# FACTORS INFLUENCING THE RETURN ON EQUITY
# A Comparative Analysis of Manufacturing and Financial Service Companies Listed in Dar es Salaam Stock Exchange

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**ABSTRACT**

This study analyzed the factors that influence the Return on Equity for domestic manufacturing and financial companies that are listed on Dar es Salaam Stock exchange. Three factors were analysed based on Dupont System namely Profit Margin, Total Assets Turnover and Equity Multiplier. A comparison of the factors was between manufacturing sector and financial sector to determine if there were any significant differences of the two sectors. Unbalanced panel data obtained from the financial statements of the companies from 2000 to 2015 was obtained, based on the fact that at least included candidate has 5 years of trading and financial reporting. A total of 93 observations was collected, and when cleaned, 86 observations remained with 22 on the financial services sector. Data was cleaned and tested based on various measures such as normality tests, unit root test and model specification test. A multiple regression model was used and the results indicated that Profit Margin had the most influence on the return on equity followed by Total Assets Turnover and lastly the Equity Multiplier. Profit Margin and Total Assets Turnover had a positive relationship with Return on Equity while Equity Multiplier was negatively related to Return on Equity, the comparative results between the two sectors indicated that there were significance means difference between the factors that influenced the Return on Equity in manufacturing and financial sectors.

Key Words: Listed Companies, Stock Market, Return on Equity, Total Assets Turnover, Equity Multiplier, Profit Margin.

# 1 INTRODUCTION

## 1.1 Background of the Study

The stock market like any other market have these essential characteristics, availability of products, the presence of buyers and sellers, the price to which the products are sold, and the exchanging of the products for the price offered. The decision of purchasing a product requires a thoughtful analysis and evaluation to the satisfaction of the buyer. This includes among others value derived from such product, price charged compared with competitors the amount of money the buyer has in disposal to purchase the product.

One of many products – referred as financial securities offered in the stock market is common stock. This is defined as a representation of a partial ownership of the company which provide their holders claims to future streams of income, paid out of company profits, commonly referred to as dividends (Darskuviene, 2010). The common stock as a product has a price, and it is normally quoted in a stock exchange, where the product is

sold and bought at the quoted price, and where the exchanging of the product for the price takes place.

The decision to purchase a stock of a company similarly requires such consideration as the purchase of any other product. For common stock and other financial securities however, the products realize earning in the future after their purchase, they are dependent on future earnings of a company, and capital gains when the price to which a buyer paid for the stock rises to cover all the costs incurred for its purchase, thus evaluation of satisfaction from their purchase is continuous until when they are sold. For this case, there is now, more need for scrutiny in the purchase of the stock of a company than any other product due to this major difference. This is because of the uncertainty of the earnings of the company which may eventually affect the claims to the earnings of the company of which the common stockholders had anticipated.

Satisfaction is a subjective term, investors may be satisfied by owning a company stock regardless of the company's future earnings. However, a common phenomena is that capital gains and dividend earnings creates more objective measure. Thus consideration of Return on equity (ROE), as it is an internal measure of shareholder's value may form a base for measuring value of the shareholders. ROE is by far the most popular measure of performance since it proposes direct assessment of financial return of shareholder's investment, it is easily available for analysis and it allows for comparisons among companies or different sectors of the economy (European Central Bank, 2010). ROE is also defined as the rate of return that management has earned on the capital provided by the owner after accounting for payments to all other capital suppliers (Reilly & Brown, 2003), it is what the owners of the company earn on their invested funds in the company after paying for all liabilities, it is calculated as the net income divided by common equity.

In light to the country Development vision 2025, Tanzania aims to become a semi-Industrial middle income country by the year 2025 as it targets a 17.8% of the manufacturing sector to contribute to the Country's GDP from a 9.8% in 2010 according to the latest report of Tanzania Industrial Competitiveness of 2015 (MITI, 2015). Among the priority areas related to build capacity for industry related development is the development and deepening of national capital and financial markets geared to provide the requisite financial intermediation to promote and sustain industrial developments at all levels of national enterprise (Simbakalia, 2015).

This study therefore aims in analyzing and comparing the factors that influence the return on equity (ROE) of manufacturing and financial service domestic companies listed on Dar es Salaam Stock exchange (DSE) Tanzania. The analysis add knowledge to the stakeholders and the general public and assist in some part in fulfilling the Government aspirations, as performance of listed companies may trigger more listing and participation in the stock markets by the manufacturing or financial services industries which finances the manufacturing firms to large extent.

## 1.2 Statement of the Problem

Corporate financial manager major responsibility is to ensure that the value of shareholder's wealth is maximized by exercising decisions on investments in real assets that will create value, financing such investments at lower cost, and efficiently

management of assets (Horne & Wachowicz, 2008). These decisions requires a scrutiny of opportunities available in the company's external environment and selecting the best opportunity to pursue from available alternatives given the company overall business objectives.

