.0739403	-1.39	0.179	-0.2554426	0.0504717
Der	-47.96903	15.94416	-3.01	0.006	-80.95205	-14.98601
Icr	-0.0002612	0.0072566	-0.04	0.972	-0.0152727	0.0147502
Fatr	5.803132	1.493087	3.89	0.001	2.714447	8.891817
_cons	50.84479	17.66386	2.88	0.008	14.30432	87.38526

Dependent Variable: roce; **Method:** Pooled Least Square.

The result of the above table Shows the summary statistics and the estimates of regression coefficients in the above two tables.

Table (A) the upper left part of summery statistics shows. Analysis-of-Variance (ANOVA) table with sum of squares (SS), degrees of freedom (df), and mean sum of squares (MS). Thus we find the total sum of squares is 2701.08367, of which 2054.31845 is accounted for by the model, and 646.76 is left unexplained (residual).

The upper right part shows other summary statistics, including the F-statistics, the R-squared, and adjusted R^2.

The F-statistics is derived from the ANOVA table as the ratio of the MS (Model) to the MS (Residual), that is, $F = \frac{\text{Model SS/df Model}}{\text{Residual SS/dfResidual}}$ Thus $F = \frac{342.38}{28.120} = 12.18$ with 6 numerator degrees of freedom and 23 denominator degrees of freedom. The F-statistic tests the joint null hypothesis that all the coefficients in the model, excluding the constant, are zero. The p-value associated with this F-statistics is the chance of observing an F-statistics that larger and is given as 0. Hence we strongly reject the null hypothesis and conclude that the model as a whole is highly significant.

The R-squared (R^2) for the regression model represents the measure of goodness of fit or the coefficient of determination, obtained as the proportion of the model SS in total SS, that is 2054.31/2701.08 = 0.7606, R^2 = 0.7606.

The adjusted R^2 (or R-bar-squared, $\bar{R}^2$) is the R-squared adjusted for degrees of freedom, obtained as:

$$\bar{R}^2 = 1 - \frac{MS_{Residual}}{MS_{Total}} = 1 - \frac{\text{Residuaal SS}/df_{Residual}}{\text{Total SS}/df_{Total}} = 1 - (1 - R^2)\left(\frac{df_{Residua}}{df_{Total}}\right.$$

Thus $\bar{R}^2 = 1\text{-}(1\text{-}0.7606)\left(\frac{23}{29}\right) = 0.6981.$

Table (b) Shows, The first term Return on Capital Employed on the first line of the table gives the dependent variable. The estimates of the marginal effects of Current ratio, Debtor Collection Period, Debt Equity Ratio, Interest Coverage Ratio, Fixed Asset Turnover Ratio, and the intercept are given as coefficients (coef) along with the standard error (Std. Err.) and the corresponding t-values (t) and two-tailed significance level (p-value, P> | t |).

The estimated regression equation from the above table is

roce=50.844-4.18cr-0.364dcp-0.102dpr-47.96der-0.0002icr+5.80 fatr ii (a)

(the estimated Model assumes that the intercept value of TCS, Infosys and Wipro are the same

Empirical Analysis of this study finds that Fixed Asset Turnover Ratio, Debt to Equity Ratio, and Current Ratio prove to be key explanatory variables of Return on Capital Employed at 1% and 5% level of significant. So it is concluded that the Return on Capital Employed increases with an increase of Fixed Asset Turnover Ratio and a decrease of Debt to Equity Ratio and Current Ratio.

Least-Squares Dummy Variables (LSDV) Regression Model

One way to take into account the "individuality" of each company or each cross-sectional unit is to let the intercept varies across the companies but that the slope coefficients remain constant across the firms. To analysis, the following Model is used.

$$yi= \beta_{1i}+ \beta_2 X_{2it}+ \beta_3X_{3it}+u_{it} \quad \text{(iii)}$$

Where

β_{1i} ; intercept,

X_1, X_2 ;are independent variables

y_i ; Value of dependent variable

Notice that we have put the subscript i on the intercept term to suggest that the intercepts of the three firms may be different; the differences may be due to special features of each company, such as managerial style or managerial philosophy

In the literature, Equation (iii) is known as the Fixed Effects Regression Model (LSDV). The term 'fixed effects' is because, although the intercept may differ across individuals (here the three companies), each individual's intercept does not vary over time; that is, it is time-invariant. Notice that if we were to write the intercept as β_{1it}, it would suggest that the intercept of each company or individual is time-variant. It may be noted that the LSDV given in (Eq. iii) assumes that the coefficients of the regressors do not vary across individuals or over time.

