IMPACT OF COVID-19 ON INVESTMENT EDUCATION AND BEHAVIOR IN CRYPTOCURRENCY AND STOCK MARKET: A STUDY OF INDIAN UNDERGRADUATE STUDENTS

Vishrut Ashish
Student, Symbiosis Centre for Management Studies, Pune
Symbiosis International (Deemed) University
vishrut.ashish@associate.scmspune.ac.in

Dr. Sabiha Fazalbhoy
Assistant Professor, Symbiosis Centre for Management Studies, Pune
Symbiosis International (Deemed) University
Sabiha.fazalbhoy@scmspune.ac.in

ABSTRACT

Background: Small-scale investments have become popular amongst UG college-level students in the recent 1-2 years in India. After the pandemic started, a significant hype around financial literacy and easy **investment education** was promoted, especially online through firms like Moneycontrol, Groww, etc. This trend led to possible positive or negative developments in the **investment behaviour** of undergraduate level students

Objectives: The study intends to discover and comprehend recent shifts in investment education and induced behaviour from the same using a sample of 142 Undergraduate level students in India, during the covid-19 crisis. Further, an analysis of probable factors like social media, peer influence, source of investments, independent auditing reports etc. that educate the investor and influence their investment decisions regarding cryptocurrency and the stock market during the Covid-19 crisis were tested on parameters designed by the author.

Methodology: This is a cross-sectional questionnaire-based study on investment education and behaviour, wherein factors designed by the authors are studied on linear and Likert scales. Participants of this study are Undergraduate level college students all over India, across all streams. On the data collected, the author has applied descriptive statistics and random forest classifier method for analysis and interpretation.

Conclusion: The study concludes that factors such as the use of social media, analysis of stock/cryptocurrency performance, peer influence, etc. have a significant cumulative (about 77%) precision-based impact in educating the young investor and determining the level of investments made in cryptocurrency and the stock market by UG-level students, along with showcasing other individual trends.

Keywords: Cryptocurrency, Investment education, Investment behaviour, Financial Literacy, India, Covid-19, Stock-Market, Undergraduate level students, Social-media

1. INTRODUCTION

"The financial market is designed to transfer money from the active to the patient."

-Warren Buffet

The highly contagious Covid-19 pandemic caused significant disruption in human life. To combat the outbreak, measures such as social isolation, self-isolation, the closure of educational systems and establishments, the restriction of modes of transportation, and national lockdowns were implemented. While such measures appeared essential given that this was a novel disease with no treatment available, the impact on global economic activity was noteworthy. (Gurbaxani & Gupte, 2021).

A large number of investors, especially people between the **age of 18-25** turned to investing in the stock-market and cryptocurrency during the second half of 2020 up to the first half of 2021. A big surge in the amount of digital content being created for **investor education** and awareness was also significantly high as compared to ever before. This surge was observed almost globally, but its significance in India was highly noticeable because of the unlikely positive performance of the Indian stock-market portfolios. Uncertainty is prevalent in international markets even right now. However, India continues to stand out as the country's raging stock market appears to be disconnected from economic logic in this new-normal. This is why this study is with respect to India. The author intends to find out what were the factors that triggered this immediate increment in the affinity and want for being educated towards such investments and what is the extent of influence these factors hold on the investment practices of the young people in the country of India.

The Sensex, India's standard stock index, has risen 22 percent since the start of 2020, nearly matching the S&P 500. The economic backdrop, on the other hand, is very distinctive. (Bird, 2021) It has also been observed that even during the start of the Covid-19 outbreak, Indian stocks were highly priced, and maybe investors are just eternal optimists. The government appears content to keep supporting the retrieval with a blow of investment spending. However, the pricing of the market is in benefit of the most positive results for India, which is far from definite and maybe even probable. This study focuses specifically on undergraduate level students, because these individuals are the most active on social media platforms wherein fruitful **investment education** information and educational content can be easily obtained these days. It will also be undertaken in this study to analyse the level of impact social media influencers that deliver financial educational content hold on an undergraduate level student's perception of investing in stocks or cryptocurrencies.

Furthermore, with market manipulators like Elon Musk, it was assumed for the study that a lot of these undergraduate level individuals were likely to be compelled into investing into cryptocurrencies like Dogecoin, Ethereum etc. just because there was a big hype created around it by their peers and icons on the internet.

The crypto market appears to respond to his tweets regarding cryptocurrencies whenever he does so. Following his tweets, CoinSwitch-Kuber mentioned that they usually witness an increase in their trade volumes.
Elon Musk initially described bitcoin as a 'probably good thing' in 2014. Even this tweet led to people being interested in following up what Elon thought of this virtual currency henceforth.
(Anonymous, 2021) When Elon Musk announced through his tweet that Tesla would no longer accept Bitcoin transactions due to the large-energy usage of mining the Bitcoin, his decision made cryptocurrency go into a tailspin, with Bitcoin plummeting to roughly $30,000. Through this study, the author intends to draw a connection between the factors influencing these young minds into investing their savings/stipend/income into IPOs, equities or cryptocurrencies, while analysing the extent to which each factor holds a significance regarding these individuals' behaviour. The comparison drawn in this study also intends to highlight the changes (if any) between the pre-covid and post-covid investment scenarios concerning the participants of this study.

