

Working Paper

Topic: Financial literacy of novice cryptocurrency investors

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Abstract

The paper examines the financial literacy levels of novice cryptocurrency investors. There are several factors influencing investment decisions in general. With respect to cryptocurrency, there are certain unique factors driving the investors' decision making process. Investors who are more financially literate tend to not own cryptocurrencies. As cryptocurrencies are characterized by high volatility, one of the key tenets involves increasing consumers' ability to understand and assess the financial risk involved among the different asset classes. It is expected that the ones who are more financially literate get less engaged in a highly volatile new instrument and in transactions driven by unrealistically high promised rewards.

1. Introduction

At the time of a global pandemic when the stock markets throughout the world have detached themselves from the economy, there was another odd event happening across the globe which was the sudden explosion in the investments in cryptocurrencies. The value of Bitcoin and other new cryptocurrencies quadrupled in months as there were new investors flooding in the market. (Inman, 2020) This era of digital currencies getting investors' attention gives rise to questions like whether we are on our way to another divide wherein the rich, tech friendly and financially educated people get to ride this opportunity vehicle and the ones who are poor, with inadequate financial knowledge and not that tech-friendly are left behind.

With more than a decade since the launch of Bitcoin and many countries accepting cryptocurrencies, the financial literacy of individuals investing in them is a big limitation (Panos et al., 2021) and a reason for high sentimental dependence of the prices of this new asset class. *(Comparison of Psychological Status and Investment Style Between Bitcoin Investors and Share*

Investors, 2020) According to FINRA's State of U.S. Financial Capability study, only 17% of 18-34 years old people can answer basic financial literacy questions and 53% feel worried about their personal finances. (Lin et al., 2019)

The investors of the cryptocurrencies are divided into two groups, one called as Elites or the ones who have a good income, are either a millennial or Gen-Z and highly financially literate. (McKenzie, 2021) They are aware of the technology that is backing crypto and know the benefits of decentralized currency. The other group, also called the majority, are less affluent, less financially literate and unaware of the demerits and merits of investing in the asset class. The second group approaches the crypto market from the perspective of a gambler and are attracted to the high risk-high reward scheme of these markets without diving deep into either of the financial or technical aspects of this new asset class. (Delfabbro et al., 2021)

It is known that keeping a speculative perspective and investing in financial markets introduces high volatility into the whole system and hence the more mature and literate investors choose to stay away from such markets where the speculation and sentiments backed by negligible fundamental information, is the driving force for the prices. (Brunetti et al., 2011) If we compare that to a stock or currency which has backing of a firm's fundamentals or/and economic factors we find that the cryptocurrency lacks all of those backing and the prices are driven solely by the buzz around the asset. Everytime there is a buzz, markets observe heavy buying and selling of cryptocurrencies. Every crypto market boom attracts a set of new investors who can and cannot be tech savvy and financially literate. This raises questions, whether or not these people entering into the crypto markets understand the amount of risk they're exposing themselves to? Also, do these financially uneducated investors understand that they're making, what could be the future of "Money", a free-wheeling game.

Sometimes even the financially savvy people give up to impulse and emotion which is a common scene in the case of less financially literate ones. (Kelly, n.d.) With that being said, this paper will explore the financial literacy levels of novice cryptocurrency investors in terms of their decision-making capabilities, considering their lack of knowledge about the cryptocurrency market and financial markets in general.

2. Literature review

There are several factors influencing cryptocurrency investment. The popularity of this digital currency comes with a backhanded issue of the financial literacy of their investors. Previous research has focused on the factors influencing cryptocurrency investment patterns and financial literacy overall.

2.1. Advent of cryptocurrency

After the 2008 subprime crisis, people started to lose faith in the conventional banking systems. The impact of the crisis was such that in many countries of the world people lost their jobs and their economies shrunk. As sources claim, after the crisis a person named Satoshi Nakamoto introduced a new currency called Bitcoin and deployed it in the year 2009. Following the subsequent launch of Bitcoin, the price increased from zero to almost \$20,000 in December 2017 and then dropped back to \$4,000. Since the first mining in 2009, thousands of cryptocurrencies with different focuses have emerged in the market. (Giudici et al., 2019) Although there is increased popularity, the lack of a theoretical foundation increases the potential risks of investing in cryptocurrencies. It was seen as a reply to the financial institutions who always privatized the profits but losses were distributed amongst the public. The creation of this currency aimed at the elimination of an intermediary while making transactions. (Liao & Xiao, 2018)