Now intercept to vary across the companies. We can easily do that by using the dummy variable technique, particularly, the differential intercept dummies.

$$y_{it}= \alpha_1+\alpha_2C_{1i}+ \alpha_3 C_{2i}+ \beta_2X_{2it}+ \beta_3X_{3it}+U \quad \text{(iv)}$$

Since we have three companies, we have used only two dummies to avoid falling into the dummy variable trap (i.e., the situation of perfect collinearity). Here there is no dummy for TCS. In other words, α_1 represents the intercept of TCS and α_2 and α_3 the differential intercept coefficients that show by how much the intercepts of Infosys, Wipro differ from the intercept of TCS. In short, TCS becomes a comparison company. Since we are using dummies to estimate the fixed effects, in the literature, the model (Eq. iv) is also known as the Least-squares dummy variable (LSDV) model. So, the terms fixed effects and LSDV can be used inter-changeably. In passing, note that the LSDV model (Eq. iv) is also known as the Covariance Model, and X_2 and X_3 are known as selected six covariates variables like Current Ratio (cr), Dividend Collection Period (dpr). An advantage of this model is that all the parameters can be estimated by OLS. The result of the fixed effect Model may resemble with Pooled Regression Model

The LSDV Model to be estimated is:

$$y_{it}= \alpha_1+\alpha_2C_{1i}+ \alpha_3 C_{2i}+ \beta_2cr+ \beta_3dcp+……...+u_{it} \quad \text{(v)}$$

Where

C_{1i} = 1 if the observation belongs to INF, 0 otherwise;

C_{2i}=1 if the observation belongs to WIP, 0 otherwise.

The results of the above equation are as given in the following table 2

Table 2 LSDV Model

Linear regression						
Roce	**coef.**	**Std.Err**	**T**	**P>|t|**	**[95% Conf.**	**Interval]**
Cr	-5.365547	2.512049	-2.14	0.045	-10.58964	-0.1414548
Dcp	-0.5197139	0.2168529	-2.4	0.026	-0.9706841	-0.0687436
Dpr	-0.1403557	0.0685673	-2.05	0.053	-0.2829492	0.0022378
Der	-38.5162	12.75634	-3.02	0.007	-65.04446	-11.98793
Icr	0.0031823	0.0059152	0.54	0.596	-0.009119	0.0154835

Fatr	3.095919	2.42148	1.28	0.215	-1.939824	8.131661
C1	11.13225	6.366791	1.75	0.095	-2.108219	24.37271
C2	5.362976	5.019814	1.07	0.297	-5.076298	15.80225
_cons	70.84692	23.93075	2.96	0.007	21.08021	120.6136
Number of obs = 30; F (8,21) = 22.38; Prob > F = 0.0000; R-squared = 0.8019; Root MSE = 5.0483						

Dependent Variable: rose; **Method:** LSDV

The comparison of equation (ii) and (v) shows that the intercept values of three companies are statically different being

70.84 for TCS

81.97 (70.84 + 11.13) for Infosys

76.11 (70.84 + 5.36) for Wipro.

This difference in intercepts eventually generates the following three regression equations with Dummy variables as:

roce = 70.84 + 11.13C1i + 5.36 C2i –5.36cr – 0.519 dcp – 0.14dpr – 38.51der + 0.003 icr + 3.09fatr iv (a)

TCS : roce = 70.84 + 11.13 (0) + 5.36 (0) – 5.36cr – 0.519 dcp – 0.14dpr – 38.51der + 0.003 icr + 3.09fatr (v)

INF : roce = 70.84 + 11.13 (1) + 5.36 (0) – 5.36cr – 0.519 dcp – 0.14dpr – 38.51der + 0.003 icr + 3.09fatr (vi)

WIP : roce = 70.84 + 11.13 (0) + 5.36 (0) – 5.36cr – 0.519 dcp – 0.14dpr – 38.51der + 0.003 icr + 3.09fatr (vii)

Thus the estimated Regression Equation are

TCS : Roce = 70.84 – 5.36cr – 0.519 dcp – 0.14dpr – 38.51der + 0.003 icr + 3.09fatr v (a)

INF : Roce = 81.97 – 5.36cr – 0.519 dcp – 0.14dpr – 38.51der + 0.003 icr + 3.09fatr vi (b)

WIP : Roce = 76.11 – 5.36cr – 0.519 dcp – 0.14dpr – 38.51der + 0.003 icr + 3.09fatr vii (c)

These differences in intercepts may be due to the special features of each company, such as managerial style or managerial philosophy.