2. REVIEW OF LITERATURE

The author has carried out a detailed literature review to compare the findings of other similar studies undertaken before and analyse the research gap. The findings from the literature review are presented below:

3.1. Stock Market Investment Education, Trends and Behaviour

Studies conducted in India:
Christopher Wood, global head of equities strategy at Jefferies feels that the Indian market is still vulnerable even in the absence of definitive evidence that the second wave has peaked. Reducing weight by 0.5 ppt in China and 1.5 ppt in Malaysia will lead to a rise in the overweight of Indian equities from 2 ppt to 14%. (Wadhwa, 2021)**.** In small regions of Madhya Pradesh, it was found that during the Covid-19 crisis, there was no change of investment behavior with age (Gurbaxani & Gupte, 2021). However, the significant finding was that due to lockdown and other restrictions leading to changes in recurring income, people reported a drop in investments like SIPs etc. (Himanshu, et al., 2021) In a lot of financial assets like securities, bonds etc. people have been observed to be shifting their portfolios to risk-free or conservative portfolios, during the pandemic. However, this is not true in with respect to all investors, but because of the returns on risky-assets not being as anticipated, investors are making this switch. In the view of raising fears of a complete lockdown in Maharashtra and other states, the stock market entered the week and the SENSEX fell 1,700 points in intraday session. Last year, the benchmark indices fell by approximately 40% in two weeks which seems to be the situation for today's market drop. (Kaur, 2021).
During the post covid-19 pandemic time frame, it was discovered that there are proof and significant instances of herding behavior during the first half of 2020. Furthermore, the COVID-19 pandemic has induced herding behavior at the industrial level. (Dhall & Singh, 2020)**.** (Khan, et al., 2020) In the city of Mumbai, India, it was evident from research that during the pandemic, income and education also had crucial impact on the investment behaviour of individuals living in this region. There was an increase towards the investment in real-estate assets. Gold and

other kind of investments also witnessed an increase, but not very significant. According to some financial experts, (Moneycontrol, 2020) instead of just taking into consideration the profit projections and company's revenue, investors must also be mindful of examining the sustainability index of a business before investing during uncertain time. With roughly 14% SENSEX returns in 2019 with blue-chip businesses including HDFC Bank ICICI Bank and many more, there was a limited rise of 8-10 stocks in the stock market. COVID-19 strike has caused global markets to plummet to levels not seen since the Global Financial Crisis of 2008. (S.Ravi, 2020)
The first review study is related to the Investors in Jaipur and Moradabad which concludes that before investing in shares, the Investors should make fundamental, technical and financial analysis. (Singh & Yadav, 2016) Furthermore, irrespective of the age and gender, the Investors should keep in mind the different avenues as well as the risks associated with it while investing the funds in the market.

Global/Foreign Studies:
Due to a huge increase in market liquidity, financial markets and most asset classes throughout the world are heading upwards despite the impact of COVID-19. Due to cost-cutting and some vaccine-related benefits, domestic stock markets have been benefited from increased liquidity and improved profitability. (Bhargava, 2021)**.**
According to the system i.e., GMM estimation results, a firm's investments in both tangible and intangible assets are considerable impacted by the peer companies. New companies are more likely to imitate their industry counterparts' investment decisions. However, business leaders do not believe copying to be a tactical strategy. (Said & Rashid, 2021) Corona Virus (COVID-19), is the most contagious disease in the last 50-year history, that spread immensely across the globe, attacking millions of individuals by 2020. Aside from killing a large number of people, the crisis not only caused widespread mass panic, but it also had a significant impact on global industries and financial markets. In a study conducted specifically for the Pakistan Stock-exchange, it was found that there was a slight increase in the number of individuals investing in the stock market in Pakistan in the year 2020. This study specifically analysed the factors such as motives and methods that individuals were relying on for getting into investing or continuing their portfolios, and presented an understanding for the country during the first year of the pandemic. (Riaz, et al., 2020). In another study conducted for the investor trading around the Egyptian region during the Covid-19 outbreak, the findings suggest that individual and organizational investors' investment behavior for Egyptians, Arabs, and foreign nationals seems to be delicate to the outbreak of Covid-19. (Allam, et al., 2020). It was discovered that personal and institutional investors' aspirations fluctuate evidently during the Covid-19 outbreak catastrophe, and in broad sense, Egyptian shareholders continue to try to circulate and not dilute their stock portfolios during the downturn of the pandemic. It is found in the reviewed study that the households' Investment and socio-economic factors influence the stock market Investment decisions. In addition, risk tolerant households are more participative in the markets than the risk loathing households (Mishra, 2018). It has been worthwhile seeing Kenyan undergraduate students making investing decisions depending on the

source of information related to investment used by each investor. 206 people from three of Kenya's most prestigious institutions were asked to fill out the questionnaires so as to witness if any of them was influenced by their peers while making financial decisions. (Mwenda & Mukami, 2017).

3.2. Cryptocurrency Investment Education and Behaviour

Studies conducted in India:

This research explains that how the concept of cryptocurrencies is entirely different from the current monetary system and hence why, difficult to accept.

It briefly tries to cover much of the aspects of cryptocurrencies like history, advantages and disadvantages and challenges and opportunities. (Kumar & Swathy, 2020). In this paper author goes into the technicalities of the cryptocurrencies and how it uses cryptography and block chain technology to keep track of every transaction in the whole network. He goes on to write about the status of cryptocurrencies in the present scenario and how in spite of being around for a decade it has not achieved the status of modern currency. He also adds the factors that can be a hindrance for the cryptocurrencies in achieving their true status. This paper specifically presents the view point of cryptocurrencies from the Silicon Valley of India. (Shukla, 2019).

Young individuals nowadays are more responsible for their financial affairs than ever before in their lives. They seek to be financially educated and accountable. Pension and social welfare structures are being strained as life expectancy rises. Employer-sponsored defined benefit (DB) pension plans are quickly giving way to private defined contribution (DC) plans in many countries, transferring obligation for retirement saving and investing from employers to employees. (Lusardi, 2019)

Studies from all across the globe suggest that there is a scarcity of investment and financial education even as of today. This finding has promoted the launch of financial education programs in many countries to attract the investors into being aware and pursuing investment instruments. In India, the need for financial education is increasing day by day due to the large section of population that still remains oblivious to investment options and opportunities. (P., 2018)

As name suggests this paper aims to answer whether cryptocurrencies are a boon or a bane for Indian tech industries and how it will impact Indian economy. This paper also includes insights how Indians invest and hold Bitcoin. (J.P.Jaideep, 2019). The first reviewed study's main focus is to determine what cryptocurrency is all about its impact on Indian economy. It also explains the concept of decentralization which bitcoin leverages. The study also tries to explore the present scenarios and future prospects for digital currencies in future. (James & Parashar, 2018).

