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Perception of Virtual Currencies in Slovakia

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Abstract

Virtual currencies have become an increasingly prominent feature of the modern financial system, yet their public perception and adoption remain insufficiently understood. This study examines the perception and use of virtual currencies in Slovakia. Its primary objective is to assess public awareness, attitudes, and patterns of use. Data were collected through a structured questionnaire covering knowledge, perception, and engagement with virtual currencies. The responses were analysed using graphical methods and statistical techniques, including the t-test and Pearson's chi-square test of independence, which were also employed to test the proposed hypotheses. The findings indicate high levels of awareness among younger respondents, but also a limited understanding of the underlying technologies and broader potential of virtual currencies. The results further suggest that many individuals hold only one virtual currency, reflecting either insufficient information or uncertainty about these assets. On the basis of these findings, the study proposes measures to improve the current situation, including targeted educational initiatives, investment in research and development, wider practical applications, enhanced security and trust, and continuous monitoring of market trends. The study offers evidence-based insights into the Slovak context and may also inform policymakers, educators, and financial institutions seeking to promote informed and responsible engagement with virtual currencies.

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1. Introduction

The emergence of the virtual currency Bitcoin in 2008 sparked considerable public interest in a novel mode of financing and laid the foundation for a revolution in the field of digital currencies. Bitcoin, originally conceived as a decentralised cryptocurrency operating without a central bank or government, gradually became the benchmark within the expanding cryptocurrency ecosystem (Guegan, 2018). However, as interest in cryptocurrencies increased, numerous other projects also emerged, either to address Bitcoin's shortcomings or to enhance its underlying mechanisms. This growth gave rise to a wide range of alternative cryptocurrencies differing in various respects, including transaction speed, distribution methods, and hashing algorithms. According to Houben and Snyers (2018), among the most prominent alternatives are Ethereum, a blockchain-based platform enabling the creation of smart contracts, and Ripple, which specialises in interbank settlement. With the proliferation of cryptocurrencies, the digital space has evolved into a complex ecosystem characterised by a diverse array of advantages, disadvantages, and risks. In addition to cryptocurrencies themselves, there are also tokens that operate on various blockchain platforms and serve a range of purposes, such as purchasing goods within decentralised applications or obtaining discounted fees (Manjula et al., 2022). According to Rusli and Zolkili (2021), the use of virtual currencies offers numerous advantages, including the speed and security of transactions, as well as greater financial inclusion for individuals without access to traditional banking services. However, these benefits are accompanied by significant drawbacks and risks, such as high market volatility,

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exposure to cyberattacks, and concerns relating to money laundering and the financing of terrorism (Adaobi & Atianashie, 2023). As cryptocurrencies and their applications continue to expand, the need for regulation and transparency likewise increases in order to mitigate risks and safeguard financial stability. Despite these challenges, cryptocurrencies and blockchain technologies remain an important component of the future financial landscape and may exert a substantial influence on the global economy and society as a whole. A cryptocurrency is a digital asset designed to function as a medium of exchange, employing cryptography to secure transactions, control the creation of additional units of value, and verify the transfer of assets (Härdle et al., 2018).

The current state of affairs is characterized by innovation across all sectors of the economy, including marketing and commerce. Digital innovations facilitate the execution and recording of transactions without the physical presence of the individual, while virtual currency has emerged as part of a broader wave of innovations that simplifies trading activities and expands investment alternatives for users. The concept of virtual currency refers to a type of unregulated virtual or digital currency that is issued and managed by its developers and widely accepted by members of a virtual community (Sharma, 2021). The first precursor to virtual currencies was the digital currency E-Gold, which emerged in 1996. It functioned as an online medium of exchange whose value was backed by gold (Mullan, 2014). In 2008, the Bitcoin system was introduced, while the first units of this digital currency were created on 3 January 2009. Its total supply is capped at 21 million units, and each unit can be divided to as many as eight decimal places. The creator of this system, known under the pseudonym Satoshi Nakamoto, claimed to have worked on its development between 2007 and 2009 (Guegan, 2018). Ethereum, launched in July 2015, was a decentralised platform designed to run smart contracts (Houben & Snyers, 2018). The history of NFTs began in 2012 with the introduction of coloured coins on the Bitcoin network and later on Ethereum. NFTs, utilising decentralised blockchain technology, gave rise to unique tokens with applications in collectibles, gaming, art, virtual assets, and the tokenisation of real-world assets (Lau, 2020). Some professional operators are already making use of central bank digital currency (CBDC). CBDC is characterised by two key elements that determine its fundamental features (Wierts & Boven, 2020).

