

DIAGNOSIS OF FINANCIAL HEALTH OF SELECTED GARMENT FACTORIES IN BANGLADESH: AN APPLICATION OF DUPONT ANALYSIS

¹Md. Nazmul Huda, ²Hamayet Hossain, ³Dr. Md. Abdus Sabur, ⁴Dr. Md. Abu Sina & ⁵Md. Abdul Alim

¹Lecturer, Dept. of Accounting& Information Systems, Islamic University, Kushtia, Bangladesh

²Assistant Professor, Quality Education College, Dhaka, Bangladesh

³Professor, Dept. of Accounting& Information Systems, Islamic University, Kushtia, Bangladesh

⁴Professor, Dept. of Accounting& Information Systems, Islamic University, Kushtia, Bangladesh

⁵Assistant Professor, Department of Marketing, Rajshahi University, Rajshahi, Bangladesh

[Abstract: The study is an attempt to diagnosis and to find out the financial health position of soundness of the selected garments by the application of DuPont approach. The objectives of the study are to overview the components of the selected garment factories in Dhaka district, to examine the situations of the ratios related to DuPont of the selected garment factories over the study period and to provide some suggestions and recommendations to enhance the position of the sample factories. To serve the purpose of the analysis, the statistical tools- geometric mean, EGR, Correlation, Regression, ANOVA and t-test have been used. The study shows that the ROE is the better position than ROI and thus the study is appropriate to conduct the research work through the undertaken topic. The soundness of most of the components is not enough to attain the standard or in the declining trends. The suggestions and recommendations of study are to increase the margin of sales i.e. the net profit margin of the garment factories, to accelerate the assets turnover by improving customers' collection, reducing inventories and selling off surplus assets, action to be taken for improving proportion of the capital of borrowers, to improve management efficiency in cost price effectiveness of the operations, to make effective use of available resources, to minimize the idle capacity and to increase the own funds of the garments factories.]

Key words: Financial Health, Garment Factories, DuPont Analysis, ROE, ROI

Introduction

Financial ratios are used by the owners and financial management of a firm in order to evaluate the financial strengths and weaknesses of the firms. These help not only the owner and financial management of the firm but also the parties outside the firm like creditors, investors and other stakeholders to know the financial position of the firm. DuPont Analysis is a comprehensive investigation of Return on Equity (ROE) of a firm that composed by the three important financial ratios Net Profit Margin, Asset Turnover Ratio, and Financial Leverage Ratio. The degree of relationship of these financial ratios has the significant impact on the financial soundness of a firm.

Now-a-days the readymade garment industry acts as a boost up sector of our economy and pioneering sector of foreign currency earnings. It is the highest contributor in GDP, employment generator as well. More than 3.5 million employees are involved in this sectors and about 60% workers of those are female which means female citizens act as a contributor in GDP (CPD, 2018). In the year of 2017-2018, export earnings are US\$ 30614.76 million which was 83.49% of total exports of the country and more than 8% growth rate based on last year. In the 2018-2019, exports from the garment sector was US\$ 34133.27 million against the total exports of US\$ 40535.04 million which was 84.21% of total exports of the country (GOB, 2019). The main reasons behind the rapid growth in garment sector are density of labor force, skilled human resources, government supports, Export Processing Zones, duty reductions, payment of incentive, international supports like GSP, GSP+, duty free access etc. The historical background of the three selected garment factories in Dhaka district has been selected as sample. These are as follows:

- a) **Desh Garments Limited:** Desh Garment factory was founded in 1977 by Mr. M. Noorul Quader with a joint venture of Daewoo in South Korea as treated as a leader of 100% export-oriented RMG (ready-made garments) production in Bangladesh as well as subcontinent where modern techniques and human resources were introduced of apparel making. In 1978, 128 of employees and management executives (including young ladies) were sent to Daewoo's innovative South Korea factory. There, staff learned about garments making practices and technology over six months of intensive training. These then-cutting-edge techniques were embraced and refined at factory in Bangladesh. Desh Garments grew to become Bangladesh's first public limited company in the garments production sector which was enlisted for IPO 19th June, 1989 in Dhaka Stock Exchange, despite bureaucratic and foreign exchange hurdles. The main products of the garments are woven shirts. Number of employees was 1327. Desh Garments was also Bangladesh's highest EU, American and Canadian quota holder for several years. This garment factory is an A-listed company, actively traded on the Dhaka Stock Exchange (Source: Annual report-2018-2019).
- b) **Tosrifa Industries Limited:** Tosrifa Industries Limited established in 2002, was the first of our concerns to go public and the only one in the share market. Tosrifa Industries Limited has received Tk. 638,721,200 (Taka Sixty Three Crore Eighty Seven Lac Twenty One Thousand and Two Hundred) only as Initial Public Offering (IPO) proceeds through subscription from 24 March 2015 to 09 April 2015. TIL is a market leader in all thing compliance and sustainability. The main products are T-shirts, Polo shirts, Jackets. Today TIL has grown to a production capability of 20000 daily. Number of employees was 1083. The number of machine was 512.