Global/Foreign Studies:

This article was studied in order to understand the main strategies required to make investments in cryptocurrencies. Basically, the tactics to invest and highlight the key contributions were selected to study this literature. It also focussed on it deliquesces, problems related to economic and social growth, and improving the longevity of the usage of cryptocurrency in the coming future as well. (Giudici, et al., 2019). This paper revolves around establishing that the risk-return trade-off of cryptocurrencies are far from those of shares, commodities and currencies. Cryptocurrencies don't get the exposure to the common share and macro Eco factors but in contrast it they have their own unique factors affecting them. Authors have also developed an index for the such currencies of industries in US and China. (Liu, 2018).

This research was carried out to study the propagation of cryptocurrency among the youth to make sure it had a better idea from the practical aspects as well. It's main objective also focussed, through the valuable responses provided by 21 countries, on laws and legislations towards cryptocurrency to build a better viewpoint of looking at the effects of numerous laws that are run in India to have a better look at executing it. (Jani, 2018)

3.3. Some factors influencing investment education & behaviour in people across all ages

Psychology has a great role to play in the stock-market conditions of 3 major countries- China, Japan and the United States. Due to the increased mental pressure, a downfall was observed in the willingness to invest into securities during the pandemic. (Naseem, et al., 2021) The author wishes to analyse this emotional aspect with respect to the Indian sub-continent and conclude if similar results are procured or not. (Sohail, et al., 2020) The most significant factors affecting the investment behaviour of individuals is the market position and volatility. It was evident from this study that physiological factors are the least significant when it comes to having an influence on investment decisions. Broker advice and government policies also impacted a good proportion of individuals to regulate their investments in accordance with these factors. Investors increased the brokerage deposits they held and a large number of new accounts were opened during the pandemic. Infact, there was a surge of almost 14% (13.9%) in the mean trading intensity per week, and this was directly proportional to twice the increase in the number of Covid-19 cases in many geographical regions. (Ortmann, et al., 2020) This finding inspired the author to undertake a similar approach of analysing whether new accounts were opened for investing and trading in India as well, especially by younger under-graduate level adults.

To sum up the findings of this research, the purpose is to scrutinize the correlation between awareness on Investment and the independent variables which includes financial literacy, personal interest, and environment. The results reveal that the young generation is notably based on fore-mentioned independent variables. (Azhar, et al., 2017)**.** A study explains the need of investor education which shall improve the participation of Investors and help them in informed investment with good returns. It also includes the requirement of media awareness which would motivate young generation to participate in the capital market. (Saikia, et al., 2015)**.** Further, in a research that undertakes the positive financial behaviour and high financial knowledge of Indians, it included mainly the employed and retired audience. This positive financial attitude and knowledge is seen more in men than women. However, the financial knowledge in students is low which in turn reflects poorly on the academic outcome. (Agarwalla & Barua, 2012)

3.4. Behavioural Finance

As observed in the other papers reviewed, t is evident that an investors' investment decisions are heavily influenced by behavioural biases. The purpose of this paper similarly is to investigate the impact of demographic factors such as age, gender, and education on an investor's experience with

regard to investments. For this study, the authors collected data from a sample of 100 IT employees in Pune. This study focuses on overconfidence and herding behavioural biases in investment strategies based on demographic variables. (Sonawane, et al., 2021). Few developing countries are currently promoting the empirical power of behavioural finance as an investment tool. The idea has received significant attention in advanced countries; however, its implementation and soundness issues are being debated almost everywhere in the world. The study therefore provides a thorough decisive investigation to promote the field of behavioural finance. Furthermore, the paper offers a route for further research into the various issues related to this appealing and worthwhile area. Behavioural Finance, Herd Behaviour, Cognitive Biases, Efficient Market Hypothesis, Behavioural Factors, and Stock Returns are some of the terms used in this paper. (Kumar, 2020)
The authors through this study have accomplished by spotlighting the flaws in the concept of market productivity and recommending how these flaws can be filled with a greater approach such as behavioural finance. The paper identifies gaps that exist in behavioural finance and how they can be filled in order for this branch to be recognised as a progressive alternative approach to EMH through more discussion of emerging trends in behavioural economics and finance.
(Sharma & Kumar, 2019). This paper intended to highlight that how different individual have different levels of risk tolerance when it comes to making investments in equity derivatives. It also highlighted how the Heuristic Variable is a very significant influence when investors have limited resources and also the investment made is for a shorter duration. It also emphasized upon the gambler's fallacy bias. Gambler's fallacy happens when investors estimate the probability of an event by considering how well it reflects its parent population, i.e., a pattern of the same outcome. While some people invest solely for loss aversion and end up losing more money which changes their perceptions about investment decisions almost permanently.
(Dhungana, 2019). Through this study I learned about people's mentalities while investing in various investment avenues. In other words, what do they consider when making investments? This paper intended to explore the major impact of behavioural finance concepts such as overconfidence, belief, reinforcing cognitive dissonance, regret aversion, slim framing, and mental accounting on the stock market decision-making state of an individual investors. Finally, the study concluded that investors mostly irrational, and the consequences of the aforementioned factors on the decision-making procedures of investors are always present in varying degrees (Upadhyay & Shah, 2019). This paper mainly focussed on how behavioural finance has emerged as a new paradigm. It also aims to evaluate the shortcomings of the traditional financial theory as identified by the supporters of behavioural finance, as well as to evaluate the importance of behavioural finance. It gave a basis for further taking into consideration the behavioural aspect of young investors for this study under concern. (Sharma, 2016) Restrictions to arbitrage, which contends that it can be challenging for logical and reasonable traders to nullify the displacement caused by less rational traders, and psychology, which catalogues the types of deviations from full reasoning that we might expect to see. These are the two pillars of the field of behavioural finance as mentioned by Barberis & Thaler. (Barberis & Thaler, 2002). They discuss these two topics before presenting a number of applications of behavioural finance to the stock market as a whole, to the cross-section of average

returns, to individual investment decision, and to corporate finance. They conclude the study by evaluating the field's progress and commenting on its future direction.

