The New Rising Wealth: Cryptocurrency

WHAT DO
PEOPLE THINK
ABOUT CRYPTOCURRENCY?

HOW IT IMPACTS
WORLD
ECONOMY

IS
CRYPTOCURRENCY
REALLY SECURED?

M.E.S. ABASAHEB GARWARE COLLEGE
PUNE-4

Department Of Statistics

Head of Department	Project Guide
DR. SANDESH KURADE	MR. KUNDALIK SHENDE

Project Group G-13	Roll No.
Aman Sheikh	9779
Ayan Sheikh	9769
Parikshit Patil	9795
Lalit Mahajan	9780
Karansingh Rajput	9797

Project Report

Cryptocurrency: The Rising Wealth

EXPLORING CRYPTOCURRENCY AND PEOPLE'S PERCEPTION TOWARDS IT

A dive into the consumer insights for distinct understanding of people's perception towards Cryptocurrency

CONTENTS

FOREWORD

Digitalization has favoured plethora of techno-related opportunities and cryptocurrency has been one of those blessed technology which has dramatically changed world economy. The significant rise of cryptocurrency industry has also imagined realistic and futuristic financial form of economy in upcoming years. We are glad to say that we've performed the cryptocurrency study understandable for the learners as well as for laymen.

We hope this study will prove helpful and give insights for many learners and practitioners for academics

- Project Group G-13

ACKNOWLEDGEMENT

First of all we would like to thank Department of Statistics for giving us opportunity to perform the study on 'Exploring Cryptocurrency and People's percpetions towards it'. We would also like to thank H.O.D of Department Dr. Sandesh Kurade and other teachers and staff for helping us at times when we needed.

Special thanks to our project guide Mr.Kundalik Shende, who have immensely put efforts for guiding us at every single step. At last we'd like to say that the project has been completed with the efforts from every single person associated with it and with their immense efforts.

ABSTRACT

The first step we started for the project was creating a survey. The survey was distributed and accordingly data was collected. We, then, interpretated the data and segmented it into significant categories. Furthermore, we performed Chi-Square Test for Independence to check the dependency of attributes. Adding to it, we also did comparison on, KNN, Decision tree, Naive Bayes and Logistic Regression classifier and checked the accuracy for each. The mentioned Statistical analysis have been completed on tools like Excel and R software.

At the end, we have provided key findings and suggestions from the data which can be useful for further academic analysis.

KEYWORDS

- Cryptocurrency
- Blockchain
- Consumer Psychology
- Awareness

TOOLS USED

- MS- Excel
- R software

OBJECTIVES

To understand the concepts related to cryptocurrency and their working.

To understand it's functioning and regulation in global market.

To analyse people's perspective towards cryptocurrency.

To understand the growth of Cryptocurrency in Indian economy

INTRODUCTION

CRYPTOCURRENCY

These days, Cryptocurrency is being termed as the new rising wealth. How come such virtual financial form of currency got so renowned within no time is really fascinating. The rise of Cryptocurrency in last few years has been touching peaks and sky seems to be the limit for its future. The idea behind creating such currency which would have no manipulation by any third-party organizations like government and banks has been welcomed by its users. The top world economies have astonished by the Cryptocurrency and it's regulation and many have started researching about the same to explore more about it.

No doubt, the prevailing currency is fulfilling the meets of transactions all over the globe. But with the rise of new digital era, the demand for flexibility in same is growing day-by-day. Not only that the requirement of individuals control over money was growing too. And concluding to these rising demands cryptocurrency came into existence.

FROM HISTORY TO FUTURE

Cryptocurrency was invented in 2009, by an unknown person- Satoshi Nakamoto. The traces of cryptocurrency can be found in 1980's, where the invention of digital cash was fundamentally based on cryptography to secured the transactions. Thereafter, there was an inspiration for creation of tools which would bring the decentralized economy into regulation.

Now, the phase of digital transformation has leverage the adoption of digitalized currencies by the financial market. Right from it's invention cryptocurrencies has been the talk of the 'market' town because of its innovative regulation.

The provoking nature of cryptocurrency has already setup its potential in usage in real life economy system. Furthermore, countries like El Salvador have legalized and allowed cryptocurrency for its people in all transaction. The forthcoming years might witnessed the 'Crypto Revolution' across the world economy.

MOTIVATION

Undoubtedly, cryptocurrency has been the most exotic financial form which is emerging at exponential rate. The last few years have proved a blessing for it cryptocurrency has managed to acquire huge market cap across the world . Though it is linked with many illegal activities but Cryptocurrency is still growing as a rising self economy ecosystem across the globe. But even though of its exotic nature, Cryptocurrency has been not able to find place in common man's wallet and pocket. The need for it do aquire more market cap is by creating awareness about its usage and benefits in long term run.

Talking about India and many other financially powerful countries like US and China, haven't, yet, allowed the cryptocurrency for regulation as a good for exchange.

METHODOLOGY

The questionnaire was prepared as of for conducting qualitative research to study people's perceptions, expressions, insights and beliefs towards Cryptocurrency. The data for this project was collected through survey. The clear-cut vision behind the survey was to explore if different replies hold age occupational or regional breakdowns. The survey was created on 'Google form' and the data collection, accordingly, took place via online mode. Also, survey was distributed by respective members of the project on online platforms and comprehensive data collection was conducted.

Major hold of the responses through survey is by Male respondents. Accordingly talking about the occupational sector wise segmentation, major respondents are from private industry domain. Alongwith, most of the residents (nearly 88%) of the respondents are Urban Residents. Finally, the most responsive age group was witnessed to be of the working age group i.e. 20-40 years.

Adding more to the data, the additional dataset was supplemented through previous researches and projects on Cryptocurrency.