Thanks to the rapid development of information and communication technologies, many aspects of our everyday activities have shifted into the online environment, thereby becoming more flexible and efficient. This growing trend in online participation has introduced new concepts from the virtual sphere and given rise to a new commercial phenomenon known as virtual currency. Virtual currency serves to facilitate financial operations, including purchasing, selling, and trading. It represents a form of value that has no physical manifestation and is used electronically across various applications and online networks, such as social media platforms, online games, virtual worlds, and peer-to-peer networks. As a result, the use of virtual currency has expanded significantly across a wide range of systems in recent years (Alghamdi & Beloff, 2015).

Risotka and Veternik (2022) define virtual currencies as digital representations of value that can be electronically transferred, stored, and traded, are not issued or guaranteed by central banks or governments, do not have the legal status of money, are not necessarily linked to official currencies, and may be accepted as a means of exchange by natural or legal persons.

Blockchain is a distributed network that can be used both as a digital ledger and as a mechanism enabling the secure transfer of assets without the need for a central authority. Much like the internet is a technology that facilitates the digital flow of information, blockchain is a technology that enables the digital exchange of units of value (Aggarwal Kumar, 2021). Transactions are verified and recorded by multiple participants (nodes) within the network, which ensures transparency and prevents single points of failure (Moro-Visconti & Cesaretti, 2023). Cryptocurrencies represent the first and most developed application of blockchain technologies. They enable the creation of money without central banks and facilitate payments without financial institutions (World Bank, 2018).

Several types of virtual currencies can be distinguished on the basis of their characteristics, functions, and underlying technological features; these categories are outlined below.

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Bitcoin (BTC) is currently the largest cryptocurrency and is not backed by any central bank or government. It can be exchanged for goods or services from merchants that accept Bitcoin as a means of payment (Aggarwal Kumar, 2021).

Altcoins are alternative cryptocurrencies to Bitcoin that differ in terms of distinctive features such as transaction speed, distribution methods, or hashing algorithms. The best-known altcoins include Ethereum and Ripple (Tetsuya, 2016).

Ethereum (ETH) is a major blockchain-based platform that utilises smart contracts. Its principal value lies in offering a fully-fledged programming language that enables the implementation of complex business logic (Tikhomirov, 2018).

Ripple (XRP) is a blockchain protocol specifically designed for interbank settlement, with a focus on cooperation with existing institutions. It enables fast global transactions for virtually any asset (Ahmadova & Erek, 2022).

Solana (SOL) is a rapidly growing smart-contract blockchain known for its speed, cost efficiency, and high throughput (Viglietti, 2022).

Cardano (ADA) is a decentralised, verified third generation blockchain platform that incorporates the cryptocurrency ADA (Cardano Docs, 2023).

Dogecoin (DOGE) differs from other cryptocurrencies that were marketed primarily on the basis of distinct technical features. Its essence is rooted to a large extent in its cultural origins as an internet trend (Nani, 2022).

Compared with other types of cryptocurrencies, tokens are entirely unique in that they do not possess their own blockchain. However, tokens do not necessarily represent physical assets such as electricity or real estate; rather, they may be used to purchase goods and services within decentralised applications (Manjula et al., 2022).

Adaobi and Atianashie (2023) identify additional advantages associated with the use of cryptocurrencies, including low transaction costs and a high degree of accessibility, which enables their use by virtually anyone, at any time, and in any location. Another notable advantage is the protection of personal data, as cryptocurrency transactions are pseudonymous, meaning that each party involved in a transaction is represented on the blockchain by a unique identifier that contains no personal information. Volatility causes the value of cryptocurrencies, such as Bitcoin, to fluctuate dramatically. Consequently, cryptocurrencies have the potential to constitute highly volatile investment assets (CGDFS, 2023). The greatest disadvantage of the cryptocurrency system lies in its persistent exposure to cyberattacks. Cyberattacks targeting cryptocurrency exchanges are common, and users' invested funds may be irretrievably lost as a result (Medina et al., 2023). According to Adaobi and Atianashie (2023), further disadvantages of cryptocurrency use include insufficient acceptance, as cryptocurrencies continue to represent a considerable risk worldwide even today.

