Using Data Visualisation Techniques in Cryptocurrency Analysis

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Contents

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1 Introduction

Cryptocurrency has become increasingly popular, attracting the attention of investors, traders, and researchers alike. Their growth made them an intriguing asset to explore. However, analyzing and understanding the vast amounts of data generated by the cryptocurrency market can be challenging (Bandi, 2021). Cryptocurrency data Visualisation involves plotting the volume movements of two or more cryptocurrencies over time to see if there is any relationship or pattern in their movements (Cointelegraph, 2023). Tableau will be used as a Visualisation tool to make it easy for Junior government officials to plot data and interpret it by a group of professional data-driven journalists of public media. This public media will be followed by traders, investors, and market analysts looking to understand the relationship between cryptocurrencies and make informed investment decisions (Bandi, 2021). This report will provide data Visualisation techniques that will be used to analyze and gain insights into the cryptocurrency market by analyzing the volumes of three different currencies Bitcoin, Ethereum, and Litecoin's over three months. Then will provide information about the dataset, describe the techniques and methods used to create the Visualisation, summarize the software design and case use specification, and outline the plans for the next project phase.

2 DATA / THEME SELECTION

The dataset was obtained from an online source called kaggle.com. The dataset refers to the volumes of cryptocurrencies for three months, starting from January 2020 till the end of March 2020 (kaggle, 2023). The dataset contains Dates, currency names (Symbol), and different measures such as opening, closing, highest, lowest, and transacted volumes. Cryptocurrency Visualisation will deliver an understanding of this evolving market and make it easier for individuals and businesses to make informed choices (Bandi, 2021). Cryptocurrency volume refers to the total amount of a particular cryptocurrency that has been traded within a given period, typically within a day or 24-hour period. It is an important metric for traders and investors as it provides insights into the liquidity and demand for a particular cryptocurrency (Cointelegraph, 2023). Analysis will help investors make informed decisions. Businesses will gain insights into the market, identify potential opportunities, and predict future movements. Blockchain analysis provides insights into users' behavior (Zhong *et al.*, 2020). For preprocessing, the dataset was three files, each file for a different currency (kaggle, 2023). Using Microsoft Excel, these

files were merged into one file then the data format was checked to ensure it was suitable for analysis. The Date column was identified to keep data covering only three months and remove the rest. Some fields that will not be used in our analysis, such as Timestamp and sheet name, will be dropped (Datawrapper, 2023). In Tableau, Using Union, we import all the tables from the file. After that, tableau will highlight potential issues with your data, including missing values if there are any (Tableau, 2023a).

3 AUDIENCE REQUIREMENTS ANALYSIS

Cryptocurrency traders and investors often rely on data to identify trends and patterns. Tableau provides Real-time analysis by keeping investors up to date by enabling live connection for easy access to data, which takes data straight from the data source (Team, 2022). The system must be robust in user management functionality to enable users to manage their data securely (Tableau, 2023b). Tableau can also help identify non-functional requirements for a system, such as providing reliable, efficient, and secure systems while providing fast and responsive data processing and retrieval. The system must handle the increasing number of users and transactions without slowing down while being easy to use and understand for its intended users (Team, 2022). To perform an audience requirements analysis for an analysis of cryptocurrency volumes: 1. Identify the Target Audience: The first step is to identify whom the analysis is intended for and may include investors, traders, analysts, financial institutions, or cryptocurrency enthusiasts. Knowing the audience will help determine the appropriate level of detail and complexity of the analysis. 2. Determine the Audience Needs: determine what the audience needs to know or understand, it may include understanding the trends and patterns in cryptocurrency trading volumes, identifying opportunities for investment or trading, or gaining insights into market sentiment. 3. Choose the Right Visualisations: choose the right Visualisations to communicate the data effectively, which may include line charts, bar charts, scatterplots, or other types of Visualisations (IBM, 2023)

