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A SURVEY ON CRYPTOCURRENCY

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Abstract:

Cryptocurrency is like online money that doesn't need a big company or government to control it. Instead, it uses computer codes to keep track of transactions and make sure everything is secure. For this study, information was gathered from ten countries where cryptocurrency is allowed. In each of these countries, thirty people were asked questions to learn about their studies and gests with digital money. The study focused on four main types of cryptocurrency: Ethereum, Bitcoin, Bitcoin Cash, and Ripple. These are like different kinds of digital coins that people use to buy things or invest in. To understand how people from these countries feel about these digital coins, different ways of studying the information were used. Some styles involved drawing lines to see patterns, checking how effects were connected, and making graphs to show the information in a visual way. This helped in figuring out how people from these countries use and think about suppose digital currencies.

1.Introduction:

A Cryptocurrency or Crypto is a form of asset made to work as a medium of exchange in which the individual coin power records are saved in a ledger that was created using strong cryptography. Some of the cryptocurrencies existing in the market are Bitcoin, Ethereum, Bitcoin cash, Ripple. Bitcoin is the first cryptocurrency, to be realised as an opensource software in 2009 which is not having a centralized authority. It was developed by pseudonymous inventor Satoshi Nakamoto. It used SHA-256, a cryptographic hash function, in its proof-of-work scheme. Following Bitcoin, Name coin and Litecoin many other cryptocurrencies were released each one having its own hash functions. Nowadays, the usage of bitcoin has increased exponentially causing the bitcoin developers to create a new cryptocurrency.

Bitcoin cash in 2016 that is much faster, reliable and accurate than its predecessor bitcoin. As of 5th April 2021, the stock market value of cryptos surpassed \$ two trillion USD for the first time. Not all countries welcome cryptocurrency, those countries that approved the usage of cryptocurrencies to its citizens are said to have legalized cryptocurrencies. This legalization essentially also includes the usage and acceptance of cryptocurrencies in most of the banks in that particular country. In a country like India where the cryptocurrency market has grown up to \$100 billion (2015) the Indian government has banned the cryptocurrencies. But still the Indians thrive to contribute more to the cryptocurrency market. In countries like Germany, Japan, China and especially in Holland, people have started to use cryptos very often that many shareholders and stakeholders are looking to expand the crypto business. The Cryptocurrency works on the principle of Blockchain. A blockchain is a dynamically increasing list of information, known as blocks, that are connected together and secured by cryptography. Each entity in blockchain generally has a hash pointer, timestamp and transaction information. Blockchains can't be easily modified. Blockchains are designed to provide security to the data about the application of distributed computer system. A cryptocurrency wallet stores the keys which are public and private or addresses or seeds which is used to receive or spend the cryptocurrency. There are several cryptocurrency wallets available in the market such as bitcoin wallet, green address, atomic wallet, bit pay and exodus. People have to use any one of the crypto wallets to exchange or typically use cryptos.

1.1 Objectives:

The survey dataset contains the respective Likert's scale values given by the respondent observations. They are :

1. Affinity towards Ethereum.
2. Affinity towards Bitcoin
3. Affinity towards Ripple.
4. Affinity towards Bitcoin cash.
5. Interest in investing in crypto shares.
6. State your frequency of using cryptos.
7. Affinity towards the Brave browser.
8. Security of cryptos?
9. Improvements in crypto wallets
10. How flexible are the laws for cryptos ?

The response given by the respondent ranges from one to five points with 1.0 being the lowest rating and 5.0 being the highest rating. The scale is allowed to have one floating point decimal value and not more than that. The survey was answered by the people irrespective of their age group, gender, income and many other factors. In any analysis, the researcher hopes to better understand about that particular subject he /she has taken. One such way of understanding about the subject and to find out the relationships the subject is involved with. Like how connections are important to people and the society judges a person by his /her connections. From the above discussions, the concept of cryptocurrencies are familiar but to deepen the knowledge about them, the following objectives are mandatory to be answered.

- The relationship between bitcoin and bitcoin cash. Since both bitcoin and bitcoin cash

2. Modelling and its Analysis:

SIMPLE LINEAR REGRESSION:

Linear regression is the most used statistical technique. It is a way to functionalize a association between two sets of variables. The calculated

were designed by the same developers, bitcoin in 2009 and bitcoin cash in 2016. It is significant to understand their correlation.

- The functional relationship between security ratings and improvements in wallets. It is certain that the security ratings given by the respondent are in regards to the need for further improvements in wallets. But to what extent and by how are they related that they influence the other's values can be only determined by the ordinary linear regression.

