INVESTMENT PREFERENCE ANALYSIS BY POWER BI

A Comprehensive Visualization of Investor Behavior, Objectives & Trends

Prepared By

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INTRODUCTION

Investment decisions vary widely across individuals, influenced by factors such as financial goals, risk tolerance, investment knowledge, and available information sources. This project, titled “Investment Preference Analysis: Objectives, Sources & Behavior,” aims to explore and analyze these behavioral patterns using data visualization and analytics in Power BI.

The primary objective of this analysis is to gain deeper insights into how individuals choose investment avenues based on their saving objectives, preferred durations, monitoring frequencies, and reasons for investing. It also examines the impact of demographic factors such as gender and age on investment behavior, along with identifying the most common sources from which people gather investment-related information.

By presenting these insights visually, the project not only highlights user behavior trends but also supports better decision-making for financial institutions, advisors, and individual investors.

TOOLS & TECHNOLOGIES USED

To perform this project effectively, the following tools and technologies were used:

- **Power BI Desktop**

  Used as the primary platform for data import, cleaning, modeling, and visualization. Power BI allowed the creation of interactive dashboards and meaningful visual insights.

- **Microsoft Excel / CSV File**

  The dataset was provided in CSV format. Initial checks and structure were reviewed in Excel before importing to Power BI.

- **Power Query Editor**

  Used within Power BI to perform data transformation tasks such as:

  - Changing data types
  - Handling null values
  - Unpivoting columns
  - Column renaming and duplication

- **DAX (Data Analysis Expressions)**

  Used to create calculated columns and measures such as:

  - Average age
  - Investment percentage
  - Pearson correlation coefficient
  - Conditional aggregations

These tools together supported the entire process of transforming raw survey data into an interactive and insight-driven dashboard.

DATASET DESCRIPTION

The dataset used in this project contains survey-based information collected from individuals regarding their investment preferences, objectives, and behaviors. It aims to capture various aspects of personal financial decision-making.

❖ Key Features of the Dataset:

- Gender – Respondent's gender
- Age – Age of the individual
- Investment Avenues – Overall indication of whether the person has invested
- Mutual_Funds, Equity_Market, Debentures, Government_Bonds, Fixed_Deposits, PPF, Gold, Stock_Market – Numerical values representing individual's interest or engagement level with each investment option
- Factor / Avenue / Objective / Purpose – Textual indicators of saving or investment preferences
- Duration – How frequently the individual invests (e.g., Daily, Weekly, Monthly)
- Invest_Monitor – Frequency of monitoring investments
- What are your savings objectives? – Survey responses such as Capital Appreciation, Growth, Income
- Reason_Equity, Reason_Mutual, Reason_Bonds, Reason_FD – Categorical reasons for choosing specific investment types
- Source – Information source for investment decisions (e.g., Internet, Newspapers, Friends, etc.)

❖ **Structure:**

- Total Rows: 40
- Total Columns: ~25
- Data Type Distribution:
- Text Columns: Qualitative data like objectives, source, reasons
- Numeric Columns: Investment rankings and age

This structured dataset enabled in-depth analysis of multiple dimensions related to investment habits, allowing meaningful exploration of trends across individuals.

DATA PREPARATION

Before diving into analysis, it was essential to clean and structure the dataset properly for accurate and meaningful visualizations. Power BI's **Power Query Editor** was used to perform all the transformation and preparation steps.

❖ **Key Data Preparation Steps:**

- **1. Null Value Check:**
  - Checked for missing or null values across all columns.
  - All columns were found to be complete, requiring no imputation.
- **2. Data Type Corrections:**
  - Verified and adjusted data types for each column:
    - Text for qualitative responses like objectives, reasons, and sources.
    - Whole numbers for investment ranking columns.
    - Decimal for calculated metrics like average.
- **3. Column Transformation:**
  - Renamed some columns for clarity (e.g., "What are your savings objectives?" → "Savings_Objective").
  - Duplicated columns like Objective and Avenue to convert text values into numerical format for correlation analysis.
- **4. Unpivoting Columns (for Task 5):**
  - For analyzing investment reasons, columns such as Reason_Equity, Reason_FD, Reason_Mutual, and Reason_Bonds were unpivoted to create a normalized structure.
  - This allowed easier visualization of frequency counts across different reason types.
- **5. Custom Measures Using DAX:**
  - Created DAX measures for:
    - Average age
    - Investment preference counts
    - Percentage calculations
    - Pearson correlation formula between Objective and Avenue (numeric)

These preparation steps ensured the data was clean, structured, and analysis-ready, enabling efficient use of Power BI visualizations.

