A COMPARATIVE STUDY OF FINANCIAL PERFORMANCE USING ANOVA BETWEEN SCHNEIDER AND SIEMENS

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ABSTRACT

Energy is the most fundamental requirement for any country's economic growth. The economic growth is so much dependent on energy that if the supply of energy is topped, it shall cease or slow down the progress of any nation. There are many forms of energy, electrical energy being the most significant out of them. According to the first law of thermodynamics, "energy can never be created or destroyed; it is transformed from one form to another". Similarly, industries may use electrical energy in different forms.The usage of electrical energy is very important when we talk about the growth of any nation. The consumption of electricity is said to be proportional to the development of the country. For the current study, the researcher has taken two electrical multinationals, Schneider and Siemens, and has tried to compare their financial performance using Anova.

KEYWORDS: *Energy, Financial Performance, ANOVA, Return on Capital Investment.*
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Introduction

Financial performance of any industry is the act of finding the level of financial performance of that organization for a duration. In other words, financial performance is the measure of the accomplishments of the financial objectives of any industry or organization, and the process of evaluating the outcomes of the policies and operations of a firm in financial terms. Financial health of different firms of similar nature within same industry as well as comparing of industries or sectors is also possible.

It involves finding answers to the following by the various stakeholders such as managers, stockholders, tax authorities, creditors, etc.:

- What is the "financial position" of a company for the selected duration?
- How does a company perform financially for the selected duration of time?

Financial analysis may help in answering these questions. Financial Analysis makes use of financial statement, which is a logically and consistently ordered collection of data. The need of financial analysis is to explore and understand the economics of any organization and reflect on the balance sheet and/or income statement.

Electric Industry

The area chosen for the present study is electric industry, for which researcher has selected top two electrical multinationals. As per Green World Investor[1], following are the main features of MNCs (Green World Investor, 2013):

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[1]   http://www.greenworldinvestor.com

- "Location – MNCs have their headquarters in home countries and have their operational division spread across foreign countries to minimize the cost.
- Capital Assets – Major portion of the capital assets of the parent company is owned by the citizens of the company's home country.
- Board of Directors – Majority of the members of the Board of Directors are citizens of the home country.
- MNCs are large-sized corporation and exercise a great degree of economic dominance."

The Top 10 Industrial Automation companies as per *plantautomation-technology.com* (Top 10 Industrial Automation Companies of the World, n.d.)are listed below:

- Siemens
- ABB
- Emerson
- Rockwell Automation
- Schneider Electric
- Honeywell process solutions
- Mitsubishi electric
- Yokogawa electric
- Omron automation
- Danaher Industrial Ltd

Selected Electrical Multinationals for Research

The following two electrical multinationals companies selected for the research are:

- **Schneider**

Schneider Electric SE is an electrical multinational specializing in management of electrical energy. It offers automation solutions, having specialized hardware and software solutions. The company is based in France and has it'sheadquarter in Rueil-Malmaison, WTC Grenoble and across the world. Schneider credits itself to be a Fortune Global 500 company. In addition, it is also a component of Euro Stoxx 50 stock market index. The company posted revenue of €25 billion in 2016 and has 20000 patents with 144000 employees in around 100 countries.

- **Siemens**

Siemens AG is the largest manufacturing company in Europe, with its origin in Germany having headquarters in Berlin and Munich. Siemens deals in energy, healthcare, infrastructure, etc. Siemens specializes in automation, electrification and digitalization. The company is one of the largest supplier of system of power generation and transmission. In addition, it is also a component of Euro Stoxx 50 stock market index. The company posted revenue of €83 billion in 2017 with 372000 employees in around 100 countries.

Review of Literature

A literature review is used to survey literature found in books, published articles, and findings in national and international periodicals pertaining to the research topic and thus exploring the research problem under the light of researches already done. They not only find the work done by different researchers in a particular area but may also highlight accomplishments in definite areas. Literature review will not accountfor new or original work, because it is based on secondary sources.

Brahmbhatt& Desai (Brahmbhatt& Desai,1998) studied the financial performance. For the purpose of analysis, they selected sample as pharmaceutical and chemical units in India. In this research, they used some sophisticated computer software as tools of analysis. They selected seven important financial ratios for the study and the techniques of correspondence analysis (CA) among companies and amid companies. All sample units were ranked using computer-aided techniques.

