School of Science

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Should India legalize Cryptocurrency and why a ban may have major repercussions on the country's economy?

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ACKNOWLEDGEMENT

We would like to acknowledge all the respondents who took their time to give us their sincere opinions/responses for our survey. We would also like to extend our heartful indebtedness to our Research Methods professor ‘Ms Amrita Banerjee’ who has been a constant source of help and encouragement for us. Her suggestions and guidance helped us get through with our research paper.

INTRODUCTION

Over in the recent past, cryptocurrency has been a subject of discussion among the public at large. Cryptocurrency is an innovative concept of decentralized virtual currency. It has turned out to be a new avenue of investment instrument in India similar to gold. Even though the government hasn't formulated any regulatory body or legislation with regards to cryptocurrency trading and transactions in India, the government restricts the buy and sell of cryptocurrencies like bitcoin, Litecoin, etc, which are however trending in the financial market as people are showing interest in buying cryptocurrencies.

Cryptocurrencies represent valuable and intangible objects which can be used electronically or virtually in different applications and networks such as online social networks, online social games, virtual worlds, and peer-to-peer networks. Cryptocurrency doesn't rely on financial institutional regulations but is encrypted and protected which makes it difficult to increase the supply of money over a predefined algorithm rate. Cryptocurrency charges fees at a minimum rate which are comparatively lesser than the fee collected by a financial institution for the processing of a credit card.

The whole ecosystem of cryptocurrency is developed in an open-source environment. These open-source programs can be run and maintained on a wide variety of computer and mobile devices. Since 2009, numerous cryptocurrencies have been developed, with, as of February 2017, 720 in existence. Bitcoin is the largest and most popular, representing over 81% of the total market of cryptocurrencies. However, Cryptocurrencies raise various limitations on their existence in Indian markets which can be highly debatable.

CRYPTO IN THE INDIAN CONTEXT

India with a population that is over 1 billion strong has been on something of an economic renaissance in the last few years. Such has been the extent of the country's growth that the IMF has called the fastest-growing emerging economy. In mystery, history, and culture, it is also not one to fall behind when it comes to technological advancement. Bitcoin and other cryptocurrencies have been operating within the country for a number of years now. As early as 2012, small-scale Bitcoin transactions were already taking place within the country. These were still early days in the development of Bitcoin when only crypto hobbyists were interested in Bitcoin. By 2013, Bitcoin was beginning to gain a level of popularity that was spreading across many countries. That year, a few businesses began to accept Bitcoin payment. A vintage-era pizza shop called Kolonial in the Worli area of Mumbai became the first restaurant service in India to accept Bitcoin payments. In a short space of time, cryptocurrency exchanges began to spring up within the country. Pioneers like BtcxIndia, Unocoin, and Coinsecure began offering cryptocurrency exchange and trading services in India. Over time, others like Zebpay, Koinex, and Bitcoin-India were added to the list.

On November 8, 2016, Prime Minister Narendra Modi announced the commencement of a demonetization policy. The move by the government to demonetize approximately 86 percent of the country's paper currency sent shockwaves all across the subcontinent of India. People with large cash holdings required a new means of holding such wealth without incurring significant tax burdens and sundry government scrutiny. It became common practice for some to buy large orders of Bitcoin or other cryptocurrencies and then sell them at a later date. This meant that they were effectively circumventing what would have been considerable taxes if they had tried to circulate their wealth through the banking system. The demonetization policy also led to widespread criticism of the mainstream financial scene in the country. In the space of 24 hours, 86 percent of the country's paper currency in circulation had been rendered valueless by virtue of a single government proclamation. Realizing that fiat money isn't exactly "real" money since it isn't backed up by anything, Indians began to seek alternative currency models. Many Indians, especially those in the 40 percent bracket with access to the Internet began to take up Bitcoin and other cryptocurrency investments. The 2016 demonetization policy may have spurred the adoption of cryptocurrencies among a considerable portion of the population but realities soon began to emerge that have stifled the growth of the market in the country.

CRYPTO IN THE INDIAN CONTEXT

Despite its vast population, India only contributes 2 percent of the total global cryptocurrency market. The small role being played by such a large economy can be attributed to the high cryptocurrency prices & the RBI-led government crackdown. The general level of prices of cryptocurrencies in India is on the high side. Market rates are relatively higher by as much as 5%-10%compared to the global average. This means that Indians can only get involved in peripheral participation in crypto trading as far as international crypto exchange platforms are concerned. Lack of large-scale mining facilities & strict government restrictions on international money flow also make it significantly difficult for Indians to transact with many of the large foreign crypto exchange platforms.

The impact of cryptocurrencies on the Indian economy is clearly depicted as the prices of the cryptocurrency market are now falling down. The Indian government has made it clear with its stand of not providing legal status for cryptocurrency in India. The reason for this kind of decision from the government hails from first, the challenge of monitoring the decentralized transactions in cryptocurrencies are difficult to trace which could be advantageous for hackers, criminals, and also for terrorist activities. The second reason being the cryptocurrency market could be a leading competitor for the banking service industry. Cryptocurrency like Bitcoin has become popular in India like other nations as the volume of the Indian rupee being traded in the cryptocurrency has been at the highest post demonetization. Research shows that the volume generated by the rupee-dominated cryptocurrency is the third largest volume traded after the American dollar and yen. The demonetization policy of 2016 may have encouraged the implementation of cryptocurrencies amongst a substantial share of the population but realities rapidly began to come out that have subdued the growth of the market in the country. In spite of its enormous population, India only contributes two percent of the whole global cryptocurrency market capitalization.

FUTURE OF CRYPTO

The future of the cryptocurrency concept is promising, showing more opportunities for positive change and progress in the e-business and e-payment sectors. With the rapid advancement and improvement of technology, cryptocurrency will not stop progressing. India by 2018 contributed between 2% and 10% of the US$430 billion virtual currency market worldwide, which has only increased in the meantime. Thus, a ban can and will create a panic situation where many will completely dispose of their crypto assets. However, a large chunk of the investors will not dispose of their assets and instead will be forced to work in unregulated environments and contribute to the formation of an underground economy or shadow economy. This will be more so because the Indian authorities do not have the capacity to identify and track down these markets. The government can neither seize nor gain access to a global network of computers mining cryptocurrency and maintaining blockchain ledgers. In order to enforce such a blanket ban, authorities will have to create an invasive monitoring system to monitor all digital and internet activity in the country.

If a ban is enforced, crypto-assets would be sold on the black market; as is always the case with unintended effects of prohibitions, the market would not go away; rather, it will move to darker places, where threats such as money laundering and terrorist financing may arise as regulators lose sight of the operation. Rather than enacting laws to prohibit these properties, it is preferable to establish the legal and policy infrastructure to control them.

Therefore, if the ban is enacted, more than 7 million people who hold cryptocurrency will either be forced to liquidate their assets or take part in the shadow economy. If a large number of such investors do dispose of their assets, it can lead to a spike in supply and reduction in price, but as had been in the case of China, there won't be any long-term effect. However, recent statements from the minister have hinted at a more "calibrated approach". They have stated that they will ensure that the "interest of crypto investors is protected in the Bill".

LITERATURE REVIEW

While studying for our topic we referred to the following compelling articles that explore each factor of our research topic:

1. **"Cryptocurrency In India: The Past Present and Uncertain Future"** by ET Tech (March 9, 2021)

This research article aims at understanding the ongoing controversy over cryptocurrency in India, and how there is a need to examine how we got to this point regarding the same. The article also gives a brief about the history of cryptocurrency since 2008 and ends with an interpretation for the future.

2. **"Cryptocurrency And Its Rising Importance in India in 2021"** by Disha Ganguli (May 14, 2021)

This article briefs us about how experts feel regarding the cryptocurrency market and its boom in India. It further enlightens us about the Factors that have contributed to the growth of cryptocurrency adoption and integration in India. In conclusion, the article mentions the challenges that remain after the adoption of cryptocurrency in the Indian market.

3. **"What's driving demand for cryptocurrencies in India"** by Koustav Das (August 25, 2021)

This article elaborates how At least 1.5 crore Indians hold cryptocurrency assets worth billions even as uncertainty prevails over the future of the digital coin ecosystem in the country. Further, they decode the factors driving rapid cryptocurrency adoption in the country. It shows how instead of buying expensive cryptos such as Bitcoin and Ether, investors are also putting their money on lower-priced virtual coins such as XRP, Cardano, Dogecoin, Litecoin, Polkadot, Chainlink, Solana, UniSwap, and more.

4. **"Why India Should Buy Bitcoin"** by Balaji Srinivasan (February 4, 2021)

This article gives a brief about how India should launch a digital rupee – and back it with digital gold. More broadly, it briefs us about how India should champion decentralized cryptocurrencies like Bitcoin and Ethereum to safeguard national security, prevent de-platforming, attract international capital, hasten India's ascendance as a global power, and various such topics.

5. **"Here is why a ban on cryptocurrencies may not even be possible"** by Business Insider India Bureau (May 19, 2021)

This paper deals with various topics and covers areas about 3 major topics:

1. How Transferring crypto from one wallet to another is no different from sharing music via a pen drive,

2. How a ban on cryptocurrencies in India will simply increase the black-market trade in the country and

3. How Experts say that public blockchain-based products may become impossible to create if a ban is enforced on cryptocurrency.

RESEARCH METHODOLOGY

A research methodology introduces the general plan of how the researcher will go about doing the research survey procedure. This study uses exploratory study and survey methods. The use of multiple methods allowed the researcher to gather different kinds of data, which provides different viewpoints to address different research objectives.

A questionnaire is a research tool featuring a series of questions used to collect useful information from respondents. Questionnaires may be qualitative or quantitative and can be conducted online, by phone, on paper or face-to-face, and questions don't necessarily have to be administered with a researcher present.

Questionnaires feature either open or closed questions and sometimes employ a mixture of both. Open-ended questions enable respondents to answer in their own words in as much or as little detail as they desire. Closed questions provide respondents with a series of predetermined responses they can choose from.

For the primary research aspect of our project, we decided to go with a quantitative research method approach through a questionnaire that included close-ended questions where participants had to answer questions based on their knowledge of the concept of cryptocurrencies in general and their subjective opinions on the future of cryptocurrency in the Indian context.

