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This research work is centred on the return on investment that informs investors and entrepreneurs on general performance of a company. The research problem was a modification of an existing model. This was done by incorporating rate of reinvestment of return and return on investment that follow random process. In addition to the modification, the existing model was extended from a two to four compartment stochastic differential equation. Formulation of a four- compartment stock market model was based on a four dimensional geometric Brownian motion. Data were collected from Nigerian Stock Exchange (NSE) for the period of 2007 -2014 to validate the model formulated. Transition probability of stock price and its volatility was zero (0) at 19th long run (iteration) from where the transition probability became stable. Also, the transition probability of return on investment and its volatility was 0.5 at 19th long run (iteration). This implies that stock price and its volatility became unstable on the long run while return on investment and its volatility became stable on the long run with a probability of 0.5. We concluded that return on investment was considered to be the best index to use to study the general performance of companies rather than stock price. (Received February 09, 2016)