Financial Innovation

RESEARCH Open Access

User acceptance of social network-backed cryptocurrency: a unified theory of acceptance and use of technology (UTAUT)-based analysis

Márk Recskó[1*] and Márta Aranyossy[2]

*Correspondence:
recskomark@gmail.com

[1] Corvinus University of Budapest, Fővám tér 8, Budapest 1093, Hungary
[2] Institute of Entrepreneurship and Innovation, Corvinus University of Budapest, Fővám tér 8, Budapest 1093, Hungary

Abstract

Turbulent market conditions, well-publicized advantages, and potential individual, social, and environmental risks make blockchain-based cryptocurrencies a popular focus of the public and scientific communities. This paper contributes to the literature on the future of crypto markets by analyzing a promising cryptocurrency innovation from a customer-centric point of view; it explores the factors influencing user acceptance of a hypothetical social network-backed cryptocurrency in Central Europe. The research model adapts an internationally comparative framework and extends the well-established unified theory of acceptance and use of the technology model with the concept of perceived risk and trust. We explore user attitudes with a survey on a large Hungarian sample and analyze the database with consistent partial least square structural equation modeling methodology. The results show that users would be primarily influenced by the expected usefulness of the new technology assuming it is easy to use. Furthermore, our analysis also highlights that while social influence does not seem to sway user opinions, consumers are susceptible to technological risks, and trust is an important determinant of their openness toward innovations in financial services. We contribute to the cryptocurrency literature with a future-centric technological focus and provide new evidence from an under-researched geographic region. The results also have practical implications for business decision-makers and policymakers.

Keywords: Cryptocurrency, Social media, Unified theory of acceptance and use of technology (UTAUT), Technology acceptance, Central-Eastern Europe, Hungary, Trust, Risk

Introduction

Throughout history, people have searched for ways to manage their finances faster, easier, and more securely. The continuous innovations of payment instruments have met these requirements; however, the most revolutionary change has probably come with the Internet's arrival. Some argue that blockchain technology and blockchain-based cryptocurrencies could make future payments more cost-effective, faster, and secure (Swan 2017).

The cryptocurrency (crypto) market has received significant public attention. Business moguls, such as Elon Musk, popularize these new assets, while on other days, the market meltdown wipes out more than 300 billion US dollars (USD) worth of wealth (Yaffe-Bellany et al. 2022), suggesting an end to crypto's popularity (Belk et al. 2022). National governments are also weighing their options regarding the cryptocurrency market, including potential bans, contraindications, or different regulations (García-Monleón et al. 2021); however, such scrutiny is also a step toward central banks' digital currencies, such as those introduced in the Bahamas or pilot-tested in China or Uruguay (Wang et al. 2022). Other prominent players are also interested in the promise of crypto; big tech companies might aspire to enter the market and reap the economic benefits of potential synergies. Social network-backed cryptocurrencies might serve as the middle ground, providing mid-level security and stability between the extremes of government-controlled digital currencies and current crypto market volatility. A consortium led by Meta (formerly known as Facebook, Inc.) has already planned such a cryptocurrency under Diem (formerly Libra). Although the Diem initiative did not receive the regulatory green light in 2021 (Murphy and Stacey 2022), market forces suggest that social media-backed cryptocurrencies might still be entering the markets in the future.

All these raise the question of how customers will perceive these new types of cryptocurrencies. Although the supply side is still in the preparatory stage of a market entry, the current speed of technological progress urges scientific researchers to explore potential user attitudes in advance (Arifovic et al. 2017). Cryptocurrencies might provide many benefits to users, including fast, efficient, traceable, and secure payment transactions; however, downsides exist, such as market and technology risk, increased need for technological and financial competencies for using cryptocurrencies, and ambiguity of social perception (Arias-Oliva et al. 2019). User-centric cryptocurrency research is needed to explore these diverse elements of user perceptions, to inform business decision-makers of the attractive features of a potential social network-backed cryptocurrency, and to enable policymakers to keep up with market developments.