- The functional relationship of interest in shares with frequency and flexibility of laws. It can be seen and by now it is clearly inevitable for people such as the shareholders, stakeholders to be interested in purchasing the shares of a particular crypto. From the dataset, the important factors determining whether a person is someone who is interested in the share market or not are frequency and flexibility of laws. Such a person must frequently be using cryptos and must know all of the affairs related to the crypto market. Thus, Multiple Linear Regression must be employed to get this relationship known. □ The popularity of the cryptocurrencies in various countries around the world. It is of immense importance to know the popularity of Bitcoin, Ethereum, Bitcoin cash and Ripple across the ten countries taken into consideration. For this task, Multi-Bar Graph must be employed.

function is a linear regression equation that are used to tell about about data. These variables are commonly called dependent and independent variables. If the association is a straight line it is called simple linear regression

otherwise simple non-linear regression. When there is more than two variables and one of them is taken to be dependent upon the others, the functional relationship is called Multiple linear Regression. That is MLR is a study of the relationship between three or more numbers of variables. In this analysis, both Simple and multiple regression techniques is used to find the functional relationship between variables. The simple linear regression of Y on X in the population is given by the equation: $Y = a + bx + e$ where a is known as the intercept, b is the slope and e is the error term given by $Y - y$. For any given value of x the survey of the error term will be zero and the regression equation becomes $Y = a + bx$. The slope may be positive, negative or zero.

MULTIPLE TYPE LINEAR REGRESSION

It is also known as Multiple regression. It is a statistical technique which is used as several independent variables to predict the outcome of a dependent variable. Multiple regression is an extension of linear regression that uses only one explanatory variable. Multiple regression is the most common form of linear regression analysis. Multiple regression behaves as a predictive analysis and explains the association between one continuous response variable so two or more explanatory variables. The explanatory variables are continuous or categorical. Multiple linear regression (MLR) is used to find a mathematical association among a number of random variables. MLR explains how many independent variables are related to one response

variable. Once all of the independent factors have been found to predict the dependent variable, the information creates a accurate prediction of the range of effect they have on the response variable. The MLR equation is given by: $Y = a + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_nx_n$ Here, a is the intercept and b values are the coefficients of the regression function. **MULTI-BAR GRAPH:** A multiple bar graph shows the relationship between different values of data. The data value is represented by a column in the graph. The list of different kinds of data are given along the horizontal, or x axis. The quantity or the load of data is listed along the vertical, or y, axis. Lastly, the legend, or key, states what each column represents.

SCATTER PLOT: A scatter plot is a type of chart or may be a mathematical diagram using Cartesian coordinates that is used to display values for two variables for a set of data. It is mostly used to find the relationship between two related variables and often plotted before a regression analysis. It has the explanatory variable in the X-axis and the response variable in the Y-axis. Using this, we can find whether the association is linear or not by observing the clustering of the points in the cartesian plane.

ANOVA (ANALYSIS OF VARIANCE): Analysis of variance is a collection of techniques for comparing

multiple means across different groups. It is systematic procedure for decomposing or dividing or splitting the overall variance in the responses observed in an experiment into different components. Each component is attributed to an identifiable cause or source of variation. The structure of these components is determined by the ANOVA model. There are widely two types of ANOVA namely oneway ANOVA and two-way ANOVA. In this analysis, one-way ANOVA is employed. One-way ANOVA has only one independent variable to compare between one or more groups. It has the null hypothesis and the alternative hypothesis as well. In the null hypothesis, there is nothing significant difference between the means of the groups in consideration to the independent variable taken into account. While the alternative hypothesis, states that there is a significant difference between the means of the groups to the independent variable taken into account. In simple words, the alternative hypothesis implies that there must be at least one mean in the groups taken for comparison to be not similar or different from the other groups' means of a particular independent variable under study. To find out which hypothesis is valid for the case, the F value or p value is used to solve this ambiguity. If the calculated p value is greater than 0.05 then the null hypothesis is all

	COUNTRY	LIKENESE OF ETHEREUM	LIKENESE OF BITCOIN	LIKENESE OF RIPPLE	LIKENESE OF BITCOIN CASH
0	USA	3.1	4.3	1.4	3.0
1	USA	4.0	4.2	2.2	2.6
2	USA	3.6	4.8	1.7	2.8
3	USA	3.9	3.8	1.5	2.9
4	USA	3.6	4.8	1.9	3.0

Figure.1:

Figure 1. contains the first few records of the entire dataset. It shows the COUNTRY, LIKENESE OF ETHEREUM and other such fields. Except the COUNTRY field, all the others are on a scale from 1.0 to 5.0 rating.