RESEARCH DESIGN

We circulated the questionnaire **from 6th October 2021 - 16th October 2021**. Our questionnaire consisted of two sections; one for people who were familiar with Cryptocurrency, and the other for people who weren't. The first section had 13 questions related to Cryptocurrency and its future in India, while the second section had an informative video explaining the basic concepts of Cryptocurrency and a few questions related to it. The second section ended with a question about their likelihood to learn more about Cryptocurrency.

1) **Survey objective**:

a) **Primary objective**: To find an estimate of the respondent's awareness about Cryptocurrency among various age groups, gender, and occupational status.

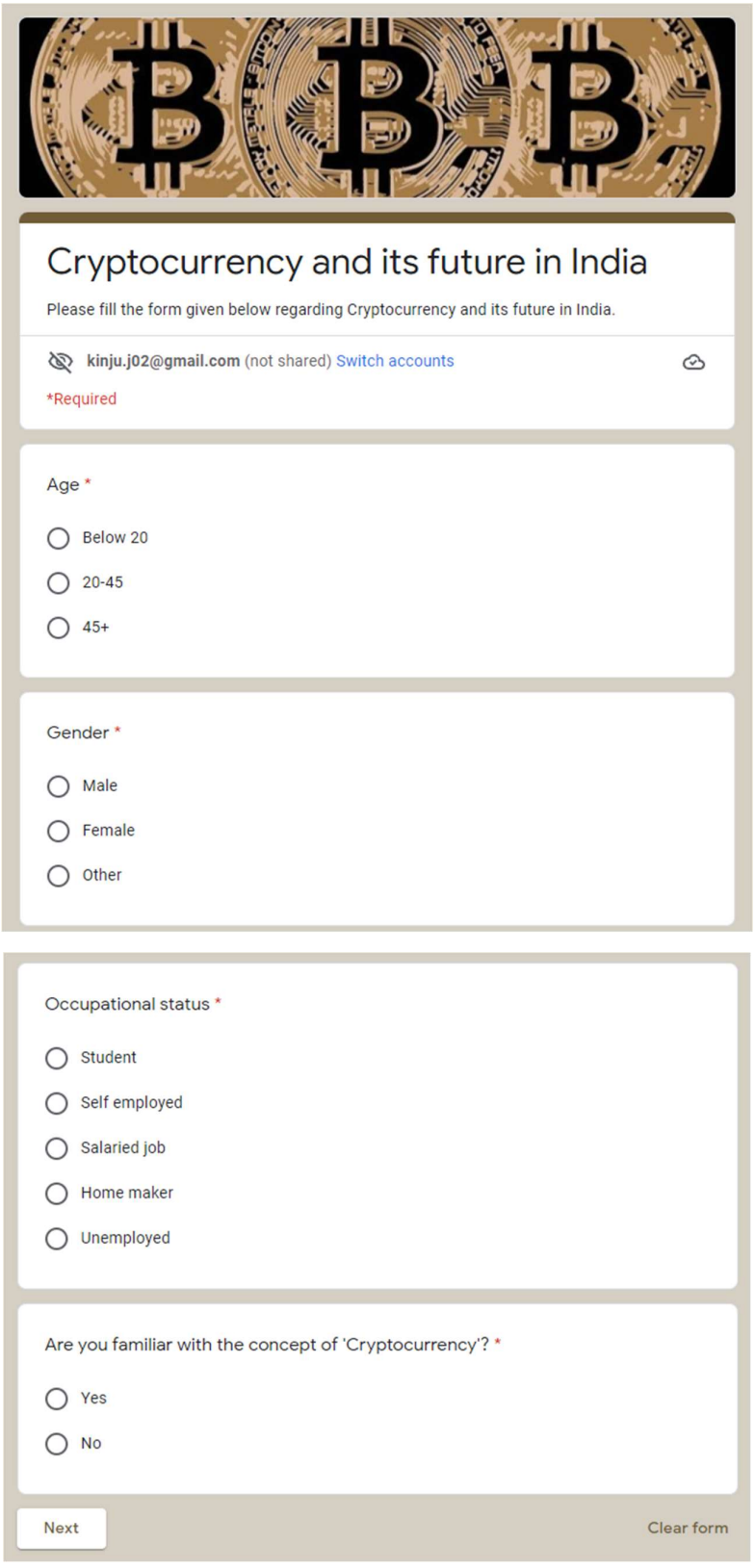
b) **Secondary objective**: To find out an individual's familiarity with various concepts and the thoughts on the speculated future of Cryptocurrency and correlate it with Age, Gender, and Occupational status of the individuals.

2) Sampling technique: The sampling technique is used to get a representation of the entire universe. For the purpose of the present study, data were collected on a random basis. Convenience sampling techniques were followed for selecting a sample of the present study.

3) Data Collection Methods: The instrument used to collect our data was a close-ended questionnaire from a population of sample size - 83. Prior to the preparation of the questionnaire, we went through multiple relevant articles and identified important factors that can be focused on for our survey questions. The questionnaire was prepared on Google forms and distributed to various people via WhatsApp and Instagram.

4) Data Analysis and Interpretation: The collected data was analysed using descriptive statistical methods and inferential statistical methods via hypothesis testing using the Chi-square test of independence through RStudio.

PROCEDURE: QUESTIONNAIRE



Cryptocurrency and its future in India

Please fill the form given below regarding Cryptocurrency and its future in India.

kinju.j02@gmail.com (not shared) Switch accounts

*Required

Age *

- Below 20
- 20-45
- 45+

Gender *

- Male
- Female
- Other

Occupational status *

- Student
- Self employed
- Salaried job
- Home maker
- Unemployed

Are you familiar with the concept of 'Cryptocurrency'? *

- Yes
- No

Next Clear form

Fig 1: Questionnaire (First page)