3.5. Investment Preferences, Literacy and Awareness across ages

This study analysed the financing decisions of the Raipur city's younger population. The research found that the Young Investors are more tempted towards investment avenues like Mutual Fund, Equity Market for trying to maximize their capital, however some people are more interested in less risky options such as Bank Deposits and Postal Service Deposits. During the course of this study, it was also discovered that 32% of the Modern Generation is predisposed towards Mutual Funds and 25% of the younger investors are inclined towards Equity Market, which is very significant from the study. (Pandey & Vishwakarma, 2020). This study was conducted using a survey circulated among 110 investors. It was found that investors are found to be risk averse, with mutual funds, insurance, fixed deposits, and gold being the most attractive investment options. According to this survey, young investors prefer to keep financial planning at an earlier stage of their career; however, due to a lack of understanding, it is difficult to separate the accurate financial plan. Therefore, marketers should design investment programs to pay attention to the specific needs of these investors. From this study, the I took inspiration to cross-check whether these were actually the most popular investment attractions among young investors (Gadde & Gupta, 2020). In this study young professionals, the most of whom work in the private IT sector and earn an average income of Rs.20,000-50,000 were the primary focus audience. The research team used a structured questionnaire to ask young professionals in India about their investment habits and awareness. Secondary data was gathered from business journals, websites, and news channels. According to the findings, numerous factors such as age, gender, income levels, family, and peers of the investors have a significant influence on their financial decisions. (Kakade, n.d.) Another study was carried out in and around the region of Dakshin Kannada and the Udupi District by the respective authors. It focuses on individual investors falling between the ages of 20 and 35, and how they make investments in the stock market. The study also examines the young investor's mindset towards these investments made.

The author at the end of this study discovered that young investors do not take more risks when investing in stocks, and if they do, they tend to go for speculation with a high return on investment, and they are occasionally unaware of obtainable financial products for investment. The main issue found is that they lack the patience to hold the stocks for an extended period of time to get the desired results. This may make these young investors disinterested soon about their investment decisions sometimes. (Maroor & Baliga, 2018). Personally, and financially, the younger generation is more adventurous and technologically savvy than the older population. One specific question that arises often is if the young generation is worried about and aware of their financial situation in the future, as well as their investment. The purpose of this study was to look into young people's attitudes toward investing. The findings show that the key determinant of investment activities among the young people is significantly influenced by the independent variables chosen for this study like income, age etc. (Mohamed, 2017).

3. RESEARCH GAP

The author recognized a gap that exists in correlating factors such as social media content, peer-influence during the last one year, past-performance of stocks/cryptocurrencies etc. as a source of investment education that further might induce a positive or negative investment behaviour. Factors like fear of risk and objection by parents were not undertaken in any previously conducted study to relate with the impact on investment behaviour and a boundary to being financially educated.

This study is being carried out specifically with respect to the undergraduate level students in India. No study has previously undertaken in the same demographics and analysed them on the chosen factors, as in the case of this study. The study also aims to capture any change in the case of new Demat registrations being done more frequently during the covid-19 crisis.

4. RESEARCH QUESTION

The study aims to understand what impact did Covid-19 pandemic and the lockdown-environment have on the level of education regarding investment in Stock market and Cryptocurrency, and the resulting investment behaviour of Undergraduate level students regarding the same?

5. RESEARCH OBJECTIVES

1. To find the instantaneous investment education/literacy and behaviour changes instilled in young students through the same after the start of the pandemic.
2. To find whether investment behaviour is sensitive to gender and know the sourcing of investments for UG-level students.
3. To understand the relation, if any between the chosen parameters for the study.
4. To study the cumulative impact of all the factors on investment education and thus, investment thresholds and measure their precision using relevant statistical tools.

7. HYPOTHESES TESTING

In light of the discussion in preceding sections, the following hypotheses are proposed for the study:

1. $H_{1:}$ The level of impact in drawing attention towards investing is almost same for both male and female students (no non-binary students were found to be present for the study)
2. $H_{2:}$ The students who use social media as a source of investment education to base their investment decisions upon, are also likely to be influenced to invest in a stock/cryptocurrency on the advice of a peer.

8. RESEARCH METHODOLOGY

The overall objective of the study was to comprehend which factors developed during the covid-19 pandemic have a varied degree of effect on the investment decisions made by UG-level students in

2021. Data collection through Questionnaire was selected as it proved to be the most feasible way to get the responses of the Undergraduate level University students who are known to the whereabouts of the current investment trends.

A self-administered questionnaire was used to collect necessary data for the analysis of the study. The questionnaires were distributed to various UG level university students. A pilot test of the questionnaire was conducted among a small sample to rectify the errors of the questionnaire. Based on the feedback from the Pilot test, changes were made in the questionnaire and then the new version was circulated to various UG level university students. A Sample size of 142 student responses was taken for the study**.** This was done to account for the 38 students that mentioned in the survey that they did not participate in any kind of investing activity at all. Thus, even then, a good sample portion of 100+ students were available to the author to analyse the potential investment behaviour in the remaining young investors regarding certain specific factors.

The subjects were randomly selected irrespective of any bias or classification. The Geographical location of India has been selected because the survey was circulated online to students living across different cities during the ongoing pandemic. The students were asked numerous questions regarding what factors they agreed to being influenced and educated by when making decisions to invest in stocks or cryptocurrencies. These factors were then made to be rated on a linear scale of 1-5 by these students, to determine the level of impact of each factor for every student. The study is being done for the time-frame after the start of Covid-19 crisis, because the factors chosen for the study held more significance when people were isolated at homes and also because of the recent hype-movements in the financial markets. Likewise, after the pandemic struck, a lot of content was curated digitally to attract amateur investors to the markets**.** Thus, the study holds its significance in the Covid-19 times.