	LIKENESE OF ETHEREUM	LIKENESE OF BITCOIN	LIKENESE OF RIPPLE	LIKENESE OF BITCOIN CASH
count	300.000000	300.000000	300.000000	300.000000
mean	3.208667	4.211667	2.630000	2.607333
std	0.806780	0.591097	0.85659	0.665047
min	1.500000	2.500000	1.000000	1.000000
25%	2.500000	3.900000	2.000000	2.175000
50%	3.300000	4.300000	2.500000	2.600000
75%	3.800000	4.600000	3.100000	3.000000
max	4.900000	5.000000	4.700000	4.400000

Figure.2: Basic descriptive

Figure 2. provides the basic descriptive statistics for the dataset. It shows that there are 300 rows in the dataset. The figure also shows the mean, min, max and also the measure of dispersion. Through the mean, the average rating for a particular field is known.

accepted and there is no significant difference between the two or more groups under study. If the calculated P value is less than 0.05 then the null hypothesis is all rejected and the alternative hypothesis is also accepted and there is significant difference between the two or more groups under study. The above hypotheses are:
H0: $\mu_1 = \mu_2 \dots = \mu_n$
HA: $\mu_1 \neq \mu_2$
 $\dots \neq \mu_n$

3.Results :

Cryptocurrency Popularity across Countries:

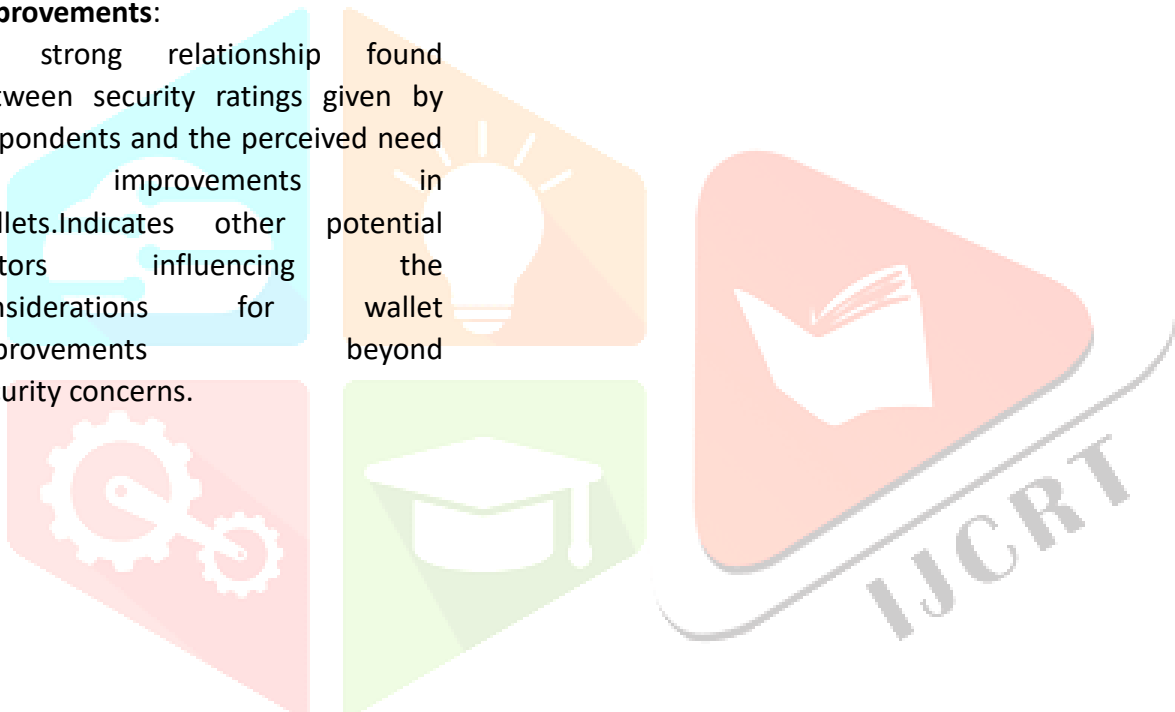
Bitcoin emerges as the most popular cryptocurrency globally, widely used across various countries. Ethereum holds significant popularity in most nations, indicating its widespread acceptance among crypto users.

Correlation Analysis:

Moderate correlation exists between Bitcoin and Bitcoin Cash, highlighting their connection despite being developed by the same team at different times.

Security Ratings Wallet Improvements:

No strong relationship found between security ratings given by respondents and the perceived need for improvements in wallets. Indicates other potential factors influencing the wallet security concerns.