QUESTIONNAIRE

Gender -
• Male
• Female
Age group -
• Below 20
• 20-40
• 40-60
• Above 60
Income per month (Personal/ family) -
• <20k
• 20k-40k
• 40k-60
• 60k-80k
• >80k
In which Sector You currently work/ or would like to work?
• Government sector
• Private Sector
• Business Sector

Which of the following describes you the best?
Im unsatisfied with my financial status so I'd like to invest in other assets
I'm unsatisfied with my financial status but won't invest in other assets
im satisfied with my financial status so I won't invest in other assets
im satisfied with my financial status but I'd like to invest in other assets

Have you ever heard or read about cryptocurrency such as Bitcoin?
• Yes, Frequently
• Sometimes
• Very rare
• Just hearing about it now in this survey.

Where have you observe the most talk about Cryptocurrency?
• On Social Media
• On T.V and news
• Among Family and Friends

Which is the Cryptocurrency you've most heard of?
• Bitcoin
• Ethereum
• Dogecoin
• Litecoin
• Others

Have you ever bought Bitcoin/other cryptocurrencies?

- **Yes**
- **No**

What had made you to invest in Cryptocurrency?

- It sounds cool to be a Cryptocurrency holder
- I see bright future in it, because I trust in its process
- My friends/colleagues asked me to do so
- Because it was a trending topic over social media
- I just wanted to explore it out and nothing else

Do you consider Cryptocurrency as a Currency Asset or a Investment asset?

- Currency
- Investment

Suppose, if Cryptocurrency is centralized, then whom would you like it to be under control of?

- Government Sectors should keep watch on them
- Private and Industrial Sector only
- Both Government and Private
- Cryptocurrency shouldn't be centralized at all

Will Government control over the cryptocurrency will affect your interest in them?

- I'd like to invest in them if Cryptocurrency will be under control of Government
- I'd not like to have Government control on regulation of Cryptocurrency
- I'm not sure

Do you think different cryptocurrencies can co-exist with existing Currency?

- Yes, they can
- No
- Can't say

In your opinion, which is more risky , investing in the stock market or investing in the cryptocurrency?

- Stock market
- Cryptocurrency
- Both are equally risky
- Can't say

Do you think the Indian government should centralized Cryptocurrency in order to protect existing Cryptocurrency holders investment in Bitcoin and others?

- Yes, they should regulate
- No, they shouldn't regulate

In your opinion, should India create its own cryptocurrency?

- Yes
- No

In your opinion, will Cryptocurrency gain the broad acceptance for use in making payments for goods and services, i.e. as a mode of Exchange?

- Yes
- No

What you think is the biggest obstacle for Cryptocurrencies to be a main stream as a currency?

- It is being associated with illegal activities
- Being Virtual
- It is Constantly fluctuating
- Other

In next 5 years, where do you see Cryptocurrency–

- **It will be significant than today**
- It will be less significant than today
- About the same
- Cryptocurrency will overtake existing Currency
- Cryptocurrency won't exist at all

Will you invest in Cryptocurrencies if relevant prediction data for them is provided to you?

- Yes
- No
- Not sure

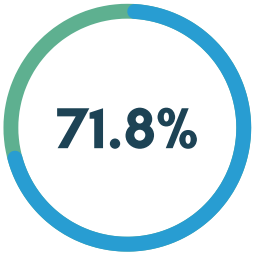
Which of the following might appeal you to invest in Cryptocurrencies?

- Provided Cyber Security
- Insurance comply with Investment
- Both of the above

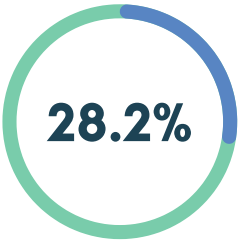
SCENARIO:

ANALYSIS AND INTERPRETATION

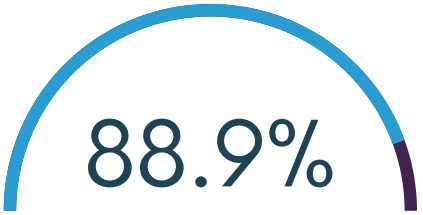
Respondents' Dashboard



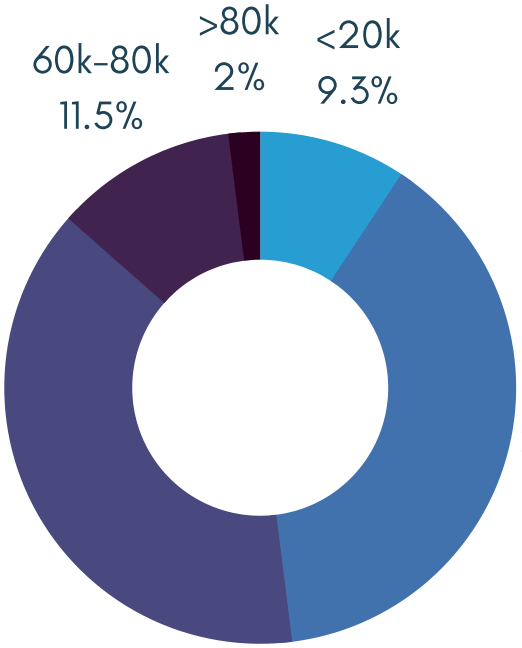
Male



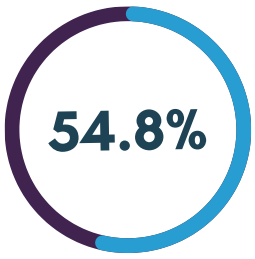
Female



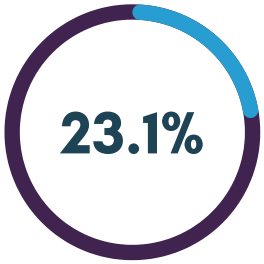
Urban Residents



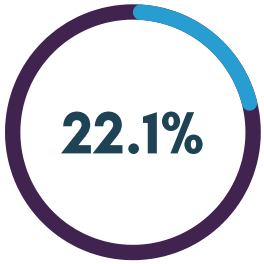
Income Classes (%)



