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INTRODUCTION
REVIEW OF LITERATURE
NEED/IMPORTANCE OF THE STUDY
STATEMENT OF THE PROBLEM
OBJECTIVES
HYPOTHESIS (ES)
RESEARCH METHODOLOGY
RESULTS & DISCUSSION
FINDINGS
RECOMMENDATIONS/SUGGESTIONS
CONCLUSIONS
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REFERENCES
APPENDIX/ANNEXURE

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- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
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MULTIVARIATE MODEL FOR PREDICTING THE IMPACT OF FIRM SPECIFIC VARIABLES ON FINANCIAL PERFORMANCE OF AIR INDIA LIMITED

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ABSTRACT

Indian Civil Aviation Industry is facing a troubling phase, and the financial condition of the country's one and only flag carrier Air India Limited is worst among all the airlines operating in Indian Market. Air India has faced multiple problems including escalating financial losses. Stiff competition from private low cost carriers led to the decline in the market share of Air India. Present study attempted to identify certain firm specific variables that affect the financial position of Air India Limited. The variables have been selected based on past studies. The study will give an outcome about the progress of Air India that will be helpful to in order to enhance its efficiency. Researcher has focused on framing a multivariate model to know the impact of Firm Specific Variables on the Return on Capital Employed of Air India Limited. Return on capital employed is selected as the dependent variable. Various firm specific variables have been used in the study to analyze their impact on the ROCE of Air India Limited. Proxy measures have been selected based on the past studies to represent the respective independent variables. Study attempted to find out the various reasons of the sufferings of Air India Limited keeping the operating environment of the aviation sector in India in mind. Various suggestions are also given to improve the financially suffered condition of Air India Limited.

KEYWORDS

Aviation Sector, Air India Limited, Return on capital employed, Firm Specific Variables and Multivariate Model.

INTRODUCTION

Air India is a national carrier of India, which is under the control of government of India. It serves various National and International destinations and has a fleet of Airbus and Boeing aircraft. Air India is headquartered at the Indian Airlines House in New Delhi having two domestic hubs at Indira Gandhi International Airport and Chhatrapati Shivaji International Airport. Chennai International Airport and Netaji Subhas Chandra Bose international Airport are the secondary hubs (Wiki Pedia, 2014). With the nationalization of Indian Airlines and Air India in 1953, the Indian domestic civil aviation came under the purview of Government. Thus, Airlines Corporation and Air India Limited came into existence in order to operate domestic and international long haul services. Before year 2006, Air India undertook the domestic flights only and the Erstwhile Indian Airlines was operating the international routes. In year 2006-07, the GOI decided to merge both Air India and India Airlines with the objective to accelerate growth. Hence, the National Aviation Company Limited formed because of the merger of both Air India and India Airlines. It is the oldest and the largest airline of India.

Between years 2007 to 2012, Air India has faced multiple problems including escalating financial losses. Stiff competition from private low cost carriers led to the decline in the market share of Air India from 19.2% to 14%. Further, the situation of the national carrier is more devastating in year 2013 & 2014. The present case focused on the key functional areas that should be address in order to know the real cause of the negative profitability figures of Air India Limited.

Depreciation of rupee, rise in fuel prices and highly leveraged balance sheets are the biggest challenges for the ailing airline. During the financial year 2012-13, the company had incurred a net loss of Rs.54, 901.6 Million as compared to net loss of Rs.75, 597.4 million in 2011-12. The sharp increase in ATF prices, increase in the maintenance cost, keeping the ticket fare low to fight competitions are some of the challenges faced by Air India Limited. Moreover, a ray of hope is that Air India Limited is now a member of STAR Alliance that will give an additional value proposition to improve its performance.

Present study is focused on framing a multivariate model to know the impact of Firm Specific Variables on the Return on Capital Employed of Air India Limited. Researcher attempted to find out the various reasons of the sufferings of Air India Limited keeping the operating environment of the aviation sector in India in mind.