Although the extant literature has examined cryptocurrency acceptance, European studies are incredibly scarce (Palos-Sanchez et al. 2021). While cryptocurrency ownership is estimated at 3.9% worldwide, ownership is 2.83% in Poland, 2% in Slovakia, 2.08% in the Czech Republic, 1.62% in Austria, and only 1.48% in Hungary (tripleA 2022). These data show that the Central European region is underdeveloped in cryptocurrency adoption, especially in Hungary, where trust has always been the primary bottleneck to accepting technology-based innovations (Nagy and Hajdú 2021). In contrast, Hungarians use social media heavily; 87 percent of Hungarian internet users had a Facebook account in 2020 (Statista 2022). These trends define a market where social media-backed cryptocurrency can be instrumental for widescale crypto adoption. Thus, our research aims to assess the influencing factors of the intention to use a hypothetical cryptocurrency introduced and operated by a social networking platform in Central Europe.

We examine cryptocurrency acceptance in Central Europe as a scientists did with earlier digital financial innovations, such as online banking (Eriksson et al. 2005) or mobile payments (Schierz et al. 2010), building on existing international evidence and mainstream technology acceptance models to ensure comparability of results. Our study is

based on the unified theory of acceptance and use of technology (UTAUT) model used frequently in information technology adoption research (Venkatesh et al. 2003). We contribute to the literature by exploring technology adoption, focusing on a promising new technology and an under-researched geographic region adapting an internationally comparative framework. Furthermore, we expand the UTAUT model with perceived risks and trust factors, which can be particularly relevant in the financial services arena (Palos-Sanchez et al. 2021). In this way, our original research covers the gap in the extant literature regarding emerging technology.

This study contributes to the international discourse on crypto-acceptance while broadening the research stream toward planned but not-yet-available technologies. The large sample partial least square structural equation modeling (PLS-SEM) analysis provides results with implications for industry players and regulators. Our study offers a valuable addition to the scarce empirical data in Europe and could serve as a foundation for further scientific investigations in the Central European region.

The remainder of this paper begins with the literature review in Sect. "Literature review", focusing on cryptocurrencies and cryptocurrency acceptance. Sect. "Research questions and methodology" introduces the hypotheses and methodological approaches regarding sampling, data collection, and analysis, Sect. "Results" presents the results of the PLS-SEM analysis, and Sect. "Discussion" provides a detailed discussion. Finally, conclusions are drawn in Sect. "Conclusions", highlighting practical implications, limitations, and directions for future research.

Literature review

The emergence of cryptocurrencies

A blockchain is "an open, shared, and distributed ledger that enables information disclosure and responsibility attribution, and it is suitable for dealing with valuable information" (Chang et al. 2019, 2). Blockchain-backed technology shows significant promise as its "four TR" characteristics—TRaceability, TRacking, TRansparency, and TRust (Centobelli et al. 2021)—might provide financial, economic, and social benefits to users. Furthermore, researchers recommend exploring further usage and implementation possibilities of blockchain technology in the business sector (Xu et al. 2019); however, the potential downsides and risks cannot be ignored, as high deployment and switching costs and diverse government regulations slow its spread (Crosby et al. 2016). Scalability, security, privacy, and energy consumption are all notable challenges (Chang et al. 2020), and in the case of financial applications of blockchain, money laundering and the potential to finance terrorism (Akartuna et al. 2022; Brenig et al. 2015) pose severe ethical and regulatory issues.

Blockchain technology can be used in many economic fields, from intellectual property rights to supply chain management (Chang et al. 2019), and its economic benefits are often the subject of research (Xu et al. 2019). Cryptocurrencies are probably the most closely monitored form of blockchain technology, attracting the attention of businesses, governments, and the public. The evolution of payment instruments and methods has accelerated over the last century, with a growing demand for speed, simplicity,

and security (Bezovski 2016). Generally, cryptocurrencies are virtual currencies: "unregulated, digital money issued and usually controlled by its developers and used and accepted among the members of a specific virtual community" (European Central Bank 2012, 14) or "native digital assets of open access public blockchain systems with various purposes" (Steinmetz et al. 2021, 1). Cryptocurrencies usually offer cheaper and faster transactions due to the lack of intermediaries (García-Corral et al. 2022). The different types of cryptocurrencies typically belong to one of the following categories: (1) initial coin offering with a specific purpose, usually raising funds (Campino et al. 2022); (2) single-layer crypto for currency transfer only; (3) multi-layer crypto with multiple functionalities above payment (García-Monleón et al. 2021). Market trends have also led to the development of stablecoins, that are cryptocurrencies with their value tied to traditional currencies or other financial instruments (Akartuna et al. 2022). The stablecoin format seems to be the most probable nature of a future social network-backed cryptocurrency. Cryptocurrency studies often examine the profitability and returns of crypto investments, while data-driven analyses of cryptocurrency price forecasting and trading have also become a mainstream research topic (Sebastião and Godinho 2021; Fang et al. 2022).