Investment in the Tanzania's vision for industrialization requires financing. Financing may be sought form the commercial banks which must be highly capitalized or from listing of the company. In any case, investment opportunities exist from the banking and manufacturing firms and a measure on how resources will be allocated may be reflected on where one earns more and one of the obvious measures is through ROE. Corporations that can demonstrate a high ROE consistently will attract more equity investments, and eventually its stock price appreciation due to high demand of its stocks, corporate managers are then faced with a challenge to achieve a high consistent ROE over time. Thus the relevancy of this study is to determine the factors that influences ROE of manufacturing and financial services company listed on DSE. Various similar studies such as (Marques, 2011) and (Cîrciumaru, Siminică, & Marcu, 2010) have been conducted but not in Tanzanian context thus this study will add into the knowledge already studied from previous studies basing its analysis in Tanzanian context.

## 1.3 Research Objectives

### *1.3.1 General Objective*

To analyze and compare the factors influencing the return on equity (ROE) of manufacturing and financial services domestic companies listed in Dar es Salaam Stock Exchange (DSE).

### *1.3.2 Specific Objectives*

i. To analyze and compare profit margin of manufacturing and financial services domestic companies listed in DSE.
ii. To analyze and compare asset turnover ratio of manufacturing and financial domestic companies listed in DSE.
iii. To analyze and compare leverage ratio of manufacturing and financial services domestic companies listed in DSE.

## 1.4 Significance of the Study

This study is significant to investors, licensed dealing members and investment companies, as it enlighten them on factors influencing the return on equity. This is important to help investors make informed judgement on their investment decisions. To the managers of the companies the study is important to focus upon improvements so as to achieve a return on equity that meets investors' expectations, attract more investment capital and maintaining good reputation on managing the company. The study also contributes to the body of knowledge on understanding the factors that influence ROE, especially to the Tanzanian listed domestic manufacturing and financial services companies.

Finally, the study contributes to policy corporate financing aspects and contribute to the DSE operations and improvement of the market operations and adding to the efforts of creating awareness of the stock market.

# 2 LITERATURE REVIEW

## 2.1 About Dar es Salaam Stock Exchange

Dar es Salaam Stock Exchange was incorporated in September 1996 as a private company limited by guarantee and not having a share capital under the Companies Act (Cap. 212). The domestic listed companies in DSE are in total 18 (DSE, 2016), 14 of these companies are manufacturing companies and financial services companies this amounts to 81.25% of the domestic listed companies at DSE in total. DSE was demutualized in 2015 and being self-listed in July 2016. First candidate to be listed in DSE was the Tanzania Oxygen Limited (TOL) in 1998. In 2013, the bourse launched second tier market known as Enterprise Growth Market (EGM) which was aimed at giving more room for small and medium enterprises t list their shares and seek external capital through the bourse. DSE operations are regulated by the Capital Markets and Securities Authority (CMSA).

New candidates to join in the bourse should be aware of the factors that influence their return on equity, so as to position themselves basing on their core competencies focusing on such factors to achieve a good consistent return on equity to attract investors as the financial markets develops.

## 2.2 Factors Affecting Return on Equity

Return on equity is the rate of return that management has earned on the capital provided by the owner after accounting for payments to all other capital suppliers (Reilly & Brown, 2003)**.** The return on equity is what the owners of the company earn on their invested funds in the company after paying for all liabilities, it is calculated as the net income divided by common equity. According to the DuPont System, ROE is affected by Profit Margin, Total Assets and Financial Leverage.

***Profit Margin:*** This is refers to as the net income to net sale ratio, it refers to how much a company earns after subtraction of all liabilities of each sale made. (Brealy, Myers, & Allen, 2014) defined profit margin as it measures the proportion of sales that finds its way into profits.

***Total Assets Turn over:*** This refers to as the net sales to total assets ratio, it is a measure of efficiency. (Brealy et al., 2014) defines total assets turnover as the ratio that shows how much sales are generated by each dollar of total assets, and therefore it measures how hard the firm assets are working.

***Financial Leverage:*** This refers to the ratio of total assets to common equity, it measures the proportionate amount of total assets that are financed by common equity, and the higher the ratio implies that the total assets are financed more by debt rather than common equity. From Finance point of view, assets are either financed by equity or some form of debt. Reilly & Brown, (2003) points put that, the higher the proportionate of debt to equity, the higher the financial leverage, which is also referred as leverage multiplier.

## 2.3 Theoretical Literature Review

The return on equity is among the financial ratio used to analyze firm's performance in terms of profitability, it quantifies the amount of income that the company has earned relatively to the equity capital of the owners of the company, in most literature it is explained as among the indicator that measures firm profitability in relative terms (Reilly & Brown, 2003). There are various theoretical perspectives that elaborates the

performance of a company as reflected by Return on equity and some theoretical perspectives on investing in financial markets. Theories on this regards are many but the study discusses two commonly used theories namely: Resource Based View Theory and Agency Theory.