- c) **Stylecraft Limited:** Stylecraft Limited is one of the pioneer Ready Made Garment Manufacturers in Bangladesh who established “Made in Bangladesh” tag as a prestigious brand across the globe was established in 1983 as a Public Limited Company under the Companies Act 1913 and listed with Dhaka StockExchange Limited in the same year by Mr. M. Shamsur Rahman which was in Monipuripara, Tejgaon. The capacity of production has grown rapidly ever since with the help of latest machineries & equipment’s, efficient workforce and long experience. Last year, Stylecraft Limited has exported USD 41.78 million to the world market. New art factory in Gazipur is equipped with the latest machineries and technologies and meets all health and safety guidelines in relation to fire and safety regulations, lighting and emergency procedures. Now, Stylecraft Limited has 32 product lines and 3, 00,000 square feet utilized work area where 5250 employees were engaged and the monthly production capacity 11, 50,000 per month.

Objectives of the Study

The main objective of the study is to emphasis on the analysis of the financial health of the selected garment factories in Dhaka regarding through DuPont model. To achieve the main objective some specific objectives are presented as follows:

- To overview the components of the selected garment factories in Dhaka district in analyzing financial strength by DuPont method;
- To examine the situations of the ratios related to DuPont model of the selected garment factories in Dhaka over the study period under review; and
- To provide some suggestions and recommendations to enhance the better position of the garment industry especially of the sample factories under study.

Review of the Related Literature

Some research works are reviewed for searching research gap of which a small numbers are stated below:

Germaine and Kruger (2017) stated that there was an effect of oil price on accounting profitability of oil and gas companies are mixed and inconclusive. The investigations have been limited to a single country - unlike oil price impact on performance of stocks and develop a model to examine the relationship between the crude oil price and accounting performance measures (as represented by ROA, ROE and EPS) of oil and gas companies listed worldwide. The study employed panel models, random effects and fixed effects estimation to establish the required relationships. Panel models with EPS as response performed better than ROA and ROE responses. This study found that crude oil prices have positive and significant impact on the accounting returns (as represented by ROA, ROE and EPS) of the firms considered.

Tulsin (2014) wrote an article and measured current operating performances and efficiency which is related to sales, cost of goods sold, operating expenses, capital invested etc. Gross profit ratio, Operating profit ratio and return on capital employed ratio are used in the study and conclude that gross profit is controlled by the cost of goods sold. Decreasing return on capital employed implies the inefficiency of the management and inefficient utilization of capital.

Sankaran (2002) focuses on financial performance by examining ten major pharmaceutical companies (five Indian and five multi-national corporations) by using return on investment and other financial performance measures such as liquidity, profitability and solvency. The study pointed to a number of factors that may contribute to the performance i.e net and gross margins were high due to the increase in sales and overall control of costs, debtors and stock turnover were less than the industry average because of the strong brand equity and distribution network, and Debt content was either very low or zero, making them highly solvent.

Erdoğan and et. al. (2015) prepared an important study and opined that an increasingly competitive market conditions, maintaining the activities of companies is closely related to their financial performances. Various financial ratios are used and concluded that the financial decisions made for the future by companies directly affect the performance.

Sina and Matubber (1998) used financial ratios to test the financial strengths and weaknesses of Khulna Newsprint Mills Ltd. They found that due to lack of planning and control of working capital, operational inefficiency, obsolete store, ineffective credit policy, increased cost of raw materials, labor and overhead, the position of the company was not good.

Sanny & Yanti (2019) stated is to analyze financial performance with the analysis of DuPont using the ratio approach. The method used in this study is a comparative approach that compares between ROI and ROE to determine whether there may be differences between these ratios to analyze financial performance using a DuPont. It shows that there are significant differences between ROI and ROE in DuPont which means that the analysis using a DuPont better than use of ROE.