Dharmaraj&Kathirvel(Dharmaraj & Kathirvel, 2013)analyzed the "financial performance" of for 1998 to 2012 of 15 automobile industries.. They applied statistical tools like mean, median, minimum, maximum, S.D. and ANOVA to analyze different ratios. They revealed that automobile industry had huge scope in India. They found that considered automobile companies were financially strong and were growing at the rate of 17% per annum. Results also implied insignificant differences for inventory turnover ratio, debt equity ratio, long-term debt equity ratio, return on net worth ratio and interest coverage ratio for considered automobile industries.

Feeny (Feeny, 2000) in his research study speaks about the elements of profitability. He made use of simple techniques of regression for analysis. He also suggested that entity - size is proportional to profitability. However, the industry characteristics do not explain the entity profitability and concentration,

yet there was some evidence that barriers to entry have some significance with entity profitability, according to the theory. There is also evidence that profitability and market share of any entity were related to each other.

Lee (Lee, 2011) discussed in his research paper about "The Rise of Korean Automobile Industry: Analysis and Suggestions"[1] about the huge impact of Korean automobile industry on the global market. He in his study analyzed the key areas of operations of the automobile industry, concluding that in order to succeed, the Korean industry needs to make sure that they have a strategic plan taken into consideration after the complete SWOT analysis.

Pai, Vadivel & Kamala (Pai, Vadivel, & Kamala, 1995)in their research tried to study the relationship between diversified companies and their financial performance. They selected seven large companies for their study. The selected firms were diverse in products but related to each other otherwise. The study revealed the similarity and variation in the financial performance of these firms.

Sharma (Sharma, 2011) studied in his research concerning "Comparing and Analyzing Financial Statements to Make an Investment Decision: Case Study of Automotive Industry". In this research study, he has selected four automotive companies for a comparative study for the period of 2008 to 2011. He used qualitative and quantitative techniques and the other major outcome of this research has been the assessment of risk and gain of an investment. They concluded that the Indian automotive industry's performance has significant difference in terms of their profit levels using ANOVA. It has also been depicted from the analysis about existence of some relationship between Ford & General Motors in terms of profitability.

Objectives of the Study

- To study the significance of profitability with shareholder's fund of the selected electrical multinationals during the period of study.
- To evaluate the financial performance of the electrical multinational companies under study for the period of study.

Hypothesis

$H0_1$ There is no significant difference between the profitability and the shareholders fund of the electrical multinational companies under study.

$H0_2$ There is no significant difference between the financial performances of the electrical multinational companies under study.

Scope of the Study

The present study "*A Comparative Study of Financial Performance using Anova between Schneider and Siemens*" evaluates the significance of profitability with shareholder's fund using Anova test between Schneider and Siemens.

Electricity is the basic need of present world. It has an important role in development of domestic life and industrial expansion. As a result, it is important to know the working and financial performance of the electric companies. The multinational electric companies' financial performance have great importance and relevance not only for their owners, shareholders, creditors, governments, etc. but also for worldwide development of civilization.

Research Methodology

Sample Size: Population of this study are all electrical multinationals. For this research purpose, researcher has selected two Electrical multinationals.

Sampling Technique: Judgmental sampling technique was used in selecting companies and collecting data with respect to researcher's area of study.

Data Collection: The current study is majorly based on secondary data collected from the annual reports published by the sampled units on their website.

Period of Study: Period of this research is three years from 2013 to 2016 for the two selected electrical multinationals. The researcher took three financial years i.e. 2013-2014, 2014 -2015, 2015-2016 for the study.

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[1]   "The Rise of Korean Automobile Industry: by Analyzing And Suggestions" (Lee, 2011)

Limitations

The limitations of the present study are as follows:

- Most of the strategies regarding boosting performance were confidential and authorities were reluctant to discuss about them.
- Various techniques used by selected companies to utilize the funds were not mentioned in the Annual reports, as the major source of data collection was annual reports.

Data Interpretation and Analysis

The process of breaking down a topic into smaller subtopics to make deeper understanding of the same is called Analysis. It is a systematic assessment and evaluation of information, by breaking it into parts to uncover their interrelationships.

The most significant tool to test the significance between two variables is Anova. Anova is a statistical technique which is used to analyze the potential difference between two or more categories in a scale-level dependent variable by a nominal level variable. Ronald Fisher developed it in 1918. The Anova test extends the t and the z test, which have the problem of only allowing the nominal level variable to have two categories.

Significance of Profitability with Shareholders Fund of Schneider

The table given below displays the significance of profitability with shareholders fund of Schneider over the period of study.

