**Analyzing The Stock Market for Informed Investment Approach using Power BI**

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**A Business Intelligence Project submitted to iLabafrica in partial fulfilment of the requirements for the award of the Certificate in Business Intelligence**

**With Power BI.**

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## Executive Summary

The Growth Stock Analysis Dashboard Project, built with Microsoft Power BI, addresses this by streamlining the stock evaluation process for mid- to long-term investment strategies. This initiative integrates global stock market data, economic indicators, and sector performance metrics into a unified, interactive dashboard. This empowers stakeholders to make data-driven decisions with enhanced speed and precision.

The dashboard consolidates data from the World Stock Prices Dataset from Kaggle with Key functionalities including latest data on stocks, advanced filtering by sector and region, comprehensive volatility and return metrics. These features enable Portfolio Managers and Investment Analysts to quickly monitor growth trends, evaluate stock performance, and assess risk-adjusted returns, hence reducing analysis time.

By automating data consolidation and report generation, the dashboard enhances operational efficiency for financial teams and supports compliance. Its interactive design, drill-down capabilities, and export options for executive reporting facilitate a seamless transition from static reports to dynamic, self-service analytics. Ultimately, this project aimed to strengthen investment, Time Intelligence and aligns technology with the strategic objective of optimizing growth-focused portfolio performance.

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# Chapter 1 :Introduction

## 1.1 Background to study

In the context of an increasingly dynamic global economy, the identification and exploitation of growth stock opportunities have become both essential and inherently complex. Investment professionals—including portfolio managers and financial analysts—are routinely required to evaluate extensive volumes of fragmented data originating from multiple platforms, each characterized by unique standards, formats, and update frequencies. This fragmentation not only impedes analytical efficiency but also increases the likelihood of missed opportunities within rapidly evolving markets.

The Growth Stock Analysis Dashboard Project addresses these challenges through the development of a centralized and interactive analytics solution utilizing Power BI. Specifically designed to support mid- to long-term investment strategies, the dashboard integrates both historical and real-time financial data into a unified, visually intuitive interface. This platform enables users to monitor growth stocks across global markets, analyze sectoral and geographic trends, assess volatility and returns, and benchmark performance against major market indices.

## 1.2 Purpose of Study

The primary objective of this initiative is to enhance the speed, accuracy, and transparency of investment decision-making processes. By minimizing manual data processing and automating report generation, the dashboard allows finance teams to allocate more resources to analytical tasks rather than administrative functions. Furthermore, the solution is designed to facilitate compliance with financial regulations and data protection policies, thereby ensuring responsible data management in accordance with industry standards such as the General Data Protection Regulation (GDPR).

The implementation of this project proceeded in phases, commencing with data integration , Model relationships and the establishment of core dashboard functionalities. Subsequent phases introduced advanced features, including drill-down capabilities, export options, and comprehensive stakeholder training. Ultimately, it serves as a robust tool that transforms raw market data into actionable insights, thereby enabling stakeholders to identify high-potential stocks and optimize portfolio performance in a more informed, efficient, and strategic manner.

**Chapter 2:Objectives and Problem Statement**

## 2.1 Project Aim

The purpose of this project is to develop and implement a Power BI-based dashboard that consolidates global stock data, provides interactive analytics, and supports mid- to long-term investment strategies. This tool aims to empower investment professionals to efficiently identify, monitor, and evaluate growth stocks across diverse markets.

## 2.2 Objectives

1. To conduct a comparative analysis of stock performance across various international markets and countries.
2. To evaluate the long-term performance and cyclical patterns of diverse brands within the stock market.
3. To identify leading countries and companies within the global stock market.
4. To analyze the relationship between company-specific factors, industry dynamics, and regional market conditions and their impact on stock price movements.
5. To identify and quantify high-price volatility stocks.