Cryptocurrencies have thus far not developed in the manner originally envisaged by their creators, particularly as a practical form of money when compared with other already established alternatives, both physical and digital (CGC, 2019). Investments in cryptocurrencies have generated returns for many investors in the past; however, past performance does not guarantee future results. Financial scandals and the collapse of certain cryptocurrency firms have prompted debate over the introduction of new regulations for the sector. The uncertainty surrounding such changes may affect the future financial performance of cryptocurrencies. Investment in cryptocurrencies shares certain similarities with investment in publicly traded companies, yet the high volatility characteristic of this sector substantially increases the associated risks. It is therefore important for investors, regulators, and researchers alike to understand both the positive and the negative aspects of cryptocurrency (Kerr et al., 2023).

2. Materials and Methods

In the preparation of the theoretical section, methods of analysis, analogy, deduction, description, comparison, and synthesis were employed. The theoretical part of the thesis was divided into two principal sections: the history, characteristics, and underlying nature of virtual currencies,

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and the types of virtual currencies. In the section dealing with the history, characteristics, and essence of virtual currencies, we defined in greater detail the motives underlying the emergence of virtual currencies. We also characterised virtual currencies and clarified the technology on which they are based. Finally, we outlined the regulatory and legislative framework that defines them. The second section provides a more detailed specification of the various types of virtual currencies. It introduced selected types of virtual currencies and their uses, explained the advantages and disadvantages of virtual currencies, summarised the development of the virtual currency market, and defined the methods of their storage and exchange. Lastly, attention was devoted to their future prospects.

Within the framework of the research, hypotheses H0 to H6 were formulated and tested in order to facilitate a systematic and more in-depth examination of public attitudes towards, and perceptions of, virtual currencies in Slovakia. On the basis of theoretical assumptions and an analysis of existing studies, hypotheses were formulated to address various aspects of the issue under investigation.

To achieve the research objective, the questionnaire survey method was employed. As a data collection instrument, the questionnaire was intended to provide quantitative information on respondents' preferences, experiences, and attitudes towards virtual currencies. This method enabled us to establish a representative view of the perception of virtual currencies in Slovakia and to analyse potential trends and differences in the attitudes of various population groups. In this section, the individual research hypotheses were also evaluated. In order to verify the validity of the overarching hypothesis H0, it was necessary to assess the individual partial hypotheses. For the verification of all hypotheses, a confidence level of 99% was adopted; accordingly, we worked with a probability of error of 1%, or a significance level of $\alpha = 0.01$. In testing the partial hypotheses, statistical methods such as Pearson's chi-square test of independence and the z-test were employed.

Pearson's chi-square test is used to determine whether there is an association between non-numerical variables, which are frequently employed in statistical studies. There are three types of chi-square tests: the chi-square goodness-of-fit test, the chi-square test of independence, and the chi-square test of homogeneity. In our case, the chi-square test of independence was used, as it assesses whether categorical variables are associated within given populations, given that such variables may exhibit differences across population groups. In the analysis of the data, it was necessary to determine the degrees of freedom, expected frequencies, test statistics, and the *p*-value associated with the test statistic. The hypotheses of the chi-square test of independence are as follows: H0: the variables under examination are independent. H1: the variables under examination are significantly associated (Turhan, 2020).

The z-test is a statistical tool used to compare or determine the significance of several statistical measures, particularly the mean of a sample drawn from a normally distributed population or the means of two independent samples. It is typically applied in studies where the sample size is large ($n > 3$). A *z*-score is a numerical value indicating how many standard deviations a given observation lies above or below the population mean. In our case, a quantile of 2.33 was selected for hypothesis testing at a 99% probability level. For hypothesis H0 to be confirmed, the condition $z > 2.33$ had to be satisfied. The formula below describes the calculation of the *z*-value, where p^1 and p^2 denote the mean values of the two samples, and n^1 and n^2 represent the numbers of observations in the respective samples (Sapkota, 2023)

$$z = \frac{p_1 - p_2}{\sqrt{\frac{p_1 \times (1-p_1)}{n_1} + \frac{p_2 \times (1-p_2)}{n_2}}} \quad (1)$$

Where z denotes the z-score, which expresses the number of standard deviations by which an observed value differs from the mean, p_1 and p_2 represent the proportions of successes in the two samples, and n_1 and n_2 correspond to the sample sizes.