From the above reviews it is found that there is no comprehensive research work on diagnosis of financial health of garment industry in Bangladesh through DuPont analysis. So the researcher have chosen the topic “Diagnosis of Financial Health of Selected Garment Factories in Bangladesh: An Application of DuPont Approach” for their research work.

Important Terms and Concepts

DuPont Analysis : DuPont Analysis (also known as the DuPont identity, DuPont equation, DuPont framework, DuPont Model or the DuPont method) is an expression which breaks ROI (return on investment) or ROE (Return on Equity) into three parts. The name is derived from the DuPont Corporation that started using this formula in the 1920s. DuPont explosives salesman Donaldson Brown invented this formula in an internal efficiency report in 1912 (Phillips, 2015). Basically DuPont Analysis is an examination of Return on Equity (ROE) of a company which analyses Net Profit Margin, Asset Turnover, and Financial Leverage. This analysis was developed by the DuPont Corporation in the year 1920. In simple words, it breaks down the ROE to analyze how corporate can increase the return for their shareholders.

Formula of DuPont Analysis

The **Return on Assets (ROA)** ratio developed by DuPont for its own use is now used by many firms to evaluate how effectively assets are used. It measures the combined effects of profit margins and asset turnover (Groppelli and Ehsan, 2000).

$$\text{ROA} = (\text{Net Income} \div \text{Revenue}) \times (\text{Revenue} \div \text{Average Total Assets})$$

$$= (\text{Net Income} \div \text{Average Total Assets})$$

The return on equity (ROE) ratio is a measure of the rate of return to stockholders (Groppelli and Ehsan, 2000). Decomposing the ROE into various factors influencing company performance is often called the DuPont system (Bodie, Alex and Alan, 2004).

$$\text{ROE} = (\text{Net Income} \div \text{Average Total Equity})$$

$$= (\text{Net Income} \div \text{Pretax Net Income}) \times (\text{Pretax Income} \div \text{EBIT}) \times (\text{EBIT} \div \text{Revenue}) \times$$

$$\text{Revenue} \div \text{Average Total Assets} \times (\text{Average Total Assets} \div \text{Average Total Equity})$$

Where,

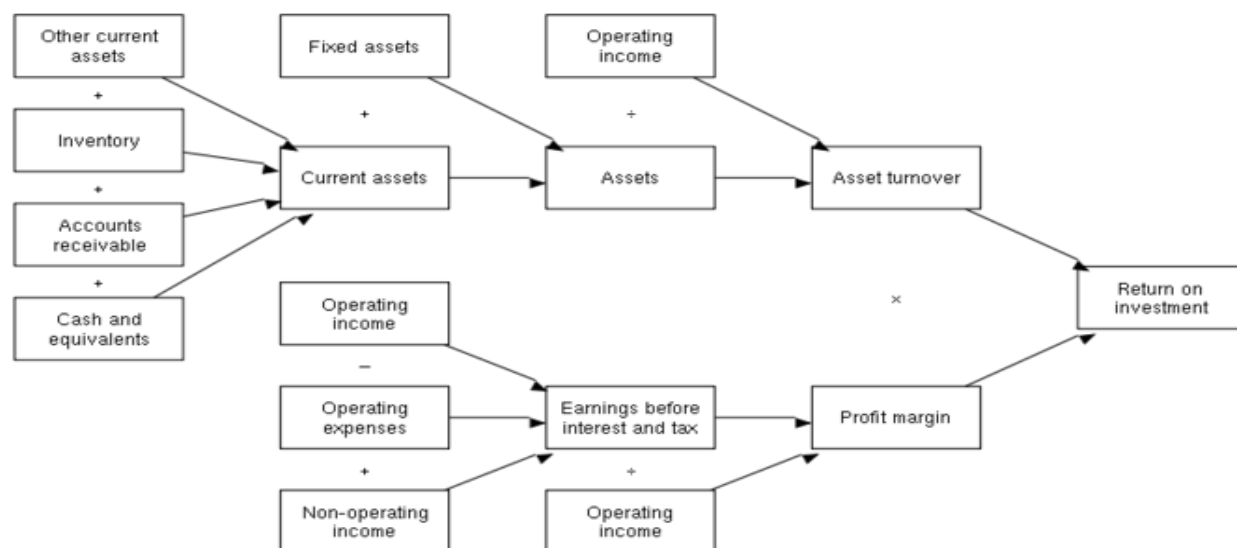
- Net Income = net income after taxes
- Equity = shareholders' equity
- EBIT = Earnings before interest and taxes
- Pretax Income is often reported as Earnings Before Taxes or EBT

This decomposition presents various ratios used in fundamental analysis.