### *2.3.1 Resource Based View Theory*

The theorem propounds that company's resources which are valuable, rare, difficult to imitate and those that are not substitutable with other resources are the sources of sustainable competitive advantage (Barney, 1991). Access to finance is one of the important resource to the business firm and hence ensuring value creating to the capital holders is very important.

In relation to this theorem, company managers have responsibility in ensuring that shareholders wealth is maximized. Managers can raise capital from the financial markets (the company's external environment) to acquire resources that are valuable, rare, difficult to imitate and non-substitutable needed to achieve a competitive advantage and increase the company's performance. However, in order to use the opportunity of raising the investment capital from their external environment a company should demonstrate to the investors that it can generate a good return on their investments. Good performance on ROE can also be used by the managers to seek debt financing and thus complementing the equity of the company. ROE can only be sustained through profit generation and thus, proper utilization of company assets competitively.

The resource based view theory can aid in deciding the resources that can have a competitive advantage given the nature of the company and its industry, thus this theory proves to be useful in this study. As the study entails to find out factors influencing ROE and making a comparable analysis, the theorem envisage further on focusing on uniqueness of such factors to secure a sustainable competitive advantage.

### *2.3.2 Agency Theory*

The Agency Theory, elaborates on the agency relationship which is between the principal and an agent. The principal delegates some of the activities to be performed by the agent. In so doing two problems arise. Firstly, when the principal and agent goals are incongruent and that it is hard for the principal to verify the appropriateness of agent actions and secondly; the principal and the agent differences in risk preferences, whereby the two parties might make different actions on a given scenario due to their difference on risk preference (Eisenhardt, 2016).

In regard to this theory, the principal are the shareholders and the agent are the managers of a Corporation. Agents are deemed to act in a manner that will maximize shareholders wealth, as it is the universal acceptable objective of a modern Corporation in the field of business (Paramasivan & Subramanian, 2009). The return on equity can be used to gauge if this objective is achieved over time, since it is the return that investors acquire by investing in the Corporation, a consistently high return on equity indicates that the objective is being accomplished.

Furthermore breaking down the return on equity into various factors that influence it, points out where the achieved ROE over a period of time emanates from, thus communicates directly to shareholders what the managers challenges are in running the Corporation, for example the return on ROE could be emanating from the use of high

financial leverage relatively to a lower total assets turnover, this might communicate the message that managers employ more risks and that its assets are underutilized, therefore such information aids in lowering the knowledge gap of shareholders of what the managers are actually doing in running the business.

## 2.4 Empirical Literature review

Berzkalne & Zelgalve, (2014) studied the return on equity and company characteristics of Agriculture, food production and retail industries in Latvia, the study analyzed a sample of 450 companies between the period of 2004 to 2012. The findings and conclusions of their study was that ROE correlates with ROA and return on sales was positive and statistically significant, and that ROE had significant higher correlation coefficient with ROA compared to return on sales. Since the data considered the effects of financial crisis which affected macro-economic variables, the study indicated that during the 2007-2010 financial crisis, food and retail industries had a higher ROE compared to agriculture however during the recession their ratio plunged and became negative and as of the present they were positive, however the agriculture companies had experienced a period with low volatility of ROE.

From their study, it can be observed that return on equity can be influenced differently depending on the difference in industries the companies and the macro-economic situations.

Marcues (2011) studied the Return on equity and made a comparison between companies in Portugal and Brazil. The study used a DuPont method to analyze whether differences in the ratios depend on specific features of a country, or it is influenced by the industry where it is located. The findings was that Brazilian companies pay higher corporate taxes and while the Portuguese companies are more leveraged, and that the Brazilian companies pay higher interests. It was also noticeable that Portuguese companies take more advantage from financing decisions and Brazilian on the investing decisions. From his study an observation can be made that the Return on equity can be influenced by different factors among others financial leverage.

Ally (2013) conducted a comparative analysis of financial performance of commercial Banks in Tanzania, in a period of seven years from 2006 to 2012. The banks were grouped into sizes as large banks, medium, regional and small banks, the bank's profitability was measured in terms of return on assets, return on equity and net interest margin (NIM). In his conclusion of the study, he indicated that that there is no significant means difference on the profitability among bank groups in terms of ROA. However, a significance differences among bank groups existed in terms of ROE and NIM. ROE was positively correlated from year 2006 to 2009 among large banks, medium banks and regional and small banks. In 2011 and 2012 the large banks and regional and small banks were positively correlated unlike the medium banks. While his study focused on one category of industry, this study will take it further to see a comparison on manufacturing and financial services companies listed on DSE, and analyze if there are any differences on factors that influence ROE.

The literature review somewhat enlightened the nature of this study by providing background knowledge of the study. It is then the purpose of this study to analyze empirical data on the factors influencing the return on equity of manufacturing and financial services companies listed at the DSE. Analyzing the listed companies provides more light as the companies are more transparent and

## 2.5 Conceptual Framework

The conceptual framework is developed from the DuPont system approach is used. The DuPont system breaks down the Return on equity ratio into various components that constitutes it, these are the profit margin, the Total assets turn over and financial leverage or equity multiplier. The return on equity is then given by the following equation.