Cryptocurrencies are a subset of digital currencies that are based on a decentralized network. Most cryptocurrencies are created to introduce new units of currency with a limited total amount. Unlike state-issued currencies, cryptocurrencies are not governed by established laws, but by technology. This makes crypto modern and different from traditional currencies. Their scope has grown exponentially over the years. Cryptocurrency operates in a strong, unhackable, peer-to-peer infrastructure monitored by blockchain technology. (Luo et al., 2021)

The application of cryptocurrency ranges from simple to complex financial transactions. Extensive use of crypto increases the efficiency in trading and ease of exchange through the internet. A cryptocurrency ecosystem also provides opportunities to support startups by facilitating the process of fundraising. One of the biggest challenges is lack of governance which may be risky for the users as they may become victims of fraud and cyberattacks. Investors and businesses might

also consider the use of cryptocurrencies to facilitate tax evasion, money laundering, and the financing of illicit activities. (Verma, 2021)

2.2. Investor behavior

As said by Lana Swartz, “Money is a technology that allows us to imagine futures”. (*Why People Invest in Bitcoin: Psychology of Cryptocurrency*, 2021) The excitement about Bitcoin seen mostly in the youth tells us that people feel that they have finally got the ability to own assets which could get them any form of wealth. People get elated when they hear that there is a novice, possibly transformative technology in the world which can make them millions. Behavioral economics explores how people give more weightage to their losses than gains, which makes them risk-averse in the stock market. (Yaser, 2020) This behavioral aspect is not visible in the crypto market. People liquidate their assets to invest in cryptocurrency (Kleinman, 2021), in the hope of making profits in cryptocurrency, irrespective of how volatile the crypto market is and how drastically the prices dip. Cryptocurrency investment patterns depend on what is trending on social media. (*How Pop Culture and Social Media Manipulate the Meme Coin Market*, 2021) It can range from what celebrities, businessmen to politicians have to say about crypto all the way to vigorous crypto communities across different platforms.

2.3. Sustainability of cryptocurrency

As cryptocurrencies grow in daily use, trade and adoption, their significant energy use also increases with an adverse impact on the environment and overall sustainability. Cryptocurrencies are minted after the purpose-built computers solve increasingly complex math puzzles, known as hashtag algorithms. Cryptocurrency miners constantly monitor the energy consumption to constantly power, cool and store all of this specialized computer equipment. Most of this energy comes from fossil fuel sources in places that offer cheap prices. (Reiff, n.d.) While digital currencies only make up a fraction of global transactions, their energy consumption has become a major concern for financial regulators, energy providers, and governments. The Cambridge Bitcoin Electricity Consumption Index estimates cryptocurrency uses more energy than entire nations like Sweden and Malaysia. (Shekhar, 2021) As the environmental concern grows, there is more talk about sustainability-focused uses of blockchain. The nonprofit group Blockchain for Climate is advocating for the technology to help connect the world's national carbon accounts to

trade carbon emissions reductions. Some blockchain developers, like Ethereum, are moving away from the energy-intensive methods and shifting towards a Proof-of-Stake (PoS) method by which crypto transactions would be validated based on the number of coins a user has. This process will require much less processing power and time. The move is anticipated to reduce the environmental impact of Ethereum by 99%, according to Ethereum core protocol developer Tim Beiko. (*COP26: How to Make Cryptocurrency More Sustainable* / World Economic Forum, 2021)

2.4. Financial literacy with emphasis on cryptocurrency

Financial literacy was found to have a significant impact on financial behavior of investors. (Zhao & Zhang, 2020) Remund defined financial literacy as a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through appropriate short-term decision making and sound, long-range financial planning, while mindful of life events and economic conditions. (Remund, 2010)

