Cryptocurrencies are here to Stay! Think you aren't Vulnerable, Think Again

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Abstract: Cryptocurrencies are here to stay and represent a market capitalisation of approximately $3.57T. It has been reported that over 500 million people globally own cryptocurrencies. In this paper, I discuss the vulnerabilities identified with cryptocurrency ownership including who is vulnerable and then explore the role education plays. The study described involved 745 cryptocurrency owners (including 140 non-fungible token (NFT) owners) from Australia and explores the ways in which vulnerabilities play out for various demographics. The above-mentioned research revealed that almost everyone is vulnerable when it comes to cryptocurrency and/or NFT ownership and challenges who has previously been identified as experiencing financial vulnerabilities. Demographic characteristics associated with financial vulnerabilities often includes individuals with lower education levels who are living on low incomes, who identify as female and/or Indigenous and/or for whom English is a second language. It is often assumed that anyone else who does not meet the above-mentioned characteristics are assumed to be financially capable. However, with cryptocurrency ownership almost everyone is vulnerable. Education has a role to play to help combat the risks associated with cryptocurrency and/or NFT ownership. We need educators willing to teach about cryptocurrencies and NFT ownership, storage and tax implications.

Keywords: Cryptocurrencies, vulnerabilities, education, storage, cryptocurrency literacy, vulnerable, NFTs.

INTRODUCTION

Cryptocurrencies are not going anywhere, whether you own them, loathe them and/or have still never quite understood them, they represent $3.57T USD market capitalisation[1] (Coin Market Cap, 2024). In recent times, cryptocurrencies have been receiving a lot of attention in the media due to politicians stating their stance on cryptocurrencies role in global economies (Sigalos, 2024; Wright, 2024; Yarovaya, 2024; Zahn, 2024).

Prior to the 2024 US election, Donald Trump headlined the biggest bitcoin conference in Nashville Tennessee (Yarovaya, 2024) and announced"…that the United States will be the crypto capital of the planet and the bitcoin superpower of the world…" (Sigalos, 2024 para 4). Since winning the election, he has used social media to declare his position on crypto-currencies, in particular Bitcoin with speculation that a bitcoin strategic reserve will be established under his presidency (Zahn, 2024).

More recently and just days before the President-elect's inauguration, Donald Trump launched the 'Trump Meme' crypto coin which is advertised as $TRUMP (Roush, 2025). Shortly after the launch of $TRUMP coin the then incoming US first lady, Melania Trump launch the $Melania coin (Ray, 2025). As of the 30th of January 2025, the OFFICAL TRUMP ($TRUMP) coin is 26th most valuable cryptocurrency with a market cap of $5.6B and the Official Melania Meme coin ($Melania) holds 163rd position with $389.1M market cap (Coin Market Cap, 2025)[2]. Regardless of individuals views on President Trump and the First Lady Melania's meme coins, his position on embracing innovations in financial technology including cryptocurrencies has been made quite clear.

Within Australia, we are also witnessing the federal government's stance of cryptocurrencies changing due to the re-election of Donald Trump. For instance, recently treasurer Jim Chalmer acknowledged that Australia needs to rethink the role of cryptocurrencies to modernise the financial system (Wright, 2024).

Global adoption of cryptocurrencies has hit record levels with 151 countries involved with crypto activity (Chainalysis 2024). India holds the top spot followed by Nigeria, Indonesia, the United States and Vietnam (Chainalysis, 2024). Despite the United States not holding top spot for adoption their "cryptocurrency markets are the largest and most influential in the world, standing out globally by a large margin" (Chainalysis 2024, p. 13). Indeed, when comparing the

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[1]Market capitalisation is determined based on the number of coins mined multiplied current market value of the coin. The market capitalisation was as at 30th of January 2025.

[2]On the 30th of January 2025 there were 10771 cryptocurrencies listed on Coin Market Cap's website.

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top 20 countries who have adopted crypto, Chainalysis's report revealed that all 19 countries sit below $250B and mostly well below that figure whereas, the US is well over $750B.