Return on Equity = Profit margin x Total Assets Turnover x Equity Multiplier

The study utilized a multiple linear regression model for analysis of the data, and thus conceptualized follows:

$$Y_i = a + x_{i1} * b1 + x_{i2} * b2 + x_{i3} * b3 + \ldots X_{in} * b_n + \varepsilon_i$$

For $i = 1, 2, 3 \ldots n$

Whereby, Yi is the return on equity, the outcome variable, $a$ is a constant variable, $X_{i1}$ to $X_{in}$ are the correlation coefficients of the predictor variables, and b1 to bn are the predictor variables, whereas $\varepsilon_i$ is the residual variable.

## 2.6 Research Hypothesis

The study objective emphasized to not only analyzing these factors, but to compare them between the manufacturing and financial sector, thus among the hypothesis developed was to tests for the differences between these two sectors.

### Hypothesis 1

H0: Profit Margin does not influence the Return on Equity of domestic manufacturing and financial services companies listed on DSE.

H1: Profit Margin influences the Return on Equity of domestic manufacturing and financial services companies listed on DSE.

### Hypothesis 2

H0: Total assets turnover does not influence the Return on Equity of domestic manufacturing and financial services companies listed on DSE.

H1: Total assets turnover influences the Return on Equity of domestic manufacturing and financial services companies listed on DSE

### Hypothesis 3

H0: Equity multiplier does not influence the Return on Equity of domestic manufacturing and financial services companies listed on DSE.

H1: Equity multiplier influences the Return on Equity of domestic manufacturing and financial services companies listed on DSE

**Hypothesis 4**

HO: There is no significance means difference between Profit margin, Total assets turnover and Equity multiplier as factors influencing the Return on Equity between Domestic manufacturing and financial companies listed in DSE.

H1: There is significance means difference between Profit margin, Total assets turnover and Equity multiplier as factors influencing the Return on Equity between Domestic manufacturing and financial companies listed in DSE.

# 3 RESEARCH METHODOLOGY

## 3.1 Research Design, Population and Sample Size

The research design essentially it is a plan that points out approaches which are to be used in the study systematically to attain the research objectives, all the approaches to be used are to be of particular relevance to the research purpose and of economical convenience to enable the study to be conducted systematically and with ease (Kothari, Kumar, & Uusitalo, 2014). The population studied covers the domestic manufacturing and financial service companies that are listed on the DSE.

The sampling design is a non- probability sample design due to the nature of the study, the sample size will constitute of 8 companies from a population of 16 domestic listed companies (Appendix I). The sample was based on the companies with at least 5 years in the bourse. The selection excludes TATEPA due to the fact that the financial details were not obtained consecutively during the time of study due to the temporary suspension of TATEPA in the bourse.

## 3.2 Data Source, Variables and Measurements

Financial data was sourced from the financial statements of the sample study, covering the years from when the companies have been listed on the market to the most recent at least five years. Since companies from the sample study have listed on the market at different years, the nature of the data collected is panel in nature, where the data is gathered across entities over time. Data collected was based on the financial statements data and mostly Net Sales, Net Income, Total Assets and Common Equity. For this case, financial data from 2000 to 2015 for the listed companies in the two market segments were retrieved from the DSE website. Table 1 summarizes the variables that were used and their associated measurements.

*Table 1: Summary Variables and their Associated Measurements*

| | Variables | Measurements |
|---|---|---|
| 1. | Return on Equity | Net income/ Common Equity |
| 2. | Profit Margin | Net Income/ Net Sales |
| 3. | Total Assets Turnover | Net Sales/ Total Assets |
| 4. | Equity Multiplier | Total Assets/ Common Equity |

Source: Reilly and Brown (2003)

## 3.3 Validity and Reliability

The data was collected from published financial statements of listed companies at DSE. The data was audited and approved by the Boards of the listed companies as per the conditions for listed companies. The data was made public by the companies, DSE, and various regulators including the Bank of Tanzania, and subject to various scrutiny. For the financial services industry, the auditors are approved auditors by the regulators which adds more credibility to the auditing process. It is thus, considered the data used is credible and with fair scrutiny for its credibility, and can be accessed by any other researcher for such purpose.

## 3.4 Research Diagnostics and Model Estimation Techniques

The study utilized various research diagnostics of the data prior to carrying out the analysis of the data, moreover various tests were conducted to test the basic assumptions of regression analysis. Normality tests is met, the researcher checked for normality of residuals, tests such as Shapiro-wilk and Skewness/Kurtosis for normality were conducted of which the results are presented in chapter four, residual outliers were observed by a stem and leaf plot, leverage and influential data were also observed using various measures as the normalized residual plot and Cook's D and severe residual outliers were identified by Inter Quartile Range. All the issues were corrected.