In each test, the *z*-value serves as a means of quantifying the difference between population means, while the *p*-value represents the probability of obtaining a *z*-value with an absolute magnitude at least as large as that actually observed in the sample data, assuming that the null hypothesis is true. If the *p*-value is lower than 0.01, the null hypothesis of the test is rejected. In every type of *z*-test, the primary focus is on the *p*-value, whereas the *z*-value is used merely as an

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intermediate step in its calculation. Accordingly, the procedure for performing a *z*-test and obtaining the *p*-value, according to Bobbitt (2022), is as follows:

- Formulate the null hypothesis and the alternative hypothesis.
- Calculate the *z*-value using the formula presented above.
- Calculate the *p*-value corresponding to the *z*-value.

According to Trnka (2016), the calculation of the minimum research sample size represents the process through which the adequacy of the sample size is assessed in relation to the requirements and objectives of a given study. This process involves determining the optimal sample size required to obtain relevant results. The aim is to ensure that the findings are sufficiently representative of the overall population of enterprises, thereby enabling recommendations to be formulated for both academic research and professional practice. A simple calculation is used to determine the size of the sample:

$$n = \frac{z^2 \times p \times (1-p)}{z^2} \quad (2)$$

Where n represents the sample size, z is the tabulated critical value (z = 1.96 at the 95% confidence level), p denotes the proportion of the characteristic being examined, with p = 0.5 applied when the population values are unknown, and ccc refers to the allowable margin of error, which is commonly set at approximately 5% in empirical research. Interventionary studies involving animals or humans, and other studies that require ethical approval, must list the authority that provided approval and the corresponding ethical approval code.

If we have information on the minimum required sample size (384 respondents), we may infer that the above relationship provides an estimate of the number of respondents corresponding to the entire population. In this scenario, it is important to take the sample size into account and calculate the correction as follows (Tomšík, 2017):

$$n_{kor} = \frac{n}{1+\frac{n-1}{pop}} \quad (3)$$

In this context, n represents the sample size, that is, the number of respondents or observations included in the research sample, whereas pop denotes the population size, referring to the total number of individuals or units from which the sample is drawn.

In the final part of the research, we employed a broad range of methods and techniques to achieve our objective. One of the principal methods applied was summarization. This method enabled us to synthesise and analyse all relevant information and findings obtained during the survey and the research process. Summarization helped us identify the key points and trends, which subsequently served as the basis for our further analyses and conclusions. In addition, we also employed the method of analogy. Comparing our results and procedures with existing studies, models, or practical applications enabled us to identify similarities, differences, and potential areas for improvement. Synthesis constituted another important method used in the study. By integrating different findings, theories, and perspectives, we were able to develop a more comprehensive understanding of the issue under examination and of the proposed solutions. Synthesis also made it possible to identify new relationships and perspectives that might otherwise have remained unnoticed. Finally, we applied the method of deduction in formulating conclusions and proposals. On the basis of our analytical process, we derived specific conclusions and recommendations supported by our data and analyses. These conclusions and proposals represent our contribution to the existing body of knowledge and offer guidance for future research and practice. Overall, in the fourth part of the thesis, we employed methods such as analogy, synthesis, deduction, and summarization.

3. Results

The questionnaire survey was grounded in the theoretical premises from which the individual items were derived, with the aim of fulfilling the primary research objective and mapping the

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perception of virtual currencies in Slovakia. The survey was conducted between 5 February 2025 and 24 March 2025. The questionnaire was designed to minimise the time burden on respondents while ensuring clarity and comprehensibility for a general respondent sample. The survey was carried out exclusively online and was distributed across various channels, including social media, online forums, and through respondent-driven sharing, whereby participants circulated it within their own social networks. In total, 402 respondents aged 18 to 65 and over took part in the survey.

The results obtained from the questionnaire survey were used to evaluate and test the established hypotheses. We examined whether statistically significant differences existed between groups of respondents with regard to their attitudes and behaviour in relation to virtual currencies. Particular attention was devoted to testing the individual hypotheses, through which we verified various assumptions concerning the relationships among gender, age, experience, preferences, and the perception of virtual currencies.

H_1: *We assume that men display greater interest in virtual currencies than women.*

The aim of this hypothesis was to verify the claim that men show greater interest in virtual currencies than women. Based on this assumption, the null hypothesis was formulated as stating that there is no statistically significant relationship between gender and interest in virtual currencies. To test this hypothesis, we employed Pearson's chi-square test of independence (Table 2). The data indicate that 47.75% of men stated that they were interested in, or actively followed, virtual currencies. Among women, only 9.44% reported the same. Men therefore outnumbered women by more than four to one in this regard.