Despite the enormous market cap cryptocurrencies hold they are not regulated and therefore sit outside of consumer protection acts. With cryptocurrencies the owner acts as their own bank. Therefore, financial institutions (or banks) involvement with cryptocurrencies has been passive, often as a witness to funds moving from their financial institutions to cryptocurrency exchanges for the purchase of crypto and vice versa when selling crypto. However, the media portrayal of cryptocurrencies has been reported to have direct influence on consumers behaviour (Lee and Jeong, 2023). Interestingly, the media has been found to influence herding behaviours amongst minor coins (defined as anything other than the top 10 coins) and reduce volatility associated with major coins (defined as the top 10 coins) (Lee and Jeong, 2023).

As at the 29th of December 2024 the top five cryptocurrencies and their respective market share are: Bitcoin at $2.09TUSD (with 19.8M Bitcoins in circulation), Ethereum at $384.6B, XRP at $179.7B, Tether at $139.4B and Solana at $117.6B (Coin Market Cap, 2024). It is probably a fair call that if you asked your parents and/or grandparents to name the top five cryptocurrencies in the world that you would be hard pressed to obtain the correct answer. However, if you asked a millennial[3] or Gen Z[4] you might have a higher chance of getting the correct answer.

In Australia, millennials and Gen Z make up 67% of all cryptocurrency ownership (Knight, 2024). Cryptocurrencies were previously described as an emerging asset class, that have since been embraced by over 560 million people worldwide (Triple A, 2024) and contribute to a diversified investment portfolio (Wieandt, 2021). Bondar *et al*. (2020) examined the role of using cryptocurrencies to improve the efficiency of an investment portfolio. They include the top five cryptocurrencies at the time of their study which were Bitcoin, Ethereum, Ripple, Bitcoin Cash and Litecoin and found "…that cryptocurrencies have improved the quality of the investment portfolio, that is, increased its efficiency" (Bondar *et al*. 2020, p. 2951).

[3]A millennial is typically someone born between 1981 and 1996 (Dimock, 2019).

[4]Generation Z or Gen Z is typically someone born between 1997 to 2012 (Dimock, 2019).

Investors can purchase cryptocurrencies via cryptocurrency exchanges. They can also purchase exchange traded funds (EFTs) for some cryptocurrencies including Bitcoin and Ethereum to gain exposure to cryptocurrencies without owning them. ETFs also provide investors a way to get exposure to Bitcoin's price moves in a regulated way through their own brokerage accounts. Increased interest in obtaining exposure to cryptocurrencies via EFTs has been viewed as a step towards mainstream acceptance of Bitcoin (Hannah, 2024). The appeal of having exposure to Bitcoin, for example, is that the individual does not have to understand how to buy and store Bitcoin which has been described as overly complex (Birch, 2021). These EFT investors do not actually own Bitcoin because "they don't have keys, so they don't have the coin".

The saying "not your keys, not your coin" is a common phrase in the Bitcoin community (Ledger 2024). What this phrase refers to is the use of private keys which are used to ensure that the individual who purchased the cryptocurrency is the only one with custody. With Bitcoin, owners have two keys, a private key and a public key. Whoever has access to your private key has access to your Bitcoin and can do whatever they wish with it which has been described as similar to a password (Kerr *et al*. 2023). The public key however is shared to receive Bitcoin which Kerr *et al*. 2023 described conceptually similar to an address.

When an individual purchases cryptocurrencies, they become responsible for storing the crypto asset. Storage can be complicated, and the individual is responsible for storing their own cryptocurrency either on or off the crypto exchange. However, being your own bank, or having self-custody of your crypto asset also has social equity implications because of the low cost and inclusive entry point which is discussed next.

CRYPTOCURRENCIES CONNECTIONS TO SOCIAL EQUITY

Social equity, which means something different to many people, is context specific and is often connected to fair and just treatment of individuals based on morals and values (McSherry, 2013). In essence, social equity appears to be about fairness and social justice that can be experienced through social structures and impacts an individual's ability to access goods and services. Social equity is visible in some cryptocurrencies over others. What I mean by this is that some cryptocurrencies are decentralised, and others are not.