Schneider

Year	Net Worth	Net Profit
2013-14	10,806.00	2429.00
2014-15	9,808.00	1783.00
2015-16	8,745.00	2489.00

The table below represents the results of analysis of Anova Single Factor to judge the financial performance between the electrical multinationalsunder study over the period of study.

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Average	Variance
Net Worth	3	29359	9786.333333	1062282.333
Net Profit	3	6701	2233.666667	153225.3333

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	85564160.67	1	85564160.67	140.7875294	0.00028889	7.708647422
Within Groups	2431015.333	4	607753.8333			
Total	87995176	5				

Significance of Profitability with Shareholders Fund of Siemens

The table given below displays the significance of profitability with shareholders fund of Siemens over the period of study.

Siemens		
Year	**Net Worth**	**Net Profit**
2013-14	30,954.00	7427.00
2014-15	34,474.00	7218.00
2015-16	34,211.00	7404.00

The table below represents the results of analysis of Anova Single Factor to judge the financial performance between the electrical multinationals under study over the period of study.

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Average	Variance
Net Worth	3	99639	33213	3844603
Net Profit	3	22049	7349.666667	13134.33333

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1003368017	1	1003368017	520.1847249	2.1892E-05	7.708647422
Within Groups	7715474.667	4	1928868.667			
Total	1011083491	5				

Significance of Financial Performance between selected Electrical Multinationals.

In order to evaluate the financial performance between the selected multi-nationals, Return On Net Capital Employed was calculated. The table given below shows the previously mentioned data for these companies.

Year Wise Intra Roce Comparison ($)		
Year	**Schneider**	**Siemens**
2013-14	14.82	20.96
2014-15	11.46	22.85
2015-16	12.78	15.03

The table below represents the results of analysis of Anova Single Factor to judge the financial performance between the electrical multinationals under study over the period of study.

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Average	Variance
SCHNEIDER	3	39.05671627	13.01890542	2.873689552
SIEMENS	3	58.8360782	19.61202607	16.66699175

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	65.20385972	1	65.20385972	6.673652643	0.06111154	7.708647422
Within Groups	39.08136261	4	9.770340653			
Total	104.2852223	5				

Findings

From the analysis done and the objectives undertaken, we make the following findings:

- **Related to Schneider:** The above statistical data illustrates that the variances between shareholders fund and variances between profitability are significant and not due to chance factor at 5% level of significance as the calculated value of F is 140.7875294. This is greater than the table value of 7.708647422 at 5% level with degree of freedom (d.f.) being $v1 = 1$ and $v2 = 4$. This analysis rejects the null hypothesis of no difference. Therefore, it may be concluded that, variance between shareholders fund and profitability are significant.Thus, null hypothesis H01is rejected.

- **Related to Siemens:** The above statistical data illustrates that the variances between shareholders fund and variances between profitability are significant and not due to chance factor at 5% level of significance as the calculated value of F is 520.1847249. This is greater than the table value of 7.708647422 at 5% level with degree of freedom (d.f.) being $v1 = 1$ and $v2 = 4$. This analysis rejects the null hypothesis of no difference. Therefore, it may be concluded that, variance between shareholders fund and profitability are significant. Thus, null hypothesis H01is rejected.

- **Related to Intra ROCE Comparison of Multinationals:** The above statistical data illustrates that the value calculated of F is 6.673653. This is less than the table value of 7.708647422 at 5% level with degree of freedom (d.f.) being $v1 = 1$ and $v2 = 4$. This could have arisen due to chance. This analysis supports the null hypothesis of no difference. It may therefore be concluded that, there is no significant difference between the financial performances of the electrical multinational companies under study. Thus, null hypothesis H02is rejected.

Suggestions

On the basis of above findings, the researcher recommends the following suggestions:

Return on Capital Employed: Schneider should consider improving its ROCE. The most obvious way to achieve this is by reducing costs or increasing sales. Selling unwanted or unprofitable assets, paying off debts, etc. are other ways to achieve this.

Conclusion

The researcher has attempted through the research to study and understand the financial performance of two major players in the electrical multinationals, i.e. Schneider and Siemens. The researcher also made an effort to understand and evaluate the significance of profitability with shareholder's fund and evaluate the financial performance of the selected electrical multinationals.

The study has highlighted that profitability of Siemens is more than that of Schneider and the Intra-company ROCE of Siemens is more than that of Schneider.

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