- The company's tax burden is (Net income $\div$ Pretax profit). This is the proportion of the company's profits retained after paying income taxes. [NI/EBT]
- The company's interest burden is (Pretax income $\div$ EBIT). This will be 1.00 for a firm with no debt or financial leverage. [EBT/EBIT]
- The company's operating income margin or return on sales (ROS) is (EBIT $\div$ Revenue). This is the operating income per dollar of sales. [EBIT/Revenue]
- The company's asset turnover (ATO) is (Revenue $\div$ Average Total Assets).
- The company's equity multiplier is (Average Total Assets $\div$ Average Total Equity). This is a measure of financial leverage.

It is also expressed through the following chart:

DuPont Model



DuPont Model: A flow chart representation of the DuPont Model.

It is expressed through the following formula too:

$$\text{Return on Equity} = \text{Net Profit Margin} \times \text{Asset Turnover Ratio} \times \text{Financial Leverage}$$

$$= (\text{Net Income}/\text{Sales}) \times (\text{Sales}/\text{Total Assets}) \times (\text{Total Assets}/\text{Total Equity})$$

Return on Equity (ROE): Return on Equity (ROE) measures the profitability of a corporation in relation to stockholders' equity (Hossain, 2006).

Return on Assets: (ROA/ROI) indicates how much net income is generated per taka on assets or investment (Hossain, 2006).

Net Profit Margin: Profit margin is a measure of profitability. This ratio measures net income of sales and is calculated by dividing net income by sales. (Brigham & Houston, -2015).

Asset turnover (ATO), total asset turnover, or asset turns is a financial ratio that measures the efficiency of a company's use of its assets in generating sales revenue or sales income to the company (Bodie, Z., Alex, K. and Alan, J. M. (2004).

Net Income: For businesses, net income indicates how well a company is managing its profit (both earnings and expenses). For individuals, this number is defined more loosely: it can refer to your gross income net of expenses, or your take-home pay (Herman and McCamish, 2020)

Equity: Equity is the difference between what your business is worth (your assets) minus what you owe on it (your debts and liabilities) (Gilmour0, 2016). Equity = Assets – Liabilities

Pretax Income: The FREE TAX DICXTIONARY defines that Pretax Income is an individual's total income before he/she pays any income tax or other tax, but after he/she takes deductions.

Financial Leverage: Financial leverage is any technique involving using debt (borrowed funds) rather than fresh equity in the purchase of an asset, with the expectation that the after-tax profit to equity holders from the transaction will exceed the borrowing cost, frequently by several multiples—hence the provenance of the word from the effect of a lever in physics, a simple machine which amplifies the application of a comparatively small input force into a correspondingly greater output force (Brigham, 1995).

The Multiple-regression: Multiple-regression is a statistical procedure in which a dependent variable (Y) is modeled as a function of more than one variable ($X_1, X_2, X_3 \dots X_n$). The population multiple-regression model may be written as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_k X_k + \varepsilon,$$

Where,

β_0 is the intercept and other β_i is the slope terms associated with the respective independent variables. In this model, ε represents the population error term, which is the difference between the actual Y and that predicted by the regression model (Y). The ordinary least-squares (OLS) criterion for the best multiple-regression model is that the sum of squares of all the terms be minimized (Gupta, 2007).

Correlation: Correlation Analysis is a statistical technique used to indicate the nature and degree of relationship existing between one variable and the other(s) (Gupta, 2007).

The Exponential Growth Rate (EGR):

Growth rates from two sets of data points can be estimated in terms of a following natural exponential function:

$S = Pe^{rt}$ where P = Principal value, S = Total value, r = growth rate, e = Exponential base and t = time period (Dowling, 1999). It is widely use in business, Economics and industry to measure the increasing or decreasing position of different components of input-output relationship that changes between two periods.

Statement of the Problems

DuPont Analysis is a powerful technique by which a firm can identify the position of the financial areas of the Net Profit Margin, Asset Turnover Ratio and Financial Leverage. The Net Profit Margin area can be further decomposed into EBIT Margin, Tax Burden, and Interest Burden to have an even deeper understanding of the financial soundness of the firm. It reveals how equity capital has been used efficiently by the management of the firm to achieve satisfactory level of returns that leads the firm desired goal of business. It is found that the selected garments are found to be failed to achieve homogeneous satisfactory level of returns having same types of investment modes. The problems are caused by the lack of uniform situations of the components regarding DuPont of selected garments at Dhaka. That results to decrease the interest and bar to maximize wealth of the existing as well as prospective shareholders of the selected garments.