Bitcoin which is decentralised, will be used as an example because it "… has managed to achieve relative success in placing itself as a store of value – despite being a volatile one – and a niche medium of exchange in a relatively short period of time" (Nabilou, 2019, p. 266). Being decentralised means that no single person, group and/or organisation owns Bitcoin nor controls it on the blockchain (Scharfman, 2023). Instead, it is controlled by all Bitcoin owners who collectively retain control via a peer-to-peer network. Without getting into the technicalities how Bitcoin works on the blockchain, the point being made here is that in Australia anyone aged 16 can purchase Bitcoin via an exchange and decide to take self-custody of their crypto asset without the need of a third party such as a bank.

Tommerdahl (2024) states that:

> From a social perspective, blockchain and Bitcoin challenge conventional notions of trust and intermediaries. Blockchain empowers individuals by enabling peer-to-peer transactions, reducing reliance on centralized institutions, and fostering financial inclusion for unbanked populations" (p. 20534).

Cryptocurrency use amongst financial excluded populations occurs on a large scale (Johnson & Krueger, 2021). For instance, an individual can purchase very small amounts of Bitcoin which is divisible to eight decimal places and is referred to as satoshis or sats. As of the 30thof January 2025, $100 Australian dollars would result in 0.00059 of Bitcoin. Using a crypto exchange the individual could either leave their crypto purchase on the exchange and/or move their crypto asset off the exchange using their private keys and into cold storage. The idea is that anyone can acquire Bitcoin whenever they want and to whatever value they are able to afford. There is no shame if you can only purchase $50 worth of sats as you are doing this on an exchange and reasonable for stroage.

CRYPTOCURRENCIE'S ROLE IN INCREASING FINANCIAL INCLUSION

"Financial inclusion is a critical aspect of economic development, particularly in emerging markets, as it aims to provide access to financial services for all members of the economy" (Falaiye *et al*. 2024 p. 369). Muneeza *et al*. (2018) asserts that blockchain technology will enhance financial inclusion for populations of society experiencing financially vulnerability. Moreover, cryptocurrencies are viewed as technological advancements that have removed existing barriers to financial products and services for individuals who have previously faced access issues. For instance, "mobile banking has been a game-changer, allowing individuals with limited access to traditional banking infrastructure to conduct financial transactions seamlessly" (Falaiye *et al*. 2024 p. 368) especially in rural communities where financial inclusion has now increased (Hordofa, 2023).

Despite the advancements in the digital financial landscape, "challenges persist, including concerns related to data security, regulatory frameworks, and the digital literacy of users (Falaiye *et al*. 2024 p. 369). Data security and the need to protect data is essential to overcome trust and confidence issues in digital financial services (Adaga *et al*. 2024; Falaiye *et al*. 2024; Yawe *et al*. 2022). In addition to the above challenges, Abaidoo and Agyapong (2023) also asserts the need for regulatory frameworks to be adaptable to respond to innovations in the financial technology space while also ensure risks are mitigated. Martini *et al*. (2022) found that digital financial services and products are increasingly both financial literacy and financial inclusion of users. A similar finding was also report by Kusumawait *et al*. (2022) in Indonesia.

STORAGE OF CRYPTOCURRENCY

As mentioned, in the previous section, individuals who own cryptocurrency must decide if they want to keep their crypto asset on the crypto exchange and/or take it off the exchange and offline. There are risks with either option. Keeping your crypto asset on the exchange means that if the exchange is ever hacked you could lose your investment and would not have any recourse to get it back. Crypto exchanges are not regulated meaning that in Australia crypto owners are not covered by the consumer protection law. Without protection the experience is much different from when you are and have a credit card used fraudulently and have the funds recovered for you. It is often said only leave on the exchange what you are comfortable losing.

When it collapsed in 2022, FTX was the third largest crypto exchange in the world with $8B on the exchange (Reiff, 2024). This aforementioned crypto exchange is a recent example of how leaving your crypto asset on the exchange can result in losing all of your investment.

However, taking self-custody of your crypto asset has been described as overly and unnecessary complicated which means that many individuals choose to go the easiest route.