Descriptive statistics has been used for data analysis to study the different aspects of the variables. Descriptive statistics was chosen as it helps in simplifying large amounts of data in a sensible way. Use of graphs made it easy to present the findings in a meaningful way. Different variables were selected at a time to see the relation among them and generate conclusive findings. Values such as means and standard deviations helped analyse the level of broad impact of the factors chosen for study and gave clarity. Further, Random Forest classifier method was used to understand what is the cumulative significance of all the chosen factors and how does it influence the level of investments that these young investors are making.

9. DATA ANALYSIS

9.1. Testing for $H_{1:}$ The level of impact in drawing attention towards investing is almost same for both male and female students (no non-binary students were found to be present in the study).

In the study, it was firstly observed that about **68%** of the students agreed to have got a Demat account opened after the pandemic started. This itself implies that the lockdown scenario played a role in diverting interests towards investing through simple and user-friendly investment education.

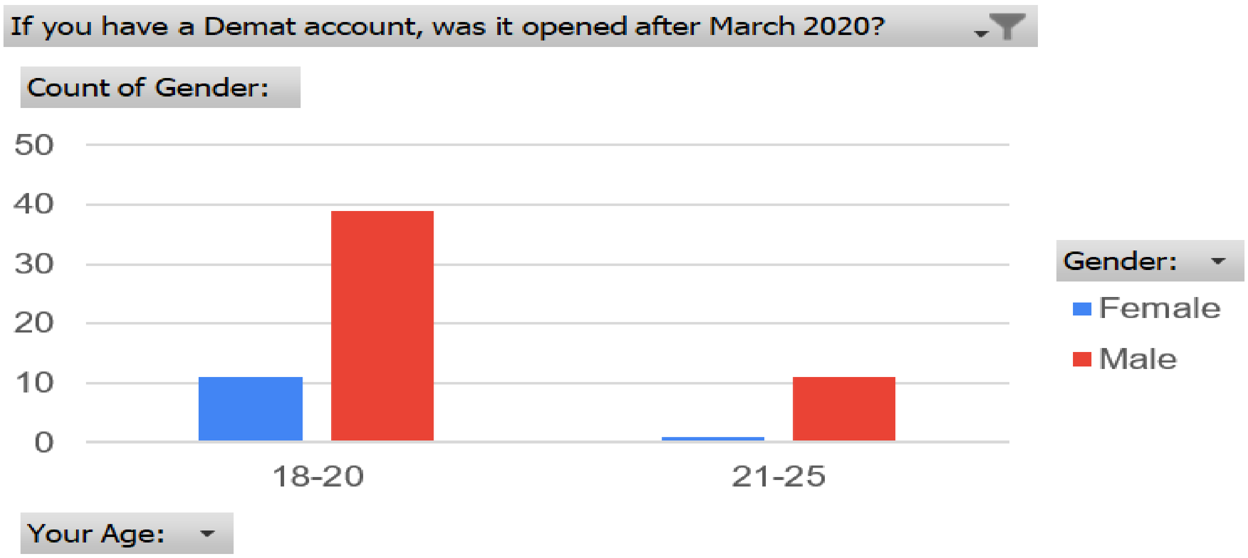

Figure 1

Graph representing the difference in no. of Demat accounts opened after March 2020, by male and female UG-level students.

From Figure1 it is very clearly evident that there is a huge difference in the number of males who opened a Demat account after the pandemic started, in comparison to the females. This vast gap is observed in both the age ranges. Hence, the statistical evidence goes strongly against the null-hypothesis. Here, p-value lies lesser than 0.05. **Therefore, the null-hypothesis H_1 is rejected and the study accepts the alternate hypothesis**. It was also observed in the study that over **57%** of the total participants, those students who invested used **pocket-money/savings** as their primary source of funds for putting into portfolios of their choice. About 81 students used this as the source of investments.

9.2. Testing for H_{2}: The students who use social media as a source of investment education to base their investment decisions upon, are also likely to be influenced to invest in a stock/cryptocurrency on the advice of a peer. Through the questionnaire, the participants were asked to input the level of dependency on 2 factors. One was how actively they were seeking financial education through social media, and secondly, how likely were they to invest in a stock, IPO or cryptocurrency if a friend suggests them to do so.

From a correlational analysis of the values for every individual under both of these two scenarios, it was found that the **Correlational coefficient= 0.687**

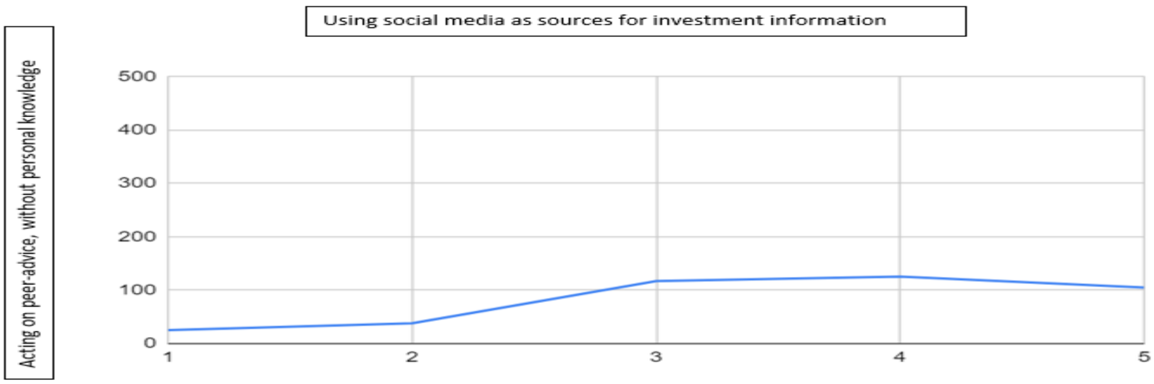

Figure 2

Upward trend graph representing how undergraduate level individuals relying on social media information education or information sources are also influenced by peers to invest into a particular share or cryptocurrency.