Hypothesis of the Study

- i) $H_0:1$ There is no significant difference between ROE and ROI of the selected garment factories under study period.
- ii) $H_0:2$ There is no significant among the selected garment factories for each of the ratios of DuPont such as Net Profit Margin, Assets Turnover, Financial Leverage and ROE under the study period.

Methodology of the Study

To analyze the financial ratios based on DuPont of the selected readymade garment factories of Dhaka district, this study covers the period of 2014-2019 (six years) based on secondary data from Desh Garments Limited, Tosrifa Industries Limited and Stylecraft Limited as the sample by the technique of purposive selection. Data will be collected mainly through secondary sources. The information from annual reports/audited reports of Desh Garments Limited, Tosrifa Industries Limited and Stylecraft Limited, journals, articles, online published journals, website of BGMEA, Export Promotion Bureau, Ministry of Finance, Bangladesh Bureau of Statistics (BBS) and CPD (Centre for Policy Dialogue) will be collected for this study. The collected data have been analyzed by using descriptive measure as selected financial ratios of DuPont like Net Profit Margin, Asset Turnover Ratio and Financial Leverage and to analyze by using statistical tools and techniques like correlation and regression with the help of SPSS Version-22. Differences between ROE and ROI of the selected garment factories will also be determined.

Analysis and Interpretation:

Table No.1
Comparative Analysis of Descriptive Statistics the Sample Garments Regarding DuPont Variables

Name of Sample Garments	Used Measurement Tools				
	Net Profit Margin				
	Minimum	Maximum	G. Mean	EGR	C.V
Desh Garments Limited	0.014	0.092	0.035	0.102	85.803
Tosrifa Industries Limited	0.004	0.088	0.046	-0.494	65.901
Stylecraft Limited	0.003	0.011	0.006	0.168	56.486
Sample	0.010	0.039	0.022	-0.075	54.404
	Assets Turnover				
Desh Garments Limited	1.220	1.682	1.513	0.042	11.460
Tosrifa Industries Limited	0.347	0.891	0.527	-0.113	37.729
Stylecraft Limited	2.493	3.886	3.098	-0.064	20.907
Sample	1.072	1.618	1.352	-0.045	17.333
	Financial Leverage				
Desh Garments Limited	2.582	7.600	3.919	-0.092	48.608
Tosrifa Industries Limited	1.161	2.062	1.428	0.080	24.926
Stylecraft Limited	4.136	5.466	4.696	-0.046	12.150
Sample	2.465	3.521	2.973	-0.020	12.553
	ROE				
Desh Garments Limited	0.086	0.421	0.210	0.052	63.518
Tosrifa Industries Limited	0.004	0.087	0.034	-0.527	82.522
Stylecraft Limited	0.053	0.206	0.094	0.057	59.341
Sample	0.037	0.166	0.088	-0.139	48.952

Source: Compiled from annual reports from 2013-2014 to 2018-2019.

Table No.1 shows a clear presentation of the results of comparative analysis of descriptive statistics with Exponential Growth Rate (EGR) of the ratios Net Profit Margin, Assets Turnover, Financial Leverage and ROE of selected garments for the period under review. EGR with negative sign indicates declining trend and positive sign shows upward trend of the ratio for concern garments. The Geometric Mean (G. Mean) of Net Profit Margin is found to be below than standard norm (4%-6%) for 0.6 percent (Stylecraft Limited), 3.5 percent (Desh Garments Limited), 2.2 percent (Sample) and within the norm 4.6 percent for (Tosrifa Industries Limited). The G. mean of Assets Turnover ratio is shown higher than the standard norm (2 times of Total asset) by 3.098 for Stylecraft Limited. The Financial Leverage has the better G. Mean of Desh Garments Limited (3.919) and Stylecraft Limited (4.696) compare to the Sample (2.973). The better ROE is found to be 0.210 in Desh Garments Limited and 0.094 in Stylecraft Limited compare to the Sample (0.088).

- i) $H_0:1$ There is no significant difference between ROE and ROI of the selected garment factories under the study period.