Table 1. Testing of H1 – Chi-Square Test of Independence.

Hypothesis	Research area	χ^2	sv	α	p-value	Contingency coefficient
H_1	Dependence between gender and interest in virtual currencies	69.76	1	0.01	< 0.00001	0.39

Source: Own research.

The test yielded a chi-square value of $\chi^2 = 69.764$. The p-value, with 1 degree of freedom, was lower than 0.00001. Overall, therefore, $p < \alpha = 0.01$. Consequently, we reject the null hypothesis and confirm that a relationship exists between gender and interest in virtual currencies. Based on the contingency coefficient, which reached 0.39, it may be concluded that this is a moderately strong association. Hypothesis H1, stating that men show greater interest in virtual currencies than women, can therefore be confirmed and accepted.

H_2: *We assume that younger generations have greater awareness of virtual currencies than older generations.*

The aim of Hypothesis H2 was to determine whether a relationship exists between age and awareness of virtual currencies (Table 2). To test this hypothesis, we employed the chi-square test of independence. The null hypothesis was formulated as follows: There is no statistically significant difference in awareness of virtual currencies among different age groups.

Table 2. Testing of H2 – Chi-Square Test of Independence.

Hypothesis	Research area	χ^2	sv	α	p-value	Contingency coefficient
H_2	Dependence between age and awareness of virtual currencies	29.45	4	0.01	< 0.00001	0.26

Source: Own research.

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Following the test, we obtained a chi-square value of $\chi^2 = 29.446$. With 4 degrees of freedom and a significance level of $\alpha = 0.01$, the calculated p-value was $p < 0.00001 < \alpha = 0.01$. This means that we reject the null hypothesis in favour of the alternative hypothesis and accept that a relationship exists between age and the perception of virtual currencies. The claim underlying Hypothesis H2, namely that younger generations have greater awareness of virtual currencies than older generations, may therefore be confirmed. The data used for the testing are presented in Graph 1. This illustrative graph shows the relationship between age and awareness of virtual currencies.

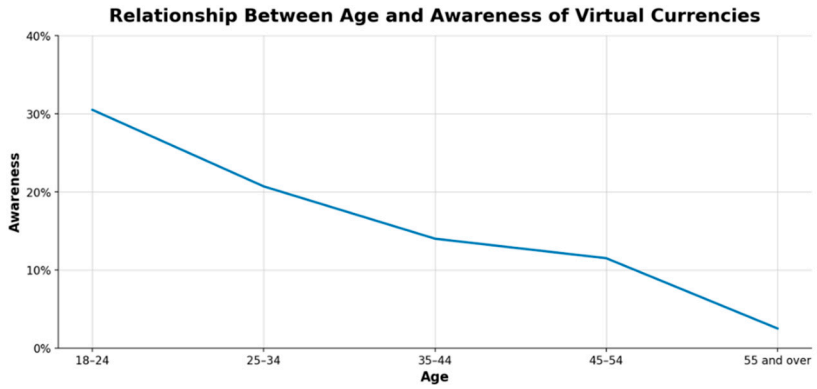

Figure 1. Relationship between Age and Awareness of Virtual Currencies. Source: own research.

H3: *We assume that Bitcoin is the best-known virtual currency.*

To evaluate this hypothesis, we used a z-test. We formulated the null hypothesis as stating that there is no significant difference in popularity between Bitcoin and other virtual currencies. We then determined the values of *p1* and *p2*, substituted them into the equation, and obtained the result $z = 13.21 > 2.33$. This indicates that significantly more people are familiar with Bitcoin than with the second most popular virtual currency. Bitcoin was recognised by 29.45% of respondents, whereas Ethereum, the second most frequently identified virtual currency, was known by almost half that proportion, specifically 15.53%.

Finally, we used an Excel function to calculate the p-value, which approached zero; at the same time, the condition $p < \alpha = 0.01$ was satisfied. This means that we reject the null hypothesis. This hypothesis is further supported by Graph 15 on page 54, which shows that the largest proportion of respondents (29.45%) identified Bitcoin, followed by Ethereum (15.53%). On the basis of these findings, Hypothesis H3 may be regarded as valid and is therefore accepted.