LITERATURE REVIEW AND GAP

Paul. Cuckoo in one of their study published in Forbes India, 29 Nov 2013 titled *"Indian carriers hit air pocket, losses Mount"* discussed about the tough times faced by the Indian carriers. The article focused on the two biggest carriers by fleet size Jet Airways and Air India that troubled the most. Jet Airways has lost Rs. 1400 crore in the first two quarters of 2013-14 more than it has earned in last 10 years. The national carrier on the other hand has projected losses of Rs. 4000 Crore for the year, while spice Jet has lost Rs. 609 Crore in the first six months of the fiscal. They presented through their article that Airlines are struggling to stay profitable, domestic capacity is rapidly shifting to the low cost model. Charging for meals and baggage is not enough to offset higher fuel prices and a depreciating rupee. The Airlines are launching new foreign routes that will bring in higher dollar earnings, this will offer a natural hedge against the volatile rupee and fuel is also cheaper overseas.

Mahesh.R and Prasad.D, (2012) in there study titled *"Performance analysis: A case study of selected Indian airline companies"* in which they analyzed whether the airline companies achieved financial performance efficiency during the post-merger and acquisition period specifically in the areas of profitability, leverage, liquidity and capital market standards. They concluded that there is no improvement in these standards after the merger has taken place.

Venkatesan.R (Aug,2009) in the paper titled *"Should the Air India Maharaja be awarded his privy Purse?"* attempted to measure the changes in productivity at the troubled airline and compares its performance with that of the private airlines. the study emphasized that India needs a thriving Air India to provide competition to airlines that are growing by mergers and consolidation. Total Factor Productivity was used for analyzing the performance of Air India. Gross Margin/ Gross Sales and Operating Turnover/Employees have been considered as appropriate financial performance variables. It was recommended that Air India was needed to remove transfer payments such as taxes and duties paid to government from the grants/ aid it is seeking to estimate the net financial support from the government.

Murinde.V and Kariisa.K (2010) in their paper analyzed the financial performance of the East African Development Bank. Standard financial ratios, statistical moments such as the Mean, Range and standard deviation of balance sheet and related accounts and the subsidy dependence index has been used for the analysis by the authors. The ratios ROE, Term Debt Equity TDE, RONA etc. have been used. It was found that the East African Development bank was a weak financial performer and study concluded with the suggestions that the bank must have the proactive approach regarding the evaluation of projects.

Sur, D. (2004) attempted to conduct a case study of Hindustan lever Limited in relation to its financial as well as social performance during the period from 1990 to 1999. Certain relevant quantitative and qualitative parameters have been taken into consideration to measure the financial and social performance of Hindustan lever Limited (HLL). The study emphasized to evaluate performance by considering financial, physical and social performance measures. Physical performance was evaluated in terms of sales revenue from domestic and foreign market, where as financial performance measured through ratios like Net Profit Ratio, Debt Equity Ratio, Return on Capital Employed, Earning per Share, Dividend Per Share and Economic Value Added to fulfill both economic and social objectives of the organization.

John, H.et al. (2003) analyzed the financial performance of horticulture industry of Florida using various parameters such as production, sales, operating expenses and net return. The study revealed that the nursery and greenhouse industry continued to become an increasingly larger and more valuable component of agriculture nationwide.

RESEARCH GAP

In the light of above, review of literature it was found that no such study so far is carried out to know the impact of firm specific variables on the Return on Capital Employed of Air India Limited. Prior studies have focused in finding out the number of reasons that are responsible of the problems of Air India Limited. Some researchers have high lightened the reasons and results of the merger of Air India and Indian Airlines. Many studies have devoted towards the analysis of financial performance of Air India Limited.
So to fill the gap the present study is done to know the impact and relation of firm specific variables on the financial performance of Air India Limited.

NEED OF THE STUDY

Past many years were very struggling for the airlines operating in India. Air India Limited is not even able to reach its breakeven point. The cutthroat competition has forced the National carrier to engage in a price war. Various factors are affecting the financial performance of Air India adversely. Present study attempted to identify certain firm specific variables that affect the financial position of the companies. The variables have been selected based on past studies. The study will give an outcome about the progress of Air India that will be helpful to in order to enhance its efficiency. The Study will be useful for the management of Air India to take corrective actions to improve their performance and facilitating the decision-making ability.