# Chapter 3 :Methodology

## 3.1 Data collection

The analysis utilizes multiple data sources to ensure comprehensive market coverage. The primary dataset consists of the World Stock Prices Dataset from Kaggle providing daily closing prices, historical performance data spanning 24+ years, sector and industry classifications, country, market capitalization metrics.

## 3.2 Data Preprocessing

The initial stage focused on data cleaning, which included handling missing values either through forward-filling or removing incomplete entries along with correcting data types such as converting date fields to proper Date/Time format and financial figures to decimals. Duplicate records were removed based on primary keys , ticker symbol, and exchange, while irrelevant entries were filtered out to maintain relevance and performance integrity.

Following this, several dimension tables were created to support a star schema model. A Date Dimension was generated to provide robust time-based filtering and included attributes such as fiscal year, quarter, and day of the week. A Stock Dimension was created using distinct combinations of ticker symbols, company names, sectors, and industries, with each entry assigned a unique Stock ID for relational mapping. A country Dimension was designed to include exchange-specific metadata like name, country, currency, and time zone.

To connect the model logically, one-to-many relationships were established between the fact table and each dimension table: linking stock IDs, exchange codes, and dates. The relationships were maintained as single-directional to preserve clarity in the filter context. To enhance analytical capabilities, calculated columns such as daily price change percentage and 7-day moving averages were added. DAX measures were created for metrics like total traded volume, average closing price, volatility, and year-over-year stock growth. Additionally, the Power BI data model was optimized by disabling auto-generated date hierarchies, indexing key columns in Power Query for performance improvement, and leveraging aggregate tables to accelerate report loading times.

## 3.3 Stakeholder Engagement

Key stakeholders include portfolio managers, investment analysts, finance leadership, IT support, compliance officers, and the data management team. Stakeholder requirements were gathered through interviews and iterative feedback sessions.

## 3.4 Success Criteria.

The success of this project was evaluated based on its capacity to enhance the speed, accuracy, and strategic effectiveness of stock analysis and investment decision-making. The performance indicators include accelerated identification of cyclical patterns and long-term trends across various sectors, thereby facilitating optimized portfolio allocation, timely market entry and exit decisions, and the formulation of risk-managed sector rotation strategies. Additionally, the dashboard is expected to enable the identification of emerging market leaders and dominant sectors, supporting thematic investment strategies and alignment with prevailing global economic trends.

To ensure measurable outcomes, the following SMART criteria have been established: Dashboard load time of less than 10 seconds, at least a 70% reduction in time spent on manual data analysis, Adoption by 85% of target users within the first month of deployment, Demonstrable improvement in portfolio return strategies, as evidenced by data-driven decision-making.

## 3.5 User Journey.

The user(s) relied on Microsoft Excel for global stock data analysis, a process characterized by extensive manual data cleaning, formatting, and static chart generation. Verification of data accuracy often necessitated the use of supplementary tools and disparate data sources. The implementation of the Power BI dashboard fundamentally transforms this workflow. Users now benefit from a unified analytics environment featuring real-time data filters, key performance indicator (KPI) visualizations, and dynamic drill-down capabilities, thereby replacing labor-intensive Excel-based processes. Robust measures have been instituted to ensure data accuracy, enabling insights that closely reflect real-world market conditions and facilitating more efficient and intuitive cross-market comparisons.

## 3.6 Assumptions.

The project would assume that the users have access to Power BI and are comfortable navigating dashboard interfaces. The dataset is currently static, and it is assumed that this structure is sufficient for historical analysis. However, future updates will include live data integrations for more dynamic use. It is also assumed that users are internal team members with secure access to Power BI Workspace or Service, and that the dataset does not contain sensitive or personally identifiable information.

## 3.7 Accessibility .

The dashboard is optimized for large screen monitors, featuring clear navigation, strong color contrast, and semantic chart labels. Support for screen readers and keyboard navigation has been factored into the layout, ensuring that users with varied abilities can interpret the visual data effectively.