4 DATA STORY TELLING AND PROCESS DESIGN

Cryptocurrencies can be complex and rapidly changing field. Data Visualisation will uncover key insights and trends to a broader audience (Zhong *et al.*, 2020). Tableau is a Visualisation tool that creates interactive charts and graphs illustrating the trends of cryptocurrency data over time and helps viewers understand how cryptocurrencies are moving (Bandi, 2021). This data analysis will help users monitor the cryptocurrency market, identify potential risks, and identify critical indicators that can help predict future trends, and this will lead the investment decisions and business strategies by identifying buying and selling opportunities (Cointelegraph, 2023). Tableau will show how transaction rates and volumes change by comparing the currencies and showing any correlation. Furthermore, analyzing the market share of different cryptocurrencies will help officials and journalists understand the relative popularity of different cryptocurrencies and how this popularity changes over time (Mikhaylov, 2020). Storytelling will engage a wider audience and help people understand this emerging field's potential benefits and risks (Bandi, 2021).

5 SOFTWARE ARCHITECTURE DESIGN

Tableau is used in business intelligence as a powerful tool for visualizing and analyzing cryptocurrency data and can effectively communicate key insights and trends to a wide range of stakeholders (Bandi, 2021). Tableau will be used for several reasons, such as: 1. User-Friendly Interface: this allows users to create interactive and visually appealing dashboards without extensive programming or coding knowledge. 2. Speed and Efficiency: Tableau's in-memory technology allows for quick data processing and analysis, which is especially important when dealing with large datasets with many parameters, such as cryptocurrencies dataset 3. Interactive Visualisation: this allows users to create Visualisations that can be easily customized. Users can drill down into data and see different perspectives of the same data. 4. Collaboration and Sharing: Tableau makes it easy for users to share their dashboards and Visualisations with others, and can be accessed from anywhere. 5. Data Integration: Tableau can connect to various data sources, making it easy to import and analyze data from different sources (Team, 2022).

6 PRODUCT CASE USE SPECIFICATIONS

Tableau can create customized Visualisations tailored to the user's needs (Bandi, 2021). The data should be presented clearly, and concisely to help convey the key insights and trends in the data. Side-by-side bars and lines will be used to check if there is any relationship or pattern between the volume movements of the cryptocurrencies. Visualizing the correlation between cryptocurrencies through Lines that will cluster together if there is a strong correlation between the cryptocurrencies and will be more spread out if there is a weak or no correlation, where the color of each line represents a different currency. Scatter plots will be used to compare the opening and closing volumes of each currency. Tables will present the highest volume and lowest volume of each currency. The scatter plot will display the volume aggregate to indicate the days where volume was most elevated and mostly down (Team, 2023). All these data Visualisations will be plotted in A dashboard.

The following steps show how users can use Tableau for cryptocurrencies analysis: 1. Connect to Data Source: The first step is linking to the cryptocurrency data source by importing a data file. 2. Prepare Data: data should be prepared for analysis. This can include cleaning and transforming the data, aggregating data, and creating calculated fields. 3. Create a Dashboard: a collection of Visualisations that provide a comprehensive view of the data. Dashboards can be customized to meet specific needs and can be shared with others. 4. Choose Visualisations: Tableau offers a wide range of Visualisations, including bar charts, line charts, scatter plots, and maps. 5. Analyze Data: identify trends, patterns, and anomalies by interacting with the data by filtering, sorting, and drilling down into the data. 6. Share Insights: share dashboards, Visualisations, and data sources with others in a variety of formats, including PDF, Excel, and Tableau Serve (Tableau, 2023a).

7 Conclusions

By analyzing cryptocurrency data on Tableau, the functional and non-functional requirements were met quickly, making it well-suited to the rapidly changing and complex world of cryptocurrencies, and users with minimal knowledge can use it. Visualisation must be of high quality to meet the targeted audience's needs and ensure that data will be well received and widely adopted by junior government officials and professional data-driven journalists of public media (Team, 2022). Analyzing cryptocurrency data can provide a deeper understanding of the market and make more informed decisions based on the latest trends and patterns. For future development, data analysis is crucial for investors

and needs to be analyzed quickly. Tableau allows data streaming to catch, pipeline, and compute the data without taking storage space, offering continuous updates and predicting future trends (Bandi, 2021). In summary, cryptocurrency trading volumes are a key metric for analyzing the popularity and demand for different cryptocurrencies.

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