Other tests that were conducted were Homoscedasticity of Residuals, Unit root tests, Autocorrelation tests and Multicollinearity test, the researcher ran a Pooled Ordinary Least Squares (OLS) Regression and ran LINK and Ramsey Model specification tests.

*Table 2: Link and Ramsey Model Specification Test*

| **LINK Test** | | | | |
|---|---|---|---|---|
| **ROE** | Coefficients | Std.Err | t | p>\|t\| |
| **_hat** | **1.035** | **0.032** | **31.860** | **0.000** |
| **_hatsq** | **-0.608** | 0.052 | -11.780 | 0.000 |
| **Constant** | **0.071** | 0.013 | 5.360 | 0.000 |
| **N= 86, F(2, 83)= 547.04, Prob>F = 0.0000, R-squared = 0.9295, Adj R-square = 0.9278** | | | | |
| **Ramsey RESET test** | | | | |
| **F(3, 78) = 103.00 Prob>F = 0.0000** | | | | |

A choice of OLS model Fixed and Random effect estimation technique was also analyzed and Random effect estimation technique was opted. The unit root tests as based on Augmented Dickey Fuller test below point out that ROE and Equity multiplier (EM) variable is stationary at 1% significant level, while PM and TAT is not stationary at 1% significant level. However, the unit root test wasn't much of a concern since the observations remaining after previously dropping severe outliers wasn't necessarily a time series issue anymore.

*Table 3: Fisher Type Unit Root Test Based on Augmented Dicky- Fuller*

| **Ho: All panels contain unit roots** | | **Number of panels = 8** | |
|---|---|---|---|
| **Ha: At least one panel is stationary** | | **Avg. number of periods = 10.75** | |
| **ROE** | | | |
| **Inverse chi-squared(14)** | P | 41.785 | 0.0001 |
| **Modified inv. Chi-squared** | Pm | 5.251 | 0.0000 |
| **PM** | | | |
| **Inverse chi-squared(14)** | P | 35.388 | 0.0013 |
| **Modified inv. Chi-squared** | Pm | 4.042 | 0.0000 |
| **TAT** | | | |
| **Inverse chi-squared(14)** | P | 27.415 | 0.0170 |
| **Modified inv. Chi-squared** | Pm | 2.535 | 0.0056 |
| **EM** | | | |
| **Inverse chi-squared(14)** | P | 42.269 | 0.0001 |
| **Modified inv. Chi-squared** | Pm | 5.342 | 0.0000 |

# 4 RESULTS, ANALYSIS AND INTERPRETATION

## 4.1 Descriptive Statistics

A total of 8 companies based on over 5 years of annual financial reporting yielded 93 observations in a non-balanced panel data settings. Based on the outliers observed, 7 observation were dropped and thus 86 observations remained of which 74.42% were manufacturing companies and 25.58% were financial companies as presented in table 12. The analysis considered cutoff from 2007 to 2015 as there were few market participants before 2007 as indicated in Appendix I.

*Table 4: Descriptive Summary Statistics after Dropping Severe Outliers*

| Type | | ROE | PM | TAT | EM |
|---|---|---|---|---|---|
| Financial | Mean | 0.248 | 0.298 | 0.103 | 8.257 |
| | Sd | 0.093 | 0.100 | 0.019 | 1.784 |
| | Min | 0.080 | 0.150 | 0.070 | 4.640 |
| | Max | 0.540 | 0.690 | 0.140 | 10.920 |
| | N | 22.000 | 22.000 | 22.000 | 22.000 |
| Manufacturing | Mean | 0.286 | 0.189 | 1.033 | 1.698 |
| | Sd | 0.302 | 0.145 | 0.330 | 0.970 |
| | Min | -1.720 | -0.540 | 0.410 | 0.970 |
| | Max | 0.560 | 0.560 | 2.010 | 7.500 |
| | N | 64.000 | 64.000 | 64.000 | 64.000 |
| Total | Mean | 0.276 | 0.217 | 0.795 | 3.376 |
| | Sd | 0.265 | 0.143 | 0.498 | 3.126 |
| | Min | -1.720 | -0.540 | 0.070 | 0.970 |
| | Max | 0.560 | 0.690 | 2.010 | 10.920 |
| | N | 86.000 | 86.000 | 86.000 | 86.000 |

Source: Data Analysis Reports

The Return on Equity and the Total Assets Turnover of manufacturing companies which averaged higher than that of financial companies at 29% and 1.03 times respectively while ROE and TAT for financial companies averaged at 25% and 0.102 times respectively whereas Profit Margin and Equity Multiplier for financial companies averaged higher than that of manufacturing companies at 30% and 8.3 times respectively while that of manufacturing companies averaged at 19% and 1.7 times respectively.

