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Can Cryptocurrencies Be Feasibly Adopted as a National Currency? The Perspective of the Younger Generation

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Monika Eisenbardt[1], Tomasz Eisenbardt[2]

Abstract:

Purpose: *The aim of the paper is twofold. First, it is a presentation the cryptocurrencies as an interdisciplinary issue, however raising justified concerns. Second, it is the analysis of the opinion of the young generation on the possibility of converting their national currency into cryptocurrencies.*

Design/methodology/approach: *The survey questionnaire was used and data collected from 778 university students were statistically analyzed. The survey was conducted in Poland, a country the cryptocurrencies are treated quite neutrally, they are not banned, and at the same time, they are not a full-fledged means of payment. The opinions of Poland-based students about the possibility of cryptocurrencies adaptation as a national currency considering their experience with cryptocurrencies were taken into consideration.*

Findings: *The results showed that only 17% of students see the possibility of cryptocurrency adaptation as a national currency whereas most of them were opposed to that idea. Significant differences were found between students who had and not had experience with cryptocurrencies and their opinions on such variables as access to cryptocurrency wallets, using cryptocurrencies as a means of payment, and willingness for undertaking activities aimed at cryptocurrencies. However, there were no differences for such variables as cryptocurrency mining as well as the period students learnt about cryptocurrencies. Generally, students who have already had experience with cryptocurrencies rated higher the possibility of cryptocurrency adaptation as a national currency and saw more chances for a such adaptation.*

Practical implications: *The majority of students found it difficult to assess cryptocurrencies and their further development. The presumed adaptation of the cryptocurrencies can encounter two main problems, i.e., (1) there is a large group of people that have no experience with cryptocurrencies and are not interested in them, (2) the opinion and evaluation of cryptocurrencies vary significantly considering people's experience even though only younger generation were analyzed, i.e. people for whom newest technologies and solution are an inseparable part of their lives and thus they are more eager to use them. It can be assumed that for older generations these problems can act as a major limitation and barrier and thus to hinder cryptocurrency adaptation.*

Originality/value: *This study is the first attempt to empirically test the young generation's opinion on the potential adaptation of cryptocurrencies as national currencies. The study results enrich the literature by analyzing cryptocurrencies as a phenomenon rather than an economic variable through the lens of the young generation's opinion.*

[1]*University of Economics in Katowice, Poland monika.eisenbardt@ue.katowice.pl;*
[2]*University of Warsaw, Warsaw, Poland teisenbardt@wz.uw.edu.pl;*

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1. Introduction

People's opinions may vary depending on their level of experience. Research indicates that individuals with experience in a specific field are more likely to engage in certain activities compared to those without such experience (Rapanos, 2023). Experience influences how reality is perceived and allows for better risk analysis, which is crucial when dealing with cryptocurrencies (Brown, 2016; FATF, 2021). Cryptocurrencies, virtual currencies based on blockchain technology, are highly susceptible to price fluctuations, making investments in them inherently risky (Singh and Kulkarni, 2019; Thalassinos *et al.*, 2020).

On the other hand, significant profits can be obtained quickly. In the case of cryptocurrencies, experience may be associated with activities such as accessing cryptocurrency wallets, using cryptocurrencies as a means of payment, and engaging in mining (Antonopoulos, 2014; Swan, 2015). In addition to experience, regulations governing cryptocurrencies in a particular country are equally important.

Some countries recognize cryptocurrencies as a legal alternative to traditional currency and have specific laws regulating their use, such as Germany, Switzerland, Finland, Japan, and the United States. However, there are countries like Poland and Albania that consider cryptocurrencies as tokens (Legaxit, 2022; Bitcoin.org.pl, 2022). While they are not treated as legal tender, they are still considered legal, and their circulation is subject to taxation.

On the other hand, countries like China, Vietnam, Iran, and Venezuela have either fully or partially prohibited cryptocurrencies. Conversely, there are countries that have adopted Bitcoin, a well-known cryptocurrency, as legal tender, such as El Salvador and the Central African Republic (Hawkins, 2022; Sigalos and Kharpal, 2022; Siswantoro, Handika, and Mita, 2020; Thalassinos *et al.*, 2022). In general, the legal status of cryptocurrencies varies among countries, which is another factor influencing people's opinions on cryptocurrencies.

Research indicates that young people are more inclined to use technology compared to older ones. Young people readily incorporate technology into various aspects of their lives, including work, entertainment, and maintaining social connections (Schreurs and Quan-Haase, Martin, 2017; Szymkowiak *et al.*, 2021). Moreover, they are willing to explore technological innovations and readily engage in more demanding activities related to technology, such as cryptocurrency mining or trading

using dedicated wallets (Eisenbardt and Eisenbardt, 2022). Such wallets are virtual applications that offer a range of options and functions for cryptocurrency transactions. It is important to note that only adults can possess crypto wallets. Therefore, students were chosen as the research sample for this reason.

There is a vast number of papers that focus on cryptocurrencies. Numerous authors concentrate on economic issues such as national regulations, taxation problems, and monetary policies (Benigno *et al.,* 2022; Marthinsen and Gordon, 2022; Raza *et al.,* 2023; Wang and Hausken, 2021).

Some authors analyze the domestic approach, primarily emphasizing economic problems (Alvarez *et al.*, 2022; Cifuentes, 2019; Li *et al.,* 2023; Nawang, Ghani, and Azmi, 2020). Many papers exclusively focus on Bitcoin as the most recognized cryptocurrency (Alvarez *et al.,* 2022; Köchling *et al.,* 2020; Mzoughi *et al.,* 2022; Nouir and Hamida, 2023; Zhang *et al.,* 2023).

In contrast, our paper adopts an interdisciplinary approach to cryptocurrencies. We do not concentrate on specific cryptocurrencies but aim to analyze them as a complex issue. This means that we focus on cryptocurrencies as a phenomenon rather than the economic variable.