H4: *We assume that individuals who own virtual currencies use them primarily for investment purposes.*

To test Hypothesis H4, we used a z-test. We formulated the null hypothesis as stating that there is no significant difference in the frequency of the use of virtual currencies for investment compared with other purposes. We compared the most frequent response, namely investment, with the second most frequent response, namely trading. The calculation produced a result of $z = 10.56 > 2.33$, with a p-value < 0.00001, which is lower than $\alpha = 0.01$, indicating that the null hypothesis should be rejected. Among those who use cryptocurrencies, the most common purpose was investment (60%), while the second most common was trading (24%). It follows that investment is the predominant form of virtual currency use among those who own them. Hypothesis H4 is therefore confirmed and accepted.

H5: *We assume that individuals with experience in using virtual currencies consider the advantages of using virtual currencies to be more important than the disadvantages.*

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The aim of Hypothesis H5 was to verify the relationship between experience with the use of virtual currencies and the perception of their advantages and disadvantages (Table 4). The null hypothesis stated that there is no statistically significant relationship between individuals who have experience in using virtual currencies and their perception of the advantages or disadvantages of such use. A total of 34.73% of respondents were individuals with experience in using virtual currencies who considered the advantages to be more important. A group approximately three times smaller regarded the disadvantages as more important.

To evaluate the hypothesis, we used the chi-square test of independence, on the basis of which we calculated a chi-square value of $\chi^2 = 21.305$. The p-value was lower than 0.00001 and at the same time lower than the significance level of $\alpha = 0.01$. It may therefore be concluded that there is a statistically significant relationship between individuals with experience in using virtual currencies and their perception of the advantages or disadvantages of using them. We therefore reject the null hypothesis in favour of the alternative hypothesis.

Table 3. Testing of H5 – Chi-Square Test of Independence.

Hypothesis	Research area	χ^2	sv	α	p-value	Contingency coefficient
H_5	Dependence of experience on the preference for the advantages or disadvantages of using virtual currencies	21.31	1	0.01	< 0.00001	0.25

Source: Own research.

This means that the statement underlying the hypothesis, namely that individuals with experience in using virtual currencies consider the advantages of their use to be more important than the disadvantages, is valid; Hypothesis H5 is therefore accepted.

H_{5a}: *We assume that the most significant advantage of using virtual currencies is the protection of personal data.*

To evaluate Hypothesis H5a, we used a z-test. The null hypothesis stated that there is no significant difference in respondents' preferences regarding the individual advantages of using virtual currencies. As already shown in Graph 19, respondents tended to regard all the selected advantages of using virtual currencies as important. Since these selected advantages were perceived as important, the hypothesis could be tested. The two most highly rated advantages were the protection of personal data and security. Based on the z-test, we calculated a value of $z = 0.09 < 2.33$. This z-value is too low and falls below the critical value, which means that the null hypothesis may already be accepted; nevertheless, we also calculated the p-value. The resulting p-value was 0.46 > the significance level $\alpha = 0.01$. This means that the null hypothesis is accepted. The two most important advantages of using virtual currencies are therefore equally significant, and for this reason the claim advanced in Hypothesis H5a cannot be confirmed and is not accepted.

H_{5b}: *We assume that the most significant disadvantage of using virtual currencies is the loss of money.*

Similarly to the previous hypothesis, Hypothesis H5b aimed to verify whether there is a difference in preference between the two most significant disadvantages of using virtual currencies, which, according to Graph 21, are financial loss and the risk of cyberattacks. This hypothesis was likewise evaluated using a z-test. The null hypothesis stated that there is no significant difference in respondents' preferences regarding the individual disadvantages of using virtual currencies. After performing the calculation, we obtained a value of $z = 3.01 > 2.33$. This means that the null hypothesis can be rejected. Accordingly, no equivalence exists between these two disadvantages. The p-value was $0.0013 < \alpha = 0.01$. On the basis of the test and the input data, Hypothesis H5b may therefore be

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confirmed, as the most significant disadvantage of using virtual currencies is indeed the loss of money.

H6: *We assume that individuals who perceive the future of virtual currencies positively believe that they should form part of the financial system.*

The data obtained from the questionnaire survey indicate that 38.81% of respondents both perceive the future of virtual currencies positively and believe that they should be incorporated into the financial system. By contrast, 9.45% perceive their future positively but do not believe that they should form part of this system. The null hypothesis stated that there is no statistically significant relationship between perceptions of the future of virtual currencies and opinions regarding their inclusion in the financial system. After performing the chi-square test of independence, we obtained the value of the test statistic and its corresponding p-value. Based on these results, we concluded that the p-value was lower than $\alpha = 0.01$, with a chi-square value of $\chi^2 = 38.717$. This means that we have sufficient evidence to reject the null hypothesis in favour of the alternative hypothesis (Table 5). It therefore follows that there is a statistically significant relationship between perceptions of the future of virtual currencies and opinions on their integration into the financial system.