FRAUD AND CRYPTOCURRENCY

The Australian Competition and Consumer Commission (ACCC) reported that in 2022-23 that "… nearly half of all scam losses were processed through cryptocurrency exchanges (ACCC, 2024). Recently, Holt and Cross (2024) reported that crypto fraud is an emerging area of fraud, and that more information is needed to help support victims of crypto related fraud. Hasan, Nahar & Akhter (2024) found that "cryptocurrency scams pose significant risks to investors, particularly those with limited knowledge and experience in discerning legitimate offerings from fraudulent ones" (p. 1). Numerous cryptocurrency scams exist globally, I will describe some well-known ones including why they have appeal.

Pump and dump schemes have been found to be the most profitable scams perhaps due to "their ability to exploit the fear of missing out (FOMO)" (Hasan, Nahar & Akhter 2024) which can be used to influence consumer behaviour (Good & Hyman, 2020). FOMO was also found to influence investment decisions (Bouri *et al*. 2019) and Friederich *et al*. 2023 argue that "FOMO appeals likely elevate consumers' expected pleasure as the investment opportunity might seem attractive and socially gratifying" (p. 103).

When "an operator attempts to convince investors to buy the particular asset by spreading misinformation about its attributes (pump) before selling the inflated asset once others have been duped into boosting the price (dump)" a pump and dump schemes has occurred (Childs, 2024, p. 541). However, other cryptocurrency related scams exist including fake mobile phone apps acting as cryptocurrency exchanges, scams connected to initial coin offerings (ICO) and Ponzi schemes, and phishing scheme that target and attack cryptocurrency wallets (Childs, 2024). Another type of scam is referred to as advance fee frauds where "fraudsters pos[e] as influential figures in the crypto industry, promising to multiply cryptocurrency sent to them as part of a giveaway" with victims receiving nothing in return (Hasan, Nahar & Akhter, 2024, p. 11). Another cryptocurrency scam is referred to as rug pulls which occurs "where fraudulent developers lure investors into seemingly profitable projects and then run off with their money, leaving the investors with worthless assets" (Zhou *et al*. 2024, p.228).

Due to the preconceived complexities of purchasing cryptocurrencies and/or storing cryptocurrencies; scammers continue to exploit, lure and extract funds from individual vulnerable in this space. The continued exploitation of victims of cryptocurrency fraud also hinders the cryptocurrency space by deterring individuals from entering this space (Ducas and Wilner, 2017) and delays financial technological innovation adoption.

EDUCATOR'S ROLE IN INCREASING KNOWLEDGE AND SKILLS ABOUT CRYPTOCURRENCIES

There is a compelling need to incorporate education about cryptocurrencies and NFTs into both formal and informal educational settings (Blue *et al*. 2024a & b; Blue *et al*. 2023). Ferdig *et al*. (2022) argues that despite "mass acceptance globally and commercially" that these new technologies "are very slow to find their way into or to make an impact on teacher education" (p. 5). Tommerdahl (2024) highlights that the "exponential growth rate of adoption of these technologies [blockchain and Bitcoin] rivals that of early internet adoption, necessitating the development of curricula in elementary, secondary, and post-secondary educational institutions worldwide" and acknowledges that "…current educators will likely need to educate themselves to understand the content they must teach" (p. 20527).

Blue *et al*. (2024a & b) did reveal that social media platforms were the number one place individuals learned about cryptocurrencies and NFTs which TikTok being the most popular. The above-mentioned finding highlights the critically important role of educators introducing and exploring these new technologies in classroom environments to reduce ways in which scammers are currently exploiting individuals.

The purpose of this paper is to highlight the areas Australians were deemed to be vulnerable with regards to cryptocurrencies including who was identified as being vulnerable (Blue *et al*. 2024) and outline possible preventive educational measures. Before discussing the findings from the above-mentioned study, I will share with you how the data was collected that informs this paper.

DATA COLLECTION

The research project I am referring to throughout this paper was designed to identify who is vulnerable

and what the vulnerabilities are when it comes to cryptocurrencies and/or NFTs. The survey was designed based on existing literature and knowledge about buying, storing and selling cryptocurrencies (see Blue *et al*. 2024a).

Ethical clearance was obtained from the Queensland University of Technology (where I was previously employed). Data collection took place in 2022. Qualtrics was hired to recruit participants. They partner with over 20 online sample providers to supply a network of diverse quality participants who act as a client base. All participants were recruited anonymously and randomly from Qualtrics databases. Participants who were 18 or older and had purchased cryptocurrencies and/or NFTs had an equal chance of participating. We did seek a mix of demographic characteristics which was managed by Qualtrics.