The underlying premise of this paper is that people's experiences vary, leading to differing opinions on the matter under analysis. The primary research objective of this study is to investigate students' opinions regarding the possibility of adopting cryptocurrencies as a national currency, considering their individual experiences.

Therefore, the main research question is: Is it possible to adapt cryptocurrencies as a national currency? To address this research objective and answer the aforementioned question, a quantitative approach was employed, and an empirical study was conducted. The paper begins with a brief economic discussion, focusing on internal state regulations concerning cryptocurrencies.

However, these regulations serve as background information for the empirical research that explores the main research problem, which is the analysis of the young generation's perspective on the potential adoption of cryptocurrencies as a national currency in the future. The study is further complemented by in-depth analysis, considering students' personal experiences with cryptocurrencies.

2. Literature Review

Cryptocurrencies were created based on blockchain technology. It is nothing more than a kind of distributed ledger technology (Distributed Ledger, 2016; Tapscott and Tapscott, 2016). This technology relies on decentralized networks (peer-to-peer) and cryptography. The first people who had created blockchain were Stuart Haber and Scott Stornetta in 1991.

They used it to timestamp digital documents to verify their authenticity (Oberhaus, 2018). They inspired Nakamoto (2009) who created Bitcoin in turn.

The time when Bitcoin was created coincided with a financial crisis, during which many financial institutions lost the trust of their clients. There arose a need to establish a new and secure means of communication between IT systems for conducting financial transactions. In computer science, the unsolved Byzantine General's Problem, introduced by Leslie Lamport, Robert Shostak, and Marshall Pease in 1982, presented a challenge (Geeksforgeeks, 2022). Solving this problem enabled the assurance of non-repudiation of communication between distrusting IT entities and protected it against forgery (Bitcoin.org, 2022).

The year 2008 marked a significant milestone with the invention of Bitcoin (BTC), followed by its release as the first cryptocurrency the following year. Satoshi Nakamoto is credited as the creator of Bitcoin (Nakamoto, 2009). However, the true identity of Satoshi Nakamoto remains uncertain (Sharma, 2021; Vigna, 2021; CNBCTV, 2021). Subsequently, thousands of other cryptocurrencies have been introduced shortly after Bitcoin (CoinMarketCap, 2022).

2.1 Young Generation Opinion of Different Phenomena

An opinion refers to a perspective or standpoint conveyed by an individual or a collective regarding a specific subject. Opinions can be founded on scientific facts and evidence or be influenced by subjective factors. They are rooted in personal beliefs, values, experiences, and emotions (Paul, 2007). Opinions are shaped by one's own convictions, faith in something, knowledge, and personal encounters, or through the individual interpretation of factual information.

The research show that the age and more specifically the age generations are the factors that shape people’s opinion. From this perspective, people belonging to different generations have varying opinions on specific topics. Krishnan et al. (2012) emphasize the key characteristics of the younger generations such as high levels of digital literacy, making it effortless for them to swiftly adopt new tools and technologies, readiness for changes, a fast-paced lifestyle, and social relationships through social media. All of these factors significantly influence their opinions on various phenomena.

Bencsik *et al.* (2016) conducted a study on the distinct characteristics exhibited by the youngest generations, namely Generation Y and Generation Z, in the labor market focusing particularly on multi-generational collaborations. They discovered that there are variations in the opinions held by different generations, presenting a challenge for HR managers who must adapt to new conditions in order to attract and retain young employees, as well as facilitate knowledge-sharing, which is crucial for maintaining competitiveness.

Szymkowiak *et al.* (2021) examined the opinions of the young generation regarding information technologies as a means of acquiring knowledge and learning. Their findings indicated that the respondents showed a greater preference for mobile applications and video content, as opposed to traditional forms of learning.

Ahlfeldt *et al.* (2022) revealed that younger generations tend to support initiatives that benefit their own generation in the present, such as advocating for a lower retirement age. In contrast, older generations expressed more conservative opinions.

Considering the financial issues and the opinions of the younger generation, individuals from different age groups exhibit variations in their use of financial management technology and their perspectives on it. This results in faster technology adoption among younger generations than the older ones (Carlin *et al.,* 2019).

A study examining the financial information sources, financial knowledge, and financial practices of students found that parental influence and finance courses in college have positive effects on financial socialization, irrespective of their demographic backgrounds (Mimura *et al.,* 2015).

In our research, we specifically focus on university students and their opinions regarding a specific financial issue, which is the possibility of using cryptocurrencies as a national currency. We prioritize the students' experience with cryptocurrencies over their demographic backgrounds, as we consider their experience to be a significant factor that distinguishes their opinions on cryptocurrencies. In other words, individuals who have had experience with cryptocurrencies tend to be more receptive to the idea of using them as legal tender, compared to those without any prior experience in this matter.

2.2 The Factors that Impact Ppeople’s Opinion on Cryptocurrencies

There are two primary factors that influence people's opinions on cryptocurrencies. The first factor is their experience with cryptocurrencies. This experience can be assessed based on individuals' access to cryptocurrency wallets, involvement in cryptocurrency mining, and the period people learnt about cryptocurrencies. The second factor is the national approach to cryptocurrencies. This means that people's opinions can vary due to national regulations.

Consequently, people's willingness to engage in activities related to cryptocurrencies and their perception of the viability of cryptocurrencies as a medium of exchange can be influenced by these regulations.
Sukumaran *et al.* (2022) utilized consumer behavior theory to gain insight into retail investors' behavior in the context of cryptocurrency investment. They also assessed the impact of perceived risk and perceived value on their decision to adopt cryptocurrencies. One of the factors they investigated was investment experience.

The researchers concluded that perceived value significantly influenced the adoption of cryptocurrencies, while perceived risk did not have a significant impact on investors' adoption decisions.