The standard deviations (SD) for manufacturing companies averaged higher than those of financial companies for all variables except for Equity Multiplier as presented in table 4. This implies that that there was more variability of the data for manufacturing companies than those of financial companies over the years. Using standard deviation as a measurement of risk these results shows that manufacturing companies had more risk on return on equity as compared to financial companies.

*Figure 1: ROE Trend on the Studied Companies*

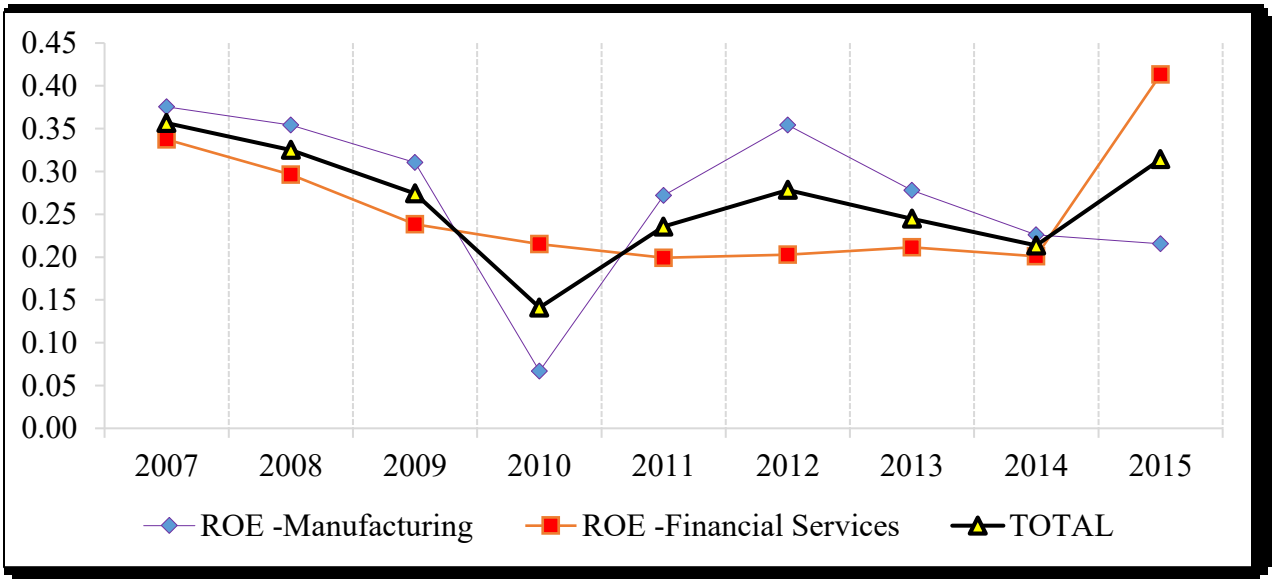



Figure 1 presents ROE trend for the period 2007-2017. Same analysis were made to PM, TAT and EM for manufacturing and financial companies. The return on equity of manufacturing companies trended higher than financial companies over time except for year 2010 and 2015. The abrupt low return on equity as depicted in year 2010 was mostly due to a very low return on equity by TOL PLC.

Profit margin of financial companies trended higher than manufacturing companies over the years on almost a steady trend. The average Total Assets Turnover trend for manufacturing companies was higher than financial companies and depicted a decreasing trend over the years while that of financial companies depicted a stable trend over the years. Equity Multiplier trend for financial companies was higher than that of manufacturing companies and depicted a decreasing trend over the years while that of manufacturing depicted a stable trend, slight differences between ROE and PM of these

manufacturing and financial companies can be vividly seen by the closeness of the line charts as compared to TAT and EM over the years.

## 4.2 Model Estimation Results Comparison.

Summary of the Models Estimation Results is presented in table 5. The coefficient results of the Pooled Ordinary Least Square and Random effects were the same, as well as the coefficient of determination (R- Squared) were the same at 0.812, implying that

81% of the dependent variable variability is accounted for by the models. The models were statistically significant, Profit Margin and Total assets Turnover coefficients were statistically significant at 0.1% while Equity multiplier was not statistically significant. The fixed effect model results produced the coefficient of determination at 0.638, implying that 63% of the variability of the dependent variable is accounted for by the model. The coefficients of Profit Margin and Equity multiplier were higher than those produced by Pooled Ordinary Least Squares and Random effect estimation technique while that of Total Assets Turnover was the same. Profit margin and Total Assets Turnover was statistically significant at 0.1% while Equity multiplier was significant at 5%.