An online survey was developed using Qualtrics software. A link to the survey was then shared with Qualtrics who recruited participants. In total we had 745 participants complete this survey. The number of participants was determined based on the budget we had available to conduct this research.

There were two screening questions included in the survey. The first was about the participant's age and the second was confirming that the participant had purchased cryptocurrency before. Included in the survey were some demographic questions about the participants and some other questions about their experience and interest in cryptocurrencies as well as how they stored and learned about cryptocurrencies.

There were also three questions that focussed on the participants cryptocurrency literacy as they related to the financial understanding connected to cryptocurrencies. These three questions included: 1) if they were aware of the phrase: “not your keys, not your coins”; 2) calculating how much Bitcoin had increased by; and 3) asked participants about the tax consequences relating to buying and selling cryptocurrencies.

DATA ANALYSIS

SPSS 28 was used to identify the demographic information from the participants responses. Following the summary of demographic information a chi-squared test was conducted to examine significance based on gender, age range and educational level. Through this analysis we were able to identify the demographic characteristics of Australian cryptocurrency owners and identify any potential vulnerabilities. For more details about the data analysis please refer to Blue *et al*. 2024a.

DEMOGRAPHICS OF CRYPTOCURRENCY OWNERS IN AUSTRALIA

As shown in Table **1**, we had slightly more females (413) complete the survey than males (325) which is common as females tend to complete surveys at a higher rate than males.

As shown in Table **1**, there were also 70 females and 69 males also owning NFTs. Sixty-two Indigenous Australians own cryptocurrencies and 27 also own NFTs. Most cryptocurrency owners and NFT owners have a university degree with 415 and 98 respectively. Cryptocurrency and NFT owners also tend to be employed fulltime with 47.5% of the participants being employed full-time.

VULNERABILITIES IDENTIFIED

Based on Blue et al. (2024a)’s research, we identified that Australian cryptocurrency and NFT owners were experiencing vulnerabilities in six ways. These included: 1) when purchasing NFTs; 2) storage concerns: losing NFTs and crypto; 3) receiving unsolicited advice; 4) social media influence; 5) lack of crypto literacy; and 6) lack of IT literacy. Note, I am using the language of individuals experiencing vulnerabilities after reading Russell-Bennett et al. (2024) editorial urging us to state that an individual is experiencing vulnerabilities rather than that they are vulnerable.

Russel-Bennett *et al*. (2024) state the person-first language is less offensive (Uduehi and Reed, 2018) and removes the responsibility from the person for the circumstances they find themselves in. With person-first language “… the situation or circumstance places the person before the condition, i.e. the person experiencing homelessness, people using drugs, those living with disability and consumers experiencing vulnerability” (Russell-Bennett *et al*. 2024, p. 510). Table **2** reveals who was identified as experiencing vulnerabilities with regards to cryptocurrencies and NFTs and what the vulnerabilities were.

Table **2** illustrates who is experiencing vulnerabilities and what the vulnerabilities are. In summary, males experiencing were vulnerabilities relating to the loss of cryptocurrencies and females

Table 1: Demographic of Cryptocurrency and NFTs owners in Australia (Adapted from Blue *et al*. 2024a)

	Purchased crypto	Purchased NFTs in addition to crypto	Total
Participants	745	140	745
Gender			
Female	413 (55.4%)	70 (9.4%)	343 (46%)
Male	325 (43.6%)	69 (9.3%)	256 (34.4%)
Non-binary	6 (0.8%)	1 (0.1%)	5 (0.7%)
Prefer not to say	1 (0.1%)	0 (0.0%)	1 (0.1%)
Indigeneity			
Indigenous	62 (8.3%)	27 (3.7%)	35 (4.8%)
Non-Indigenous	662 (89%)	111 (15.3%)	551 (76.11%)
Prefer not to say	20 (2.7%)	2 (0.3%)	18 (2.4%)
Education levels			
Highschool or below	153 (20.6%)	23 (3.1%)	130 (17.4%)
TAFE	167 (22.4%)	18 (2.4%)	149 (20%)
University	415 (55.7%)	98 (13.2%)	317 (42.6%)
Other	10 (1.3%)	1 (0.1%)	9 (1.2%)
Employment Condition			
Full-time	457 (61.3%)	103 (13.8%)	354 (47.5%)
Part-time/casual	182 (24.4%)	23 (3.1%)	159 (21.3%)
Not	104 (14.0%)	2 (0.3%)	90 (12.1%)
Prefer not to say	2 (0.3%)	0 (0.0%)	2 (0.3%)