## 3.8 Compliance and Privacy considerations.

Given the absence of sensitive personal data within the dataset, compliance with privacy regulations such as the General Data Protection Regulation (GDPR) or the Health Insurance Portability and Accountability Act (HIPAA) is not applicable at this stage. The dashboard may be deployed either internally or publicly, it depends upon organizational rollout strategies. Should future enhancements involve the integration of licensed or proprietary content, or the use of external APIs, appropriate legal reviews and data usage agreements will be pursued to ensure regulatory compliance.

# Chapter 4:Results

**Primary Dataset:** World Stock Prices Dataset (Kaggle)

**User Profiles**

**Portfolio Managers:** Need quick identification of growth opportunities with risk assessment capabilities for mid-to-long term investment decisions. Expect to use dashboard for weekly portfolio reviews and monthly strategy sessions.

**Investment Analysts:** Require detailed quantitative analysis tools for stock research and recommendation development. Will use dashboard for daily market monitoring and quarterly sector analysis.

**Finance Team Leadership:** Need consolidated reporting capabilities for executive presentations and performance tracking. Expect monthly dashboard usage for board reporting and strategic planning.

## Dashboard Functionality

|  |  |
| --- | --- |
| **Dashboard Feature** | **Your Request** |
| **Reference Dashboard** | Industry-standard financial dashboards (similar to Bloomberg Terminal layouts) with clean, professional design optimized for financial data visualization |
| **Access** | Role-based access for 10-20 concurrent users from finance and investment teams |
| **Scope** | Global stock markets with focus on growth sectors. Include major developed markets (US, EU, Asia-Pacific) with ability to exclude penny stocks and illiquid securities |
| **Date Filters and Granularity** | Default view: Last 12 months with daily granularity. Options for 1M, 3M, 6M, 1Y, 3Y, 5Y periods. Granularity options: Daily, Weekly, Monthly, Quarterly. |

## Metrics And Charts

**Chart 1:** Growth Stock Performance Overview

|  |  |
| --- | --- |
| **Chart Feature** |  |
| **Chart Title** | Stock Price Trend Daily per Month |
| **Chart Type** | Line graph |
| **Dimensions** | Close price, Open Price, Date, |
| **Metrics** | Opening price, closing price, Total Volume traded |

**Chart 2:** Volatility and Risk Assessment Matrix

|  |  |
| --- | --- |
| **Chart Feature** |  |
| **Chart Title** | Volatility Candlestick |
| **Chart Type** | Candlestick chart |
| **Dimensions** | Date\_dim, Company\_dim, |
| **Metrics** | Opening price, closing price, Max price reached, min price reached |

**Chart 3:** Volatility and Risk Assessment Matrix

|  |  |
| --- | --- |
| **Chart Feature** |  |
| **Chart Title** | Company performance over time |
| **Chart Type** | Area Chart |
| **Dimensions** | Date\_dim, Company\_dim, Industry\_dim |
| **Metrics** | **Total Volume traded,** |

**Technical Specifications:**

**Performance:** Dashboard load time under 10 seconds, chart interactions under 2 seconds

**Export Options:** PDF snapshots, Excel data export, PowerPoint-ready visuals

**Integration:** Native Power BI sharing via Teams, email subscription capabilities

**Calculation Accuracy:** ±0.1% tolerance for all financial calculations with industry-standard methodologies

**Success Metrics:**

**User Adoption:** 80% weekly usage rate among target users within 3 months

**Efficiency Gains:** Reduce report generation time from 2-4 hours to 5-10 minutes

**Accuracy Standards:** 100% calculation validation against external financial data sources

**User Satisfaction:** Minimum 8/10 rating in quarterly user surveys

**ROI Measurement:** Track time savings, decision-making speed improvements, and portfolio performance correlation

**Dashboard Images**

**A screenshot of a computer

AI-generated content may be incorrect.**

**A graph of a price

AI-generated content may be incorrect.**

**Sign-off Matrix:**

| **Name** | **Team / Role** | **Date** |
| --- | --- | --- |

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