While Bitcoin and Ethereum are two cryptocurrencies that most frequently make the headlines, cryptocurrencies in general are becoming increasingly mainstream, making the market attractive for other prominent players from other industries. For example, e-commerce or social media giants might see significant business potential and synergies in issuing a proprietary cryptocurrency, as evidenced by the case of the Diem initiative. Diem is a blockchain-based cryptocurrency created by a consortium of companies led by Meta (Levey 2022); it initially included Visa, Mastercard, PayPal, eBay, Lift, Uber, Vodafone, Spotify, and others (Murphy and Stacey 2019). Diem was planned to be a stablecoin, a payment system backed by a reserve of low-risk financial assets (Murphy and Stacey 2022), "with industry-leading controls to protect consumers and combat financial crime, which is intended to be safe for people making ordinary day-to-day payments" (Levey 2022, 1). While US federal regulations did not approve the Diem project in 2021 (Murphy and Stacey 2022), which resulted in a sale to Silvergate in 2022 (Levey 2022), the idea of social media-backed cryptocurrency is still under consideration (Murphy 2022).

A cryptocurrency backed by a social network company can potentially benefit businesses and customers. For customers, this would mean easier access to more affordable and efficient financial services worldwide (Hobbs 2020) with less volatility and a more stable institutional background. The strength of social media and social networking companies allows them to introduce and operate a new currency linked to their platform. In 2022, the number of active social media users was already over 4.6 billion, and Facebook remains the most popular platform (We Are Social-Hootsuite-DataReportal 2022).

Specific consumer trends also significantly impact the environment for adopting a social network-backed cryptocurrency. For example, 52% of Generation Z discover brands through social media, which dwarfs TV (16%), word of mouth (12%), and newspapers and magazines (3%) (Bloomberg Businessweek 2019). As consumer behavior changes and moves toward digital platforms, innovations in payment solutions

embedded in the shopping process change follow that change. This trend is also why our research pays special attention to members of Generation Z.

As shown in this section, blockchain technology and cryptocurrencies are independent of temporary market ups and downs and will not disappear. Prominent new players, such as central banks, have already entered the crypto market, while other significant players, like bigtech giants, are contemplating their point of entry. A cryptocurrency backed by social network platforms would provide natural synergies for platforms and users alike; supply and demand-side forces point toward this idea becoming a reality soon. As we approach this reality, stakeholders (including potential issuers or regulators) must be prepared and understand the underlying factors of potential users' acceptance of this new technology.

Theories and models of technology acceptance

Researchers have long sought to explore how consumers adopt and start using innovations. Davis (1986) and Davis et al. (1989) built on the general theory of reasoned action developed by Aizen and Fishbein (1980) to create the technology acceptance model (TAM) framework, which has become one of the most widely used theories in the information systems management literature (Lee et al. 2003). Davis's model proposes that the user's attitude toward using new technology (and eventually: actual usage behavior) is influenced by perceived usefulness and perceived ease of use (Davis 1986, 1989; Davis et al. 1989).

Following TAM's success, refined and extended versions have been developed, most notably the UTAUT model, created in 2003, based on synthesizing eight different models. Here the proposed variables that explain behavioral intention include performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). The moderating variables potentially influencing the relationship between the dependent and independent variables include gender, age, experience, and voluntariness of use (Venkatesh et al. 2003).

Venkatesh et al. (2003) defined PE as the extent to which a user believes in the usefulness of a particular technology for their performance improvement, while EE measures a system's perceived ease of use (Rauniar et al. 2014). SI refers to the individual's perception of whether others think they should use the tool, i.e., how strongly others' perceived opinions influence theirs (Mendoza-Tello et al. 2018). Finally, FC represents the extent to which a person has confidence in the existence of the organizational and technical infrastructure that supports the use of the system (Venkatesh et al. 2003). We selected the UTAUT framework because it is one of the most influential models in the information systems literature (Ter Ji-Xi et al. 2021) and a prevalent and relevant basis of cryptocurrency acceptance research, as shown in the next section.