In terms of cryptocurrency experience, some findings suggest that a majority of people use Bitcoin for storing value as a speculative investment or for protecting savings (Al-Amri *et al.,* 2019). This implies that they utilize dedicated wallets or engage in Bitcoin mining. Biernacki and Plechawska-Wójcik (2021) conducted more specific analyses focused exclusively on cryptocurrency wallets among respondents who had experience with such tools. Their aim was to determine the best solution for users. The results confirmed their hypothesis that the Trust Wallet tool is currently the optimal choice for experienced users.

In the Bitcoin protocol, transactions are organized into blocks and added to the ledger by linking them with previously established blocks. This process of linking valid transactions in blocks is commonly known as the blockchain. The information regarding these blocks and all the transactions within them is stored in the user's disk storage, referred to as a node.

These nodes store all the information related to recorded transactions in the network and verify the validity and legitimacy of new transactions by referencing the previous blocks. Nodes are rewarded after successfully validating new transactions. This process is called mining (Gandotra *et al.,* 2019; Yli-Huumo *et al.,* 2016).

While there are numerous altcoins that can be mined, Bitcoin remains the most popular choice for cryptocurrency miners (Gandotra *et al.,* 2019). Specialized hardware and software are being developed specifically for the purpose of mining Bitcoin (Shuaib *et al.,* 2022). In this paper, our focus is on people's opinions rather than the environmental impact of cryptocurrency mining. However, it is worth mentioning that the mining process requires a significant amount of computational power, which is considered a major drawback of the cryptocurrency market (Shuaib *et al.,* 2022; Talwar *et al.,* 2021; Yükse *et al.,* 2022).

2.3 National Approaches to Cryptocurrencies

Currently, only two countries, namely El Salvador and the Central African Republic (CAR), have adopted Bitcoin as legal currency. It is worth noting that both countries have a very low level of wealth as measured by GDP per capita. In the case of the Central African Republic, the decision to adopt Bitcoin was driven by the desire to facilitate international transactions. Despite being one of the poorest nations globally, CAR possesses reserves of gold and diamonds (Hoije and Goko, 2022).

According to World Bank data, CAR's GDP has been increasing since 2013 and appears to have remained stable in recent years (The World Bank Data, 2022). The outcomes of this decision will become apparent in the near future.

A similar decision was made in El Salvador in 2021. The country aimed to leverage its economic growth (The World Bank Data, 2022) and reduce its dependency on the US dollar. As a result, Bitcoin (BTC) was introduced as the official currency, replacing the previous currency, the colón. While US dollars are still in circulation in El Salvador, President Nayib Bukele decided in 2021 to provide citizens with the equivalent of $30 in BTC through the Government Crypto App (Novak, 2021).

The significant decline in the value of the cryptocurrency, which started at the end of 2021 and peaked in 2022, exposed the country to severe economic challenges, including financial losses, increased national debt, and a loss of credibility (Hawkins, 2022; Sigalos and Kharpal, 2022). However, alongside these negative aspects, certain positive effects have also been observed. It appears that international money transfers have become easier, and new opportunities for investment, education, and tourism have emerged in El Salvador (Morris, 2022).

The opinions of Polish students were chosen as the research sample, and therefore it is important to provide an explanation of the cryptocurrency regulations in Poland. BTC and other cryptocurrencies are considered legal in Poland, but they are not recognized as legal tender (Dz.U.2022.0.2025). Instead, they are classified as tokens (Dz.U. 2011 no. 199 poz. 1175; Bitcoin vs Prawo 2022; Legaxit 2022; Bitcoin.org.pl 2022).

The situation in Poland is somewhat unusual, as trading in cryptocurrencies is subject to taxation. Cryptocurrency trading is exempt from value-added tax (VAT), in accordance with the European Union directive (European Union Directive 2009; Dz. U. from 2021 poz. 685). However, it is subject to income tax and exempt from tax on civil law transactions (Dz.U.2021.0.1119).

This has created a paradoxical situation where a cryptocurrency owner may end up paying taxes that exceed the value of the cryptocurrencies they own or the profit they could potentially earn through cryptocurrency trading. This can happen if the owner has conducted multiple exchange operations, each of which has been taxed, or if they are unable to provide evidence of expenses incurred for the purchase of cryptocurrencies.

3. Research Methodology

3.1 Research Instrument and Data Collection

The main research problem was to test the possibility of adopting cryptocurrencies as a national currency. To address this research problem and answer specific research questions, quantitative research methods were employed.

A survey questionnaire was developed to gather empirical data from Polish students, primarily representing Generation Z. The questionnaire included a question

regarding their opinions on the feasibility of adopting cryptocurrency as a national currency. In response to this question, participants selected one of five options using a 5-point Likert scale.

In October 2021 the pilot survey was conducted. For reliability analysis, Cronbach's coefficient alpha was used and confirmed the high reliability of the scale (0.70-0.90). Moreover, substantive scrutiny of the questionnaire made us apply minor changes and improve its quality and clarity.

The data collection took place in November and December 2021. The questionnaire was anonymous, and participation was voluntary. We utilized the LimeSurvey platform to administer the survey. The survey URL was made available to 871 Polish students with varying ages, genders, fields of study, and personal experiences with cryptocurrencies.

After filtering out incomplete responses, a total of 778 valid responses were included for analysis. The sample consisted of 413 females (53.1%) and 365 males (46.9%). The majority of respondents belonged to Generation Z, with 679 (87.3%) participants falling into this category, while 99 (12.7%) were from older generations. The fields of study represented by the participants were as follows: Social Sciences, 472 (60.7%); Sciences, 226 (29%); Arts, 22 (2.8%); Health Sciences, 19 (2.5%); and Other fields, 39 (5.0%) respondents..

3.2 Research Problem and Hypotheses Development

The research problem of this study is to investigate students' opinions about the possibility of cryptocurrencies adaptation as a national currency. Thus, the main research question is: Is it possible to adopt cryptocurrencies as a national currency? To answer this question, the empirical study focuses on addressing the following two specific questions:

RQ1: In the students' opinion, is it possible to adapt cryptocurrencies as a national currency?
RQ2: Are there statistically significant differences between students' experiences with cryptocurrencies and their opinions regarding the possibility of cryptocurrencies' adaptation as a national currency?