FOR RESPODENTS WHO ARE AWARE ABOUT CRYPTO

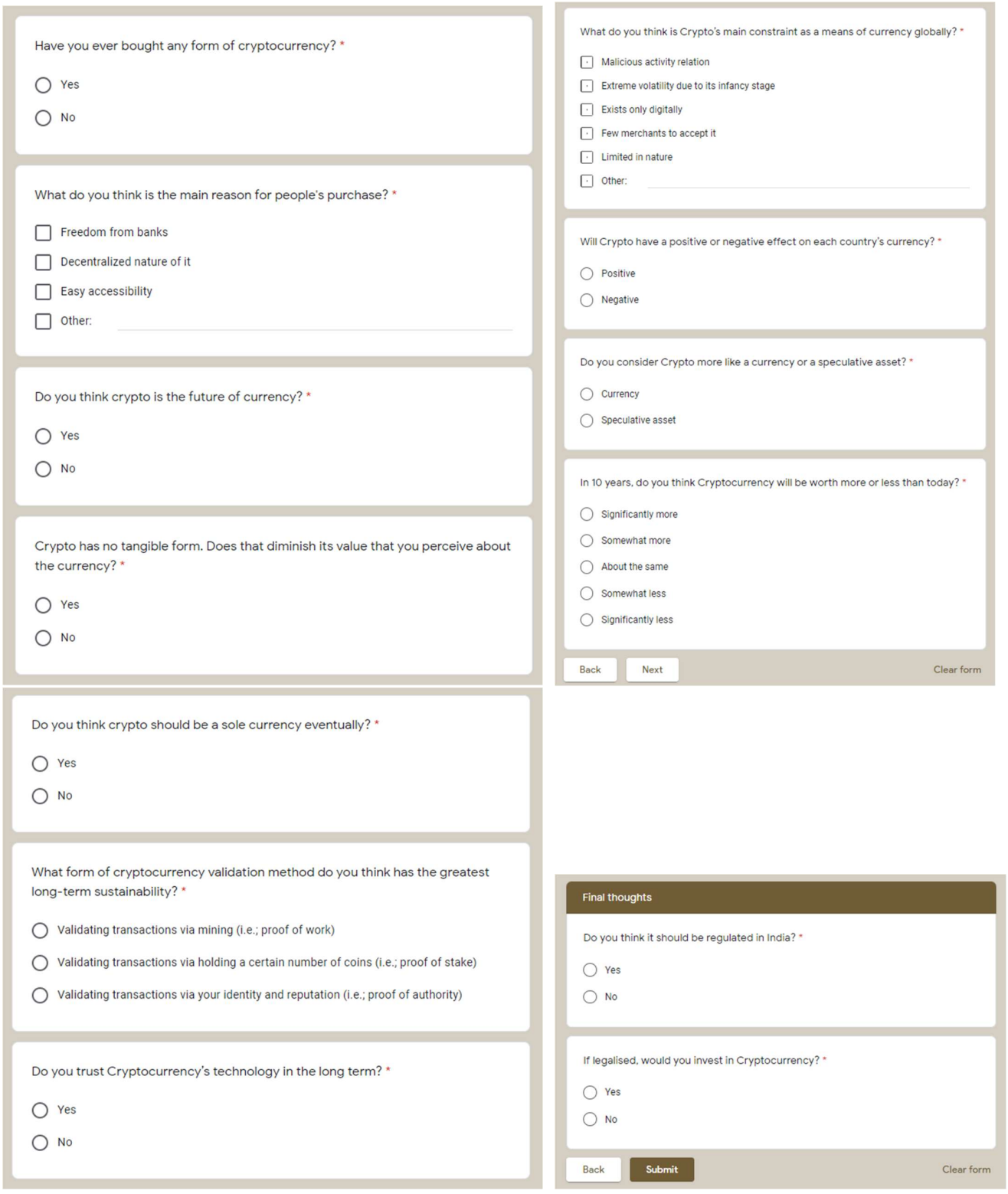


Fig 2: Questionnaire Section 1: For people who are familiar with Crypto

FOR RESPODENTS WHO WERE AWARE ABOUT CRYPTO

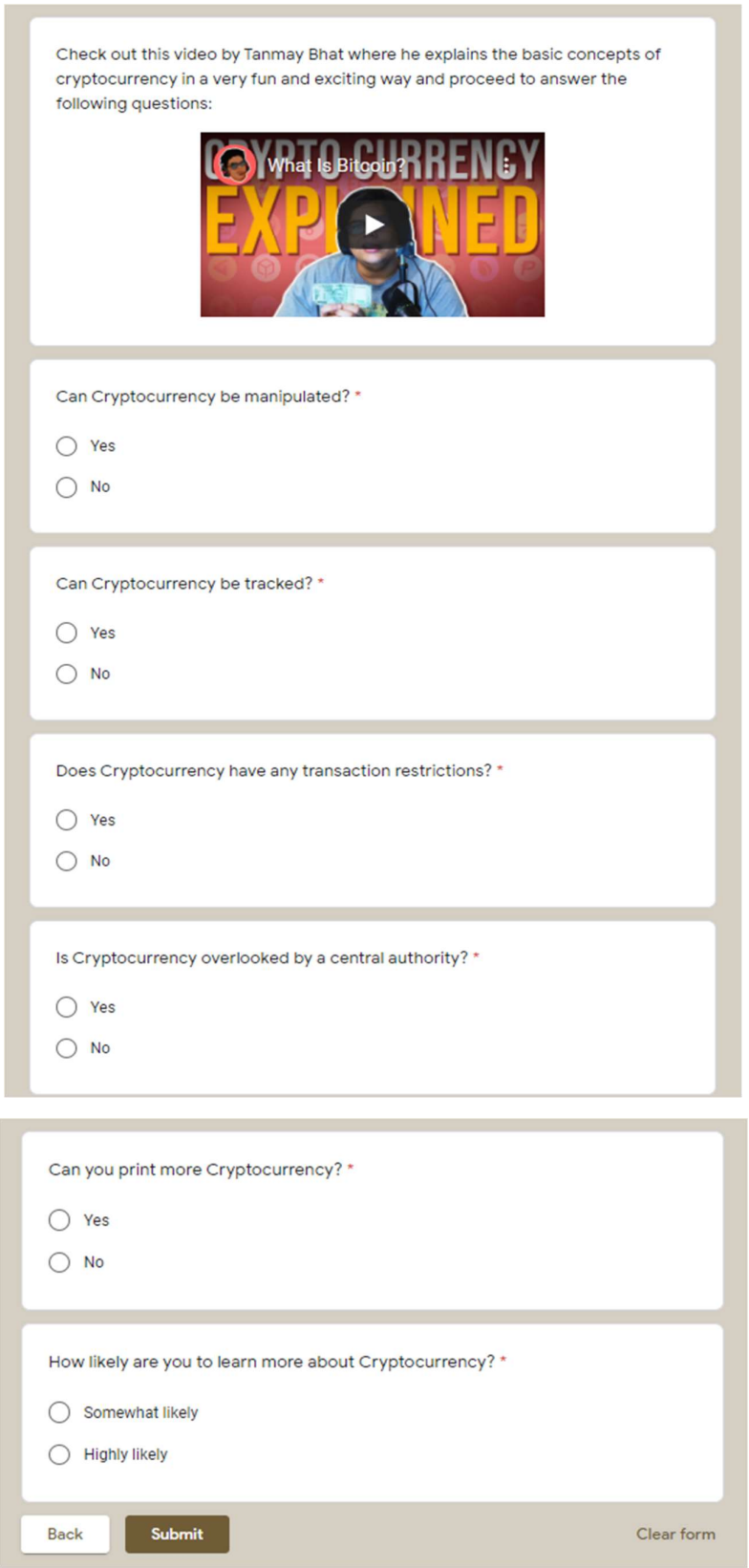


Fig 3: Questionnaire Section 2: For people who are not familiar with Crypto

DATA ANALYSIS

We decided to use the Chi-Square test of independence for finding a relation between two variables, where;

Null hypothesis, H_0: The two variables are independent of each other, implying there is no relation between the two.

Alternate hypothesis, H_1: The two variables are not independent of each other, implying there is some relation between the two.

We start by setting a level of significance alpha i.e., 0.05 in our context. Next, we input the data of both our variables for the contingency table. Then, we calculate the test statistic using the in-built function in R. We then get our critical value using the degrees of freedom and level of significance from the chi square table and compare the calculated value with the table value. If the calculated value is less than the table value then the null hypothesis is accepted otherwise if calculated value is greater than the table value, the null hypothesis is rejected.

R scripts:

1) Fig 4: Age vs Awareness about Crypto

```r
options(warn=-1)

library(readxl)
library("dplyr")

#IMPORTING THE DATA
  crypto <- read_excel("crypto data.xlsx") #Consists the data for the characteristics of the sample

############################################################ CHI SQUARE TEST ##########################################################

  #AGE

  ### H0 : Age groups and awareness about Cryptocurrency are independent of each other
  ### H1 : Age groups and awareness about Cryptocurrency are not independent of each other

  data = matrix(c(14, 20, 24, 11, 14, 0), nrow = 3)
  row.names(data) = c("Below 20","20-45", "45+")
  colnames(data) = c("Aware", "Not aware")
  data

  Expected=chisq.test(data) #We can calculate expected value
  Expected$expected #Show Expected values

  chi_cal = chisq.test(data)$statistic #Take calculated value of chi-square from data

  df = chisq.test(data)$parameter #Take degrees of freedom value from data

  chiindependent.test = function(alpha)
  {
    chi_tab = qchisq(alpha,df,lower.tail = FALSE)
    if (chi_cal < chi_tab)
      output = "H0 is accepted; i.e. Age groups and awareness about Cryptocurrency are independent variables, implying there is no relation between the two."
    else
      output = "H0 is rejected; i.e. Age groups and awareness about Cryptocurrency are not independent variables, implying there is some relation between the two."
    result=list(chi_cal = chi_cal, degrees_of_freedom = df,
                alpha = alpha, chi_tab = chi_tab, output = output)
    return(result)
  }
  #Solution:
  chiindependent.test(0.05)

```

2) Fig 5: Gender vs Awareness about Crypto

```r
  #GENDER

  ### H0 : Gender and awareness about Cryptocurrency are independent of each other
  ### H1 : Gender and awareness about Cryptocurrency are not independent of each other

  data = matrix(c(31, 26, 12, 14), nrow = 2)
  row.names(data) = c("Male","Female")
  colnames(data) = c("Aware", "Not aware")
  data

  Expected=chisq.test(data) #We can calculate expected value
  Expected$expected #Show Expected values

  chi_cal = chisq.test(data)$statistic #Take calculated value of chi-square from data

  df = chisq.test(data)$parameter #Take degrees of freedom value from data

  chiindependent.test = function(alpha)
  {
    chi_tab = qchisq(alpha,df,lower.tail = FALSE)
    if (chi_cal < chi_tab)
      output = "H0 is accepted; i.e. Gender and awareness about Cryptocurrency are independent variables, implying there is no relation between the two."
    else
      output = "H0 is rejected; i.e. Gender and awareness about Cryptocurrency are not independent variables, implying there is some relation between the two."
    result=list(chi_cal = chi_cal, degrees_of_freedom = df,
                alpha = alpha, chi_tab = chi_tab, output = output)
    return(result)
  }
  #Solution:
  chiindependent.test(0.05)
```

3) Fig 6: Occupational status vs Awareness about Crypto

```r
#OCCUPATIONAL STATUS

### H0 : Occupational status and awareness about Cryptocurrency are independent of each other
### H1 : Occupational status and awareness about Cryptocurrency are not independent of each other

data = matrix(c(16, 28, 6, 3, 5, 15, 0, 6, 4, 0), nrow = 5)
row.names(data) = c("Student","Salaried job", "Self employed", "Home maker", "Unemployed")
colnames(data) = c("Aware", "Not aware")
data

Expected=chisq.test(data) #We can calculate expected value
Expected$expected #Show Expected values

chi_cal = chisq.test(data)$statistic #Take calculated value of chi-square from data

df = chisq.test(data)$parameter #Take degrees of freedom value from data

chiindependent.test = function(alpha)
{
  chi_tab = qchisq(alpha,df,lower.tail = FALSE)
  if (chi_cal < chi_tab)
    output = "H0 is accepted; i.e. Occupational status and awareness about Cryptocurrency are independent variables, implying there is no relation between the two."
  else
    output = "H0 is rejected; i.e. Occupational status and awareness about Cryptocurrency are not independent variables, implying there is some relation between the two."
  result=list(chi_cal = chi_cal, degrees_of_freedom = df,
              alpha = alpha, chi_tab = chi_tab, output = output)
  return(result)
}
#Solution:
chiindependent.test(0.05)
```

4) Fig 7: Possession of Crypto vs Occupational status

```r
#POSSESSION OF CRYPTO AND OCCUPATIONAL STATUS

### H0 : Possession of Cryptocurrency and the respondent's Occupational status are independent of each other
### H1 : Possession of Cryptocurrency and the respondent's occupational status are not independent of each other

data = matrix(c(1, 15, 3, 0, 3, 15, 13, 3, 3, 2), nrow = 5)
row.names(data) = c("Student","Salaried job", "Self employed", "Home maker", "Unemployed")
colnames(data) = c("Does Possess", "Does not Possess")
data

Expected=chisq.test(data) #We can calculate expected value
Expected$expected #Show Expected values

chi_cal = chisq.test(data)$statistic #Take calculated value of chi-square from data

df = chisq.test(data)$parameter #Take degrees of freedom value from data

chiindependent.test = function(alpha)
{
  chi_tab = qchisq(alpha,df,lower.tail = FALSE)
  if (chi_cal < chi_tab)
    output = "H0 is accepted; i.e. Possession of Cryptocurrency and the respondent's Occupational status are independent variables, implying there is no relation between the two."
  else
    output = "H0 is rejected; i.e. Possession of Cryptocurrency and the respondent's Occupational status are not independent variables, implying there is some relation between the two."
  result=list(chi_cal = chi_cal, degrees_of_freedom = df,
              alpha = alpha, chi_tab = chi_tab, output = output)
  return(result)
}
#Solution:
chiindependent.test(0.05)
```