Empirical Analysis of this study find that Current Ratio, Debtor Collection Period and Debt to Equity Ratio prove to be key explanatory variables of Return on Capital Employed at 1% and 5% level of significant

So it is concluded that Return on Capital Employed increases with a decrease of Current Ratio, Debtor Collection Period and Debt to Equity Ratio

Pool Ability Test

Comparison with the pooled regression model and the LSDV fixed effects model are Shown in the following table:

Table 3

	Model I	**Model II**
Current Ratio (Cr)	-4.18 (P < 0.06)	-5.36 (P < 0.04)
Debtor Collection Period (Dcp)	-0.36 (P < 0.09)	-0.51 (P < 0.02)
Dividentd Payout Ratio (Dpr)	-0.102 (P < 0.17)	-0.14 (P < 0.05)
Debt to Equity Ratio (Der)	-47.9 (P < 0.06)	-38.51 (P < 0.007)
Interest Coverage Ratio (Icr)	-0.0002 (P < 0.97)	-0.0003 (P < 0.596)
Fixed Asset Turnover Ratio (Fatr)	5.8 (P < 0.001)	3.09 (P < 0.02)
Overall (roce) (baseline intercept)	50.84 (P < 0.008)	70.84 (P < 0.0007)
(INF) IT – 2 (C_1)	--	11.13 (P<0.09)
(WIP) IT – 3 (C_2)	--	5.3 (P<0.297)
F- Test	12.18	22.38
Degree of freedom	29	27
R^2	.7606	.8019

Comparing Model (i) and (ii) we found that the f- statistic increases from 12.18 to 22.38 (P < .0000) and R^2 increase from .7606 to .8019. Thus LSDV fit the data better than does pooled OLS. The parameter estimates of individual regressors in case of Model II are slightly different from those in Model I in table 3.

Note that compared with the LSDV Model, the Pooled Regression Model is a restricted model; it imposes a common intercept on all companies: Hence we have to apply the restricted F test given by

$$F = \frac{(R^2_{UR} - R^2_R)/2}{(1 - R^2_{UR})/21} \quad \ldots\ldots\ldots\ldots \quad \text{(viii)}$$

Where

= R^2 of the unrestricted regression (second model) = 0.8019

= R^2 of the restricted regression (first model) = 0.7606

Hence $F = \frac{(0.8019-0.7606)/2}{(1-0.8019)/21} = 10.55,$ we find that the difference in the observe value (f-10.55) is higher than the table value F=2.51 for v_1=2 and v_2=21 at 1% level of significance. Therefore we conclude from the F Test also that the LSDV analysis is better than pooled data analysis.

Finding of a Pooled Regression Model

The intercept value of TCS, Infosys and Wipro are the same

Fixed Asset Turnover Ratio, Debt to Equity Ratio, and Current Ratio prove to be a key explanatory variable of Return on Capital employed at 1% and 5% level of significant. The Return on Capital employed increases with an increase of Fixed Asset Turnover Ratio and decrease of Debt to Equity Ratio and Current Ratio

Finding of lSDV Regression Model

The intercept value of TCS, Infosys, and Wipro are different. These differences in intercepts may be due to the special features of each company, such as managerial style or managerial philosophy. Current Ratio, Debtor Collection Period, and Debt to Equity Ratio prove to be key explanatory variables of Return on Capital Employed at 1% and 5% level of significant. Return on Capital employed increases with a decrease in Current Ratio, Debtor Collection Period, and Debt to Equity Ratio.

Finding Related to Comparison between Pooled Data Model and the LSDV Model

The difference in the observed value (f-10.55) is higher than the table value F=2.51 for v_1=2 and v_2=21 at a 1% level of significance.

Conclusion

We conclude from the F Test also that the LSDV analysis is better than pooled data analysis in information technology industries.

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