To answer RQ2 such variables us (1) overall students' experience, (2) access to cryptocurrency wallets, (3) using cryptocurrencies as a means of payment, (4) cryptocurrency mining, (5) the willingness for undertaking activities aimed at cryptocurrencies, and (6) the period students learnt about cryptocurrencies were taken into consideration.

The following hypotheses were developed:

H1: There are statistically significant differences between students' overall experience with cryptocurrencies their opinion regarding the possibility of cryptocurrencies' adaptation as a national currency.

H2. There are statistically significant differences between students' access to cryptocurrency wallets and their opinion regarding the possibility of cryptocurrencies' adaptation as a national currency.

H3. There are statistically significant differences between students' experience of using cryptocurrencies as a means of payment and their opinion regarding the possibility of cryptocurrencies' adaptation as a national currency.

H4. There are statistically significant differences between students' experience in cryptocurrency mining and their opinion regarding the possibility of cryptocurrencies' adaptation as a national currency.

H5. There are statistically significant differences between students' anticipated willingness for undertaking activities aimed at cryptocurrencies and their opinion regarding the possibility of cryptocurrencies' adaptation as a national currency.

H6. There are statistically significant differences between the period students learnt about cryptocurrencies for the first time and their opinion regarding the possibility of cryptocurrencies' adaptation as a national currency.

The survey responses were stored in MS Excel and analyzed with Excel and Statistica software. For the data analysis purposes, the following statistical tests were employed: (1) Cronbach's alpha for instrument reliability, (2) frequency procedures and descriptive statistics for showing the differences and similarities between variables, (4) the Shapiro-Wilk test to check the normal distribution, (5) The Mann-Whitney U test for H1 to H5 and the Kruskal-Wallis ANOVA test for H6, as these tests do not assume a normal distribution.

For question concerned students' opinion we used an ordinal scale. For students' experience with cryptocurrencies we used nominal scale, i.e. 'Yes' or 'No', 'No opinion'. For testing H6 students have indicated the year they learnt about cryptocurrencies for the first time.

4. Research Results and Discussion

4.1 The General Look at the Empirical Research Problem

Table 1 shows the general distribution of the students' opinions about the possibility of cryptocurrencies adaptation as a national currency. The students answered the question: In your opinion, is it possible to adapt cryptocurrencies as a national currency? Thus, this is the answer to the RQ1.

Table 1. *The general distribution of students' opinions on the possibility of cryptocurrencies adaptation*

Opinion	Number of students	Percentage of students	Cumulative Percentage
Definitely not	164	21.1	21.1
Rather not	242	31.1	52.2
No opinion	240	30.8	83.0
Rather yes	109	14.0	97.0
Definitely yes	23	3.0	100.0

Source: *Authors' calculations.*

Table 1 illustrates that only 17.0% of students overall expressed opinions of 'Rather yes' and 'Definitely yes', indicating their belief in the possibility of cryptocurrencies being adopted as a national currency. However, the majority of students were opposed to this possibility, as they selected 'Rather not' and 'Definitely not'.

Additionally, 240 students (30.8%) did not express a definitive opinion, which could suggest difficulty in evaluating cryptocurrencies and their future development. Conversely, this could also indicate that cryptocurrencies are still a relatively unfamiliar concept to many students. In conclusion, the answer to RQ1 is that a limited number of students perceive the possibility of cryptocurrencies being adopted as a national currency.

4.2 The Possibility of Cryptocurrencies Adaptation as a National Currency and Respondents' Experience with Cryptocurrencies

Table 2 shows the distribution of the students' experience with cryptocurrencies. We analyzed such variables as overall students' experience, access to cryptocurrency wallets, using cryptocurrencies as a means of payment, cryptocurrency mining, their willingness for undertaking activities aimed at cryptocurrencies, and the period students learnt about cryptocurrencies. Students could tick 'Yes', 'No', and 'No opinion' expressing their experience. This is a preliminary analysis for RQ2 answering.

Table 2. *The distribution of the students' experience with cryptocurrencies*

Variable	Students experience	Number of students	Percentage of students	Cumulative Percentage
Overall experience (H1)	Yes	229	29.4	29.4
	No	456	58.6	88.0
	No opinion	93	12.0	100
Access to cryptocurrency wallets (H2)	Yes	152	19.5	19.5
	No	591	76.0	95.5
	No opinion	35	4.5	100
Using	Yes	73	9.4	9.4

cryptocurrencies as a means of payment (H3)	No	700	90.0	99.4
	No opinion	5	0.6	100
Cryptocurrency mining (H4)	Yes	60	7.7	7.7
	No	708	91.0	98.7
	No opinion	10	1.3	100
Willingness for undertaking activities aimed at cryptocurrencies (H5)	Yes	247	31.7	31.7
	No	183	23.5	55.2
	No opinion	348	44.7	100
The period students learnt about cryptocurrencies (H6)	2009-2011	32	4.1	4.1
	2012-2014	100	12.9	17.0
	2015-2017	319	41	58.0
	2018-2021	327	42	100

Source: *Authors' calculations.*

The results presented in Table 2 indicate that out of the total respondents, 229 (29.4%) students had some experience with cryptocurrencies, while 456 (58.6%) did not. Further analysis of the specific variables reveals the following:

- Only one in five students (19.5%) had access to cryptocurrency wallets, with the majority (76%) indicating that they did not have such access.
- A small percentage (9.4%) of students reported using cryptocurrencies as a means of payment, while the majority (90%) had not.
- Similarly, a small group (7.7%) of students engaged in cryptocurrency mining, while the majority (91%) did not.
- 31.7% of students expressed their willingness to undertake activities related to cryptocurrencies, whereas 23.5% indicated a lack of interest.
- The majority of students (83%) learned about cryptocurrencies after 2015, with 42% of them discovering cryptocurrencies between 2018 and 2021. These findings confirm that cryptocurrencies are still relatively new and unfamiliar to many students.