With the emergence of increasing financial literacy research, more and more researchers agree that financial literacy has two distinguished dimensions – objective financial knowledge and subjective financial knowledge. (Nejad & Javid, 2018) While objective financial knowledge refers to individuals' understanding of financial concepts and instruments, subjective financial knowledge refers to individuals' confidence in how much they know. (Alba & Hutchinson, 2000) Many previous studies have provided evidence that objective financial knowledge is an important determinant in investment intention and behavior. It was found that objective financial knowledge has a significant positive relationship with investment intention in stock markets. (Akhtar & Das, 2019) Also, millennials with higher levels of objective financial knowledge are more likely to have investments. In addition, higher levels of objective financial knowledge were found to be positively associated with holding risky financial assets. (Thomas & Spataro, 2018) But the level of objective financial knowledge does not have a significant relationship with crypto asset ownership. Thus, more research needs to be done to examine the relationship between objective financial knowledge and cryptocurrency investment. Higher levels of subjective financial knowledge are positively related to participating in the securities market, having investments and investing in risky assets. (Allgood & Walstad, 2015) Moreover, subjective financial knowledge has a stronger relationship with financial behavior than objective financial knowledge.

The financially literate are aware of cryptocurrencies and report that they do not intend to own them. (Panos et al., 2021) More financially literate retail investors are more likely not to have held any cryptocurrencies. As cryptocurrencies are characterized by high volatility, one of the key tenets involves increasing consumers' ability to understand and assess the financial risk involved in different choice options. It is expected by people that the more financially literate get less engaged in a highly volatile new instrument and in transactions driven by unrealistically high promised rewards or by sentiment and imitation. (Riitsalu & Murakas, 2019)

If the current cryptocurrency market is dominated by illegitimate users and only a few fund managers with many speculators and potentially less financially literate investors, then concerns about consumer detriment and sources of risk are entirely justified. For any financial market to function efficiently, there needs to be a combination of informed investors and speculators. (McKenzie, 2021) This is particularly the case for newly established markets available to the wider population, just like cryptocurrency.

A study on gender parity in cryptocurrency investment shows that men are more likely than women to engage in cryptocurrency trading, trade more frequently and be more speculative, as a result, they realize lower returns. The actual and perceived financial literacy explains approximately 40% of the gender gap in bitcoin literacy. (Gupta et al., 2021)

There is a negative relationship between financial literacy and cryptocurrency ownership because the financially literate also depend on the information available online. Digital literacy is the ability to use information and communication technologies to find, evaluate, create and communicate information, requiring both cognitive and technical skills. This has a large positive impact on current cryptocurrency ownership and also the intention to become a cryptocurrency owner in the future. (Bashiri, 2021)

Most previous research has used general financial knowledge to explore the impact of financial literacy on investment behavior, little attention has been paid to the impact of specific investment knowledge on having risky asset investments like cryptocurrency. There is a lack of research on

financial literacy of novice cryptocurrency investors and what drives their decision-making process. This is the research gap we aim to address in the paper.

3. Research question

The research question addressed in the paper is- should we expect the novice cryptocurrency investors to make financially sound decisions? This is regarding the level of financial literacy among novice cryptocurrency investors. The novice individual investors have minimum to negligible knowledge about this specific asset class as well as other asset classes. The paper will examine the financial literacy aspect of such investors.