Table No. 2
t-Test: Paired Two Sample for Means of ROE and ROI

Name of the Selected Garments	Mean of (ROE)	Mean of (ROI)	Coefficient of Correlation	Calculated value t-Stat
Desh Garments Limited	0.244	0.069	0.857*	4.52*
Tosrifa Industries Limited	0.048	0.037	0.985*	4.377*
Stylecraft Limited	0.104	0.022	0.967*	4.477*
Sample	0.132	0.043	0.808*	4.219*

Source: Compiled from annual reports from 2013-2014 to 2018-2019. *Significant at 1 percent level.

This table indicates the results of t-Test: Paired Two Sample for Means between the variables Return on Equity (ROE) and Return on Investment (ROI) of the selected garments under review. The coefficient of correlation and t-stat for each is found to be significant at 1 percent level leads to reject the null hypothesis. So that the significant association is identified between each of the selected garments with significant deference regarding two sample for means of ROE and ROI. Better mean is to be found in ROE than ROI for every case of exploration. So, it is conclude that ROE is the better than ROI to analysis the financial sound ness of the study.

- ii) H_0 : There is no significant difference among the selected garments for each of the ratios of DuPont such as Net Profit Margin, Assets Turnover, Financial Leverage and ROE under the study period.

Table No. 3
ANOVA-Test for DuPont Variables on the Selected Garments

Name of the Variables	Sum of Square			Degree of Freedom			Mean Sum of Square		F-ratio
	1	2	3	1	2	3	1	2	
Net profit Margin	0.010	0.009	0.019	2	15	17	0.005	0.001	7.895*
Assets Turnover	20.717	2.446	23.164	2	15	17	10.359	0.163	63.517*
Financial leverage	37.061	20.401	57.462	2	15	17	18.536	1.360	13.625*
ROE	0.122	0.109	0.231	2	15	17	0.061	0.007	8.445*

Source: Compiled from secondary data, 1=Between Groups, 2=Within Groups, 3=Total,

The critical value of F = 3.682 and *significant at 0.00 percent level with the value of p=0.00.

Table No. 3 shows the outcomes of ANOVA-Test for DuPont variables on selected garments under study where each of the calculated value of F-ratio 7.895, 63.517, 13.625 and 8.445 is greater than that of the critical value of F=3.682 with significant at 0.00 percent level. So the null hypothesis is rejected and it is concluded that there is a significant difference among the selected garments for each of the ratio Net Profit Margin, Assets Turnover, Financial Leverage and ROE under the study period.

Table No. 4
Measures of Pearson Correlation Coefficient of ROE with each DuPont Variables

Selected Garments	Correlation Coefficient of ROE with each of the Variables		
	Net profit Margin	Assets Turnover	Financial leverage
Desh Garments Limited	0.816*	0.651	-0.172
Tosrifa Industries Limited	0.848*	0.810	-0.847*
Stylecraft Limited	0.792	0.146	0.217
Sample	0.267	0.146	0.297

Source: Compiled from annual reports from 2013-2014 to 2018-2019, *Significant at 1 percent level.

Table No. 4 depicts the measurements of Pearson correlation coefficient of ROE with each of the DuPont variables of selected garments under study. The Net Profit Margin is found to be significant positive correlation by Desh Garments Limited and Tosrifa Industries Limited respectively of degree 0.816* and 0.848*. The negative coefficient of correlation of degree -0.172 and -0.847* respectively found in Desh Garments Limited and Tosrifa Industries Limited. Rest of the cases show the positive and dissimilar degree of relationship with ROE.

Table No. 5
Regression Analysis of DuPont Variables

Variables Name the Variables	Standardized Beta	t-Value	VIF	R-Square
Net profit Margin	1.031	3.922*	2.245	0.60
Assets Turnover	0.188	0.728	2.173	
Financial leverage	0.900	3.221*	2.534	

Source: Compiled from annual reports from 2013-2014 to 2018-2019, *Significant at 1 percent level.

This table shows the regression analysis of DuPont variables of selected sample garments where the ratio, Return on Equity (ROE) is considered as dependent variable with the predictors are Net Profit Margin, Assets Turnover and Financial Leverage. The Net Profit Margin (3.922*) and Financial Leverage (3.221*) show the positive significant impact on ROE at 1 percent level. The rest of the cases have the positive insignificant impact on ROE where 60 percent variance it is explained by the predictors.