Private Sector

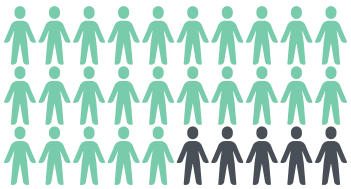


Business Sector



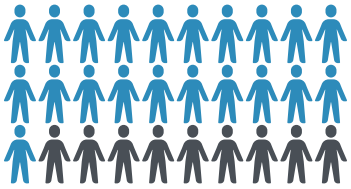
Government Sector

Respondents' Dashboard



84.2%

Of the population, **unsatisfied** with their financial status, are ready to **invest** in other assets

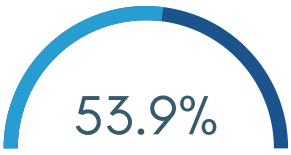


71.1%

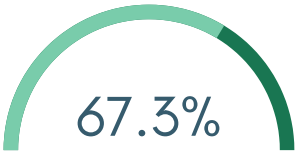
Of the population, **satisfied** with their financial status, are yet ready to **invest** in other assets

21.4%

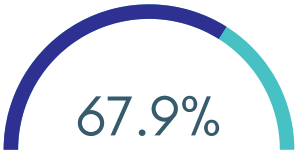
Of the population, irrespective of their financial status, **aren't ready to invest** in other assets such as stocks, mutual funds, etc



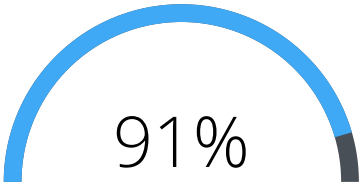
The **most** talk about cryptocurrency has been **heard** on social media



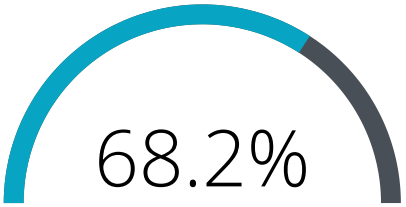
Bitcoin is most **popular** cryptocurrency amongst the population



Majority of the Population assumes cryptocurrency as a '**Currency Asset**'



Of the cryptoholders, wants Government to safeguard their investments

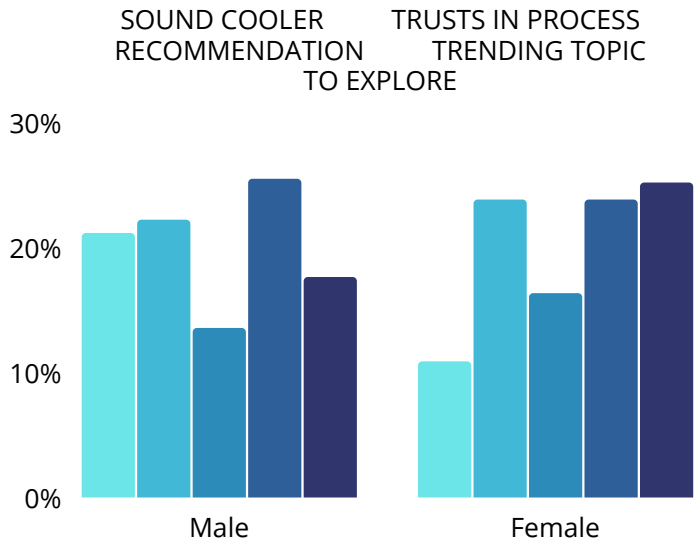


Of the total population wants cryptocurrency to be used as a mode of exchange

Graphical Representation

Genderwise

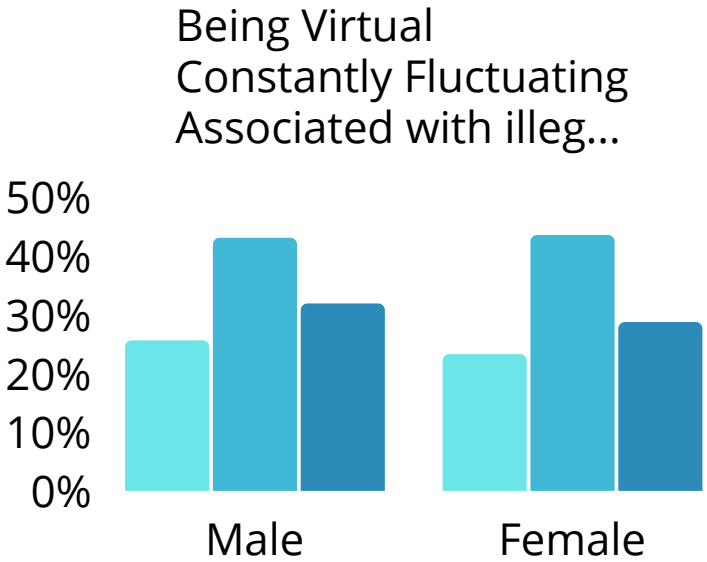
Appealing Factor



Most Male find cryptocurrency appealing because it is a trending topic over internet