4. Methodology

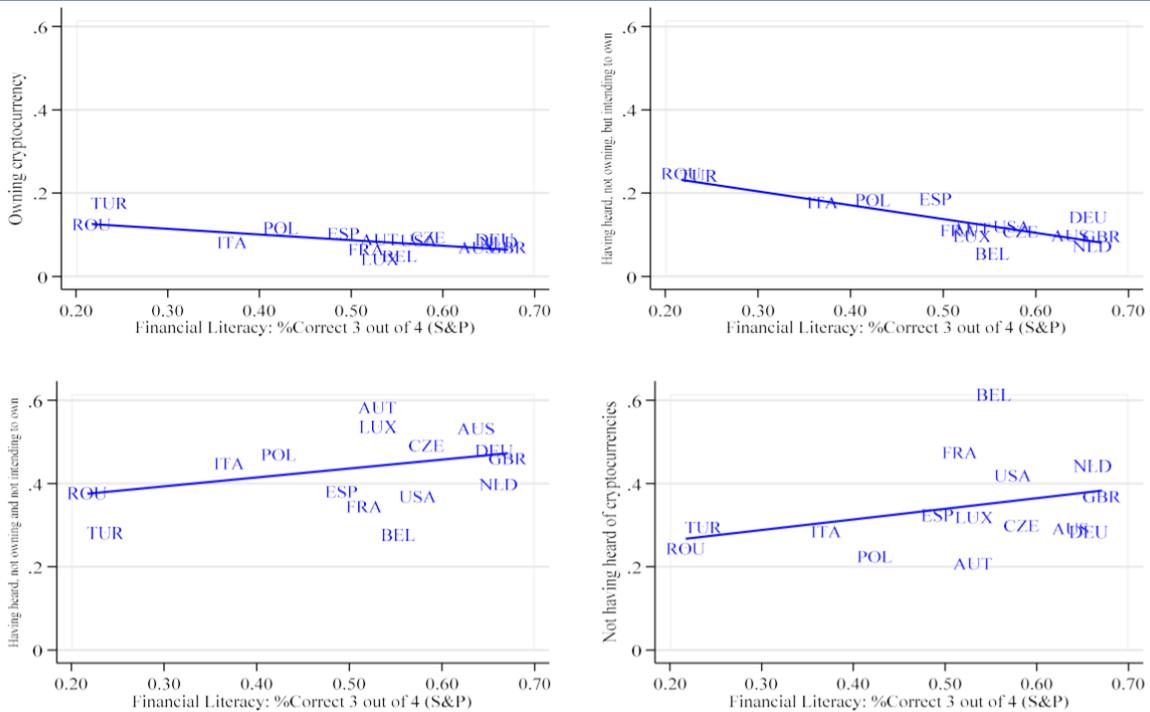
This paper is an interpretive study using secondary data for analysis. A qualitative research paper, it is exploratory in nature as it tries to explore where the novice cryptocurrency investors stand in terms of financial literacy. Case studies examining the research question will be analyzed to draw inferences.

5. Data Analysis

Concerns regarding the cryptocurrency are because of the fact that even though it is faster, convenient and has potential benefits but it is also being used for drug abuse, banned pornography, funding terrorism, money laundering and other illegal activities and because of the decentralization and untraceability capabilities of this new asset class, it has become difficult to trace the offenders through financial route. It has been found that in 2019, 46% of the total bitcoin transactions amounting USD 76 billion, were used to fund illegal activity for that year (Foley, et al., 2019, RFS).

As per S&P global financial literacy survey conducted in 2014, involving 150000 people across 140 countries in the world, the findings told us that Risk diversification is the least understood concept in the world and numeracy and inflation were highly misunderstood concepts. (*S&P Global FinLit Survey*, n.d.) They asked about 4 topics related to finance and those who answered about 3 of them correctly were considered financially literate. The below graphs taken from Georgio Panos' paper at Crypto Asset Lab Conference show that there are a high number of people

who are more financially literate but they do not own and do not intend to own any crypto currency. And the ones who are highly financially literate own less or do not expose themselves to cryptocurrencies. As the level of financial literacy increases the number of people who intend to own crypto currencies decreases. (Panos et al., 2021) This survey backs the argument that we made in the introduction of this paper, that when speculation is driving the market prices, the more financially literate investors do not prefer to invest in those markets.



(Figure 1- Source: (Panos et al., 2021))

As per the data shown in S&P global Survey of 2014, the financial literacy of the US was 57% but the recent study in George Panos’ paper shows us that the majority of people (79%), do not intend to own or have never heard of cryptocurrencies. (Panos et al., 2021)

This tells us that the majority of investors in the cryptocurrency markets are financially illiterate and hence they shouldn’t be the driving force behind the market prices of the currencies. The problem with the lack of financial literacy is that the people do not understand the concepts of volatility, inflation and are not able to distinguish between noise and useful information, therefore they do not understand the level of risk they’re exposing themselves to. This might sound nice to

someone who likes a high risk-high reward scheme, but here it is more the case of being attracted to high reward and being ignorant about the risk.

Introduction of a financial sandbox could be made which asks users to pass through multiple levels of financial literacy to familiarize themselves with the idea of financial risk, entry and exit strategies and diversification and upon passing these levels, the people will be allowed to trade in those markets.

New interfaces and infographics that inform the user about the volatility and the risk involved, whether relative or direct, would be helpful in nudging the investors to avoid entering a trade which exceeds their risk tolerance.

Inability to perform primary data research was one of the limitations of the paper. The source of data for our analysis was not recent enough, due to which some inferences may not reflect the recent developments in the cryptocurrency market and investment patterns of novice crypto investors.