5) Fig 8: Main reason for investment in Crypto vs Age

```r
#MAIN REASON FOR INVESTMENT IN CRYPTO AND AGE

### H0 : The main reason for investment in Cryptocurrency and the respondent's age are independent of each other
### H1 : The main reason for investment in Cryptocurrency and the respondent's age are not independent of each other

data = matrix(c(7, 9, 10, 4, 15, 19, 11, 11, 16, 0, 3, 1), nrow = 3)
row.names(data) = c("Below 20", "20-45", "45+")
colnames(data) = c("Freedom from banks", "Decentralized nature of it", "Easy accesibilty", "Other")
data

Expected=chisq.test(data) #We can calculate expected value
Expected$expected #Show Expected values

chi_cal = chisq.test(data)$statistic #Take calculated value of chi-square from data

df = chisq.test(data)$parameter #Take degrees of freedom value from data

chiindependent.test = function(alpha)
{
  chi_tab = qchisq(alpha,df,lower.tail = FALSE)
  if (chi_cal < chi_tab)
    output = "H0 is accepted; i.e. The main reason for investment in Cryptocurrency and the respondent's age are independent variables, implying there is no relation between the two."
  else
    output = "H0 is rejected; i.e. The main reason for investment in Cryptocurrency and the respondent's age are not independent variables, implying there is some relation between the two."
  result=list(chi_cal = chi_cal, degrees_of_freedom = df,
              alpha = alpha, chi_tab = chi_tab, output = output)
  return(result)
}
#Solution:
chiindependent.test(0.05)
```

6) Fig 9: Preferred form of Crypto validation method for long term sustainability vs Age

```r
#PREFERRED FORM OF CRYPTO VALIDATION METHOD FOR LONG TERM SUSTAINABILITY AND AGE

### H0 : Preferred form of Cryptocurrency validation method for long-term sustainability and the respondent's age are independent of each other
### H1 : Preferred form of Cryptocurrency validation method for long-term sustainability and the respondent's age are not independent of each other

data = matrix(c(5, 6, 7, 4, 6, 5, 5, 8, 12), nrow = 3)
row.names(data) = c("Below 20", "20-45", "45+")
colnames(data) = c("Proof of work", "Proof of stake", "Proof of authority")
data

Expected=chisq.test(data) #We can calculate expected value
Expected$expected #Show Expected values

chi_cal = chisq.test(data)$statistic #Take calculated value of chi-square from data

df = chisq.test(data)$parameter #Take degrees of freedom value from data

chiindependent.test = function(alpha)
{
  chi_tab = qchisq(alpha,df,lower.tail = FALSE)
  if (chi_cal < chi_tab)
    output = "H0 is accepted; i.e. Preferred form of Cryptocurrency validation method for long-term sustainability and the respondent's age are independent variables, implying there is no relation between the t
  else
    output = "H0 is rejected; i.e. Preferred form of Cryptocurrency validation method for long-term sustainability and the respondent's age are not independent variables, implying there is some relation betweer
  result=list(chi_cal = chi_cal, degrees_of_freedom = df,
              alpha = alpha, chi_tab = chi_tab, output = output)
  return(result)
}
#Solution:
chiindependent.test(0.05)
```

7) Fig 10: Assumption of Crypto's main constraint vs Occupational status

```r
#ASSUMPTION OF CRYPTOCURRENCY'S MAIN CONSTRAINT AND OCCUPATIONAL STATUS

### H0 : Assumption of Cryptocurrency's main constraint and the respondent's occupational status are independent of each other
### H1 : Assumption of Cryptocurrency's main constraint and the respondent's occupational status are not independent of each other

data = matrix(c(10, 10, 1, 1, 0, 9, 11, 1, 1, 3, 9, 17, 4, 3, 4, 6, 10, 2, 2, 2, 6, 15, 4, 1, 3, 0, 3, 0, 0, 0), nrow = 5)
row.names(data) = c("Student","Salaried Job", "Self employed", "Home maker", "Unemployed")
colnames(data) = c("Exists only digitally","Extreme volatility", "Malicious activity relation", "Limited in nature", "Few merchants to accept it", "Other")
data

Expected=chisq.test(data) #we can calculate expected value
Expected$expected #Show Expected values

chi_cal = chisq.test(data)$statistic #Take calculated value of chi-square from data

df = chisq.test(data)$parameter #Take degrees of freedom value from data

chiindependent.test = function(alpha)
{
  chi_tab = qchisq(alpha,df,lower.tail = FALSE)
  if (chi_cal < chi_tab)
    output = "H0 is accepted; i.e. Assumption of Cryptocurrency's main constraint and the respondent's Occupational status are independent variables, implying there is no relation between the two."
  else
    output = "H0 is rejected; i.e. Assumption of Cryptocurrency's main constraint and the respondent's Occupational status are not independent variables, implying there is some relation between the two."
  result=list(chi_cal = chi_cal, degrees_of_freedom = df,
              alpha = alpha, chi_tab = chi_tab, output = output)
  return(result)
}
#Solution:
chiindependent.test(0.05)
```

8) Fig 11: Should Crypto be regulated vs Possession of Crypto

```r
#SHOULD CRYPTO BE REGULATED AND POSSESION OF CRYPTO

### H0 : Possession of Cryptocurrency and thefr opinion on whether it should be regulated in India are independent of each other
### H1 : Possession of Cryptocurrency and their opinion on whether it should be regulated in India are not independent of each other

data = matrix(c(18, 28, 4, 8), nrow = 2)
row.names(data) = c("Does Possess","Does not Possess")
colnames(data) = c("Should be regulated", "Should not be regulated")
data

Expected=chisq.test(data) #we can calculate expected value
Expected$expected #Show Expected values

chi_cal = chisq.test(data)$statistic #Take calculated value of chi-square from data

df = chisq.test(data)$parameter #Take degrees of freedom value from data

chiindependent.test = function(alpha)
{
  chi_tab = qchisq(alpha,df,lower.tail = FALSE)
  if (chi_cal < chi_tab)
    output = "H0 is accepted; i.e. Possession of Cryptocurrency and their opinion on whether it should be regulated in India are independent variables, implying there is no relation between the two."
  else
    output = "H0 is rejected; i.e. Possession of Cryptocurrency and their opinion on whether it should be regulated in India are not independent variables, implying there is some relation between the two."
  result=list(chi_cal = chi_cal, degrees_of_freedom = df,
              alpha = alpha, chi_tab = chi_tab, output = output)
  return(result)
}
#Solution:
chiindependent.test(0.05)
```

9) Fig 12: Effect of Crypto on the economy vs Plans on investing in future

```r
#EFFECT OF CRYPTOCURRENCY ON THE ECONOMY AND PLAN ON INVESTING IN FUTURE

### H0 : The respondent's assumption on the effect of Cryptocurrency and their plan on investing in future are independent of each other
### H1 : The respondent's assumption on the effect of Cryptocurrency and their plan on investing in future are not independent of each other

data = matrix(c(36, 7, 6, 9), nrow = 2)
row.names(data) = c("Positive","Negative")
colnames(data) = c("Would", "Would not")
data

Expected=chisq.test(data) #we can calculate expected value
Expected$expected #Show Expected values

chi_cal = chisq.test(data)$statistic #Take calculated value of chi-square from data

df = chisq.test(data)$parameter #Take degrees of freedom value from data

chiindependent.test = function(alpha)
{
  chi_tab = qchisq(alpha,df,lower.tail = FALSE)
  if (chi_cal < chi_tab)
    output = "H0 is accepted; i.e. The respondent's assumption on the effect of Cryptocurrency and their plan on investing in future are independent variables, implying there is no relation between the two."
  else
    output = "H0 is rejected; i.e. The respondent's assumption on the effect of Cryptocurrency and their plan on investing in future are not independent variables, implying there is some relation between the two
  result=list(chi_cal = chi_cal, degrees_of_freedom = df,
              alpha = alpha, chi_tab = chi_tab, output = output)
  return(result)
}
#Solution:
chiindependent.test(0.05)
```

Table 1: Table summary of the outputs:

Sr. No.	Variable 1	Variable 2	Calculated value	Degrees of freedom	Alpha	Table value	Output
1)	Age	Awareness about Crypto	14.60746	2	0.05	5.991465	H0 is rejected
2)	Gender	Awareness about Crypto	0.2110052	1	0.05	3.841459	H0 is accepted
3)	Occupational status	Awareness about Crypto	23.82006	4	0.05	9.487729	H0 is rejected
4)	Occupational status	Possession of Crypto	12.96918	4	0.05	9.487729	H0 is rejected
5)	Age	Main reason for investment in Crypto	7.671019	6	0.05	12.59159	H0 is accepted
6)	Age	Preferred form of Crypto validation method for long-term sustainability	1.026354	4	0.05	9.487729	H0 is accepted
7)	Occupational status	Assumption of Crypto's main constraint	12.8615	20	0.05	31.41043	H0 is accepted
8)	Possession of Crypto	Opinion on whether it should be regulated in India	0.001194	1	0.05	3.841459	H0 is accepted
9)	Effect of Crypto on the economy	Plan on investing in future	8.56525	1	0.05	3.841459	H0 is rejected

RESULTS

Disclaimer:

1. The data is collected from 83 respondents only. Therefore, generalization to all people is inevitable.
2. An interpretation of this study is based on the assumption that the respondent has given the correct information.
3. In spite of the intensive effort, the variables confined to this study may have been influenced by the interests and the known limitations.

Characteristics of the sample:

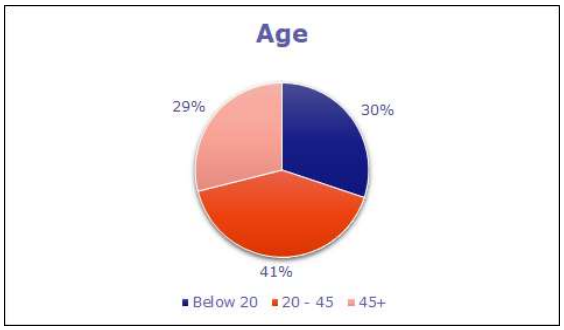


Fig 13: Age of the respondents.

Inference: The age groups are equally distributed with a slight inclination towards ages 20-45.