Most Female find cryptocurrency appealing because they want to explore it out

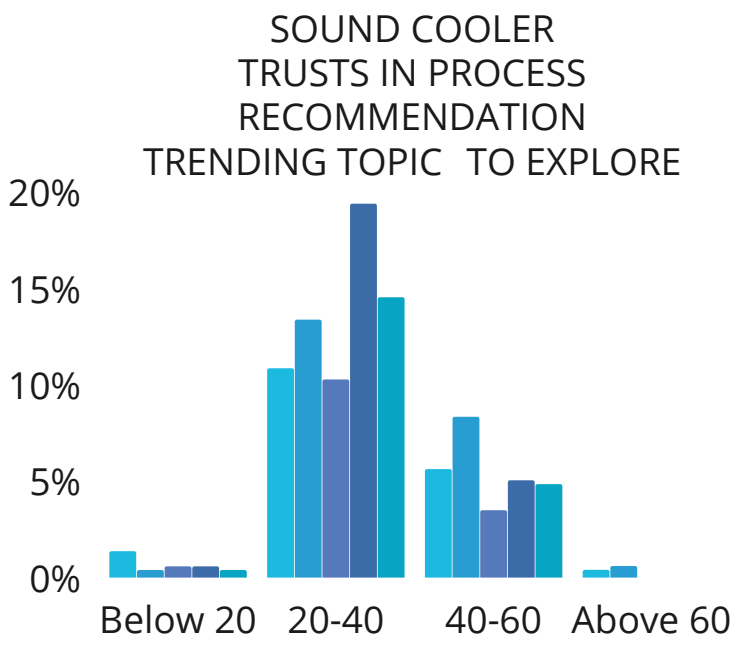
Obstacle Factor

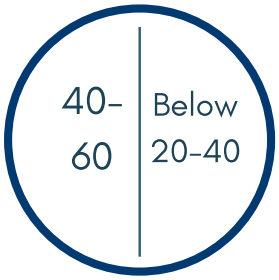


Majority of the Male and Female Population assumes 'Constant Fluctuation' in price of cryptocurrency is the biggest obstacle

Agewise

Appealing Factor

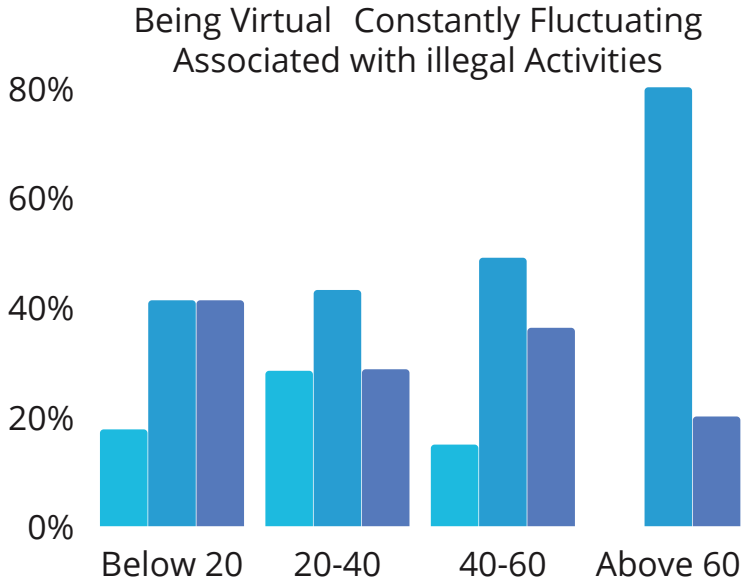


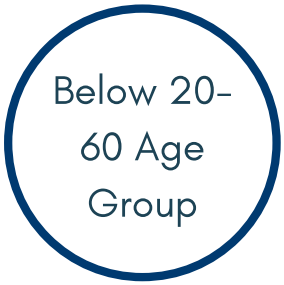


Age Group **40-60,** find cryptocurrency appealing because they **trust** in its process

Age ranging, below **20-40**, find cryptocurrency appealing because, it sounds cooler and is trending over the internet

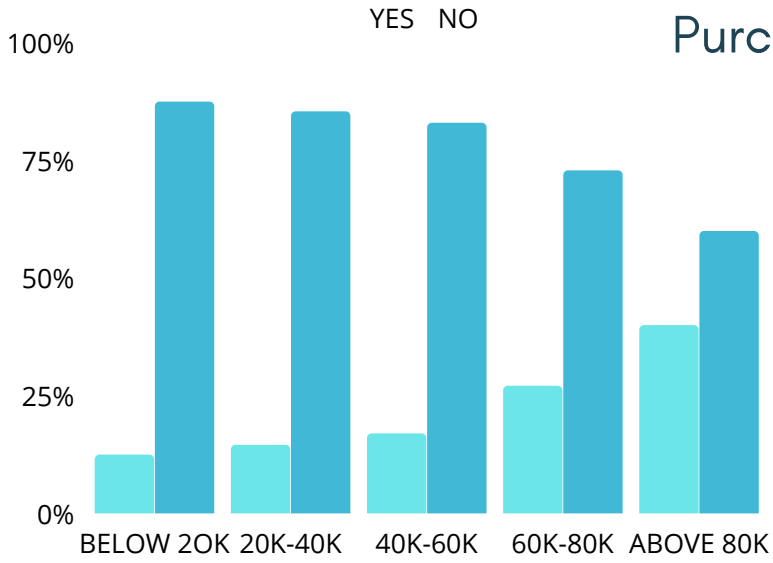
Obstacle Factor



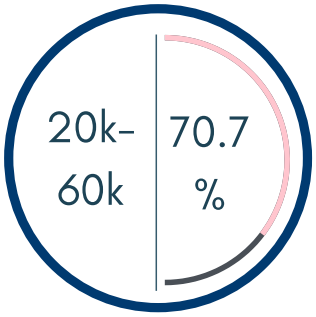


Majority of the population, belonging to age group, **20-60**, believe that **'Constant Fluctuation'** is the Biggest obstacle for cryptocurrency