TASK-WISE ANALYSIS

❖ Task 1: Data Exploration & Summary

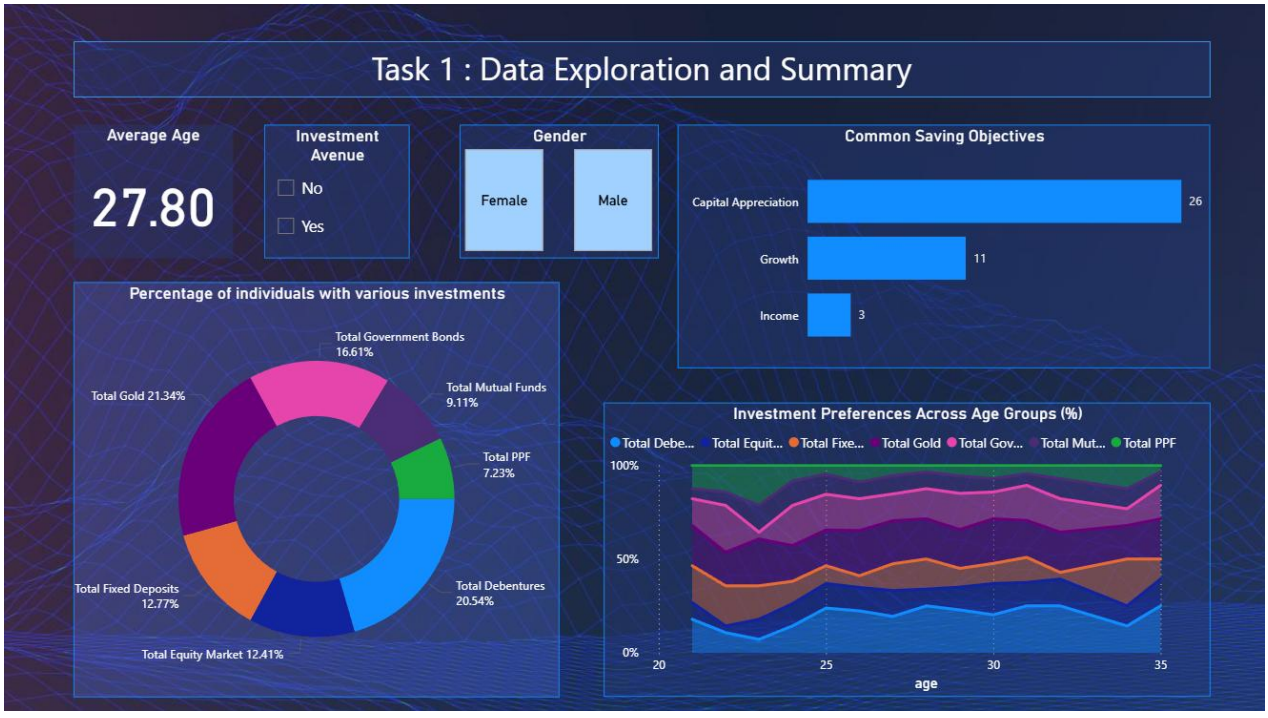
Objective:
Understand the basic structure of the dataset and summarize key statistics such as average age, investment preference, and saving objectives.

Key Actions:

- Checked and validated data types.
- Computed the **average age** using DAX and displayed it via a card visual.
- Calculated the **percentage of individuals** engaged in investment avenues.
- Identified the **most common savings objectives** using a clustered column chart.

Insights:

- Average investor age is approximately **27.8 years**.
- Most individuals preferred **Gold**, followed by **Mutual Funds** and **Fixed Deposits**.
- The most cited saving objective was **Capital Appreciation**.