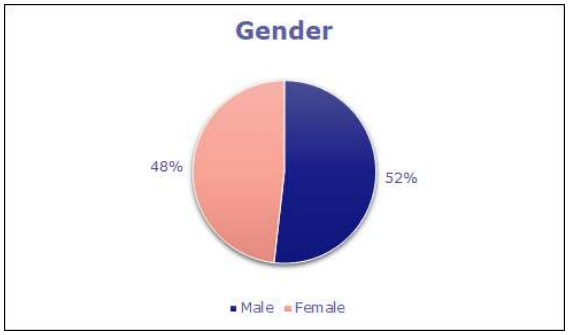


Fig 14: Gender of the respondents.

Inference: Majority of the respondents are male.

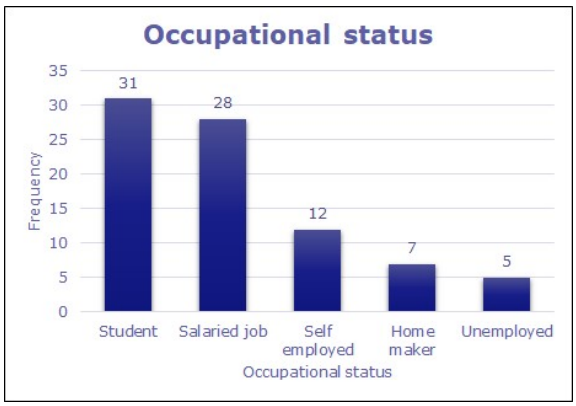
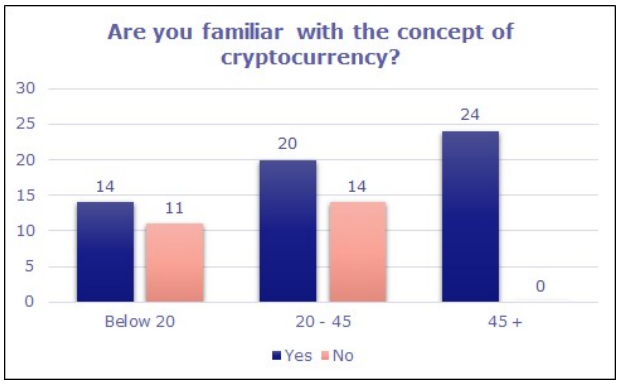
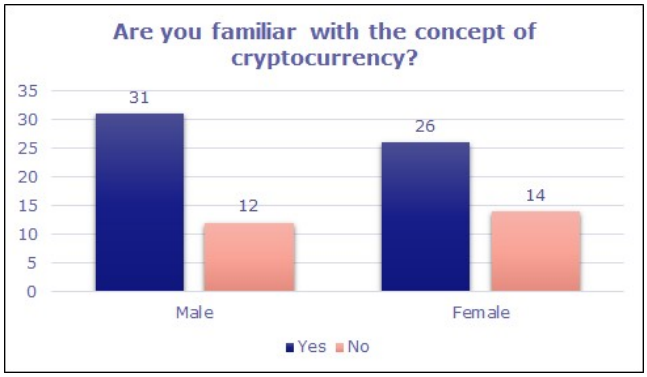


Fig 15: Occupational status of the respondents.

Inference: Majority of the respondents are male.

ANALYSIS OF THE RESPONSES:





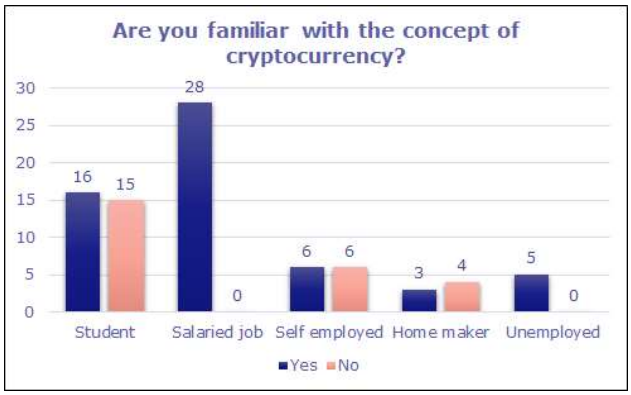


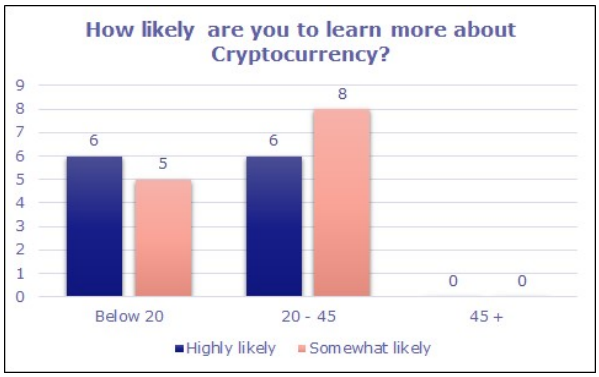
Fig 16: Awareness of Cryptocurrency among different characteristics of the sample.

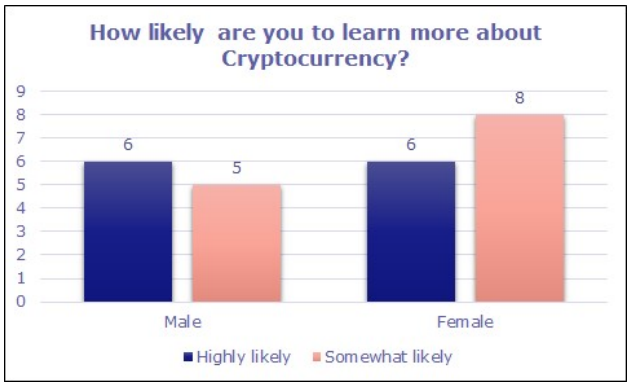
Inference: 1) According to our data, we can derive the conclusion that people above the age of 20 are more likely to know about Cryptocurrency.

2) 72% of the respondents who know about Cryptocurrency are male and 65% are female.

3) According to our data, we can derive the conclusion that Salaried employees are more likely to know about Cryptocurrency.

For respondents who were not familiar with Cryptocurrency:





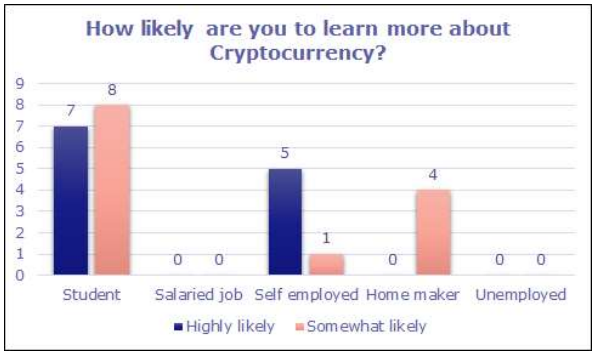


Fig 17: Likeliness to learn more about Crypto among different characteristics of the sample.

Inference: 13 out of 25 people said that they were somewhat likely and 12/25 people said that they were highly likely to learn more about cryptocurrency. Which is 52% are somewhat likely and 48% are highly likely to gather more knowledge about cryptocurrency.

For respondents who were familiar with Cryptocurrency:

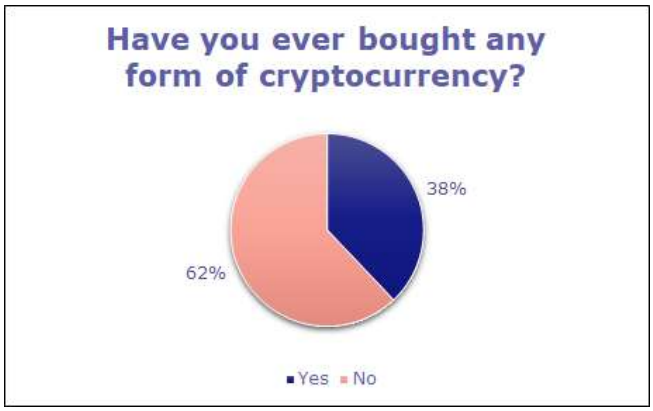


Fig 18: Possession of Cryptocurrency

Inference: Salaried employees are most likely to invest in Cryptocurrency which is 68.1% of the respondents who possess Cryptocurrency.

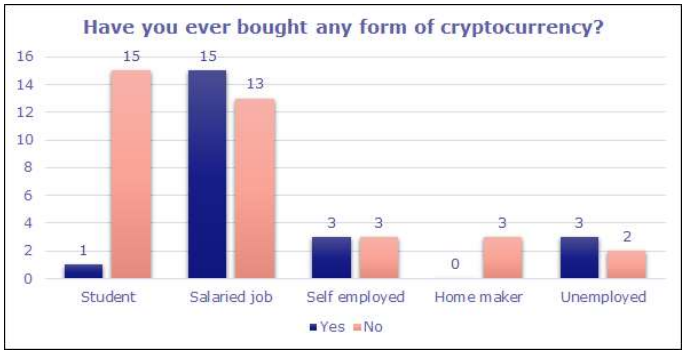
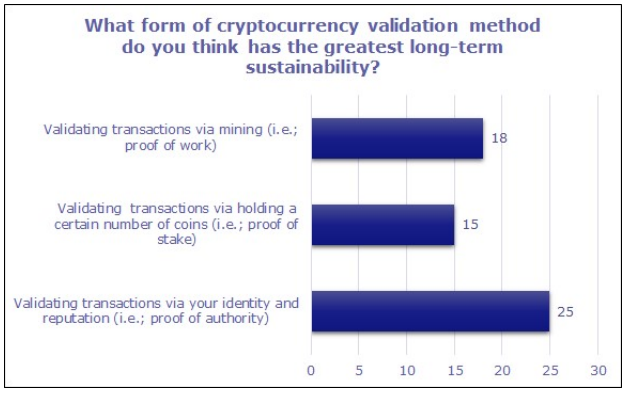


Fig 19: Possession of Cryptocurrency vs Occupational status

Inference: Salaried employees are most likely to invest in Cryptocurrency which is 68.1% of the respondents who possess Cryptocurrency.