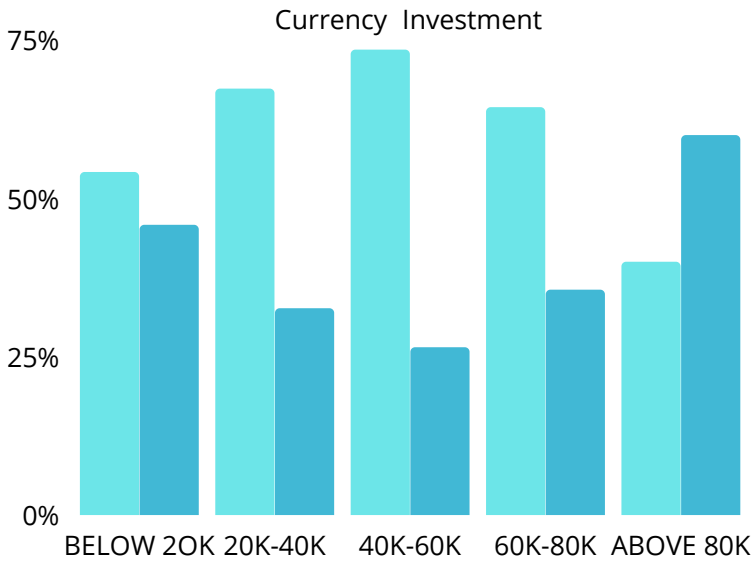
Incomewise



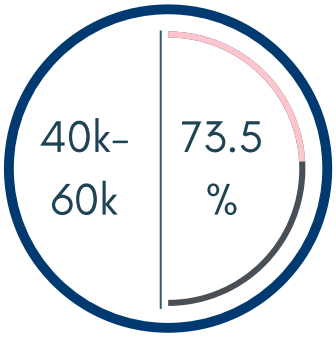
Purchased Cryptocurrency



Out of the total population invested in crypto, income group from **20k-60k** (almost **71%**) have invested the most in it



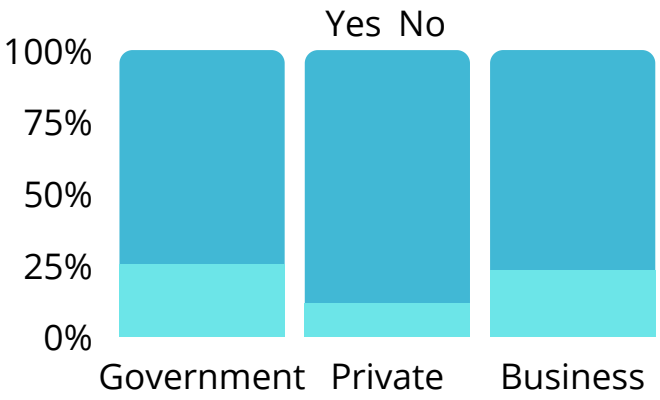
Asset Perception

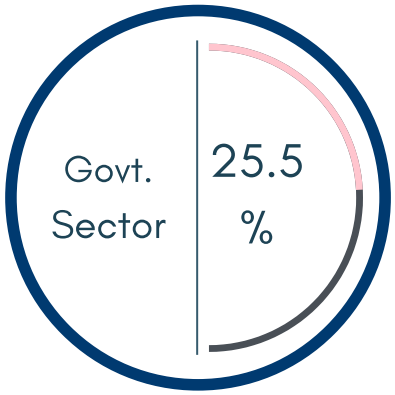


Out of the population, **40k-60k**, says most (**73.5%**) of its population, that cryptocurrency is a **CURRENCY ASSET**

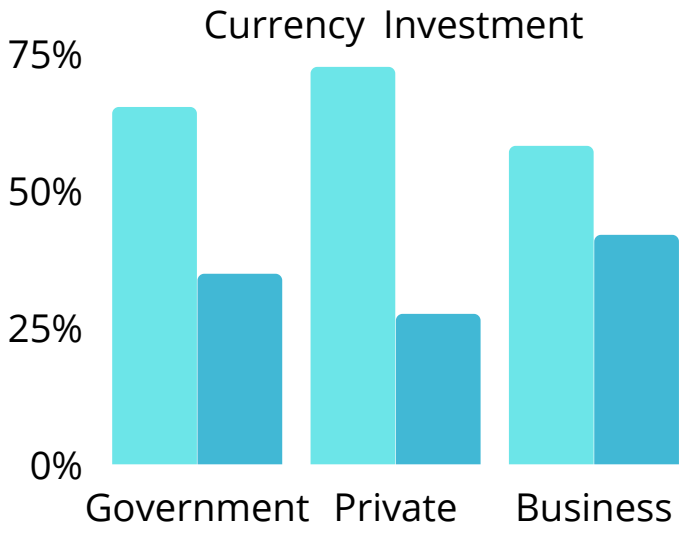
Occupation

Purchased Cryptocurrency





Out of the population, group belonging to **Government Sector** has invested the most in Cryptocurrency



Asset Perception

Out of the population, **Private Sector**, says most **(72.5%)** of its population, that cryptocurrency is a 'Currency Asset'

Chi-Square Test for Independence

The Chi-square test of independence checks whether two variables are likely to be related or not. We have counts for two categorical or nominal variables. We also have an idea that the two variables are not related. The test gives us a way to decide if our idea is plausible or not.

Hypothesis are taken to be H0 And H1

H0: The attribute are Independent

H1: The attributes are Dependent

We reject Null hypothesis for p-value<0.05 at 5% level of significance

Chi-Square Test Of Independence

SR.NO	ATTRIBUTES	CHI-SQUARE STATISTIC	p-Value	DECISION	CONCLUSION
1	Financial status Vs Occupation	37.12997	0.001	Reject H0	Attributes Dependent
2	Financial status Vs Income	52.12	0.001	Reject H0	**Attributes Dependent**
3	Gender Vs Purchased	6.72	0.013	Reject H0	**Attributes Dependent**
4	Age Vs Purchased	0.802	0.8489	Accept H0	Attributes Independent
5	Income Vs Purchased	9.4186	0.05	Accept H0	Attributes Independent
6	Occupation Vs Purchased	14.2053	0.0008	Reject H0	**Attributes Dependent**
7	Regulation Vs Purchased	41.57	0.001	Reject H0	**Attributes Dependent**
8	Regulation Vs Gender	9.3593	0.02487	Reject H0	**Attributes Dependent**
9	Regulation Vs Occupation	53.09	0.001	Reject H0	**Attributes Dependent**
10	Occupation Vs Future Significance	80.71	0.001	Reject H0	**Attributes Dependent**
11	Income Vs Future Significance	76.17	0.001	Reject H0	**Attributes Dependent**
12	Obstacle Vs Gender	1.5	0.471	Accept H0	Attributes Independent
13	Obstacle Vs Income	45.48	0.001	Reject H0	**Attributes Dependent**
14	Obstacle Vs Occupations	48.32	0.001	Reject H0	**Attributes Dependent**

