

**INTERACTIVE INFORMATION VISUALIZATION OF
FINANCIAL STABILITIES OF COMPANIES FOR
EFFECTIVE STOCK MARKET DECISION MAKING**

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Degree of Master of Business Administration in Information Technology

Department of Computer Science and Engineering

University of Moratuwa

Sri Lanka

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DECLARATION

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ABSTRACT

The Stock market is where billions of money exchanging daily. Investment decisions of the Stock market are very critical. There are many types of factors affect investment decisions. Among them, observation of share price fluctuation is the very common method that many investors are referring. Therefore, they invest money with a risk of failure.

Share price fluctuation does not directly reflect the financial stability of companies. It may have various other reasons. The financial performance analysis of companies is one of the best methods to analyze the financial stability of companies. It can be used for industry-wise financial performance analysis. From 2012 to 2017 financial years data from annual reports were collected and calculated as required. The year 2018 was forecasted using a simple moving average. Ten financial ratios under four main types of ratios have calculated. These are price to book, earning per share, price to earnings and dividends payout ratios under the stock market ratio, return on equity, net margin and asset turnover ratio under the profitability ratio, debt to asset and debt to equity ratios under the solvency ratio and finally liquidity versus quick acid ratios under the liquidity ratio. These data were taken for descriptive analysis and Altman's Z-score and forecasted year were calculated for predictive analysis. Financial ratios describe financial performances throughout the given period and Altman's Z-score describes the prediction of the likelihood of being bankruptcy.

Very few ratios do exist in annual reports but there is no interpretation has described. For calculation and interpretation, high knowledge of finance and accounting is required. Therefore, the neediness of the easy analyzing tool is present. The research addressed this problem by proposing an interactive information visualization of financial performance to help investors to make clever decisions in the stock market.

The research was conducted as a quantitative analysis based on survey results of the user-based evaluation. The user-based evaluation was performed for the preference test and A/B test with users who are interested in company data. The preference test was performed to identify how people read, understand and analyze data provided by the graphs and also drawbacks of graphs. Based on the results of the preference test, the proposed dashboard was designed as a solution for interactive information visualization. The dashboard of typical graph designs with existing data found in an annual report and the proposed dashboard design with new insights creation were tested under the A/B test.

This research found that the proposed dashboard design was easy to read and understand insights of the data, even though if the user does not have good domain knowledge. It leads users to the right direction where users should be.

Keywords: Interactive information visualization, financial performance analysis, financial ratios, Altman's Z-score, graph design techniques, preference test, A/B test.

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LIST OF ABBREVIATIONS

ACC	Access Engineering PLC
CSE	Colombo Stock Exchange
D/A	Debt to Asset ratio
D/E	Debt to Equity ratio
DPS	Dividend per share
EPS	Earnings Per Share
IIV	Interactive Information Visualization
IT	Information Technology
IV	Information Visualization
MCQ	Multiple Choice Questions
MTD	MTD Walkers PLC
LKM	Lankem Development PLC
P/B	Price to Book ratio
P/E	Price to Equity
PLC	Public Limited Companies
ROE	Return on Equity