❖ Task 2: Gender-Based Analysis

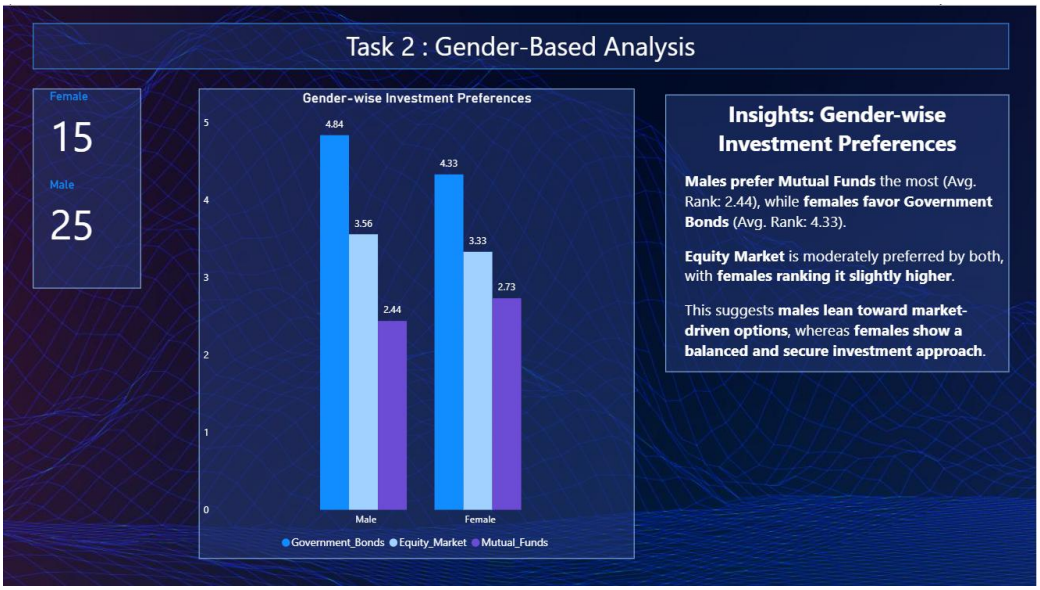
Objective:
Analyze investment preferences based on gender.

Key Actions:

- Created clustered column charts to compare **average** and **sum** of investments between male and female respondents across major avenues.

Insights:

- Males showed a higher average investment in **Government Bonds** and **Equity**.
- Females were more inclined towards **Mutual Funds** and **Fixed Deposits**.



❖ Task 3: Objective-Wise Investment Analysis

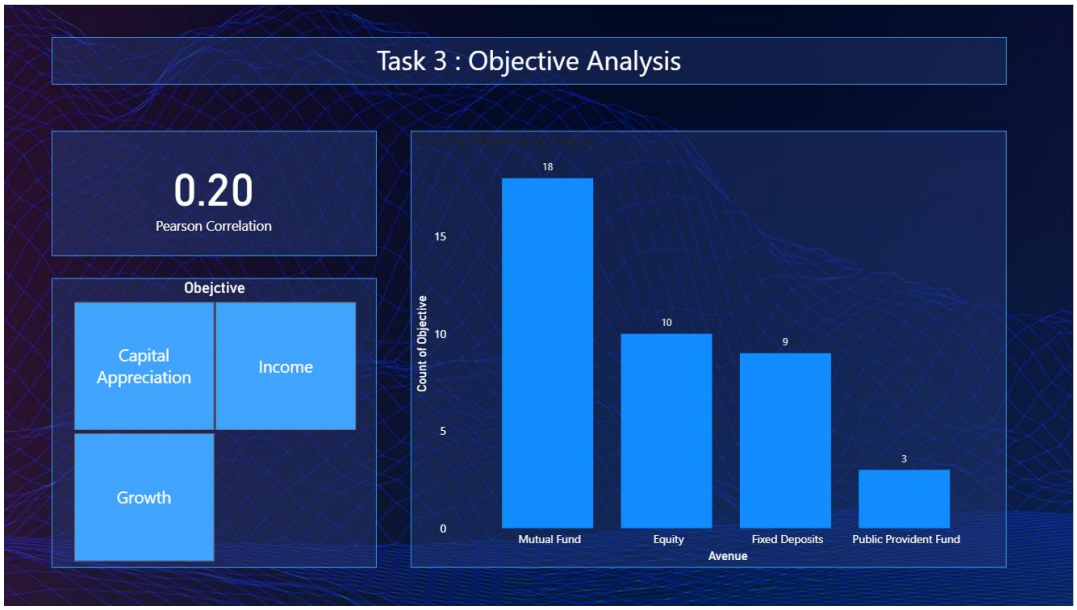
Objective:
Analyze correlation between savings objectives and chosen investment avenues.