*Table 5: Model Estimation Results Dependent Variable Return on Equity (ROE)*

| **Variable** | **Pooled Ordinary Least Square Regression** | | **Random Effects Regression** | | **Fixed Effects Regression** | |
|---|---|---|---|---|---|---|
| | Coefficients | t | Coefficients | Z | Coefficients | t |
| **Profit Margin** | 1.443*** | 4.89 | 1.44*** | 13.44 | 1.550*** | 10.50 |
| **Total Assets Turnover** | .263*** | 5.54 | .263*** | 5.52 | .263*** | 5.48 |
| **Equity Multiplier** | -.017 | -0.74 | -.017 | -1.43 | -.042* | -2.52 |
| **Financial coefficient. (0 for Manufacturing coefficient)** | .159 | 1.06 | .159 | 1.71 | (omitted) | |
| **Constant** | -.231*** | -4.09 | -.231*** | -3.87 | -.150 | -1.63 |
| **N=86, F(4, 81) = 37.62, Prob> F = 0.0000, R-square= 0.812** | | | N=86, wald chi2(4)= 349.12, Prob> chi2 = 0.0000, R-square overall= 0.812 | | N=86, F(3, 75)= 67.28, Prob>F= 0.0000, R-Square overall= 0.638 | |
| **Note * = 5% significant, ** = 1% significant, *** = 0.1% significant** | | | | | | |

## 4.3 Two Sample t tests with Unequal Variance of Profit Margin, Total Assets Turnover and Equity Multiplier.

The hypothesis 4 of this study was to determine if there was significance means differences on the factors influencing the return on equity of manufacturing companies and financial companies. Therefore the authors conducted a two sample t tests for the

factors Profit Margin, Total Assets Turnover and the Equity Multiplier, of which their results are presented in table 6 through 8. Both Profit Margin, Total Assets Turnover and Equity Multiplier results were statistically significant and that the null hypothesis that there is no significance means difference of Profit Margin, Total Assets Turnover and Equity Multiplier as factors influencing Return on equity between Manufacturing and Financial Companies is was assigned a dummy variable 0 in favor of the Alternate hypothesis.

*Table 6: Two- Sample t test with Unequal Variances for variable Profit Margin*

| **Industry** | **Observations** | **Mean** | **Std.Err.** | **Std.Dev** |
|---|---|---|---|---|
| **Financial** | 22 | .298 | .021 | .0999 |
| **Manufacturing** | 64 | .189 | .018 | .145 |
| **Combined** | 86 | .217 | .015 | .1426 |
| **diff** | | .109 | .023 | |

Diff = mean(Financial) – mean(Manufacturing), t = 3.891
Ho: diff = 0, Satterthwaite's degrees of freedom = 53.138
Ha: diff < 0 Ha: diff! = 0 Ha: diff > 0
Pr (T <t) = 0.9999 Pr (|T| >|t|) = 0.0003 Pr(T > t) = 0.0001

*Table 7: Two- Sample t test with Unequal Variances for variable Total Assets Turnover*

| **Industry** | **Observations** | **Mean** | **Std.Err.** | **Std.Dev** |
|---|---|---|---|---|
| **Financial** | 22 | .103 | .004 | .019 |
| **Manufacturing** | 64 | 1.03 | .041 | .330 |
| **Combined** | 86 | .795 | .054 | .498 |
| **diff** | | -.930 | .042 | |

Diff = mean(Financial) – mean(Manufacturing), t = -22.405
Ho: diff = 0, Satterthwaite's degrees of freedom = 64.239
Ha: diff < 0 Ha: diff! = 0 Ha: diff > 0 Pr (T <t) = .0000 Pr (|T| >|t|) = 0.0000 Pr(T > t) = 1.0000

*Table 8: Two- Sample t test with Unequal Variances for variable Equity Multiplier*

| **Industry** | **Observations** | **Mean** | **Std.Err.** | **Std.Dev** |
|---|---|---|---|---|
| **Financial** | 22 | 8.257 | .380 | 1.784 |
| **Manufacturing** | 64 | 1.698 | .121 | .969 |
| **Combined** | 86 | 3.376 | .337 | 3.126 |
| **diff** | | 6.560 | .399 | |

Diff = mean(Financial) – mean(Manufacturing), t = 16.4302
Ho: diff = 0, Satterthwaite's degrees of freedom = 25.3968
Ha: diff < 0 Ha: diff! = 0 Ha: diff > 0 Pr (T <t) = 1.0000 Pr (|T| >|t|) = 0.0000 Pr(T > t) = 0.0000

### 4.4 Interpretations of the Results

The Coefficients of Profit margin (1.55) as by Fixed Effect Regression results is positive and statistically significant at 0.1% and it was the highest coefficient among other independent variables Total Assets Turnover and Equity Multiplier. This implies that given other factors constant Return on Equity and Profit Margin had a positive relation, and that a unit increase in Return on Equity is accounted for by 1.55 unit increase of Profit margin. This result indicates that manufacturing and financial companies relies mostly on Profit Margin to increase Return on Equity. Therefore Shareholders need to keep most watch of the Profit Margin as it has the highest potential in influencing their Return on Equity.

Total Assets Turnover Coefficient (0.26) as by Fixed Effect Regression result is positive and statistically significant at 0.1%. This was the second highest coefficient among other independent variables, it implies that given other factors held constant Total Asset Turnover influences Return on Equity positively by 0.26. The Equity Multiplier Coefficient (-0.04) as by Fixed Effect Regression result is negative and is statistically significant at 5%. This implies that given other factors being held constant Equity Multiplier influences negatively return on Equity by 0.04.