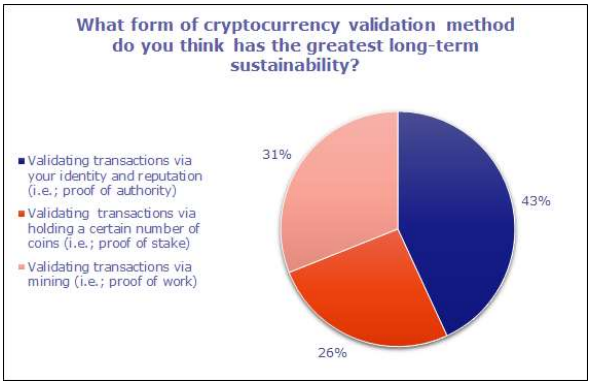
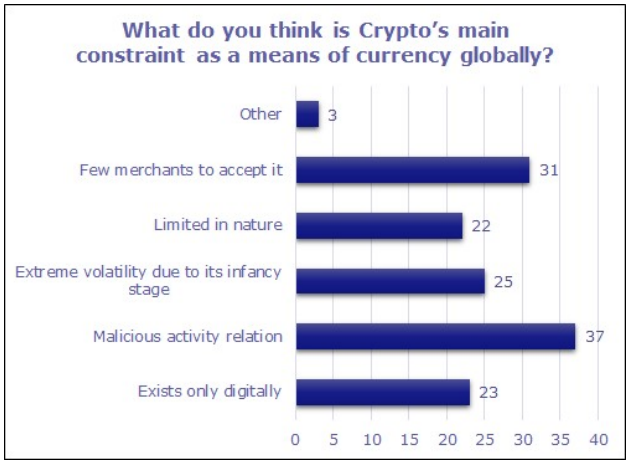


Fig 20: Form of cryptocurrency validation method having greater long-term sustainability.

Inference: Although, all three validation methods have closely similar percentages there is a slight inclination towards proof of authority as Crypto's greatest long term sustainability validation method.



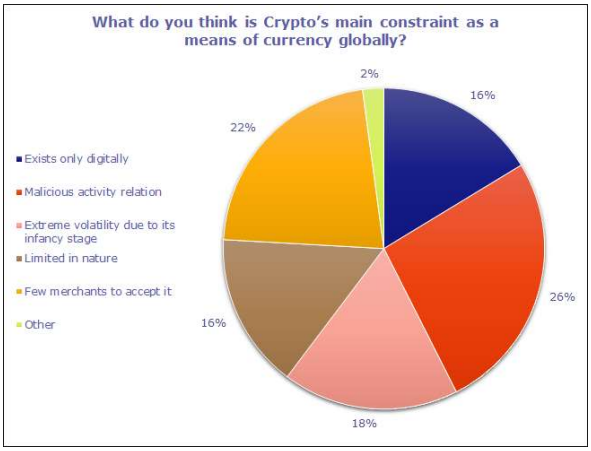


Fig 21: Crypto's main constraint as a means of currency globally.

Inference: According to our data, the respondents think that Crypto's malicious activity relation, extreme volatility due to its infancy stage and its non-tangible form are its main constraints as a means of currency globally, closely followed by fewer merchants accepting it and its limited nature.

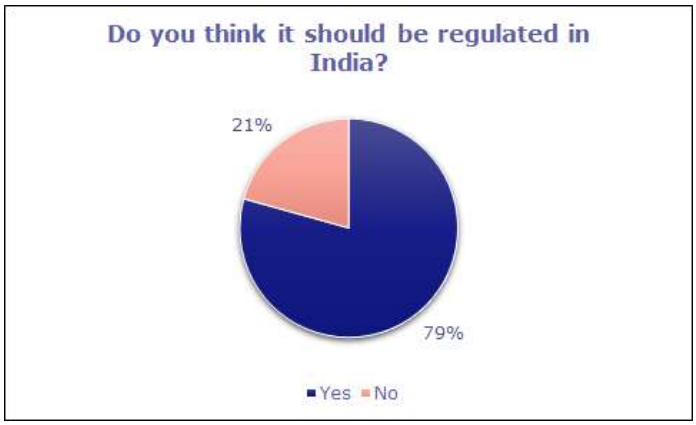


Fig 22: Should Crypto be regulated in India?

Inference: 79% of the respondents want Crypto to be regulated in India.

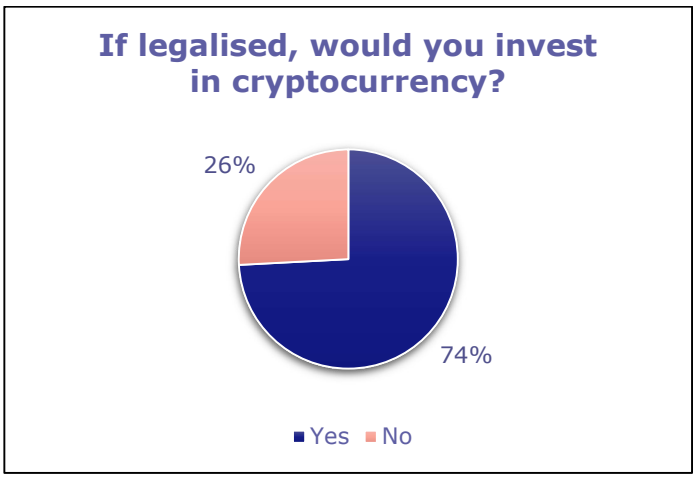


Fig 23: If legalized, would you invest in cryptocurrency?

Inference: 74% of the respondents say that they will invest in Crypto, if legalised

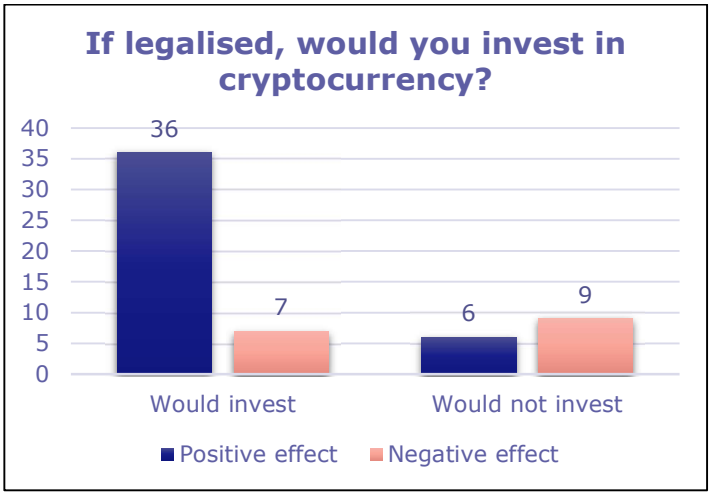
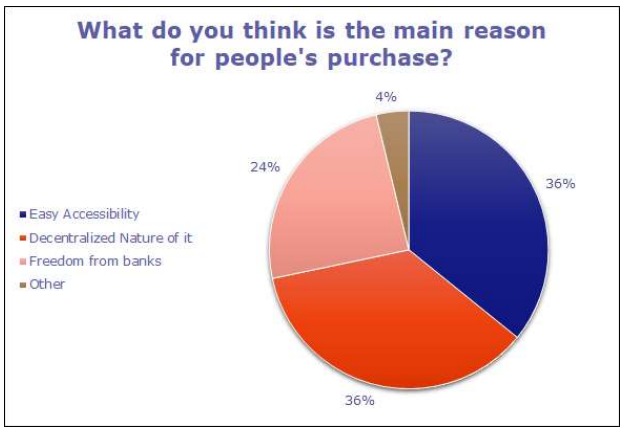


Fig 24: Assumption on the effect of Cryptocurrency and their plan on investing in the future.

Inference: Majority of the respondents who believe that it will have a positive effect on the



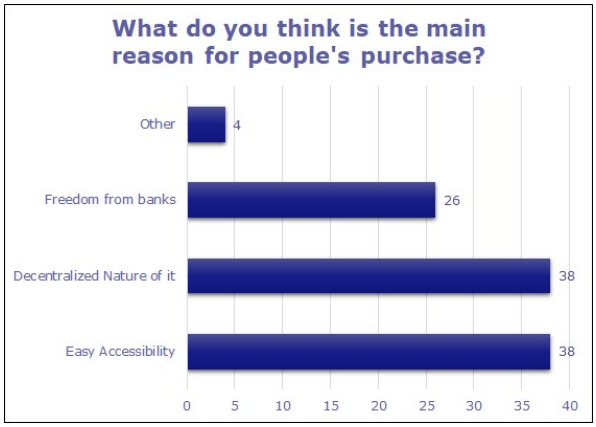


Fig 25: Main reason for people's purchase.

Inference: According to our data, we can conclude that the two main reasons why people purchase Cryptocurrency is its easy accessibility and its decentralized nature followed by freedom from banks. Where other includes hedging against inflation, high appreciation possibilities, transaction in crypto and volatility making it good for trading

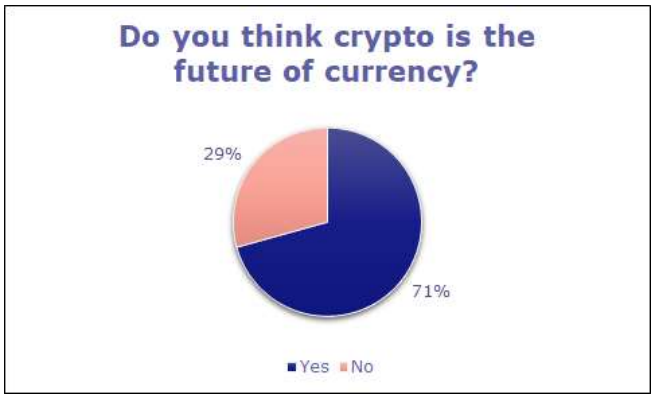


Fig 26: Is Crypto the future of currency?

Inference: 71% of the respondents think that Crypto is the future of currency.