Testing, Fitting And Interpretation

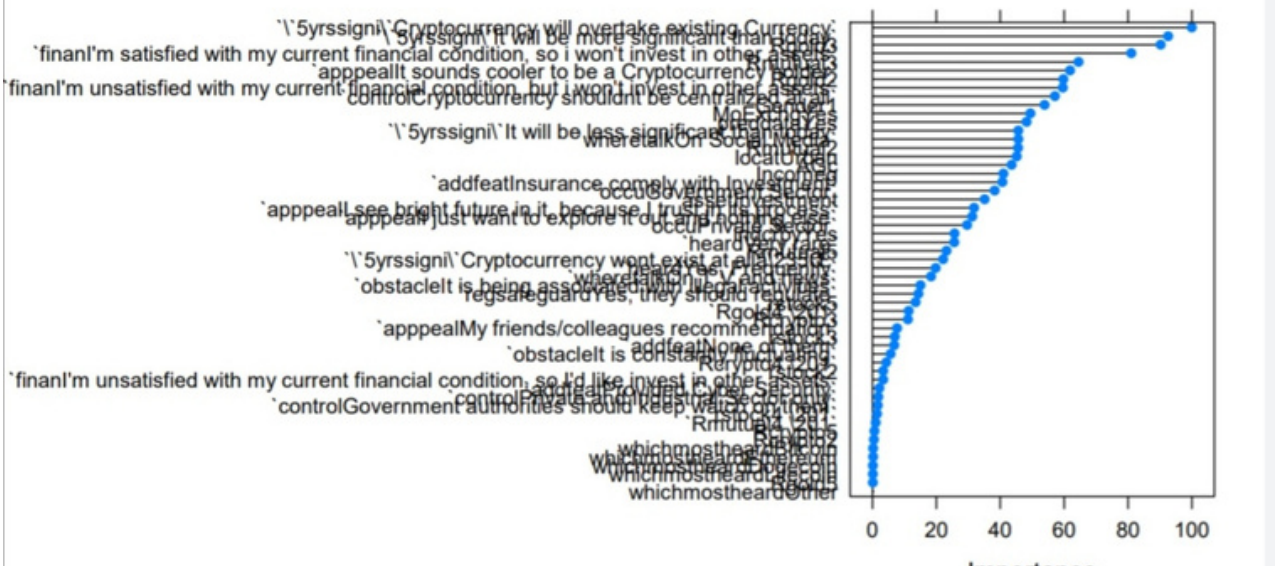
Logistic Regression

(FOR ALL VARIABLES)

The dependent or response Variable has been taken as If person has purchased the cryptocurrency or not?
i.e Purchased~.

The logistic model has been fitted for all attribute data, the significance of variables of have been calculated in further later steps

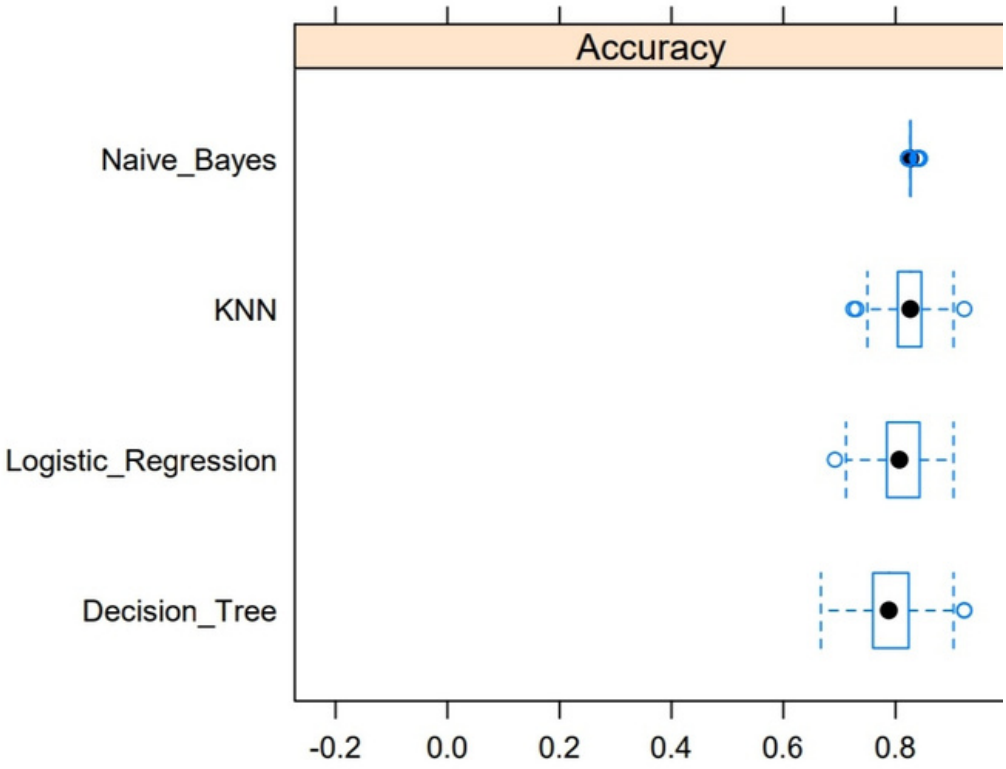
Significance of variables are interpreted as:



(The attributes are converted into short texts for ease of convenience in calculations)

COMPARISION OF CLASSIFIER

	MIN	AVEG .ACCURACY	MAX
KNN	0.7254	0.8262	0.9430
DECISION TREE	0.6666	0.7913	0.9430
NAIVE BAYES	0.8235	0.8275	0.8431
LOG. REG	0.6923	0.8106	0.9038



From the above outputs, it can interpretated that **Naive Bayes** is the best classifier amongst all