People who perceive the future of virtual currencies positively show a markedly greater tendency to agree with their inclusion in the financial system.

Table 4. Testing of H6 – Chi-Square Test of Independence.

Hypothesis	Research area	χ^2	sv	α	p-value	Contingency coefficient
H6	Dependence between perceptions of the future of virtual currencies and opinions on their inclusion in the financial system	38.72	1	0.01	< 0.00001	0.39

Source: Own research.

Based on the test results and the data, we can confirm the validity of Hypothesis H6, namely that individuals who perceive the future of virtual currencies positively also believe that they should form part of the financial system; the hypothesis is therefore accepted.

After evaluating all the hypotheses, we may confirm that the main hypothesis H0 is accepted, as all nine hypotheses were tested and eight of them were accepted with 99% confidence. The result is the confirmation of the main hypothesis H0, which means that we identified statistically significant differences in gender, age, perception, awareness, and the use of virtual currencies. In this way, we obtained a comprehensive view of the complex relationships and preferences associated with virtual currencies and their perception across different social and demographic contexts.

4. Discussion

The aim of the research was to map the perception of virtual currencies in Slovakia. To achieve this objective, we conducted a questionnaire survey involving 402 respondents aged 18 years to 65 and above. The overall research findings in four thematic areas are presented in Chapter 3, *Results*. The first part of the survey served to identify the target sample of respondents, namely residents of the Slovak Republic. The second part was devoted to mapping general awareness of virtual currencies. The third part focused on identifying awareness of selected virtual currencies and perceptions of virtual currencies. The final, fourth part of the survey addressed perceptions of the future of virtual currencies in Slovakia. On the basis of the results obtained, we propose the following recommendations for improving the current situation.

Although awareness of virtual currencies is relatively widespread, a thorough understanding of blockchain technology and its potential remains limited. It is therefore important to focus on

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expanding awareness of virtual currencies and their applications through education. One proposed measure is the organisation of workshops, seminars, or online courses that would provide both basic and advanced information on virtual currencies and blockchain technology. These programmes could be primarily targeted at younger cohorts, who have demonstrated greater interest in virtual currencies. This would apply particularly to secondary schools and universities, which could incorporate awareness of this form of finance into subjects such as information technology or economics. Likewise, online courses and workshops would most likely appeal to this target group. Building on existing communities and supporting new initiatives may also help foster trust and mutual support.

Investment in research and development of new technologies in the field of blockchain and virtual currencies may lead to the creation of new and innovative solutions capable of attracting a broader audience. Supporting start-ups and innovation projects aimed at improving cryptocurrency infrastructure may contribute to the faster development of this market.

Most individuals hold only a single virtual currency in their portfolio. It may be assumed that this is due either to a lack of awareness of other options or to uncertainty regarding alternative cryptocurrencies. Providing information about the different virtual currencies available and their characteristics could encourage greater portfolio diversification. Although most people hold virtual currencies primarily as an investment instrument, only a small proportion actively use them. Promoting the real-world applications of virtual currencies and, above all, making such applications more accessible and practical, such as payments for goods and services, could motivate individuals to use cryptocurrencies more actively. Establishing cooperation with financial institutions, merchants, and payment gateway providers may facilitate the integration of virtual currencies into everyday life. Such partnerships could enable people to buy, sell, and use cryptocurrencies more easily in their daily activities.

Fear of financial loss is one of the main reasons why people do not use virtual currencies. Increasing security and trust in cryptocurrencies is therefore essential. This may be achieved through improved security measures for cryptocurrency storage and through stronger regulation aimed at consumer protection. Although the majority of respondents were neutral or had no opinion on the current legislation governing virtual currencies, the inclusion of cryptocurrencies in the financial system could increase trust in this market and provide better protection for users. Even a reduction in taxation conditions could encourage users to view this type of asset as a form of passive income.