Key Actions:

- Converted Objective and Avenue into numerical values to enable correlation.
- Applied a custom **Pearson correlation formula** using DAX.
- Created a clustered column chart showing preference of investment types by saving objective.

Insights:

- **Mutual Funds** were most associated with **Capital Appreciation**.
- A slight **negative correlation** (~-0.15) was observed between objective and avenue, indicating minor divergence in choices.



❖ Task 4: Duration & Monitoring Frequency

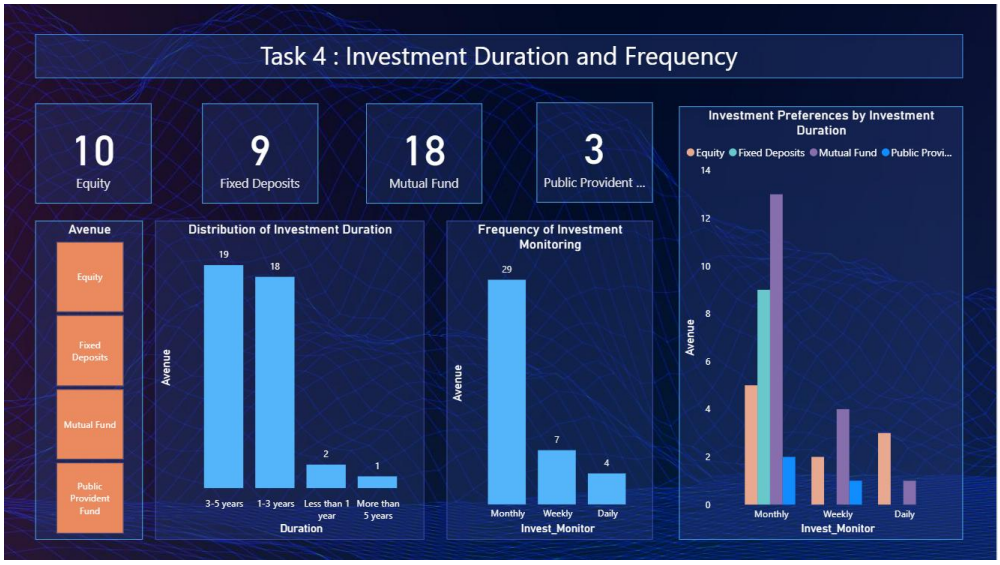
Objective:
Examine investment durations and how often individuals monitor their investments.

Key Actions:

- Created bar charts for:
  - Distribution of **investment duration** (Daily, Weekly, Monthly)
  - Frequency of **investment monitoring**
  - Investment preferences vs monitoring frequency

Insights:

- Majority of individuals invest on a **monthly basis**.
- Those who monitor investments **weekly** showed higher involvement across most avenues.



❖ Task 5: Investment Reasons Analysis

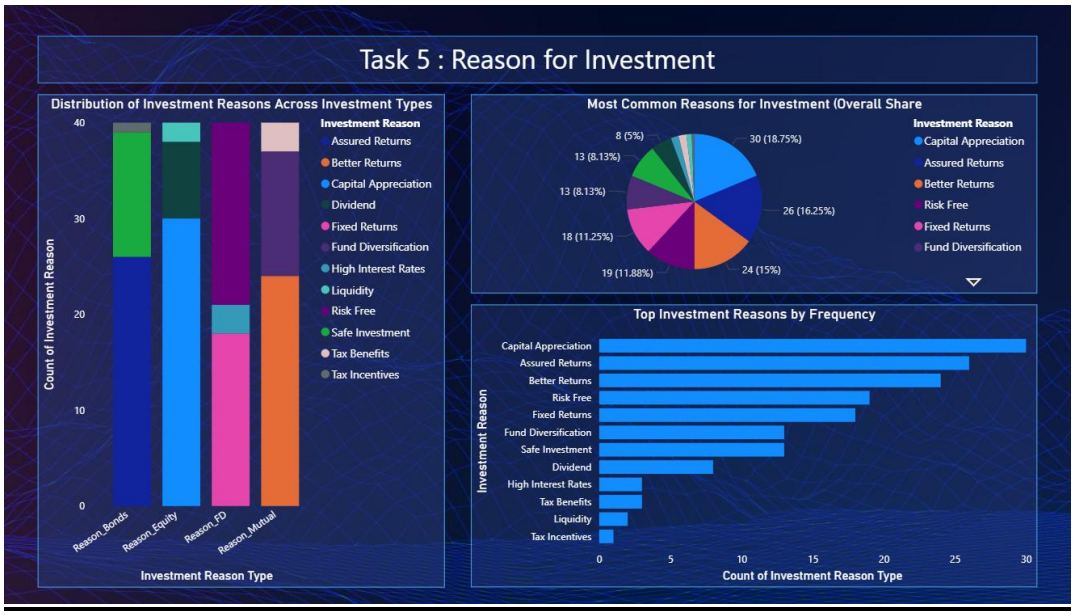
Objective:
Identify common reasons for choosing specific investments.