OBJECTIVES OF THE STUDY

- To identify the firm specific variables that affects the ROCE of Air India Limited.
- To know the relation among firm specific variables and ROCE of Air India Limited.
- To analyze and predict the impact of Firm Specific Variables on the ROCE of Air India Limited.

HYPOTHESES OF THE STUDY

Null Hypothesis
H0: There is no significant impact of Firm Specific Variables on the Return on Capital Employed (ROCE) of Air India Limited.
Sub Hypotheses
$H0_1$: There is no significant impact of Operating efficiency on the ROCE of Air India Limited.
$H0_2$: There is no significant impact of Tangibility on the ROCE of Air India Limited.
$H0_3$: There is no significant impact of Asset management on the ROCE of Air India Limited.
$H0_4$: There is no significant impact of Solvency on the ROCE of Air India Limited.
$H0_5$: There is no significant impact of Liquidity on the ROCE of Air India Limited.

DATA AND METHODOLOGY

The present study is based on the secondary data obtained from the annual financial statements of Air India Limited from FY 2002-03 to 2014-15. Some of the other sources are also used to obtain the financial data of the selected airline companies. These sources are CMIE Prowess database; published reports of ministries, government publications, journals, books, different websites and other relevant documents have also been used to supplement the data. Relevant data is also collected from the "Airlines House" the head office of Air India Limited situated in New Delhi. The management of Air India Limited provided no financial information for FY 2013-14. So, the data for FY 2013-14 and 2014-15 is estimated by using least square method. The collected information and data has been arranged systematically and is tabulated and analyzed. Various financial and statistical tools have been applied in order to fulfill the objective of the present study and to arrive at useful conclusions.

VARIABLES USED IN THE STUDY

The present study uses return on capital employed as the dependent variable. Various firm specific variables have been used in the study to analyze their impact on the ROCE of Air India Limited. Proxy measures have been selected based on the past studies to represent the respective independent variables.

Dependent Variable		Statistical Method
Return on Capital Employed (Net Profit/ Capital Employed)* 100		Multiple Regression Analysis
Independent Variables	Proxy Variables	
Operating Efficiency	Operating Expense ratio (Operating Expense/Net Sales) *100	
Tangibility	Fixed Assets/ Total Assets	
Asset Management	Inventory Turnover Ratio Cost of goods sold/ Average Inventory	
Solvency	Interest Coverage Ratio	
Liquidity	Quick Ratio Liquid Assets/ Current Liability	

ANALYSIS AND INTERPRETATIONS

TABLE 1: CORRELATION MATRIX FOR MULTIPLE REGRESSION MODEL OF AIR INDIA LIMITED

Variables	OE	Tangibility	AM	Solvency	Liquidity	ROCE
OE	1.00					
Tangibility	.068	1.00				
AM	-.445	.350	1.00			
Solvency	-.656	-.219	-.102	1.00		
Liquidity	.165	.104	-.391	-.111	1.00	
ROCE	-.618	-.548	-.324	.843	.059	1.00

Source: SPSS

Correlation matrix of firm specific variables with ROCE of Air India Limited is being shown in Table 1. Operating efficiency is negatively but significantly related with dependent variable ROCE. Tangibility and Asset management are also found to be negatively related with the dependent variable. However, Solvency and Liquidity are found to be positively related with the ROCE of Air India Limited.

TABLE 2: MULTIPLE REGRESSION MODEL SUMMARY OF AIR INDIA LIMITED

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin-Watson
	.975	.951	.917	.03979	2.468

Source: SPSS

The Multiple Regression Model Summary is shown in Table 2. The column labelled R is the value of the multiple correlation coefficients between the independent variable and the dependent variable. The Table 2 examined the relationship between these variables and ROCE that gives the coefficient of correlation i.e. .975.