The above graph also suggests almost an upward trend between both of these two factors, though not a very strong one. Thus, it is safe to say that young students who actively use social media as their source of guidance on investments are likely to use their peer's advice as the basis to make an investment decision even without having proper personal knowledge. Here, the p-value is definitely greater than 0.05. **Hence, the null-hypothesis H_2 is accepted.**

Analysing the cumulative effect of chosen parameters on the investment threshold (amount in INR) using Random Forest Classifier

The factors being considered for measuring their level of impact on investment behaviour are in a broader perspective and have been recorded on a linear scale of 1-5 by the respondents of the study.

The chosen factors are:

1. The Level of investment influence by educational content and influencers on social media
2. The Level of investment influence by peer recommendations (even when the participant has zero personal knowledge)
3. The Level of investment influence if the student's parents object to him/her investing money in stocks/cryptocurrencies.

4. The Level of investment influence by the presence of convenient trading apps like wazirX, Binance, Upstox.
5. The Level of investment influence by fearing a risk of loss of money (negative factor)
6. The Level of investment influence by hoping to make quick money.
7. The Level of investment influence by analysing past-performance of a stock/cryptocurrency

After taking and analysing the responses from the participants of the study (including both investors and non-investors), a mean and standard deviation of the values from the linear scale was drafted for each of these factors. This was done to get the gist of student perceptions and where actually they are sourcing their investment knowledge and investment habits from.

Here, the values are comprehended in this particular reference:

Mean values less than 2 shows that variables have very low impacts
Mean values between 2 to 3 shows that the variables have low impacts
Mean values between 3 to 4 shows that the variables have good impacts
Mean values between 4 to 5 shows that the variables have high impacts
SD must be <2 for a notable inference

The table below represents the data for the same:

Factor	Mean	Standard Deviation	Impact on Investment Decision
Social Media/Digital Content	3.158273381	1.270919866	Good
Peer Influence	2.791366906	1.305631522	Low
Objection by Parents	2.481751825	1.356800604	Low
Ease of Trading through apps	3.470588235	1.408697649	Good
Fear of Loss	**1.992125984**	**1.411404968**	**Very Low**
Getting rich Quickly	3.059259259	1.153178943	Good
Past Performance of Stock/cryptocurrency	3.413533835	1.189729353	Good

Table I

The table represents the mean impact (on a scale of 1-5) of chosen factors, as admitted by the participants of the study.

Here fear of loss did not prove to be a negative factor in most cases. Hence although impact is low, it leads to positive investment decisions.

Now, applying the Random Forest classifier method using Python, it can be found out that for each level of investment (in terms of different amounts in INR), what is the significance of all chosen factors working together. A **random forest** is a meta estimator that fits a number of **decision tree classifiers** on various sub-samples of the dataset and uses averaging to improve the predictive accuracy and control over-fitting.

Therefore, by including the linear scale values of all the parameters from each respondent (as the X values) and taking Investment threshold (as the Y value or **Dependant variable**), a **confusion matrix** (Figure 3) was formed. The diagonal elements in the matrix represent the number of totally accurate values (for the **monthly investment thresholds)** out of the total values present in that row (i.e. The total number of students falling into that threshold).

Confusion Matrix:

51	0	0	0	1
7	**4**	3	0	2
3	0	**24**	0	2
4	0	1	**2**	3
3	0	1	0	**21**

Figure 3
Confusion matrix representing accurate values as diagonal values for each threshold of investment

The Random Forest table below shows the cumulative **precision** of all the seven factors taken above, while the **recall** represents how many truly relevant results were returned. The F-1 score in the table is taken as the weighted average of the precision and recall, where an F1 score reaches its best value at 1 and worst scor**e** at 0.

Classification Report:

		Precision	Recall	F1-score	Support
I do not Invest	0.0	0.75	0.98	0.85	52
Less than 500 INR	1.0	1.00	0.25	0.40	16
500-1500 INR	2.0	0.83	0.83	0.83	29
1500-3000 INR	3.0	1.00	0.20	0.33	10
3000 INR and above	4.0	0.72	0.84	0.78	25

Accuracy			**0.77**	132
Macro Avg.	0.86	0.62	0.64	132
Weighted Avg.	0.81	0.77	0.74	132

Table II

Random forest classification representing the accuracy and precision of all the chosen factors cumulatively, towards different investment thresholds.

It is evident from the table that for each investment threshold ranging from 500-3000 & above INR, the precision is fairly more than **70%.**

This implies that under this study model, all these factors hold a likewise cumulative influence in deciding the final monthly amount invested (or not) by these students, both working as positive or negative factors accordingly. This can be understood in the sense that for every person who chose **"I do not Invest"** also rated his/her social media usage, peer-influence etc. to not be persuasive enough to compel them to invest. On the contrary, the students actually investing an amount into portfolios, will have definitely rated the seven factors as relevant to their personal lives and hence, their investment decisions.

The final accuracy of this study model comes out to be approx. **77%**, which implies that the factors undertaken for the study including educational sources are highly relevant as determinants of the level of investments the chosen UG-level students are putting into stocks and cryptocurrencies.

10. FINDINGS

From this study, it is pretty evident that after the pandemic hit, investment education boomed extremely well through digital content and it helped promote a positive investment behaviour in more than 3/4th of the cases. It was also found that most of the young investors between age 18-20 use their pocket-money/freelance payments as a source of funds for investing, instead of a recurring source of income as is absent in their case. Further, the study revealed that after the pandemic started, male investors have been far more attracted towards investing in comparison to female investors. This implies that after the crisis hit the world, with the presence of simple to follow investment education sources, male students in India turned newly to investing while most of the females did not find this domain relevant to start investing.

From the statistical analysis done on the data collected, it was clearly proven that the chosen factors in the study not only individually held a significance over how a student think and behaves regarding investments, but also that these factors together play a vast role in deciding how much amount an individual young investor is putting in their portfolios on a monthly basis. To sum up, these were the primary findings of this study.

1. 81% UG level students use their pocket-money/stipends as a source of investments.
2. Male students are more likely to engage in herd behaviour/ be interested when it comes to investing using digital content as investment education sources.
3. Social media literacy content and peer-influence played the most significant role in influencing investment behaviour during Covid-19 pandemic.
4. There was a drastic increase in the level of involvement and financial literacy during the year 2020.