Findings of the Study

DuPont Analysis is a comprehensive investigation of Return on Equity (ROE) of a firm that composed by the three important financial ratios Net Profit Margin, Asset Turnover, and Financial Leverage. The degree of relationship of these financial ratios has the significant impact of the financial soundness of a firm. According to first hypothesis and Table No. 2, the coefficient of correlation and t-stat for each is found to be significant at 1 percent level. So that the significant association is identified between each of the selected garments with significant deference regarding two sample for means of ROE and ROI. Better mean is to be found in ROE for every case of exploration. The diagnosis as shown in Table No.1, shows a clear presentation of the results of comparative analysis of descriptive statistics with Exponential Growth Rate (EGR) of the ratios Net Profit Margin, Assets Turnover, Financial Leverage and ROE of selected garments where the values of EGR with negative sign indicates declining trend and positive sign shows upward trend of the ratio for concern garments. The Geometric Mean (G. Mean) of Net Profit Margin is found to be below than standard norm (4%-6%) for 0.6 percent (Stylecraft Limited), 3.5 percent (Desh Garments Limited), 2.2 percent (Sample) and within the norm 4.6 percent for (Tosrifa Industries Limited). The G. mean of Assets Turnover ratio is shown higher than the standard norm (2 times of Total asset) by 3.098 for Stylecraft Limited. The Financial Leverage has the better G. Mean of Desh Garments Limited (3.919) and Stylecraft Limited (4.696) compare to the Sample (2.973). The better ROE is found to be 0.210 in Desh Garments Limited and 0.094 in Stylecraft Limited compare to the Sample (0.088). The significant variations in mean values of DuPont variables for the selected garments have been found out by the hypothesis (ii) in Table No. 3.

The Correlation Coefficient of ROE with each DuPont Variables shows the degree of relationship where the Net Profit Margin is found to be significant positive correlation by Desh Garments Limited and Tosrifa Industries Limited respectively of degree 0.816* and 0.848*. The negative coefficient of correlation of degree -0.172 and -0.847* respectively found in Desh Garments Limited and Tosrifa Industries Limited. Rest of the cases show the positive and dissimilar degree of relationship with ROE.

In Table No. 5, regression analysis of DuPont variables determine Net Profit Margin (3.922*) and Financial Leverage (3.221*) show the positive significant impact on ROE at 1 percent level. The rest of the cases have the positive insignificant impact on ROI where 60 percent variance it is explained by the predictors.

Identified Problems

On the basis of analyses, interpretation and findings the identified problems have been furnished as below:

- i) The Net profit Margin is low to the standard norm and somewhere shows declining trends for the selected garments under review period. That impact negatively on cost price effectiveness of the operations, inadequate return to the owners as well as to unable to face the garments to withstand adverse economic situation such as selling price is declining, cost of production is rising and demand of products is falling.
- ii) There are below standard norm of Assets Turnover ratios have been identified in most of the selected garments industry indicating inefficiency to utilize available resources and presence of idle capacity.
- iii) The Financial leverage is declining over the study period in most of the cases of the selected garments indicating owned funds are in the decreasing.
- iv) It has been identified the ROE values determined for the selected garments are below than that of sample with declining trend that impacts negatively on the wealth of owners of the selected garments

Conclusion

The study is an attempt to diagnosis the selected garment factories in Dhaka by the DuPont related variables. The study suggests that the ROE is the better than ROI of those factories. Most of the components are not sound to attain the standard norm or are in the declining trends which can be overcome to execute the suggestions and recommendations provided on the basis of identified problems.

Recommendations

The findings of the research results recommend the following suggestions and for the betterment of the factories.

- i) The margin of sales i.e. The Net profit Margin of the garments industry should be increased.
- ii) To accelerate the Assets Turnover by improving customers' collection, reducing inventories and selling off surplus assets.
- iii) The financial leverage should be adequate taking action in improving proportion of the capital of borrowers.
- iv) Cost price effectiveness of the operations should be improved for enhancing management efficiency.
- v) Available resources should be used efficiently and idle capacity must be minimized.
- vi) Owned funds of the garment industry should be increased.