In conclusion, the overall findings suggest that most students have limited or no experience with cryptocurrencies. Therefore, there is still much to uncover and explore in this area for them.

To fully address RQ2, six hypotheses were formulated, and two statistical tests were utilized to test these hypotheses. The Mann-Whitney U test was employed to test hypotheses H1 to H5, while the Kruskal-Wallis ANOVA test was used for hypothesis H6 (Table 3). Only direct 'Yes' and 'No' opinions were considered in the analysis to provide clearer results. Moreover, the focus was placed on students who expressed specific views on cryptocurrencies.

Table 3. *The statistical tests results*

Variables	*The Mann-Whitney U test results*	
	Z	*p*-value
overall experience (H1)	3.384	0.001
access to cryptocurrency wallets (H2)	-3.939	0.001
using cryptocurrencies as a means of payment (H3)	-2.384	0.017
cryptocurrency mining (H4)	1.059	0.290
willingness for undertaking activities aimed at cryptocurrencies (H5)	-7.515	0.001
	The Kruskal-Wallis ANOVA test results	
the period students learnt about cryptocurrencies (H6)	H (12, N= 778) =10.021 p =0.614	

Source: *Authors' calculations.*

Table 3 demonstrates statistically significant differences in students' opinions regarding the possibility of cryptocurrencies being adopted as a national currency across various variables, including overall experience, access to cryptocurrency wallets, using cryptocurrencies as a means of payment, and willingness to engage in activities related to cryptocurrencies.

As a result, hypotheses H1, H2, H3, and H5 are supported by the findings. However, the results of the Mann-Whitney U test for cryptocurrency mining (H4) and the Kruskal-Wallis ANOVA test for the period students learned about cryptocurrencies (H6) indicate that there are no statistically significant differences among students in these regards. Therefore, hypotheses H4 and H6 are rejected.

It was decided to elaborate additional analyses using descriptive statistics to present the problem of the respondents' experience with cryptocurrencies and their opinions in a more comprehensive way. The results are presented in Table 4.

Table 4. *The distribution of the students' experience with cryptocurrencies*

Variables	Students experience	N	Mean	Median	Min	Max	Q25	Q75	St. dev.
Overall experience (H1)	Yes	229	2.66	3	1	5	2	3	1.153
	No	456	2.33	2	1	5	2	3	1.000
	No opinion	93	2.65	3	1	5	2	3	1.039
Access to cryptocurrency wallets (H2)	Yes	152	2.81	3	1	5	2	4	1.166
	No	591	2.37	2	1	5	2	3	1.015
	No opinion	35	2.57	3	1	5	2	3	1.092

Variables	Students experience	N	Mean	Median	Min	Max	Q25	Q75	St. dev.
Using cryptocurrencies as a means of payment (H3)	Yes	73	2.81	3	1	5	2	4	1.198
	No	700	2.42	2	1	5	2	3	1.039
	No opinion	5	3.40	3	2	5	3	4	1.140
Cryptocurrency mining (H4)	Yes	60	2.68	3	1	5	2	4	1.308
	No	708	2.44	2	1	5	2	3	1.039
	No opinion	10	2.70	3	1	5	2	3	1.059
Willingness for undertaking activities aimed at cryptocurrencies (H5)	Yes	247	2.84	3	1	5	2	4	1.103
	No	183	2.00	2	1	5	1	3	0.914
	No opinion	348	2.45	2	1	5	2	3	1.007
The period students learnt about cryptocurrencies (H6)		778	2016	2017	2009	2021	2015	2019	-

Source: *Authors' calculations.*

The results presented in Table 4 show that the majority of students do not have experience with cryptocurrencies. Concededly 229 indicated that they have overall experience however analyzing particular forms of the experience it turns out that only limited number of them have such experience indeed. The mean values for all variables are low. The highest value for "Yes" (2.84) as well as the lowest value for 'No' (2.00) is for Willingness for undertaking activities aimed at cryptocurrencies. It means that students had concrete opinions referring to this variable.

What is more, the mean values vary from 3.40 for Using cryptocurrencies as a means of payment and 'No opinion' to 2.0 for Willingness for undertaking activities aimed at cryptocurrencies and 'No'. The former means that students who do not have specific opinion on using cryptocurrencies as a means of payment at the same time see the highest chances about the possibility of cryptocurrencies adaptation as a national currency.

The latter means that students who are not willing to undertake activities aimed at cryptocurrencies see the lowest chances of such an adaptation. Interesting is that no one ticked "Definitely not' for Using cryptocurrencies as a means of payment hence the conclusion that all students see greater or lesser chances of using cryptocurrencies.

5. Conclusions and Recommendations

Our paper discusses the varying approaches to cryptocurrencies in different countries, including their legislative policies. Countries typically adopt one of four approaches: replacing traditional means of payment with cryptocurrencies, legalizing cryptocurrencies as alternative acceptable means of payment, considering cryptocurrencies as tokens, or banning them.

According to a recent national survey commissioned by Coinbase, which involved over 2000 respondents from the general population, the majority of Americans desire an update to the financial system and believe that cryptocurrencies can be a powerful solution (Coinbase, 2023).

In Poland, legislation has been catching up with technological advancements, effectively regulating cryptocurrencies (Mincewicz, 2021). Coinbase is dedicated to collaborating with policymakers and traditional financial institutions to bring about these changes. As the next step, Coinbase plans to launch an integrated public education campaign to highlight the everyday challenges faced by consumers and demonstrate the role that crypto can play in the broader effort to modernize the system (Coinbase, 2023).

Al-Amri *et al.* (2019) revealed that there was a lack of study focusing on the factors that are significantly influenced on the acceptance of cryptocurrencies. Arias-Oliva *et al.* (2019) concluded that performance expectancy is the determinant variable in the acceptance of cryptocurrency financial technologies. On the other hand they argued that the perceived risk of cryptocurrency transactions is very high.