11. CONCLUSION

The aim of this paper was to study the relationship between both - investment education and investment behaviour, while also quantifying the actual investments made (in INR) with respect to the chosen factors for the study of undergraduate-level college students in India. In theory, it is commonly believed that investments in the stock market and cryptocurrencies are things that need way too much professional knowledge to properly be executed. It is also a practice in India, for people to be sceptical about putting their money into investments.

This study however concludes that the young people lying mostly in the age range of 18-21 are nowadays actively involved in taking their own financial decisions and are aware of what triggers or not triggers their perceptions regarding the same. They are eager to learn and be financially educated. The use of descriptive statistics and Random Forest classifier for analysing the parameters of the study proved out to be fruitful and gave a very significant indication that the factors chosen by the author to undertake this study are in fact very crucial in deciding how often and how much money these young investors are investing (in the case of students who invest). The mean values themselves predicted a wider impact that the participants of the study agreed to have experienced by factors like social media, gut feeling of getting rich etc. The standard deviation was less than 2 in all cases, indicating that the values in each individual’s case do not move very far from the mean.

12. LIMITATIONS AND SCOPE FOR FURTHER RESEARCH

Following are the few limitations of the conducted study:

1. The sample size is not large enough to imply the study effectively on the vast Indian population.
2. Some of the responses to certain questions in the survey may not have been honest or accurate.

This study by the author successfully establishes a relation between the factors having an impact of the undergraduate level students’ investment education decisions and perception. It also assesses the pre-covid and post-covid pandemic scenarios by comparing them parallelly. The scope for further research for this study is to analyse whether in the near future, when the pandemic is over and restrictions across the world are limited, will these factors undertaken in the study still hold their significance or not. Considering that people will swiftly start getting back to more-normal lives and be busy unlike now, since all undergrad level students are studying from home. Therefore, will the time factor also change the level of impact of these factors of the study? This is yet to be concluded and can be undertaken for further study on this topic.

REFERENCES

1. Adeyeye, P. O., Aluko, O. A. & Migiro, S. O., 2018. The global financial crisis and stock price behaviour: time evidence from Nigeria. *Global Business and Economics Review (GBER)*, 20(3), pp. 2-9.
2. Agarwalla, P. S. K. & Barua, P. S., 2012. A Survey of Financial Literacy among Students Young Employees and the Retired in India. *Indian Institute of Management Ahmedabad*, 1(1), pp. 4-22.
3. Allam, S., Abdelrhim, M. & Mohamed, M., 2020. The Effect of the COVID-19 Spread on Investor Trading Behavior on the Egyptian Stock Exchange. *SSRN*, 18 June, pp. 1-13.
4. Anon., 2017. Investment Awareness Among Young Generation. Advances in Economics. *Advances in Economics, Business and Management Research*, 36(11), pp. 5-23.
5. Azhar, Z., Juliza, Azilah, N. & Syafiq, A., 2017. Investment Awareness Among Young Generation. *Advances in Economics, Business and Management Research*, 36(11), pp. 5-23.
6. Azhar, Z., Juliza, Azilah, N. & Syafiq, A., 2017. Investment Awareness Among Young Generation. *Advances in Economics, Business and Management Research*, 36(11), pp. 126-135.
7. Baliga, D. B. V. & Maroor, D. J. P., 2018. Individual investment behaviour of young investors in stock market. *NOLEGIEN Journal of Consumer Behavior & Market Research*, 1(1), pp. 1-26.
8. Barberis, N. &. T. & Richard, 2003. A survey of Behavioral Finance. *Handbook of the Economics of Finance*, 1(1), pp. 1-19.
9. Bhargava, K., 2021. *Why is share market resilient in face of Covid-19?*. [Online] Available at: https://www.financialexpress.com/market/cafeinvest/why-is-share-market-resilient-in-face-of-covid-19-kalpen-parekh-reveals-says-watch-these-stocks-interview/2254224/
   [Accessed 1 June 2021].

10. Bird, M., 2021. *The Wall Street Journal.* [Online] Available at: https://www.wsj.com/articles/indias-stock-market-mania-defies-economic-reality-11613732914
[Accessed 2 June 2021].
11. Dhall, R. & Singh, B., 2020. The COVID-19 Pandemic and Herding Behaviour: Evidence from India's Stock Marke. *Millenial Asia*, 11(3), pp. 366-390.
12. ET Spotlight Specialhttps://economictimes.indiatimes.com/markets/cryptocurrency/extent-of-elon-musks-influence-on-cryptocurrency-where-is-it-headed/articleshow/83037268.cms, 2021. *Extent of Elon Musk's influence on cryptocurrency; where is it headed?.* [Online] Available at: https://economictimes.indiatimes.com/markets/cryptocurrency/extent-of-elon-musks-influence-on-cryptocurrency-where-is-it-headed/articleshow/83037268.cms
[Accessed 15 June 2021].
13. Jefferies, C. W., 2021. *Business Standard.* [Online] Available at: https://www.business-standard.com/article/markets/indian-stock-market-vulnerable-to-the-rise-in-covid-cases-chris-wood-121043000242_1.html
[Accessed 12 June 2021].
14. Khakhar, D. C. D., Aggarwal, N. & Rughani, D., 2019. A Study on Behavioral Finance in Investment Decisions of Investors in Ahmedabad. *International Journal of Research in Commerce, Economics and Management,* 9(12), pp. 1-17.
15. Liu, Y. & Tsyvinski, A., 2021. Risks and Returns of Cryptocurrency. *The Review of Financial Studies,* 34(6), p. 2689–2727.
16. Mishra, R., n.d. Financial Literacy, Risk Tolerance and Stock Market Participation. *Asian Economic and Financial Review,* 8(12), pp. 1457-1471.
17. MoneyControl Contributor, 2020. *MoneyControl.* [Online] Available at: https://www.moneycontrol.com/news/business/markets/time-to-align-your-investments-to-the-new-normal-post-covid-19-check-these-essentials-5369381.html
[Accessed 15 May 2021].
18. Mr.J.P.Jaideep & Jyoty, M. K. P., 2019. A Study on Cryptocurrency in India – Boon or Bane. *Journal of Emerging Technologies and Innovative Research,* 6(2), pp. 412-417.