Finally, monitoring current conditions and public attitudes towards the development and use of virtual currencies is crucial for their successful integration into society. A key measure is to ensure that the public is adequately informed, as their preparedness will be critical should virtual currencies begin to be used more widely in practice. Since virtual currencies represent a new form of finance and economic transaction, the public should be sufficiently educated about their potential advantages and disadvantages. Without adequate awareness, undesirable or unforeseen consequences could arise, such as inefficient use or even misuse of these technologies. It is therefore essential that the public have access to reliable information on virtual currencies and the opportunity to express their views. Such participation and awareness will be decisive for the proper understanding and acceptance of virtual currencies as part of the modern financial system.

The most important measures are therefore as follows: increasing awareness, education, and the quality of information, developing and supporting events and communities, investing in research and development, supporting start-ups and innovation projects, expanding opportunities for the real-world use of virtual currencies, increasing security and trust in cryptocurrencies, monitoring the current state of development.

Virtual currencies were created with the aim of decentralisation and have undergone substantial development since their inception in the digital era. Blockchain technology has provided them with credibility and anonymity. Although the regulation of this dynamic market is still evolving, virtual currencies offer advantages such as fast transactions and investment potential. Security and

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regulation remain crucial to their broader adoption. The future of virtual currencies will depend on technological innovation and on the ability to address current challenges.

An empirical questionnaire was used to obtain data directly from respondents, followed by an analysis that enabled us to identify the current state of affairs. On the basis of these findings, we proposed specific measures to improve the situation. In doing so, we contributed to a deeper understanding of the issue and to the identification of possible improvements in this field.

The theoretical contributions of the research traced virtual currencies from their precursors and origins through to individual virtual currencies, their forms of use, their advantages and disadvantages, and their future prospects. The most important theoretical sections summarising the essence of the issue are as follows: a comprehensive characterisation of virtual currencies, an analysis of the motivations behind the emergence of virtual currencies, an introduction to blockchain technology, a characterisation of different types of virtual currencies, the identification of the advantages and disadvantages of virtual currencies, an outlook on the future of virtual currencies.

The practical contributions of the research helped clarify the issue of the perception of virtual currencies in Slovakia. The most important contributions are: identifying the level of interest in virtual currencies, providing insight into awareness and the use of virtual currencies in Slovakia,

offering an overview of experience with and perceptions of virtual currencies, comparing perceptions of the future of virtual currencies in Slovakia, proposing measures and improvements to the current situation.

5. Conclusions

Virtual currencies attract public attention with every growth cycle. Many experts argue that the monetary system still offers considerable scope for improvement. It is therefore essential to understand the phenomenon of virtual currencies, as the time will come for their genuine and widespread use. Even now, however, many individuals and many systems already make use of them, and virtual currencies are gradually becoming part of everyday life. The time has therefore come for the world to begin adopting this form of finance and thus move monetary systems into a new digital environment.

The theoretical part of our research characterised the issue of virtual currencies, their essence, and their history. In addition, it clarified the motives behind their emergence and the technology on which they are based. We also defined the individual types of virtual currencies, their uses, and their advantages and disadvantages. An important part of the study was also the presentation of current market developments and the methods used to store these assets. This section concluded with findings concerning the future direction of these trends and financial instruments.

The main objective of the research was to map the perception of virtual currencies in Slovakia. The outcome of the study was the confirmation of this objective, as well as confirmation of the existence of differences in gender, age, perception, awareness, and the use of virtual currencies.

The findings showed that awareness of virtual currencies is relatively widespread in Slovakia, particularly among younger generations, although a lack of understanding of the underlying technologies and the potential of virtual currencies remains evident. Most people hold only one virtual currency in their portfolio, which suggests a lack of information or uncertainty regarding other cryptocurrencies. It is essential to improve awareness and education by organising workshops and courses for young people, integrating information on cryptocurrencies into the educational system, and supporting cryptocurrency-related events. Expanding the possibilities for the use of virtual currencies, increasing their security and trustworthiness, and monitoring their development and public attitudes towards them are key steps towards the successful integration of these assets into society.

Further research on this topic is, however, necessary, as our study was limited by an uneven age distribution and by a relatively small, albeit statistically valid, sample. It is equally important to obtain more data from people who are not directly engaged with the subject matter, so that the current situation can be monitored more effectively, since our research was also limited by the fact

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that this is a relatively complex topic that the general public does not yet sufficiently understand. A significant area that could extend this research in the future is the identification of people's perceptions and expectations regarding virtual currencies. This issue should therefore be examined more thoroughly in future research. The dissemination of the results and findings achieved will help improve the implementation of virtual currencies in society.

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