Key Actions:

- Unpivoted columns Reason_Equity, Reason_FD, Reason_Mutual, and Reason_Bonds.
- Created a clustered column chart to display reason frequency per investment type.

Insights:

- **Better Returns** and **Tax Benefits** were the most cited reasons.
- **Mutual Funds** were commonly chosen for **better returns**, while **Fixed Deposits** were preferred for **safety**.



❖ Task 6: Source of Information Analysis

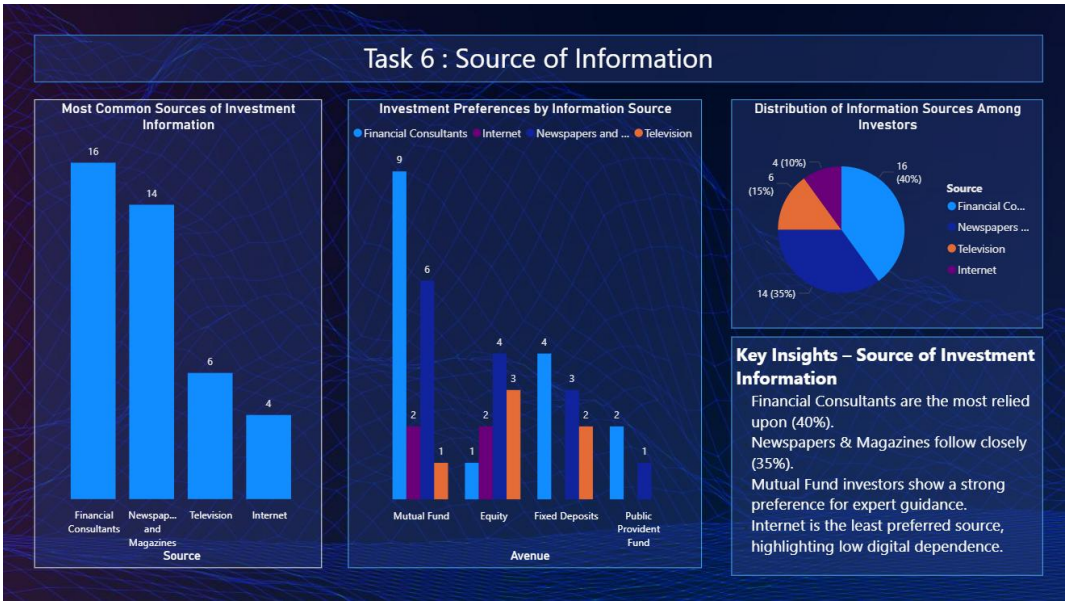
Objective:
Visualize how individuals gather investment-related information.

Key Actions:

- Created bar and donut charts to display frequency of each source (Internet, Newspapers, Friends, etc.)

Insights:

- **Internet** was the most trusted and used source for investment research.
- **Friends/Family** and **Financial Advisors** were also notable sources.



CONCLUSION

This Power BI project provided a comprehensive analysis of individual investment behavior through interactive visualizations and data-driven insights.

By breaking down the dataset into focused analytical tasks—such as demographic analysis, gender-based patterns, savings objectives, investment frequency, and reasons for investing—we were able to uncover trends that reflect real-world financial preferences and decision-making patterns.

The final dashboard brings together all these insights in a user-friendly, professional format that allows stakeholders to:

- Quickly understand target investor profiles.
- Identify popular investment products based on purpose and demographics.
- Recognize key influencing factors such as duration, frequency, and source of information.

This project demonstrates the power of visual analytics in transforming raw survey data into actionable intelligence.