Therefore, future cryptocurrencies should seek to solve that problem as a condition for pre-adoption. The firsts cryptocurrencies to be seen as “riskfree” could gain an important competitive advantage in relation to the current offer (Arias-Oliva *et al.,* 2019). In our study, we examined the opinions of students regarding cryptocurrencies, specifically the possibility of cryptocurrencies being adopted as a national currency.

Based on the survey results, only a small percentage of students perceive this possibility. In total, only 17% of the respondents expressed opinions of 'Rather yes' and 'Definitely yes', indicating their belief in such an adaptation. Conversely, the majority of students (52%) were opposed to this possibility, selecting 'Rather not' and 'Definitely not'.

Our findings also highlight the influence of respondents' experience with cryptocurrencies on their opinions regarding their potential adaptation as a national currency. These results demonstrate that opinions vary among students when considering differences in their experience with cryptocurrencies.

The results indicate that experience has an impact on opinions about cryptocurrencies. Students who have prior experience with cryptocurrencies are more likely to value the possibility of their adaptation as national currencies and see greater potential in them.

Significant differences were observed between respondents' experience and their opinions regarding the possibility of cryptocurrencies being adopted as national currencies for variables such as overall experience, access to cryptocurrency wallets, using cryptocurrencies as a means of payment, and willingness to engage in activities related to cryptocurrencies. However, no statistically significant differences were found for cryptocurrency mining and the period in which students learned about cryptocurrencies.

Considering the percentage of students with cryptocurrency experience, only 7.7% reported engaging in cryptocurrency mining, 9.4% used cryptocurrencies as a means of payment, and 19.5% had access to crypto wallets. However, 19.5% expressed a willingness to participate in cryptocurrencies-related activities. Therefore, it can be concluded that the majority of students have limited or no experience with cryptocurrencies, indicating that there is still much to be explored in this area for them.

6. Limitations

The study focused on a specific group of students from Polish universities, which limits the generalizability of the findings. However, it is possible to speculate that young people in countries with similar economic situations may hold similar opinions and experiences regarding cryptocurrencies.

Additionally, the findings may be useful in countries where cryptocurrencies have a similar legal status, being recognized as legal for trading but not as full-fledged means of payment, rather as a token turnover. A notable omission in the paper is the lack of discussion on environmental issues and the excessive energy consumption associated with cryptocurrency mining. These topics are extensively covered in scientific literature.

Therefore, further research should involve diverse groups of respondents and place a focus on environmental concerns related to cryptocurrencies.

By addressing these limitations, future studies can provide a more comprehensive understanding of the opinions and experiences of various populations and delve into the environmental impact of cryptocurrencies, particularly in relation to energy consumption.

References:

Ahlfeldt, G.M., Maennig, W., Mueller, S.Q. 2022. The Generation Gap in Direct Democracy: Age vs. Cohort Effects. European Journal of Political Economy, 72, 102120. https://doi.org/10.1016/j.ejpoleco.2021.102120.

Al-Amri, R., Zakaria, N.H., Habbal, A., Hassan, S. 2019. Cryptocurrency Adoption: Current Stage, Opportunities, and Open Challenges. International Journal of Advanced Computer Research, 9(44), 293-307. http://dx.doi.org/10.19101/IJACR.PID43.

Alvarez, F.E., Argente, D., Van Patten, D. 2022. Are Cryptocurrencies Currencies? Bitcoin as Legal Tender in El Salvador. NBER working papers (29968). National Bureau of Economic Research. DOI:10.3386/w29968.

Antonopoulos, A.M. 2014. Mastering Bitcoin: Unlocking Digital Cryptocurrencies. Sebastopol, O'Reilly Media, Inc.

Arias-Oliva, M., Pelegrín-Borondo, J., Matías-Clavero, G. 2019. Variables Influencing Cryptocurrency Use: A Technology Acceptance Model in Spain. Frontiers in Psychology, 10(475). doi:10.3389/fpsyg.2019.00475.

Benigno, P., Schilling, L.M., Uhlig, H. 2022. Cryptocurrencies, Currency Competition, and the Impossible Trinity. Journal of International Economics, 136, 103601. https://doi.org/10.1016/j.jinteco.2022.103601.

Biernacki, K., Plechawska-Wójcik, M. 2021. A Comparative Analysis of Cryptocurrency Wallet Management Tools. Journal of Computer Sciences Institute, 21, 373-377. DOI 10.35784/jcsi.2756.

Bitcoin.org. 2022. Technologia Blockchain (Bitcoin technology). Polskie Stowarzyszenie Bitcoin. Available at: https://bitcoin.org.pl/technologia-blockchain.

Bitcoin.org.pl. 2022. Prawno-podatkowe aspekty kryptowalut w Polsce (Legal and Tax Aspects of Cryptocurrencies in Poland). Polskie Stowarzyszenie Bitcoin. Available at: https://bitcoin.org.pl/prawno-podatkowe-aspekty-kryptowalut.

Bitcoin vs Prawo. 2022. Legalność Bitcoina w Polsce i na Świecie (Bitcoin Legality in Poland and in the World). Available at: https://odkryjbitcoin.pl/legalnosc-bitcoina/.

Brown, S.D. 2016. Cryptocurrency and criminality: The Bitcoin Opportunity. The Police Journal, 894, 327-339. https://doi.org/10.1177/0032258X16658927.

Carlin, B., Olafsson, A., Pagel, M. 2019. Generational Differences in Managing Personal Finances. AEA Papers and Proceedings, 109, 54-59. DOI: 10.1257/pandp.20191011.

CNBCTV. 2021. Who is Mysterious Bitcoin Creator Satoshi Nakamoto? Elon Musk Says he has the Answer, TV release, Dec 31. Available at: https://www.cnbctv18.com/cryptocurrency/who-is-mysterious-bitcoin-creator-satoshi-nakamoto-elon-musk-says-he-has-the-answer-11979682.htm.