Table 2: Who is experiencing vulnerabilities and what the vulnerabilities are with cryptocurrencies and NFTs

	Purchasing NFTS	Concerns about storage: losing NFTs and crypto	Unsolicited advice	Crypto investment social media	Crypto literacy	IT Literacy
Females				x	x	
Male		x				
Indigenous		x				
Non-Indigenous	x		x	x	x	
University educated	x	x		x		
TAFE		x				
High school					x	
English as a second language					x	
Living on own		x				
Own home with mortgage		x				
Full-time employed	x			x		
Part-time/casual					x	
Not employed					x	x

were experiencing vulnerabilities related to being influenced by social media about crypto investments and because they performed poorly on crypto literacy questions. Indigenous peoples were experience vulnerabilities due to losing both crypto and NFTs with non-Indigenous peoples experiencing vulnerabilities related to purchasing NFTs, receiving unsolicited advice and not understanding the tax implications of buying and selling crypto.

Table **2** also reveals that university educated individuals are vulnerable when it comes to purchasing NFTs and because of their concerns related to storing crypto. Individuals who have TAFE as their highest education experience vulnerabilities when it comes to the storage of cryptocurrency with individuals with high school education revealing that they did not understand the importance of holding your own keys which is essential to self-custody. Last, individual who are employed full-time experience vulnerabilities when purchasing NFTs.

DISCUSSION AND CONCLUSIONS

In this section, I discuss the ways in which participants from Blue *et al*. (2024a)'s research experienced vulnerabilities related to cryptocurrency and/or NFT ownership. Each of the items illustrated in Table **2**, are discussed below including preventive educational measures.

PURCHASING NFTS

Most of the participants in the study who own either cryptocurrency and/or NFTs were non-Indigenous, university educated and employed full-time. The above-mentioned characteristics also corresponded who purchased NFTs based on the survey results from Blue *et al*. 2024a. Simply owning NFTs and make an individual experience vulnerabilities related to storage, fear of missing out, lack of regulation and consumer protection, social media influence and investment related scams. Educational opportunities exist to explain how NFTs work, how to purchase them, store them and how to critically evaluate claims spread on social media which may include common pump and dump and/or ICO schemes.

STORAGE CONCERNS: LOSING NFTS AND CRYPTO

Of the 62 Indigenous participants who own cryptocurrencies, 27 also own NFTs. Unfortunately, a larger proportion of Indigenous peoples were found to have lost cryptocurrencies (n = 16, 2.2 per cent) and NFTs (n = 6, 4.4 per cent) than non-Indigenous participants. Loss of cryptocurrencies and/or NFTs was also connected to storage issues. However, it is concerning that Indigenous peoples were more likely to lose both cryptocurrencies and NFTs. An external vulnerability factor explaining this risk may have to do with a lack of strong social networks (Salignac *et al*. 2020) in the cryptocurrency/NFTs space.

With regards to losing NFTs Indigenous peoples were most at risk. Whereas with losing cryptocurrencies, in addition to Indigenous peoples it also included males, individuals living on own and individuals who own their home and have a mortgage. It appears that internal factors such as gender, race, home ownership and living with others contributed to the loss of cryptocurrencies. Other studies have linked gambling and addiction issues with cryptocurrency ownership (Delfabbro *et al*. 2021) which may explain the results found.