19. Naseem, S. *et al*., 2021. The Investor Psychology and Stock Market Behavior During the Initial Era of COVID-19: A Study of China, Japan, and the United States. *Frontiers in Psychology,* 12(1), pp. 1-10.
20. Ortmann, R., Pelster, M. & Wengerek, S. T., 2020. COVID-19 and Investor behavior. *Finance Research Letters,* 37(-), pp. 1-20.
21. Pandey, S. K. & Vishwakarma, A., 020. A Study on Investment Preferences of Young Investors in the City of Raipur Chhattisgarh, India. *PalArch's Journal of Archaeology of Egypt / Egyptology,* 7(9), pp. 9757-9768.
22. Ravi, S., 2020. *Business World.* [Online] Available at: http://www.businessworld.in/article/Impact-Of-COVID-19-On-The-Indian-Stock-Markets/11-05-2020-191755/
[Accessed 23 June 2021].
23. Riaz, S., Ahmed, R., Parkash, R. & Ahmad, M. J., 2020. Determinants of Stock Market Investors' Behavior in COVID-19: A Study on the Pakistan Stock Exchange. *International Journal of Disaster Recovery and Business Continuity,* 11(3), pp. 977 -990.
24. Saikia, S., 2015. *Investment Pattern of Youth in India with particular reference to Mumbai.* Mumbai: R.A.P.C.C.E initiative .
25. Sayankar, D. V., Sonawane, D. M. & Joshi, P. M., 2021. A Study on Impact of Demographic Factors on Overconfidence Bias in Investment Decision Process. *International Journal of Management*, 12(5), pp. 64-71.
26. Sharma, A. J., 2016. Role of Behavioural Finance in the Financial Market. *International Journal of Business and Management Invention,* 5(1), pp. 1-5.
27. Sharma, A. & Kumar, A., 2019. A review paper on behavioral finance: study of emerging trends. *Qualitative Research in Financial Markets,* 12(2), pp. 137-157.
28. Shukla, S. & A, A., 2019. A Study on the Awareness and Perception of Cryptocurrency in Bangalore. *Indian Journal of Applied Research,* 9(4), pp. 15-24.
29. Singh, J. & Yadav, P., 2016. "A Study on the Factors Influencing Investors Decision in Investing in Equity Shares in Jaipur and Moradabad with Special Reference to Gender. *Amity Journal of Finance,* 1(1), pp. 117-130.

30. Sohail, A., Husssain, A. & Qurashi, Q. A., 2020. An Exploratory Study to Check the Impact of COVID-19 on Investment Decision of Individual Investors in Emerging Stock Market. *Electronic Research Journal of Social Sciences and Humanities* , 2(4), pp. 1-13 .
31. Yoshida, Y., 2010. Is this time different for Asia?: Evidence from stock Markets. *Discussion Paper*, 4(40), pp. 9-15.
32. Gadde, T. & Gupta, D. A., 2020. The study of Risk-Taking Ability among Young Investors. *Journal of Xi'an University of Architecture & Technology,* 12(6), pp. 508-515.
33. Gill, S., Khurshid, M. K., Mahmood, S. & Ali, A., 2018. Factors Effecting Investment Decision Making Behavior: The Mediating Role of Information Searches. *European Online Journal of Natural and Social Sciences,* 7(4), pp. 758-767 .
34. Giudici, G., Milne, A. & Vinogradov, D., 2020. Cryptocurrencies: market analysis and perspectives. *Journal of Industrial and Business Economics,* 47(1), p. 1–18.
35. Gurbaxani, A. & Gupte, R., 2021. A Study on the Impact of COVID- 19 on Investor Behaviour of Individuals in a Small Town in the State of Madhya Pradesh, India. *Australian Accounting, Business and Finance Journal,* 15(1), pp. 70-92.
36. Himanshu, Ritika, Mushir, N. & Suryavanshi, R., 2021. Impact of COVID -19 on portfolio allocation decisions of individual investors. *Journal of Public Affairs,* pp. 1-6.
37. Jani, S., 2018. *The Growth of Cryptocurrency in India: Its Challenges & Potential Impacts on Legislation,* vadodara: Research Gate.
38. Kakade, S., 2020. *Investment Perspectives of Young Professionals in India,* s.l.: Scribd.
39. Karkacıer, A. & Ertaş, F. C., 2017. ndependent auditing effect on investment decisions of institutional investors. *Journal of Accounting and Management Information Systems* , 16(3), pp. 297-319.
40. Kaur, A., 2021. *Covid returns: Will stock market crash again in 2021?.* Available at: https://www.businesstoday.in/markets/market-perspective/story/covid-returns-will-stock-market-crash-again-in-2021-293247-2021-04-12 [Accessed 12 april 2021].
41. Khan, D. S., Upadhyaya, D. C., Gautam, D. S. & Natu, D. P., 2020. A study on the impact of covid-19 on the investment pattern of investors with specific reference to traditional investment (real estate and gold) and market based financial products (equities) in mumbai. *European Journal of Molecular & Clinical Medicine,* 7(11), pp. 5644-5660.

42. Syed, Z. & Bansal, D. R., 2017. Do investors exhibit behavioral biases in investment decision making? A systematic review. *Qualitative Research in Financial Markets* , 10(5), pp. 00-00.
43. V.V, D. A. K. & P, S., 2019. A study on opportunities and challenges of cryptocurrency in india with special reference to bitcoin. - *International Journal of Research and Analytical Reviews*, 6(1), pp. 774-780.
44. Lusardi, A. (2019). Financial literacy and the need for financial education: evidence and implications. *Swiss Journal of Economics and Statistics*.
45. P., A. (2018). Financial Literacy and Financial Education in India: An Assessment. *International Research Journal of Commerce Arts and Science, 9*(3), 72-79.