Cifuentes, A.F. 2019. Bitcoin in Troubled Economies: The Potential of Cryptocurrencies in Argentina and Venezuela. Latin American Law Review, 3, 99-116. https://doi.org/10.29263/lar03.2019.05.

CoinMarketCap. 2022. Cryptocurriencies. Available at: https://coinmarketcap.com/.

Coinbase. 2023. New survey of 2,000+ American adults suggests 20% own crypto and the vast majority see an urgent need to update the financial system. Available at: https://www.coinbase.com/blog/new-national-survey-of-2-000-american-adults-suggests-20-of-americans-own.

Distributed Ledger. 2016. Distributed Ledger Technology: beyond block chain. UK: Government Office for Science. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/492972/gs-16-1-distributed-ledger-technology.pdf.

Eisenbardt, M., Eisenbardt, T. 2022. Sources of Knowledge about Cryptocurrencies: Polish Students Perspective. In: P. Centobelli, R. Cerchione eds., Proceedings of the 23rd European Conference on Knowledge Management, 23(1), 335-344. https://doi.org/10.34190/eckm.23.1.329.

FATF. 2021. Updated Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers. FATF, Paris. Available at: www.fatf-gafi.org/publications/fatfrecommendations/documents/Updated-Guidance-RBA-VA-VASP.html.

Gandotra, V., Racicot, FÉ., Rahimzadeh, A. 2019. Cryptocurrency Mining. In: Goutte, S., Guesmi, K., Saadi, S. (eds.) Cryptofinance and Mechanisms of Exchange. Contributions to Management Science. Springer, Cham. https://doi.org/10.1007/978-3-030-30738-73.

Geeksforgeeks. 2022. Byzantine Generals Problem in Blockchain. Available at: https://www.geeksforgeeks.org/byzantine-generals-problem-in-blockchain.

Hawkins, J. 2022. One Year on, El Salvador's Bitcoin Experiment Has Proven a Spectacular Failure. The Conversatiation, Sept. 11, 2022. Available at: https://theconversation.com/one-year-on-el-salvadors-bitcoin-experiment-has-proven-a-spectacular-failure-190229.

Hoije, K., Goko, C. 2022. Bitcoin Declared Legal Currency in Central African Republic. Bloomberg. https://www.bloomberg.com/news/articles/ 2022-04-28/bitcoin-is-declared-a-legal-currency-in-central-african-republic-l2isppnb.

Köchling, G., Schmidtke, P., Posch, P.N. 2020. Volatility Forecasting Accuracy for Bitcoin. Economics Letters 191:108836. https://doi.org/10.1016/j.econlet.2019.108836.

Legaxit. 2022. Bitcoin i kryptowaluty a prawo podatkowe w Polsce – stan aktualny (Bitcoin and Cryptocurrencies and Tax Law in Poland - the Current State). Available at: https://lexagit.pl/bitcoin-i-kryptowaluty-a-prawo-podatkowe-w-polsce-stan-aktualny.

Li, Z., Mo, B., Nie, H. 2023. Time and Frequency Dynamic Connectedness Between Cryptocurrencies and Financial Assets in China. International Review of Economics & Finance. https://doi.org/10.1016/ j.iref.2023.01.015.

Marthinsen, J.E., Gordon, S.E. 2022. Hyperinflation, Optimal Currency Scopes, and a Cryptocurrency Alternative to Dollarization. The Quarterly Review of Economics and Finance, 85, 161-173. https://doi.org/10.1016/j.qref.2020.12.007.

Mimura, Y., Koonce, J., Plunkett, S.W., Pleskus, L. 2015. Financial Information Source, Knowledge, and Practices of College Students from Diverse Backgrounds. Journal of Financial Counseling and Planning, 261. DOI: 10.1891/1052-3073.26.1.63.

Mincewicz, W. 2021. Cryptocurrencies in the polish legal system – basic problems and challenges. Annuals of The Administration and Law, XXI(1), 75-84. DOI: 10.5604/01.3001.0015.2503.

Morris, D.Z. 2022. 1 Year of Bitcoin in El Salvador: The Bad, the Good and the Ugly. CoinDesk Updated on 15 September 2022. Available at: https://www.coindesk.com/layer2/2022/09/15/one-year-of-bitcoin-in-el-salvador-the-bad-the-good-and-the-ugly.

Mzoughi, H., Benkraiem, R., Guesmi, K. 2022. The Bitcoin Market Reaction to the Launch of Central Bank Digital Currencies. Research in International Business and Finance, 63, 101800. https://doi.org/10.1016/j.ribaf.2022.101800.

Nakamoto, S. 2009. Bitcoin: A Peer-to-Peer Electronic Cash System. Available at: https://bitcoin.org/bitcoin.pdf.

Nawang, N.I., Ghani Azmi, I.M.A. 2020. Cryptocurrency: An Insight into the Malaysian

Regulatory Approach. Hamdard Islamicus, 432, 262-271.

Novak, M. 2021. El Salvador to Give Every Citizen $30 in Bitcoin for Downloading Govt Crypto App. Available at: https://gizmodo.com/el-salvador-to-give-every-citizen-30-in-bitcoin-for-do-1847171236.

Nouir, J.B., Hamida, H.B.H. 2023. How do Economic Policy Uncertainty and Geopolitical Risk Drive Bitcoin Volatility? Research in International Business and Finance, 64, 101809. https://doi.org/10.1016/j.ribaf.2022.101809.

Oberhaus, D. 2018. The World's Oldest Blockchain Has Been Hiding in the New York Times Since 1995. Available at: https://www.vice.com/en/article/j5nzx4/what-was-the-first-blockchain.

Rapanos, T. 2023. What Makes an Opinion Leader: Expertise vs Popularity. Games and Economic Behavior, 138, 355-372. https://doi.org/10.1016/j.geb.2023.01.003.