All the independent variables used in the model has a high correlation with dependent variable ROCE with the value of R= .975. The value of coefficient of determination (R^2) is at .951 signifying that 95.1% of variability in the ROCE is accounted for by the selected Independent variables.

In the above model, the value of Durbin Watson is 2.468, which implies that there is no autocorrelation among the independent variables used in the study.

TABLE 5.3.6: COEFFICIENT MODEL OF AIR INDIA LIMITED

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics
	B	Std. Error	Beta			VIF
C	.627	.188				
OE	-.206	.067	-.496	-3.084	.018	3.719
TAN	-.281	.090	-.302	-3.109	.017	1.359
AM	-.008	.003	-.366	-2.540	.039	2.985
SOL	.025	.009	.423	2.964	.021	2.928
LIQ	.136	.177	.077	.771	.466	1.419

Source: SPSS

Dependent Variable: ROCE~ Return on capital employed

Independent Variables: OE~ Operating Efficiency, TAN~ Tangibility, AM~ Asset management, SOL~ Solvency, LIQ~ Liquidity.

Multiple Regression Model

$FP = \beta_0 + \beta_1 OE + \beta_2 TN + \beta_3 AM + \beta_4 SOL + \varepsilon$

$FP = .627 - .206\ OE - .281 TN - .008\ AM + .025\ SOL + \varepsilon$

The B-values tell us about the relationship between Dependent variable and each independent variable. The positive B-value shows a positive relationship between independent variable and dependent variable. However, a negative coefficient represents a negative relationship. For the above model, three independent variables have negative B-values indicating negative relationships. So, if Operating Efficiency, Tangibility, and Asset Management increase than there is a decrease in the ROCE. However, solvency and liquidity have a positive relationship with ROCE. The b-values tell us more than this, though they tell us to what degree each predictor affects the outcome if the effects of all other predictors are held constant:

Operating Efficiency (b = -.496): This value indicates that as operating efficiency increases by one unit, ROCE decrease by -.496 units at t value -3.084. Both variables were measured in ratio therefore, for every one unit change in OE an extra -.496 units will decrease ROCE. The interpretation is true only if the effects of other independent variables are held constant. It is worth noting that both beta value and t value are negative for the operating efficiency. Further, the significant p-value is .018, which is less than .05, and it leads to the conclusion that operating efficiency has a significant impact on the ROCE of Air India limited. Thus, the null hypothesis *there is no significant impact of Operating efficiency on the ROCE of Air India Limited* is rejected statistically.

Tangibility (b = -.302**):** This value indicates that as the value for tangibility of Air India Limited increases by one unit, ROCE will moved down by -.302 units. Therefore, every addition in tangibility is associated with a reduction of -.302 units in ROCE. The beta value is negative at the t value -3.109, which is also negative for tangibility. This interpretation is true only if the effects of other independent variables are held constant. Further, the significant p-value is .017, which is less than .05, and it leads to the conclusion that Tangibility has a significant impact on the ROCE of Air India limited. Therefore, the null hypothesis *There is no significant impact of Tangibility on the ROCE of Air India Limited* is rejected statistically.

Asset Management (b = -.366**)**: This value indicates that if there is an increase in one unit on asset management than ROCE will decrease by -.366 and the t value is -2.540. Therefore, every unit increase in the Asset management is associated with a decrease of -.366 unit in ROCE. The value of both beta coefficient and t statistics is negative for asset management. This interpretation is true only if the effects of other independent variables are held constant. The significant p-value is .039, which is less than .05, and it leads to the conclusion that asset management has a significant impact on the ROCE of Air India limited. The null hypothesis *there is no significant impact of Asset Management on the ROCE of Air India Limited* is rejected statistically.