6. Conclusion

The inferences indicate negative effects of financial literacy on the probability of owning cryptocurrencies and on intending to own in the future. The financially literate are more likely to be aware of cryptocurrencies, compared to their financially-illiterate counterparts. The paper confirms the assumption that the more financially literate are better positioned to evaluate the risk-reward profile offered by cryptocurrencies. On the other hand, novice cryptocurrency investors lack the knowledge, skills and understanding of the market to evaluate the risk-reward profile of cryptocurrencies. They are not equipped per se to make financially sound decisions with regards to investment in cryptocurrency.

Financial literacy has significant associations with individuals investing in cryptocurrencies. Future research on the topic could take into account the causal relationship between financial literacy and cryptocurrency investment. It may be beneficial in future studies to measure

investment experience with respect to the level of financial literacy of crypto investors and explore how different investment experiences affect cryptocurrency investment behavior differently.

References

- Akhtar, F., & Das, N. (2019, Feb 13). Predictors of investment intention in Indian stock markets: Extending the theory of planned behaviour. *International Journal of Bank Marketing*, 37.
- Alba, J., & Hutchinson, W. (2000, September 2). Knowledge Calibration: What Consumers Know and What They Think They Know. *Journal of Consumer Research*, 27.
- Allgood, S., & Walstad, W. B. (2015, September). The effects of perceived and actual financial literacy on financial behaviors. *Economic Inquiry*, 54.
- Alonso, S., Vasquez, J., Fernandez, M., & Forradellas, R. (2021, July). Cryptocurrency Mining from an Economic and Environmental Perspective. Analysis of the Most and Least Sustainable Countries. *Multidisciplinary Digital Publishing Institute*.
- Bashiri, S. (2021, September 24). *Financial Literacy: Understanding Cryptocurrency – Financial Fitness Group*. Retrieved December 23, 2021, from Financial Fitness Group: <https://financialfitnessgroup.com/financial-literacy-understanding-cryptocurrency/>
- Brunetti, C., Buyuksahin, B., & Harris, J. (2011). Speculators, Prices and Market Volatility. *SSRN Electronic Journal*.
- Comparison of Psychological Status and Investment Style Between Bitcoin Investors and Share Investors*. (2020, November 17). Retrieved December 30, 2021, from NCBI: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7705067/>
- COP26: How to make cryptocurrency more sustainable | World Economic Forum*. (2021, November 15). Retrieved December 23, 2021, from The World Economic Forum: <https://www.weforum.org/agenda/2021/11/how-to-make-bitcoin-and-cryptocurrency-sustainable-renewable-energy-blockchain-crypto-mining/>
- Delfabbro, P., King, D., & Williams, J. (2021, Nov). Cryptocurrency trading, gambling and problem gambling. *Addictive Behaviors*, 122.
- Foley, S., Karlsen, J., & Putnins, T. (2019, May). Sex, Drugs, and Bitcoin: How Much Illegal Activity Is Financed through Cryptocurrencies? *The Review of Financial Studies*, 32.
- Giudici, G., Milne, A., & Vinogradov, D. (2019, September). Cryptocurrencies: market analysis and perspectives. *Journal of Industrial and Business Economics*.
- Gupta, S., Gupta, S., Mathew, M., & Sama, H. (2021, October 29). Prioritizing intentions behind investment in cryptocurrency: a fuzzy analytical framework. *Journal of Economic Studies*, 48.
- How pop culture and social media manipulate the meme coin market*. (2021, November 30). Retrieved December 30, 2021, from Times of India: <https://timesofindia.indiatimes.com/business/cryptocurrency/blockchain/how-pop-culture-and-social-media-manipulate-the-meme-coin-market/articleshow/88012517.cms>
- Huston, S. (2010, June 1). Measuring Financial Literacy. *Journal of Consumer Affairs*, 44.
- Inman, P. (2020, November 17). *Bitcoin jumps to three-year high as Covid crisis changes investor outlook*. Retrieved December 30, 2021, from The Guardian: <https://www.theguardian.com/technology/2020/nov/17/bitcoin-jumps-to-three-year-high-as-covid-crisis-changes-investor-outlook>
- Kelly, R. C. (n.d.). *Financial Markets: When Fear and Greed Take Over*. Retrieved December 30, 2021, from Investopedia: <https://www.investopedia.com/articles/01/030701.asp>