Raza, S.A., Khan, K.A., Guesmi, K., Benkraiem, R. 2023. Uncertainty in the Financial Regulation Policy and the Boom of Cryptocurrencies. Finance Research Letters, 52:103515. https://doi.org/10.1016/j.frl.2022.103515.

Schreurs, K., Quan-Haase, A., Martin, K. 2017. Problematizing the Digital Literacy Paradox in the Context of Older Adults' ICT Use: Aging, Media Discourse, and Self-Determination. Canadian Journal of Communication, 422, 359-377. https://doi.org/10.22230/cjc.2017v42n2a3130.

Sharma, R. 2021. Three People Who Were Supposedly Bitcoin Founder Satoshi Nakamoto, Investopedia. Available at: https://www.investopedia.com/tech/three-people-who-were-supposedly-bitcoin-founder-satoshi-nakamoto.

Shuaib, M., Badotra, S., Khalid, M.I., Algarni, A.D., Ullah, S.S., Bourouis, S., Iqbal, J., Bharany, S., Gundaboina, L.A. 2022. Novel Optimization for GPU Mining Using Overclocking and Undervolting. Sustainability, 14, 8708. https://doi.org/10.3390/su14148708.

Sigalos, M., Kharpal, A. 2022. El Salvador's Bitcoin Experiment: $60 Million Lost, $375 Million Spent, Little to Show so far. CNBC. Available at: https://www.cnbc.com/2022/10/13/el-salvadors-bitcoin-holdings-down-60percent-to-60-million-one-year-later.html.

Singh, A.P., Kulkarni, V. 2019. Bitcoin—Upsides, Downsides and Bone of Contention—A Deep Dive. Theoretical Economics Letters, 9, 1383-1392. https://doi.org/10.4236/tel.2019.95089.

Siswantoro, D., Handika, R., Mita, A.F. 2020. The Requirements of Cryptocurrency for Money, an Islamic View. Heliyon, 61. e03235. https://doi.org/10.1016/j.heliyon.2020.e03235.

Sukumaran, S., Bee, T.S., Wasiuzzaman, S. 2022. Cryptocurrency as an Investment: The Malaysian Context. Risks, 10, 486. https://doi.org/10.3390/risks10040086.

Swan, M. 2015. Blockchain. Blueprint for a New Economy. Sebastopol, O'Reilly Media, Inc.

Szymkowiak, A., Melović, B., Dabić, M., Jeganathan, K., Kundi, G.S. 2021. Information Technology and Gen Z: The Role of Teachers, the Internet, and Technology in the Education of Young People. Technology in Society, 65, 101565. https://doi.org/10.1016/j.techsoc.2021.101565.

Talwar, B., Arora, A., Bharany, S. 2021. An Energy Efficient Agent Aware proactive Fault Tolerance for Preventing Deterioration of Virtual Machines within Cloud Environment. In 2021 9th International conference on reliability, infocom technologies and optimization Trends and Future Directions ICRITO pp. 1-7. IEEE.

Tapscott, A., Tapscott, D. 2016. Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies Is Changing the World. NY, Penguin.

Thalassinos, E.I., Rabbani, M.R., Khan, S. 2020. FinTech, blockchain and Islamic finance: an extensive literature review. International Journal of Economics and Business Administration, 8(2), 65-86. DOI:10.35808/ijeba/444.

Thalassinos, I.E., Do, Trang Doan, Ha An Thi Pham, Hoang Anh Le. 2022. The Impact of Digital Transformation on Performance: Evidence from Vietnamese Commercial Banks. Journal of Risk and Financial Management, 15, 21. https://doi.org/10.3390/jrfm15010021.

The World Bank Data. 2022. GDP Growth – El Salvador, Central African Republic. Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2021&locations=SV-F&start =2013.

Wang, G., Hausken, K. 2021. Governmental Taxation of Households Choosing between a National Currency and a Cryptocurrency. Games, 12(2), 34. https://doi.org/10.3390/g12020034.

Vigna, P. 2021. Who Is Bitcoin Creator Satoshi Nakamoto? What We Know and Don't Know. The Wall Street Journal. Available at: https://www.wsj.com/articles/who-is-bitcoin-creator-satoshi-nakamoto-what-we-knowand-dont-know-11638020231.

Yüksel, S., Dinçer, H., Çağlayan, Ç., Uluer, G.S. Lisin, A. 2022. Bitcoin Mining with Nuclear Energy. In: Dinçer, H., Yüksel, S. (Eds.) Multidimensional Strategic Outlook on Global Competitive Energy Economics and Finance, Emerald Publishing Limited, Bingley, 165-177. https://doi.org/10.1108/978-1-80117-898-320221019.

Zhang, C., Ma, H., Arkorful, G.B, Peng, Z. 2023. The Impacts of Futures Trading on Volatility and Volatility Asymmetry of Bitcoin Returns. International Review of Financial Analysis, 102497. https://doi.org/10.1016/j.irfa.2023.102497.

Legal acts:

Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions amending Directives 2005/60/EC and 2006/48/EC and repealing Directive 2000/46/EC.

Dz.U. 2011 nr 199 poz. 1175 – [Ustawa z dnia 19 sierpnia 2011 r. o usługach płatniczych]. Journal of Laws 2011 No. 199 item 1175 - Act of 19 August 2011 on payment services.

Dz.U.2021.0.1119 - [Ustawa z dnia 26 lipca 1991 r. o podatku dochodowym od osób fizycznych]. Journal of Laws 2021.0.1119 - Act of 26 July 1991 on personal income tax.

Dz. U. z 2021 r. poz. 685 – [Ustawa z dnia 11 marca 2004 r. o podatku od towarów i usług]. Journal of Laws 2021, item 685 - Act of 11 March 2004 on tax on goods and services.

Dz.U.2022.0.2025 – [Ustawa z dnia 29 sierpnia 1997 r. o Narodowym Banku Polskim]. Journal of Laws 20122.0.2025 - Act of August 29, 1997 on the National Bank of Poland.