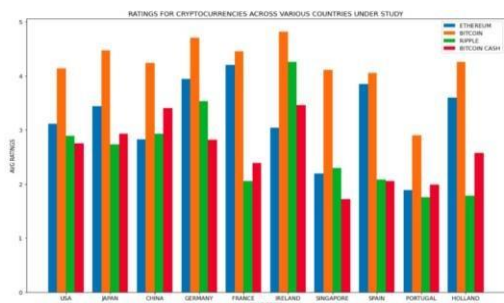


Figure. 3: Average ratings of various cryptos across different countries

Figure 3 is necessary to understand the popularity of the various cryptos Ethereum (ETC), Bitcoin (BTC), Bitcoin cash (BCH) and Ripple (XRP) in various countries around the world. It can be seen or observed from the figure that Bitcoin is very popular and most people in the universe of cryptos use it irrespective of their country. In most of the country etherium is popular.

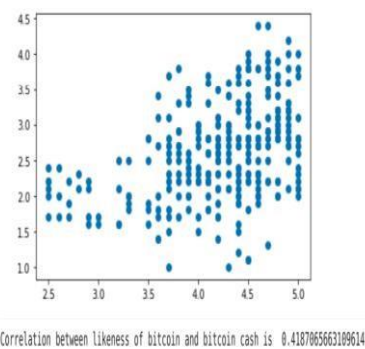


Figure.4: Scatter plot and correlation value of likeness of bitcoin and bitcoin cash

The above figure suggests there is also correlation existing among two variables bitcoin and bitcoin cash but are not strong and also there is also no negative correlation between them. The correlation value is 0.418 validating the former statement. Majority of the people pay no heed to the fact that the bitcoin and bitcoin cash were developed by the same set of developers and bitcoin cash is fact much faster than its predecessor bitcoin.

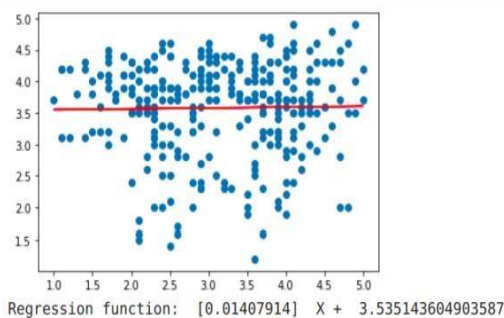


Figure-5: Scatter plot along with the regression function between security and need for improvements in wallets. From the figure above, the graph indicates no negative association existing between all the independent and dependent variables. The intercept is 3.535 and the slope of the function is the coefficient about the explanatory variable X that is 0.014. There is no strong relationship among the Security ratings given by the respondent to the need for improvements in wallets. There may be other factors affecting the ratings given to the need for improvements in wallets other than the security ratings.

MLR model : [0.39014922 -0.34372065] X + 3.326536479689376

Figure.6: MLR model for the interest in shares with frequency and flexibility of laws

In the figure shown above, the MLR model or the Multiple regression model are employed to find the association between the interest in shares shown by the respondents to the frequency of the respondent and the flexibility of laws in that particular respondent's country. The model suggests that the investment of shares of cryptos are not heavily influenced by the frequency of the participant and the favour of laws in that country of the individual but rather on more significant factors and the income of that particular respondent.

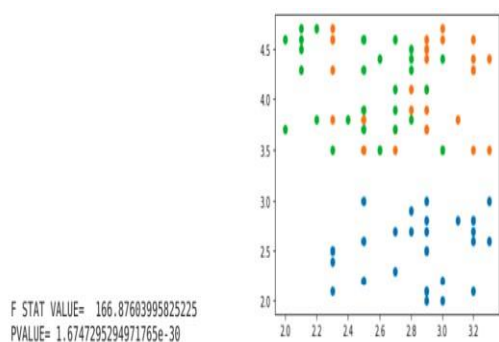


Figure.7: Graph along with one-way ANOVA results of three countries in their interest in shares.

are seen and is more movement of cryptos in these countries. It is also be seen overall that most of the columns in the dataset are independent of each other.

F STAT = 0.3247570569180935
PVALUE = 0.570963612925472

Figure.8: One-way ANOVA results between China and Japan in their affinity towards Ethereum. In the previous figure, it was found that there is no similarity between France, Spain and Germany respect to the interest in shares. However, in this figure, it is clearly evident that there is a similarity between the Chinese and Japanese in their likeness towards Ethereum cryptocurrency. The P value is 0.57. The p-value is greater than 0.05 so the null hypothesis is accepted. Therefore, there exists no significant difference between China and Japan in the aspect of the affinity towards Ethereum (ETC)

4.CONCLUSION :

The world of cryptos will always tend to progress and give way to bigger markets worldwide. It is found that though the crypto market is already grown it is only the early stages in most of the countries. It is also found that Bitcoin is the most famous and the most used crypto currency in the world right now. People need further provisions to be made so that they can use cryptos at their convenience. The Chinese, the Japanese and the people of Asia seem to have adapted to the cryptocurrency world that they

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