Logistic Regression : 1

For Significant Attributes

Significant Attributes are: Popularity of Cryptocurrency and Income

H0: β=0, for all j H1: β≠0, for atleast one j

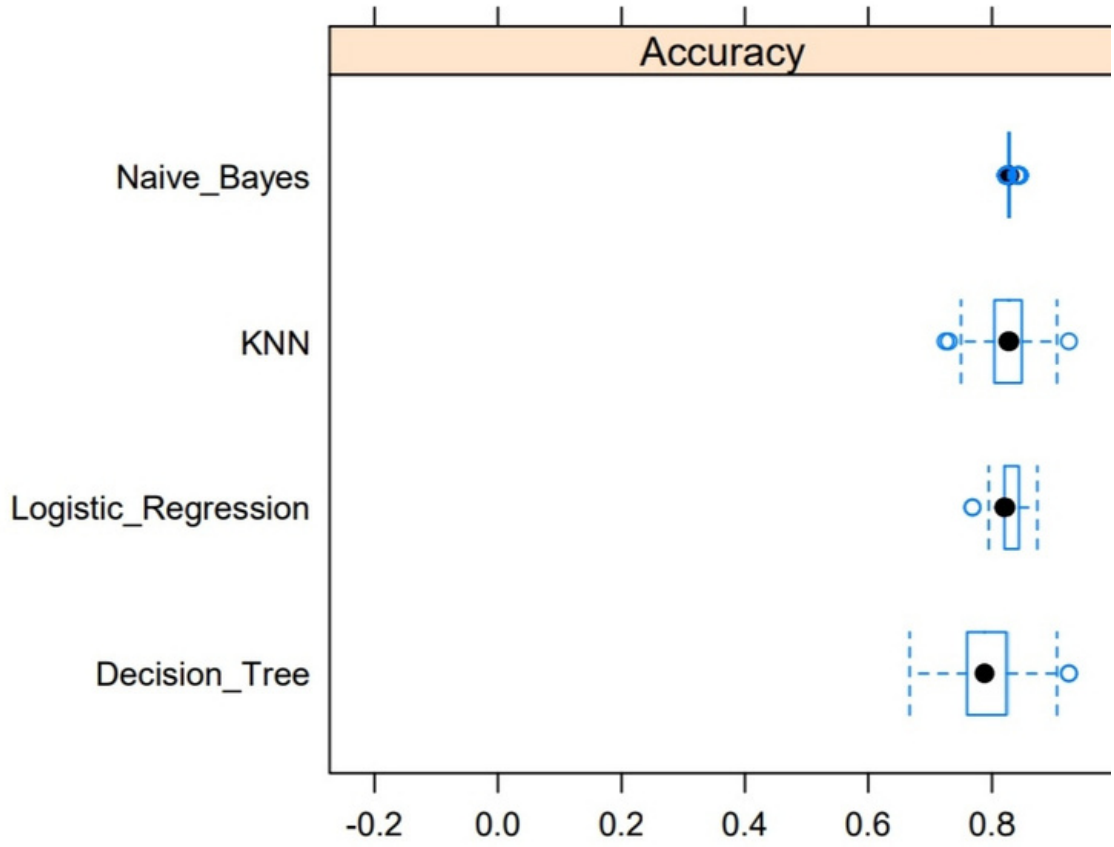
NULL DEVIANCE	353.52
DEGREES OF FREEDOM	386
RESIDUAL DEVIANCE	342.55
DEGREES OF FREEDOM	380
CHI-SQUARE STATS.	10.97
DEGREES OF FREEDOM	6
p-VALUE	0.06

Therefore, the null hypothesis is **rejected** at 10% level of significance

Logistic Regression

For Significant Attributes

	MIN	AVEG .ACCURACY	MAX
KNN	0.7254	0.8262	0.9430
DECISION TREE	0.6666	0.7913	0.9430
NAIVE BAYES	0.8235	0.8275	0.8431
LOG. REG	0.7692	0.8262	0.9038



From the above outputs, it can interpretated that **Naive Bayes** is the best classifier amongst all

Logistic Regression : 2

For Significant Attributes

Significant Attributes are:

Popularity of cryptocurrency, Gender and Occupation

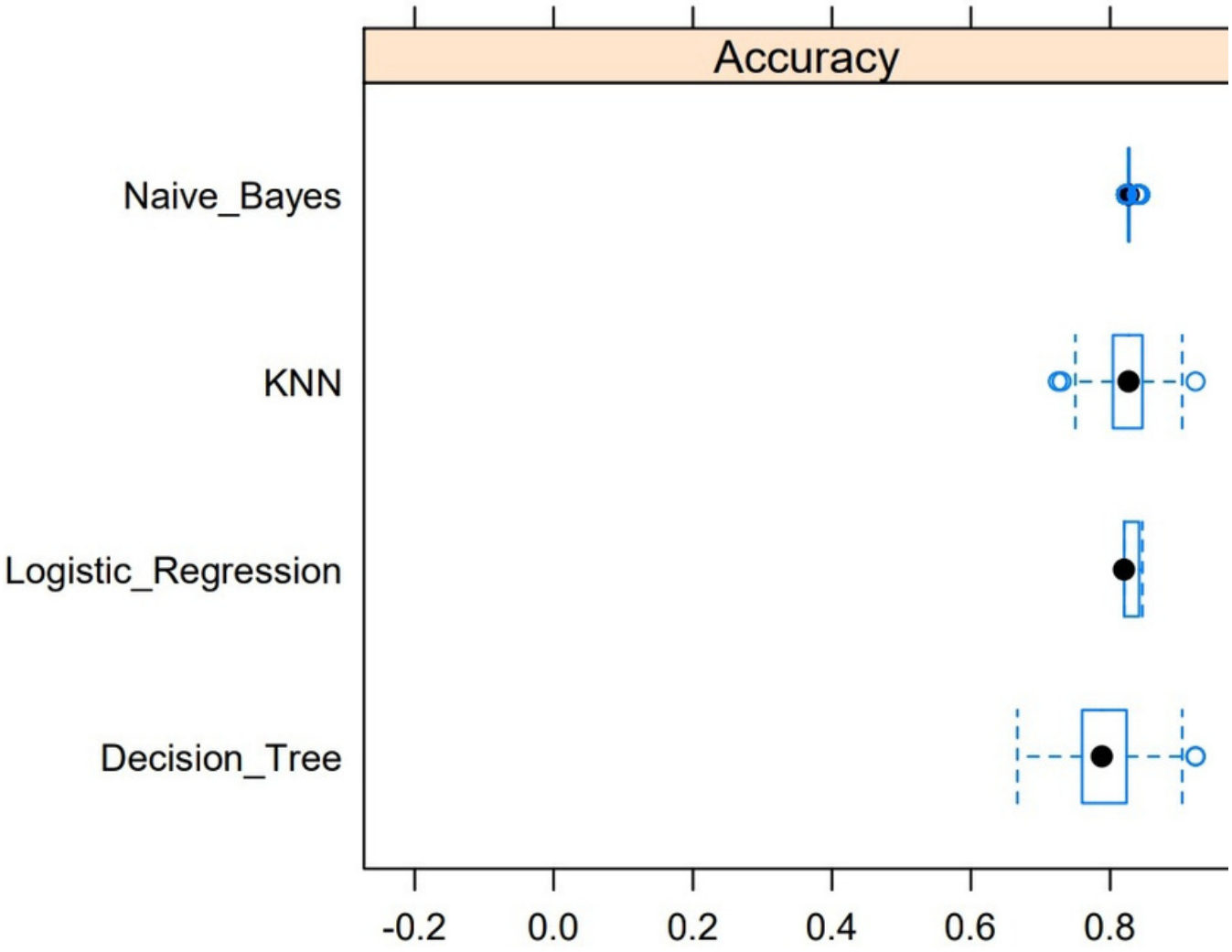
H0: β=0, for all j	H1: β≠0, for atleast one j
NULL DEVIANCE	353.52
DEGREES OF FREEDOM	386
RESIDUAL DEVIANCE	341.02
DEGREES OF FREEDOM	380
CHI-SQUARE STATS.	12.42
DEGREES OF FREEDOM	6
p-VALUE	0.053

Therefore, the null hypothesis is **rejected** at 10% level of significance

Logistic Regression

For Significant Attributes

	MIN	AVEG .ACCU RACY	MAX
KNN	0.7254	0.8262	0.9430
DECISIO N TREE	0.6666	0.7913	0.9430
NAIVE BAYES	0.8235	0.8275	0.8431
LOG. REG	0.8205	0.830	0.8461



From the above outputs, it can interpretated that **Logistic Regression** is the best classifier amongst all

KEY FINDINGS

- Majority of the population is **Unsatisfied** with their **financial status** and are ready to **invest** in other assets

- More people believe that **cryptocurrency** is highly **riskier** than gold, stocks and mutual funds

- Majority of the population believes that biggest **drawback** of cryptocurrency is its, **CONSTANT FLUCTUATION** of price

- **Popularity** of cryptocurrency, **Income** and **Gender** have significantly influenced purchased rate of cryptocurrency

- The income group **(20k-60k)** have invested the most in Cryptocurrency

- Majority of people belonging to **Private Sector** believes cryptocurrency as a future **Currency Asset**

- Most people believe that cryptocurrency will be **MORE SIGNIFICANT** in next **5** years

SUGGESTIONS

- More than 50% population wants **India** to create its own **Digital Currency**

- Almost all **Non-cryptoholders** wants additional features like **Cyber Security** and **Insurance Compliance** with the Investment

- **91%** of the current Cryptocurrency holders wanted, **India**, to **safeguard** their investment, by regulating the cryptocurrency

- Almost **43%** of the population wants cryptocurrency to stay decentralised without any control from Government as well as Private Domain,even after regulation of cryptocurrency

LIMITATIONS AND SCOPE

- The major hurdle in data collection stood out to be the **time constraint**, for both respondents as well as project members. Constraints such as scope of discussion and minimal experience were major limitations for research team. On the other hand, from respondents, limitations were more likely associated with **lack of awareness** regarding Cryptocurrency, and **inefficient interaction** while filling out the survey. Alongwith, Project was constrained to specific region.

- Scope of the project can be extended to exponential analysis in detail This project has been illustrated with the scale of primary data. It can be conducted on secondary data as well and more accuracy can validated. Also, the regional restrictions can eliminate and the survey can be performed at larger region level like state and national

APPENDIX

```
m<-glm(purchased~.,family=binomial)
summary(m)
test<-data.frame(p)
predicted_prob<-predict(m,test,type='response')
predicted<-ifelse(predicted_prob<0.5,0,1)


data(p)
data1<-p[1:100,]
control <- trainControl(method="repeatedcv",number=10,repeats=15)
set.seed(1)
knn<-train(purchased~., data=train, method="knn", trControl=control)
set.seed(1)
tree<-train(purchased~., data=train, method="C5.0Tree",
trControl=control, verbose=FALSE)
set.seed(1)
nb<-train(purchased~., data=train, method="naive_bayes",
trControl=control)
set.seed(1)
#logistic_reg<-train(purchased~., data=iris,
method="glm",family="binomial",trControl=control) # for two classes
logistic_reg<-train(purchased~., data=train,
method="multinom",trControl=control, trace=FALSE) # for multiclasses
results <-
resamples(list(KNN=knn,Decision_Tree=tree,Naive_Bayes=nb,Logistic_R
egression=logistic_reg))
summary(results)
bwplot(results)
```

References

- Journal of Risk and Financial Management: A Statistical Analysis of Cryptocurrencies
- RUSI-ACAMS: Cryptocurrency Risk and Compliance Survey
- Global Cryptocurrency Benchmarking Study