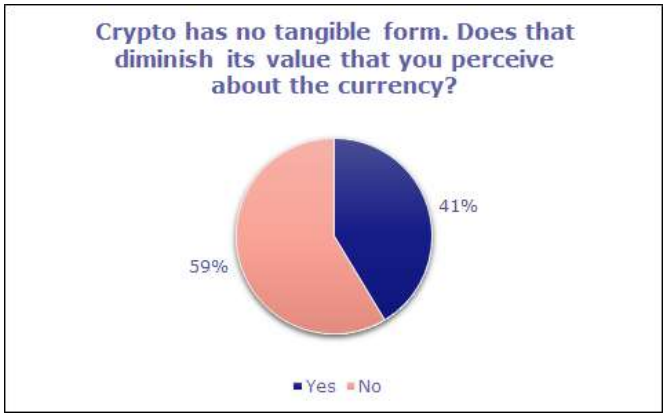


Fig 27: Crypto has no tangible form. Does that diminish the value that you perceive about the currency?

Inference: 59% of the respondents think that Crypto not having a tangible form does not diminish its value. In fact, one of the main reasons why people have purchased Crypto is because of its easy accessibility. But 41% of the respondents believe that it does diminish its

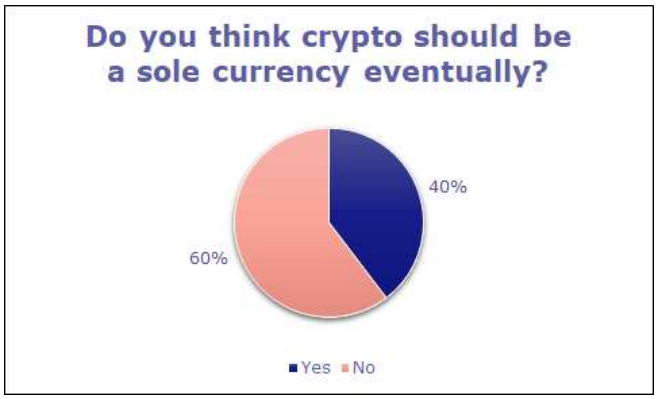


Fig 28: Should be a sole currency eventually?

Inference: 60% of the respondents believe that Crypto should not be a sole currency eventually whereas, 40% believe that it should. Therefore, the regarding predictive state of Crypto being a sole currency eventually is inconclusive.

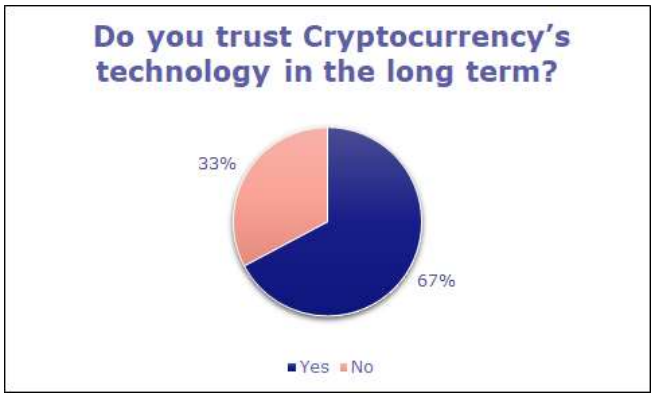


Fig 29: Do you trust Cryptocurrency's technology in the long term?

Inference: 67% of the respondents, trust Crypto's technology in the long run while 33% still have their doubts.

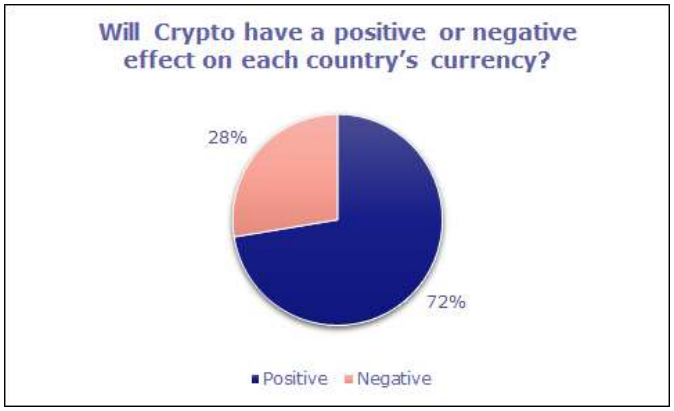


Fig 30: Will Crypto have a positive or negative effect on each country's currency?

Inference: Majority of the respondents i.e., 72%, believe that Crypto will have a positive effect on each country's currency.

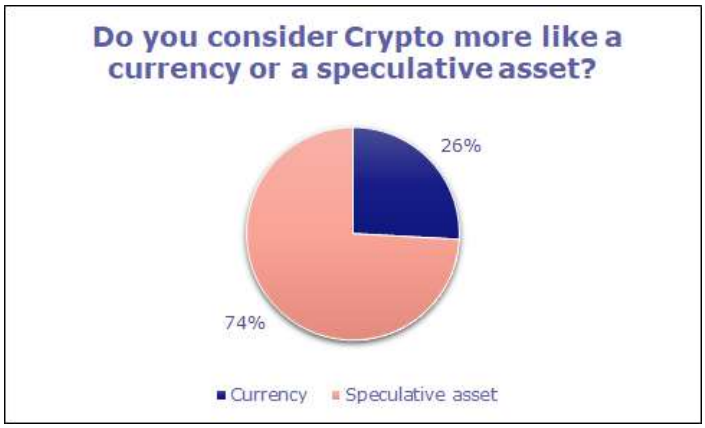
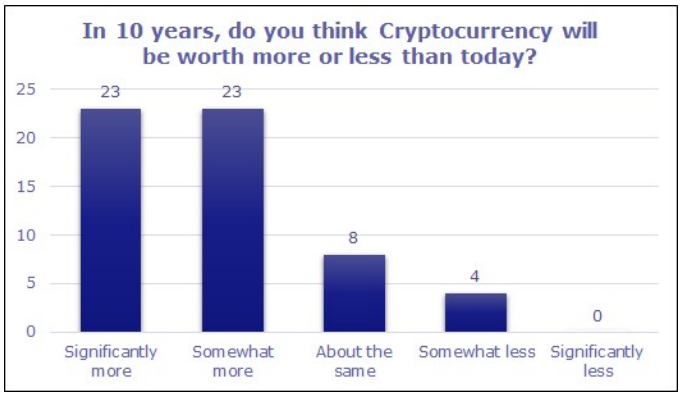


Fig 31: Is Crypto considered more like a currency or a speculative asset?

Inference: Majority of the respondents believe Crypto to be more like a speculative asset.



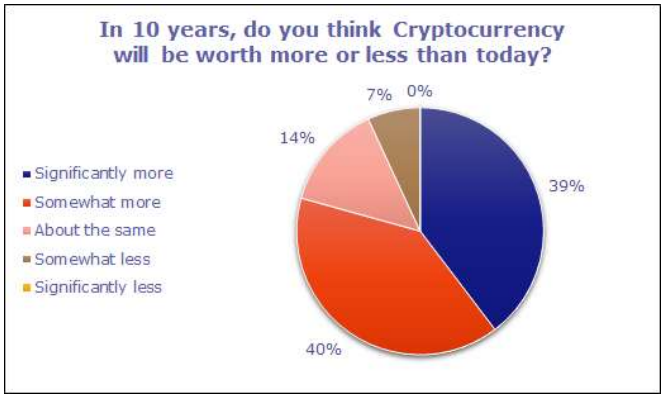


Fig 32: In 10 years, Will Cryptocurrency be worth more or less than today?

Inference: About 79% of the respondents believe that Crypto will be worth more than

Major Findings

1) From the test of independence:

- Possession of Cryptocurrency and the respondent's Occupational status are not independent variables, implying there is some relation between the two.
- Occupational status and awareness about Cryptocurrency are not independent variables, implying there is some relation between the two.
- Age groups and awareness about Cryptocurrency are not independent variables, implying there is some relation between the two.
- The respondent's assumption on the effect of Cryptocurrency and their plan on investing in the future are not independent variables, implying there is some relation between the two.

2) According to our data, we can conclude that the two main reasons why people purchase Cryptocurrency are its easy accessibility and its decentralized nature followed by freedom from banks. Where other includes no regulatory body to govern and the government won't allow such currencies due to its decentralized nature.

3) 59% of the respondents think that Crypto not having a tangible form does not diminish its value. In fact, one of the main reasons why people have purchased Crypto is because of its easy accessibility. But 41% of the respondents believe that it does diminish its value.

4) 60% of the respondents believe that Crypto should not be a sole currency eventually whereas, 40% believe that it should. Therefore, the predictive state of Crypto being a sole currency eventually is inconclusive.

5) 72% of the respondents believe that cryptocurrency will have a positive impact on the Indian economy in the future.

6) 71% of the respondents think that cryptocurrency is the future of cryptocurrency.

7) About 79% of the respondents believe that Crypto will be worth more than what it is worth today.

8) According to our data, the respondents think that Crypto's malicious activity relation, extreme volatility due to its infancy stage, and its intangible form are its main constraints as a means of currency globally, closely followed by fewer merchants accepting it and its limited nature.

9) 79% of the respondents want Crypto to be regulated in India.

10) 74% of people would invest in cryptocurrency if legalized.

11) There are 83.7% of the respondents who believe that Crypto will have a positive effect on the country's currency and would invest in Crypto if legalized.

CONCLUSION

The crypto in the present situation can help the foundation of India's advanced framework and make sure about all the exchanges made on the computerized network. In the present circumstance requiring charges on the exchanges including digital currency ought to be viewed as an inviting move and ought not to be viewed as a limitation. It is a two-route road for the crypto exchanges to be followed and utilized legitimately just as producing pay for the public authority to be utilized productively. It is likewise eagerly attested that utilizing charge on crypto as a strategy matter can assist with giving an ideal environment to guarantee the merchants that their cash is protected and the dangers engaged with exchanging are additionally moderated. The laws of tax collection should evolve to reduce visionary practices. The achievement of bitcoins as a mode of trade appears promising and progressive and, in this manner, it demands serious thought. It has become necessary now to establish clear laws about regulatory aspects and taxation to ensure security.