Blue *et al*. 2024 also found that university and TAFE educated participants had concerns about the storage of cryptocurrencies and NFTs. One explanation could be that attributed to a lack of awareness about the associated risks connected to self-custody of cryptocurrencies and/or NFTs. Lusardi (2019) previously identified individuals with lower education levels to be more vulnerable in financial context which could also be at play here. However, Blue *et al*. 2024a also revealed that participants who had lost funds had concerns about storage indicating a relationship between experiencing loss and feeling vulnerable when it comes to storing cryptocurrencies and/or NFTs. The above-mentioned study also found there to be "no significant relationship between concerns over storage of cryptocurrencies or NFTs and storage on the exchange" (p. 10). With 9.4 per cent (or 69 participants) having lost their cryptocurrencies due to storage issues and 7.9 per cent (or 11 participants) having lost NFTs for the same reason.

Educational opportunities that exist to overcome storage concerns include class projects asking students to research and critically evaluate possible storage solutions while also identifying associated scams targeting each storage option. Classroom discussions about cryptocurrency scams may also help to open up conversations and establish social networks amongst individuals who have an interest in cryptocurrencies.

UNSOLICITED ADVICE

One hundred and seventy-five non-Indigenous participants representing 23.5 per cent of the participants had received unsolicited investment advice with email (n = 108, 51.4 per cent) being the main source followed by direct message (n = 79, 37.6 per cent) followed by phone (n =67, 31.9 per cent) and text message (n = 45, 21.4 per cent). Social media platforms including Instagram, Facebook and YouTube were also used to contact individuals albeit at a lower percentage (n = 15, 7.1 per cent). There is no obvious reason why non-Indigenous participants received unsolicited advice more often other than there are more non-Indigenous peoples in the total population in Australia. There has also been an overall there has been an increase in investments scams in Australian (ACCC, 2023).

To help prevent individuals from being exploited by scammers offering unsolicited advice, classroom conversations and projects could include identifying the type of messages scammers have used to target individuals. Students could then critically examine the promises offered in the unsolicited advice and link these messages to how they work based on FOMO.

SOCIAL MEDIA INFLUENCERS

All that hype on social media about cryptocurrencies and/or NFTs was reported to have influenced 223 participants (or 29.9 per cent) to purchase cryptocurrencies and fifty (35.7 per cent) to purchased NFTs. Females, non-Indigenous peoples with a university degree and individuals who were employed full-time were found to be influenced by social media with regards to purchasing cryptocurrencies and/or NFTs.

As mentioned previously, one way that individuals intending to scam others is by promoting a particular cryptocurrency and/or NFT and suggesting that the price will skyrocket. However, the operator behind this pump and dump scheme quickly sell off their holdings and capitalise on the increase in value before the cryptocurrency and/or NFT plummets in value. Victor and Hagemann (2019) highlight how this scheme used to be reserved for penny stocks and is now commonplace amongst cryptocurrencies.

Group projects in classrooms asking students to identify and research different types of cryptocurrencies scams and how they operate using videos available on social media platforms (especially TikTok) could be a powerful way to educate students about scams.

CRYPTOCURRENCY LITERACY

Participants were asked if they understood the saying “not your keys, not your coins” which is connected to storage and self-custody of cryptocurrencies. The other question was around calculating the increase in value of a cryptocurrency and the last was about understanding the tax implications of buying and selling cryptocurrencies. With regards to the tax implications of buying and selling cryptocurrencies approximately 66 per cent of participants were unsure (Blue *et al*. 2024). Unfortunately, female participants performed poorly on all three questions which highlights the importance of targeting financial education about cryptocurrencies and NFTs geared to females especially since females are also active cryptocurrency owners.

Another potential area of concern which was not included in the study but has been reported by Botha and Leenen (2024) is that with the rising popularity of cryptocurrencies there has also been cases of spouses hiding cryptocurrency holding during divorce settlements. This occurs when one spouse is familiar with buying, storing and/or storing cryptocurrencies and the other spouse is not.

Education directly about how to purchase cryptocurrencies from an exchange is done would help to educate individuals about the process needed to obtain an account. Targeted education for females is also required to increase crypto literacy knowledge and skills when it comes to critically examining finfluencers’ messages on social media platforms.

IT LITERACY

Understanding how storage works for self-custody of cryptocurrencies is vital for cryptocurrency owners who decide not to leave their holdings on the exchange. In Blue *et al*. 2024a it was found “…that participants who were employed full-time tended to be more confident about their technology skills in cryptocurrencies or NFTs” (p. 19) meaning that individuals who were unemployed had the potential to be more vulnerable due to a lack of IT literacy. We also found that includes who rated their IT skills as average or above were less likely to lose their cryptocurrency investments.