Solvency (b = .423**):** The beta value indicates that a unit increase on the Solvency will lead to the increase in ROCE by .423 units. Therefore, every unit increase in the solvency of Air India Limited is associated with an extra .423 unit ROCE. The t value is 2.964 which is also positive as the beta coefficient. This interpretation is true only if the effects of other independent variables are held constant. The significant p-value is .021, which is less than .05, and it leads to the conclusion that solvency has a significant impact on the ROCE of Air India limited. The null hypothesis *there is no significant impact of Solvency on the ROCE of Air India Limited* is rejected statistically.

Liquidity (b= .077**):** Beta value for liquidity at t value .771 indicates that if liquidity increase by one unit ROCE will increase by .077. Therefore, every unit increase in the liquidity is associated with an extra .077 units ROCE. This interpretation is true only if the effects of other independent variables are held constant. The significant p-value is .466, which is more than .05, and it leads to the conclusion that solvency has no significant impact on the ROCE of Air India limited. Thus, the null hypothesis *there is no significant impact of Liquidity on the ROCE of Air India Limited* is accepted statistically.

FINDINGS OF THE STUDY

The multiple regression analysis was performed to know the collective impact of Operating efficiency, Tangibility, Asset Management, Solvency and Liquidity on ROCE. It was found that all variables have a significant impact on ROCE of Air India Limited except Liquidity. The impact of Operating Efficiency, Tangibility and Asset Management was negative on the ROCE of Air India Limited. Solvency has a positive significant impact on ROCE of Air India Limited. The impact of Liquidity on ROCE is insignificant at p value= .466.

SUGGESTIONS & RECOMMENDATIONS

Air India is amongst the worst performing PSU's in India. The study has its significance as through this it has been found that which variable has a negative impact on the ROCE of Air India and which factors are contributing positively to increase the ROCE of Air India. Certain lope holes in the administrative cost structure of Air India Ltd. are also identified that are need to be improved. Researcher has brought forth certain suggestions for Air India based on the present study which are given below:

1. Fuel costs play vital roles in aviation industry a big share of revenue is swallowed by fuel cost. Therefore, the Air India Limited should try to reduce the expenses. High level of taxes on fuel is the big menace to the aviation industry. The aviation minister has requested the governors of states to reduce the sales tax on the ATF.
2. The effective leverage management can gear up the debt-equity ratio to attain maximum value creation for the shareholders.
3. Cost reduction and control techniques like budgetary control, standard costing, control ratios and value analysis should be adopted. Further, efforts should be made to control and reduce the administration selling and distribution overheads.

4. The short-term liquidity position, long-term funds have to be used to finance current assets. Better cash position would earn credit confidence and reduce the risk of short-term crisis. The company should try to reduce its short-term obligations first.

CONCLUSIONS AND FUTURE DIMENSIONS

Air India enjoys monopoly in some specific international routes. Still air India has many challenges to face. The unpredictable fuel costs and depreciation of rupee against dollar and high costs at airports are the bottlenecks in improving the financial performance of Air India Limited. The financial distress also forced the airline to reduce its fare, as there is considerable decline in the no. of passengers. Diverse income groups also pose a challenge for the AI as to frame the strategy to satisfy the want of passenger coming from different income backups. The poor utilization of capacity and lack of clarity in strategic planning and poor management are pushing air India into losses. However, the turbulence in whole Indian aviation market is adding to the distress of Air India Limited. The Indian aviation market is skewed more towards the low cost carriers. The recent budget of BJP has increased the service tax on the business class travels in airlines. This will also affect the passenger load factor among airlines in general and Air India in particular.

LIMITATIONS OF THE STUDY

1. The study is restricted to only Air India Limited, ignoring the Low Cost Airlines operating in Indian Market.
2. Findings are subjected to accuracy of secondary data Sources.
3. The findings are limited to the study period of 13 years i.e. from FY 2002-2014.

SCOPE OF FUTURE RESEARCH

1. Present study is restricted only to one airline company Air India Limited. Further studies can focus on other airlines with same set of firm specific variables.
2. Only Operating efficiency, tangibility, asset management, Solvency and Liquidity variables have been selected as firm specific variables, other variables like firm size, sales, turnover ratios etc. can also be employed in future studies.

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