

## Optimization of a High-Growth Investment Portfolio for the South African Market Using Predictive Analytics

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**Abstract :** This report aims to develop a strategy for assisting short-term investors to benefit from the current economic climate in South Africa by utilizing technical analysis techniques and predictive analytics. As part of this research, value investing and technical analysis principles will be combined to maximize returns for South African investors while optimizing volatility. As an emerging market, South Africa offers many opportunities for high growth in sectors where other developed countries cannot grow at the same rate. Investing in South African companies with significant growth potential can be extremely rewarding. Although the risk involved is more significant in countries with less developed markets and infrastructure, there is more room for growth in these countries. According to recent research, the offshore market is expected to outperform the local market over the long term; however, short-term investments in the local market will likely be more profitable, as the Johannesburg Stock Exchange is predicted to outperform the S&P500 over the short term. The instabilities in the economy contribute to increased market volatility, which can benefit investors if appropriately utilized. Price prediction and portfolio optimization comprise the two primary components of this methodology. As part of this process, statistics and other predictive modeling techniques will be used to predict the future performance of stocks listed on the Johannesburg Stock Exchange. Following predictive data analysis, Modern Portfolio Theory, based on Markowitz's Mean-Variance Theorem, will be applied to optimize the allocation of assets within an investment portfolio. By combining different assets within an investment portfolio, this optimization method produces a portfolio with an optimal ratio of expected risk to expected return. This methodology aims to provide a short-term investment with a stock portfolio that offers the best risk-to-return profile for stocks listed on the JSE by combining price prediction and portfolio optimization.

**Keywords :** financial stocks, optimized asset allocation, prediction modelling, South Africa

**Conference Title :** ICBEFSM 2023 : International Conference on Business, Economics, and Financial Sciences, Management

**Conference Location :** Cape Town, South Africa

**Conference Dates :** November 06-07, 2023