Self-custody of cryptocurrencies involves having both a private and a public key and is connected to the saying "not your keys, not your coins" which means if you are not in charge of your keys, you are not in control of your coins. The private key is something that must be kept private because whoever has their private key can do what ever they want with your coins (Ledger Academy, 2024). Whereas the public key can be shared with others to receive cryptocurrency. Remembering that if you accidentally share your private keys and/or send your coins to the wrong address you cannot recover your coins.

EDUCATIONAL SPECIFIC RECOMMENDATIONS

All of the above-mentioned findings point to the need to educate about cryptocurrencies. Whether we are young or old we all need to learn and educate ourselves about digital finance. Sawatzki *et al*. (2022) advocate for teaching about cryptocurrencies in the classroom and point to opportunities within the Year 9 economics and business curriculum where financial risks and rewards are taught. The above-mentioned authors also acknowledge that "the only way to teach in this space is to position yourself as a learner, and model learning alongside your students" (para 15). However, within Australia, the consumer and financial literacy curriculum available on the Australian Curriculum website (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2025) does not appear to have cryptocurrencies explicitly mentioned.

Educating about cryptocurrencies in the higher education section is occurring. However, Dylan-Ennis (2021) also acknowledges that providing education about cryptocurrencies is difficult. They advise educators teaching at the university level to do the following:

"My advice is perhaps unexpected: teach cryptocurrencies not as technical or financial phenomena unless you are specifically teaching the practicalities of them to computer science or finance students. To everyone else, teach cryptocurrencies as cultural phenomena because this is what they are in reality. Cryptocurrencies are cryptocultures. If you want to understand cryptocurrencies holistically, then you must look at the cultural characteristics they exhibit and then how those characteristics inform economic and technological decisions. (p. 125)"

Dylan-Ennis (2021) recommends teaching cryptoculture which is defined as the "shared commons and social imaginary associated with a cryptocurrency" (p. 126). With the shared commons they use the terms hash (referring to blockchain), bash (referring to the social community) and cash (referring to the micro-economy surrounding cryptocurrencies) to educate in the space. It is thought through this approach student will "examine each cryptoculture on its own terms and in light of its unique properties" (p. 128).

Within community centres there are also opportunities for informal education about cryptocurrencies to occur alongside existing financial literacy training. Some cryptocurrency exchanges also offer resources to educate individuals about cryptocurrencies. However, like all financial literacy training we cannot default to a one-size-fits-all approach to capacity building. Individuals also need to be cautious and rely on their critical thinking skills to determine who benefits from the education being offered and ensure there are no strings attached (Sawatzki & Blue, 2016). Educators guided by praxis-based approach to financial education (Blue & Grootenboer, 2019) will ensure that resources and discussions can be tailored to the needs of the students and that students are exposed to financial dilemmas that are age appropriate and relevant (Sawatzki, 2017).

CONCLUDING COMMENT

Cryptocurrencies are here to stay, and education is key to inform individuals about how to buy, sell and store cryptocurrencies including the tax implications of buying and selling. Starting in primary school, continuing in high school and post-secondary settings and informal educational settings will ensure individuals are exposed to digital finance including cryptocurrencies and NFTs and may be less likely to fall victim to finance related scams.

Incorporating critical conversations about finfluencers and other operators spruiking pump and dump schemes and/or operating rug pulls could also begin to diminish the strength of these common ways to exploit individuals. Education is needed to understand the unknowns of cryptocurrencies and NFTs whether you personally invest in them or not.

Educators in formal and informal settings have opportunities to incorporate cryptocurrencies and NFTs awareness and the technology behind it (blockchain) into their financial education curriculum which is often within subjects such as mathematics, social studies,

business and economics, history and technology (Blue *et al*. 2024b; Tommerdahl, 2024). More exposure to these digital finance technologies in educational settings may help to reduce the risk of individuals falling prey to cryptocurrency scammers and increase skills and knowledge about the technology behind cryptocurrencies and NFTs. Noting that current and future educators may also need to educate themselves about these new technologies before they are comfortable and confident introducing these topics into the classroom.

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