References

Books and Articles:

- [1] Bodie, Z., Alex, K., Alan, J. M. (2004). *Essentials of Investments*, 5th ed. NY: McGraw-Hill Irwin. pp. 458–459.
- [2] Brigham, E. F. (1995). *Fundamentals of Financial Management*. NY: McGraw-Hill Irwin.
- [3] Brigham, E. F & Houston, J. F. (2015), *Fundamentals of Financial Management*, Concise Eighth Edition, USA: Cengage Learning.
- [4] Carlson, R. (July, 2020) What is equity? *Business Finance*.
<https://www.thebalancesmb.com/the-business-definition-of-equity-393287>. Retrieved on July 20, 2020
- [5] Dowling, Edward T. (1999). Introduction to theory and problems of mathematical economics, *Singapore: Schaum's Outline Series*, NY: The McGraw-Hill Companies, Inc.
- [6] Erdoğan, E. O., Erdogan, M., & Omurbek, V. (2015). Evaluating the effects of various financial ratios on company financial performance: Application in Borsa İstanbul, *Business and Economics Research Journal*, Volume- 6, Number- 1. Pp.35-42
www.berjournal.com
- [7] Farlex. Pretax Income. *THE FREE TAX DICTIONARY*. <https://financial-dictionary.thefreedictionary.com/pretax+income>
- [8] Germaine, D. & Kruger, J. (December, 2017). Determinants of oil price influence on profitability performance measure of oil and gas companies: A panel data perspective, *International Journal of Economics, Commerce and Management*, Vol. V, Issue 12, Licensed under Creative Common, Page 993. <http://ijecm.co.uk/>.
- [9] Groppelli, A. A. and Ehsan, N. (2000). *Finance*. 4th ed. Barron's Educational Series, Inc. pp. 444–445. ISBN 0-7641-1275-9.
- [10] Gupta S. P. & Gupta M. P. (2007). *Business Statistics*. Fourteenth Enlarged Edition. India: Sultan Chand & Sons.
- [11] Herman, M. and McCamish, B. (August, 2020). Net Income, *Investing Answers Dictionary*.
<https://investinganswers.com/dictionary/n/net-income>. Retrieve on September 1, 2020.
- [12] Honey, S. (2019). Awareness regarding sustainable marketing and its implications: A study on RMG sector in Bangladesh. *Journal of ELT and Education*, 2(2): 34-40.
- [13] Hossain, M. (2006). *Cost and Management Accounting*. Dhaka: Universal publication Limited.
- [14] Islam M. M. & Adnan A. T. M. (2016), Improving ready-made garment productivity by changing worker attitude, *European Scientific Journal*, vol.12, No. 4. <http://dx.doi.org/10.19044/esj.2016.v12n4p436>.
- [15] Phillips. M. (December, 2015). The DuPont invention that changed how things work in the corporate world. *Quartz* (publication). Retrieved on 9 December 2015.
- [16] Sankaran, K. (2002). Financial performance evaluation of pharmaceutical companies in India, *Finance India*, 16(3), pp. 1059–1061.
- [17] Sanny A, &Yanti E. D. (2019). DuPont analysis integrative approach to ratio analysis at PT. Federal International Finance. *International Journal of Research and Review*. Vol. 6, Issue: 11, pp-319-326. (www.ijrrjournal.com) 319;
- [18] Sina, A. & Matubber, M. A. (1998). Financial statement analysis of Khulna Newsprint Mills Ltd. *Islamic University Studies*, Part-C, Vol-1, pp.211-223.
- [19] Singh, Y. (2015). *Fundamental of Research Methodology and Statistic*. New Delhi: New Age International (P) Ltd., Publishers, p.88.
- [20] Tulsian, M. (2014). Profitability analysis: A comparative study of SAIL & TATA Steel. *IOSR Journal of Economics and Finance (IOSR-JEF)*, Volume- 3, Issue- 2. Ver. I, PP19-22. www.iosrjournals.org

Websites:

- [1] <https://www.dhakatribune.com/business/economy/2019/08/04/rmg-global-market-share-bangladesh-loses-as-vietnam-gains>
- [2] <http://www.epb.gov.bd/site/page/7bd7d4d7-cdba-4da3-8b10-f40da01e49b6/MarketAccess-Facilities>
- [3] <https://mof.portal.gov.bd/site/page/28ba57f5-59ff-4426-970a-bf014242179e/Bangladesh-Economic-Review>
- [4] <http://rmg-study.cpd.org.bd/cpd-rmg-study-2018-concluded-with-recommendations-for-sustainability-of-the-rmg-sector/>
- [5] <https://corporatefinanceinstitute.com/resources/knowledge/finance/dupont-analysis/>
- [6] <https://courses.lumenlearning.com/boundless-finance/chapter/the-dupont-equation-roe-roa-and-growth>
- [7] <https://courses.lumenlearning.com/boundless-finance/chapter/the-dupont-equation-roe-roa-and-growth/>
- [8] <http://www.til.com.bd/investors.php?p=1>
- [9] <https://www.deshgroup.com/factory.html>
- [10] <http://stylecraftltd.com/investors/>