Cryptocurrency-focused technology acceptance studies

TAM has served as a theoretical basis for several technology acceptance studies on the newly developing cryptocurrency field, usually in an extended format. Palos-Sanchez

Table 1 Comparable studies on the field of cryptocurrency acceptance

Source	Research question	Existing or hypothetical technology	Data collection and analysis	Theoretic context	Source, sample size
Thelwall (2018)	Factors influencing the value of SteemIt posts	Existing (STEEM cryptocurrency)	Quantitative; descriptive; bivariate, sentiment analysis	–	Online community; 925,092 posts in English
Arias-Oliva et al. (2019)	Factors influencing cryptocurrency use	Existing (cryptocurrencies)	Quantitative; PLSc-SEM	Extended UTAUT (Risk, Financial literacy)	Country specific (Spain); 402
Jung et al. (2019)	Factors influencing intention to use cryptocurrencies	Existing (cryptocurrencies)	Quantitative; MCFA, MSEM*	Extended UTAUT (Risk, Economic benefit, Payment convenience, Government regulation)	Country specific (China, South-Korea, Vietnam); 208
Sohaib et al. (2020)	Factors influencing intention to use cryptocurrencies	Existing (cryptocurrencies)	Quantitative; PLS-SEM, ANN, IPMA**	TRAM (TRI*** & TAM)	University of Technology Sydney; 140
Treiblmaier et al. (2020)	travellers' intention to use cryptocurrencies for payment purposes	Existing (cryptocurrencies)	Quantitative and Qualitative	Cryptocurrency adoption model	Asia–Pacific region; 161 travellers
Alharbi and Sohaib (2021)	Factors influencing intention to use cryptocurrencies	Existing (cryptocurrencies)	Quantitative; PLS-SEM, ANN, IPMA	TRI***	University of Technology Sydney; 160
Palos-Sanchez et al. (2021)	Factors influencing Bitcoin adoption in businesses	Existing (Bitcoin cryptocurrency)	Quantitative; PLS-SEM	Extended TAM (Risks, Trust, Privacy)	Businesses; 248 executives
Ter Ji-Xi et al. (2021)	Factors influencing intention to use cryptocurrencies	Existing (cryptocurrencies)	Quantitative; PLS-SEM	Extended UTAUT (Risk)	Country specific (Malaysia); 233
Jariyapan et al. (2022)	Factors influencing intention to use cryptocurrencies during pandemic	Existing (cryptocurrencies)	Quantitative; PLS-SEM	Extended TAM 3 (Risk, Financial literacy)	Country specific (Pakistan); 357
Lansiaux et al. (2022)	Cryptocurrency prices affected by tweets, prediction of future price	Existing (Dogecoin; Litecoin cryptocurrencies)	Quantitative; causality and correlation analysis	-	Online community; Twitter content
Koroma et al. (2022)	Factors influencing intention to use cryptocurrencies	Existing (cryptocurrencies)	Quantitative; PLS-SEM	Trust, Ethical issues, Blockchain transparency, Technology attachment	Country specific (Mano River Union States); 421
Mashatan et al. (2022)	Factors influencing intention to use crypto-payment	Existing (crypto-payment)	Quantitative; PLS-SEM	Trust, risk, anonymity, traceability	Toronto Metropolitan University; 327

Table 1 (continued)

Source	Research question	Existing or hypothetical technology	Data collection and analysis	Theoretic context	Source, sample size
Miraz et al. (2022)	Factors influencing intention to use cryptocurrencies	Existing (cryptocurrencies)	Quantitative; PLS-SEM	Modified UTAUT (Trust, Transaction transparency, Volatility)	Country specific (Malaysia); 263
Sukumaran et al. (2022)	Factors influencing intention to use cryptocurrencies	Existing (cryptocurrencies)	Quantitative; PLS-SEM	Perceived risk and value	Country specific (Malaysia); 211
Quan et al. (2023)	Factors influencing intention to visit a destination	Existing (cryptocurrencies, traditional and mobile payment)	Quantitative; SEM	Extended TAM (Perceived security)	Country specific (South Korea & China); 378 & 407

[*] *MCFA* Multilevel confirmatory factor analysis, *MSEM* Multilevel structural equation modeling

[**] *ANN* Artificial neural network, *IPMA* Importance-performance map analysis

[***] *TRI* Technology readiness index

et al. (2021) used the original two variables and examined the effect of trust, risks, and privacy, Quan et al. (2023) added perceived security, while Jariyapan et al. (2022) extended the TAM3 model with risks and financial literacy. Sohaib et al. (2020) combined TAM with the technology readiness index (TRI), which has also been used as a standalone model in other crypto studies (Alharbi and Sohaib 2021).