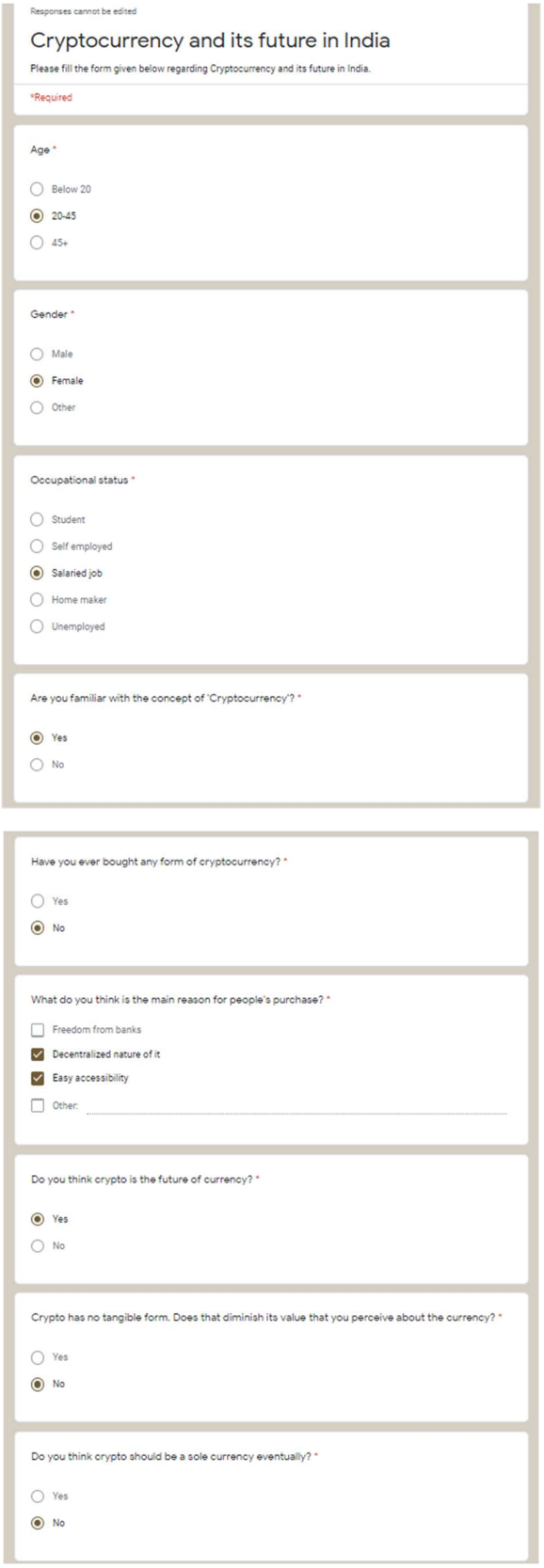
The Indian legislation as opposed to zeroing in on a boycott ought to guarantee that successful degrees of confirmation are prepared to decide a crypto-transfer tax evasion or psychological oppression financing hazard. In any event, assuming reasonable enactment is drafted for digital money, its guideline will require organizations with the digital sharp unit to observe these exchanges. Negative concerns related to Bitcoin or other digital forms of money would then be able to be appropriately fathomed and shaken off to make it all the more prevalently acknowledged token in India.

The future of the cryptocurrency concept is promising, showing more opportunities for positive change and progress in the e-business and e-payment sectors. With the rapid advancement and improvement of technology, cryptocurrency will not stop progressing. Even though there has been no regulatory response from the Indian government, the number of investors in cryptocurrency is increasing rather swiftly over the last few years. But with the high growth of interest in cryptocurrency and blockchain around the world, banning it in India wouldn't be an option. More and more sellers are accepting payments for different types of cryptocurrencies and the fact that many people are now more aware of the potential and opportunities Cryptocurrency can offer, there is a ray of hope.

DISCUSSION

The potential for blockchain technology is huge. It has the ability to be the backbone of India's digital infrastructure securing all the transactions made on the digital network. Keeping this is mind, it is clear that the technology is here to stay. Outrightly banning crypto-currencies is short-sighted and despite the complexities involved, there are sufficient benefits to consider regulating it and limiting misuse. Globally most countries have embraced it, while only countries with exchange control restrictions such as China or India have banned it. The ban imposed by RBI would be difficult to enforce in practice and as such, consumers lose value, exchanges lose business, the Government loses taxes, while most likely the trades will move either abroad or underground. This is a situation where all stakeholders lose and only way forward is to recognize the flaws of the current approach and take the steps necessary to regulate cryptocurrencies in India.

APPENDIX 1: SAMPLE RESPONSE



Responses cannot be edited

Cryptocurrency and its future in India

Please fill the form given below regarding Cryptocurrency and its future in India.

*Required

Age *

- ○ Below 20
- ◉ 20-45
- ○ 45+

Gender *

- ○ Male
- ◉ Female
- ○ Other

Occupational status *

- ○ Student
- ○ Self employed
- ◉ Salaried job
- ○ Home maker
- ○ Unemployed

Are you familiar with the concept of 'Cryptocurrency'? *

- ◉ Yes
- ○ No

Have you ever bought any form of cryptocurrency? *

- ○ Yes
- ◉ No

What do you think is the main reason for people's purchase? *

- ☐ Freedom from banks
- ☑ Decentralized nature of it
- ☑ Easy accessibility
- ☐ Other: .....

Do you think crypto is the future of currency? *

- ◉ Yes
- ○ No

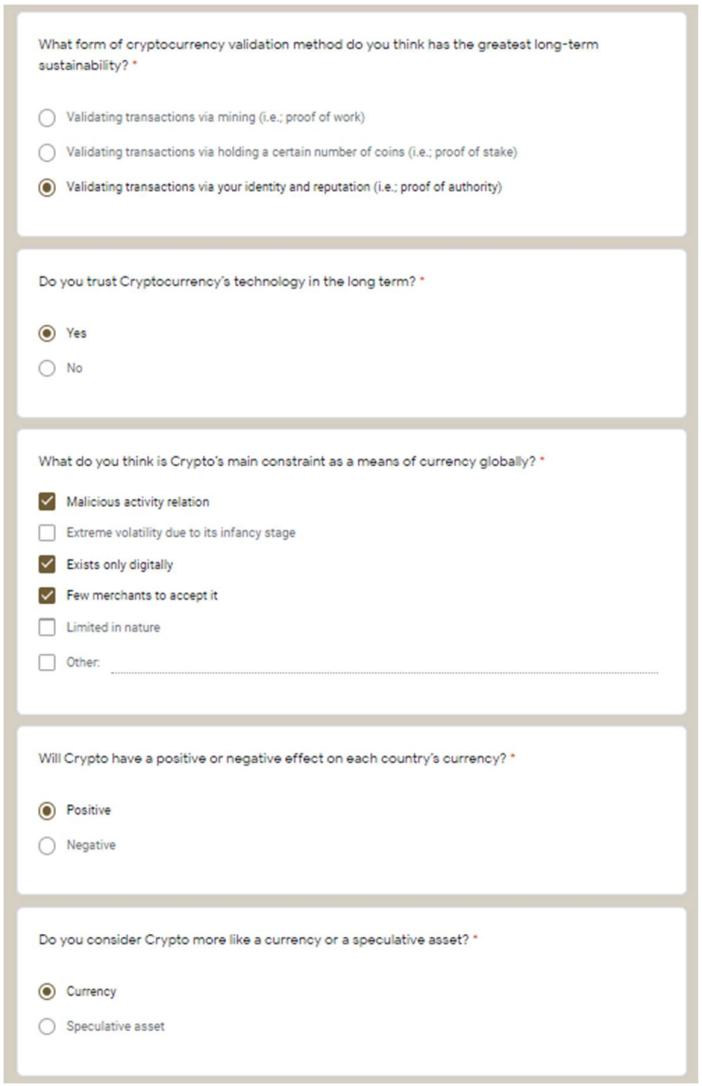
Crypto has no tangible form. Does that diminish its value that you perceive about the currency? *

- ○ Yes
- ◉ No

Do you think crypto should be a sole currency eventually? *

- ○ Yes
- ◉ No

Fig 33: Sample Response (1/2)



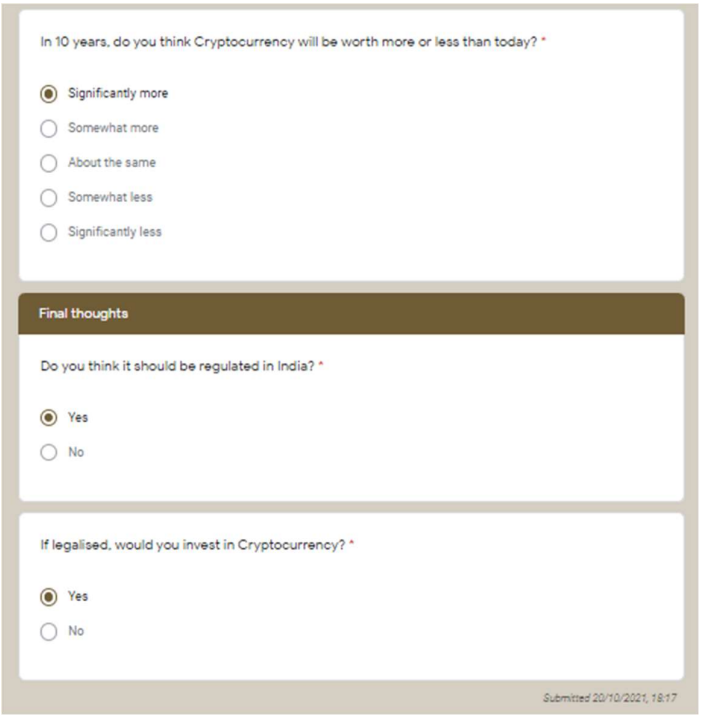


Fig 34: Sample Response (2/2)

REFERENCE LIST

1) Research Methodology Methods and Techniques by C.R Kothari

2) Research Methodology Concepts and Cases by Dr Deepak Chawla and Dr Neena Sondhi

3) How will India tax cryptocurrency investments?

4) https://www.reddit.com/r/CryptoCurrency/

5) https://youtube.com/playlist?list=PLhKwz7hYMTDXZ2vWOklHjRfqrcLFoRKIu