The Equity Multiplier had the lowest coefficient compared to the Profit Margin and Total

Assets Turnover. This indicates that the Return on Equity is mostly attributed to by Profit Margin followed by the Total Assets Turnover and lastly by the Equity Multiplier. Profit Margin and Total Assets Turnover had a positive relation with the Return on Equity which means that an increase in either Profit Margin or Total Assets Turnover leads to an increase in Return on Equity given other factors being held constant. Equity Multiplier had a negative relation with Return on equity that is an increase in Equity Multiplier will result to a decrease in Return on Equity, given other factors being held constant.

The results on the Two Sample t test with unequal variances favors the alternate hypothesis 4 proposed in this study. This indicates that the independent variables PM, TAT and EM for financial companies is different from that of manufacturing companies.

This result was expected prior to this study, as the nature of financial companies and their main business activities is different from that of manufacturing companies.

## 5 Conclusion

This study was about conducting a comparative analysis of factors influencing the Return on Equity, a case study of manufacturing and financial companies listed on Dar es Salaam Stock Exchange Market. Profit Margin, Total Assets Turnover and Equity Multiplier were analyzed as the factors influencing the Return on Equity. The results indicated that manufacturing and financial company managers focus on increasing Profit Margin and Total Assets Turnover while decreasing the Equity Multiplier in order

to increase the Return on Equity. Profit Margin which yielded a high positive coefficient was the most influential factor in influencing ROE.

The results of the study provides information to the shareholders which indicates on what areas managers they employed in the company have been focusing on in managing the company, for example managers have been focused mostly on generating a good profit margin compared to TAT and EM, as the coefficient of PM was the highest. The study aids in minimizing the Agency Problem. As discussed earlier on the Agency Theory, agency problem is as result of managers (agents) actions being incongruent with shareholders (Principal) goals. When shareholders become aware of managers actions on running the company, it becomes easier to question whether such actions are congruent to their own goals. In this case managers have been focusing more on raising profit margin which was as a result of increasing sales and decreasing expenses, and less focus was on utilizing effectively their assets as demonstrated by a lower Total assets turnover and leverage as demonstrated by Equity Multiplier.

The results of this study acknowledges the knowledge provided by the arbitrage theory of which factor models can be constructed to aid in analyzing the price of investments. For this case the return on equity as a price of investment was constructed by factors Profit margin, Total assets turnover and Equity Multiplier. The results indicated that profit margin was the most influential, which had a high coefficient than other factors. Factors used in this study were internal, that are within the company's operations. For further study external factors such as Gross Domestic Product, interest rates, Unemployment rate, could be analyzed, to see how macro-economic factors can influence the Return on Equity.

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**Appendix I: Domestic Listed Companies at DSE as of 2016**

| S/No | DOMESTIC LISTED COMPANIES | Industry sector | Date Listed |
|---|---|---|---|
| 1 | TOL Gases Ltd. (TOL) | Manufacturing | 15th April 1998 |
| 2 | Tanzania Breweries Ltd.(TBL) | Manufacturing | 9th September 1998 |
| 3 | Tanzania Tea Packers Ltd. (TATEPA) | Manufacturing | 17th December 1999 |
| 4 | Tanzania Cigarette Company Ltd. (TCC) | Manufacturing | 16th November 2000 |
| 5 | Tanga Cement Plc.(SIMBA/TCCL) | Manufacturing | 26th September 2002 |
| 6 | Swiss Port Tanzania Plc. (SWIS) | Transportation | 26th September 2006 |
| 7 | Tanzania Portland Cement Company Ltd. (TPCC) | Manufacturing | 29th September 2006 |
| 8 | DCB Commercial Bank Plc. (DCB) | Financial services | 16th September 2008 |
| 9 | National Microfinance Bank Plc. (NMB) | Financial services | 6th November 2008 |
| 10 | CRDB Bank Plc. (CRDB) | Financial services | 17th June 2009 |
| 11 | Precision Air Services Plc. (PAL) | Transportation | 21st December 2011 |
| 12 | Maendeleo Bank Plc. (MBP) | Financial services | 4th November 2013 |
| 13 | Swala Gas (Tanzania) and Oil Plc. (SWALA) | Exploration | 11th August 2014 |
| 14 | Mkombozi Commercial Bank Plc. (MKCB) | Financial services | 29th December 2014 |
| 15 | Mwalimu Commercial Bank Plc.(MCB) | Financial services | 27th November 2015 |
| 16 | YETU Microfinance Plc. (YETU) | Financial services | 10th March 2016 |
| 17 | MUCOBA Bank Plc | Financial services | 8th June 2016 |
| 18 | Dar es salaam Stock Exchange | Financial services | 12th July 2016 |

Source: (DSE, 2016)