- Kleinman, Z. (2021, February 9). *Bitcoin investors: From buying a Bentley to losing it all*. Retrieved December 30, 2021, from BBC: <https://www.bbc.com/news/technology-55996412>
- Lack of financial literacy puts novice crypto investors in jeopardy*. (2021, September 9). Retrieved December 23, 2021, from Money9: <https://www.money9.com/news/investment-planning/lack-of-financial-literacy-puts-novice-crypto-investors-in-jeopardy-78524.html>
- Liao, L., & Xiao, J. J. (2018, March 25). Financial literacy and risky asset holdings. *Accounting & Finance*, 57.
- Lin, J., Bumcrot, C., & Ulicny, T. (2019, June). The State of U.S. Financial Capability. *FINRA Investor Education Foundation*.
- Luo, D., Mishra, T., Yarovaya, L., & Zhang, Z. (2021, July). Investing during a Fintech Revolution: Ambiguity and return risk in cryptocurrencies. *Journal of International Financial Markets, Institutions and Money*.
- McKenzie, A. F. (2021, March 30). *How Cryptocurrency Could Inspire a New Kind of Financial Literacy*. Retrieved December 23, 2021, from Worth: <https://www.worth.com/how-cryptocurrency-could-inspire-a-new-kind-of-financial-literacy/>
- Nejad, M., & Javid, K. (2018, June 21). Subjective and objective financial literacy. *International Journal of Bank Marketing*, 36.
- Panos, G., Karkkainen, T., & Atkinson, A. (2021, November). Financial Literacy and Attitudes to Cryptocurrencies. *Crypto Asset Lab Conference*.
- Patil, P. (n.d.). Attitude of the millennial generation towards cryptocurrency.
- Reiff, N. (n.d.). *What's the Environmental Impact of Cryptocurrency?* Retrieved December 23, 2021, from Investopedia: <https://www.investopedia.com/tech/whats-environmental-impact-cryptocurrency/>
- Remund, D. (2010, June 1). Financial Literacy Explicated: The Case for a Clearer Definition in an Increasingly Complex Economy. *Journal of Consumer Affairs*, 44.
- Rey, E., & Williams, A. (2019). An Investigation into the Personal Financial Literacy of Cryptocurrency Users.
- Riitsalu, L., & Murakas, R. (2019, May 21). Subjective financial knowledge, prudent behaviour and income: The predictors of financial well-being. *International Journal of Bank Marketing*, 37.
- S&P Global FinLit Survey*. (n.d.). Retrieved December 24, 2021, from Global Financial Literacy Excellence Center (GFLEC): <https://gflec.org/initiatives/sp-global-finlit-survey/>
- Shekhar, A. (2021, June 12). *Is Bitcoin Sustainable -Avinash Shekhar*. Retrieved December 23, 2021, from BW Businessworld: <http://www.businessworld.in/article/Is-Bitcoin-Sustainable-/12-06-2021-392792/>
- Thomas, A., & Spataro, L. (2018, May 10). Financial Literacy, Human Capital and Stock Market Participation. *Journal of Family and Economic Issues*, 39.
- Verma, M. (2021, July 4). *Why Indians investing in bitcoin and cryptocurrencies is risky — Quartz India*. Retrieved December 23, 2021, from Quartz: <https://qz.com/india/2029185/why-indians-investing-in-bitcoin-and-cryptocurrencies-is-risky/amp/>

- Why people invest in bitcoin: Psychology of cryptocurrency.* (2021, January 23). Retrieved December 30, 2021, from CNBC: <https://www.cnbc.com/2021/01/23/why-people-invest-in-bitcoin.html>
- Yaser, B. (2020, December). Cryptocurrency Market: Behavioral Finance Perspective. *The Journal of Asian Finance, Economics and Business.*
- Yilmaz, N., & Hazar, H. (2015, December 25). PREDICTING FUTURE CRYPTOCURRENCY INVESTMENT TRENDS BY CONJOINT ANALYSIS. *Journal of Economics Finance and Accounting, 5.*
- Zhao, H., & Zhang, L. (2020, October 26). International Journal of Bank Marketing. *International Journal of Bank Marketing.*
- Zhao, H., & Zhang, L. (2021, June). Financial literacy or investment experience: Which is more influential in cryptocurrency investment? *International Journal of Bank Marketing.*