Still, most crypto-acceptance studies rely on the UTAUT model (see Table 1). In their research, Jung et al. (2019) argue that considering the field's novelty and the variables' complexity, the UTAUT model best fits the purpose of exploring cryptocurrency user acceptance. Recent examples were published focusing on Malaysian data, where PLS-SEM has also been demonstrated (Ter Ji-Xi et al. 2021; Miraz et al. 2022). In Colombia, Cabanzo (2022) confirmed the effectiveness of the UTAUT model in studying cryptocurrency adoption, extending the traditional questionnaire-based data collection with qualitative interviews. Results using the same methodology have been published in Sweden (Foremar and Löwhagen 2021), focusing on Bitcoin.

We build on the accumulated knowledge regarding the usefulness of UTAUT in crypto context, not just regarding the model choice, but also concerning the selection of extensions. The most common extensions of past UTAUT studies are related to perceived risks (Arias-Oliva et al. 2019; Jung et al. 2019; Ter Ji-Xi et al. 2021) and the level of trust (Miraz et al. 2022), similar to the TAM-based studies introduced earlier. Risk perception and trust seem to be especially important when technology deals with financial assets in a non-regulated manner.

Some crypto-acceptance studies focus on specific segments of society and specific populations. Using the TAM framework and PLS-SEM methodology, a study from Spain (Palos-Sanchez et al. 2021) explored the adoption of Bitcoin by commercial businesses, finding that privacy and trust were crucial in this context. Jariyapan et al. (2022) studied the intention to use cryptocurrencies by Pakistani adults with business education, notably including the pandemic as a factor. In Asia–Pacific, travelers' intention to use cryptocurrencies for payment was examined with a mixed methodology (Treiblmaier et al. 2020); student-focused studies were also conducted in Australia (Sohaib et al. 2020; Alharbi and Sohaib 2021). Another stream of research has a broader scope, more in line with our research aims; this literature examines the general population to derive conclusions regarding mainstream cryptocurrency acceptance.

Concerning the geographic focus, the literature is diverse but incomplete. Recent studies have explored cryptocurrency adoption in Indonesia (Gunawan and Novendra 2017), in the triad of Korea, China and Vietnam (Jung et al. 2019; Quan et al. 2023), in Pakistan (Jariyapan et al. 2022), in Australia (Sohaib et al. 2020; Alharbi and Sohaib 2021), in Africa (Koroma et al. 2022), and in Malaysia (Ter Ji-Xi et al. 2021; Miraz et al. 2022; Sukumaran et al. 2022). Few studies seem to research crypto-acceptance in the Western world. Some research was conducted in North America (Mashatan et al. 2022), but in Europe, some early studies included research on Spain (Mendoza-Tello et al. 2018; Arias-Oliva et al. 2019) and a bachelor thesis from Sweden (Foremar and Löwhagen 2021). There seems to be a gap in the literature exploring factors of cryptocurrency acceptance in Europe, especially in Central-Eastern Europe. Cultural dimensions and

national context might affect the importance of the different acceptance factors; thus, this lack of European empirical data is a significant deficiency.

Interestingly, most earlier works focused on existing crypto-related technologies, in contrast to the original purpose of the TAM/UTAUT models: exploring attitudes toward novelties with which users have no experience (Nemeslaki et al. 2016; Khechine et al. 2020). Our research is original in this regard, as the UTAUT-based technology acceptance analysis focuses on a hypothetical social network-backed cryptocurrency.

Some studies have been published on the intersection of social media and cryptocurrencies. Lansiaux et al. (2022) examined the effect of Twitter tweets on the trading value and volume of some meme coins, and Thelwall (2018) analyzed a micropayment system backed by a tradable cryptocurrency introduced by a social news site to pay registered members for creating content. No existing research focuses on the potential user acceptance of a future social network-backed cryptocurrency.

Research questions and methodology

Research model and hypotheses

To investigate customer acceptance of payment systems based on social network-backed cryptocurrency, we took the UTAUT model of Venkatesh et al. (2003) as a starting

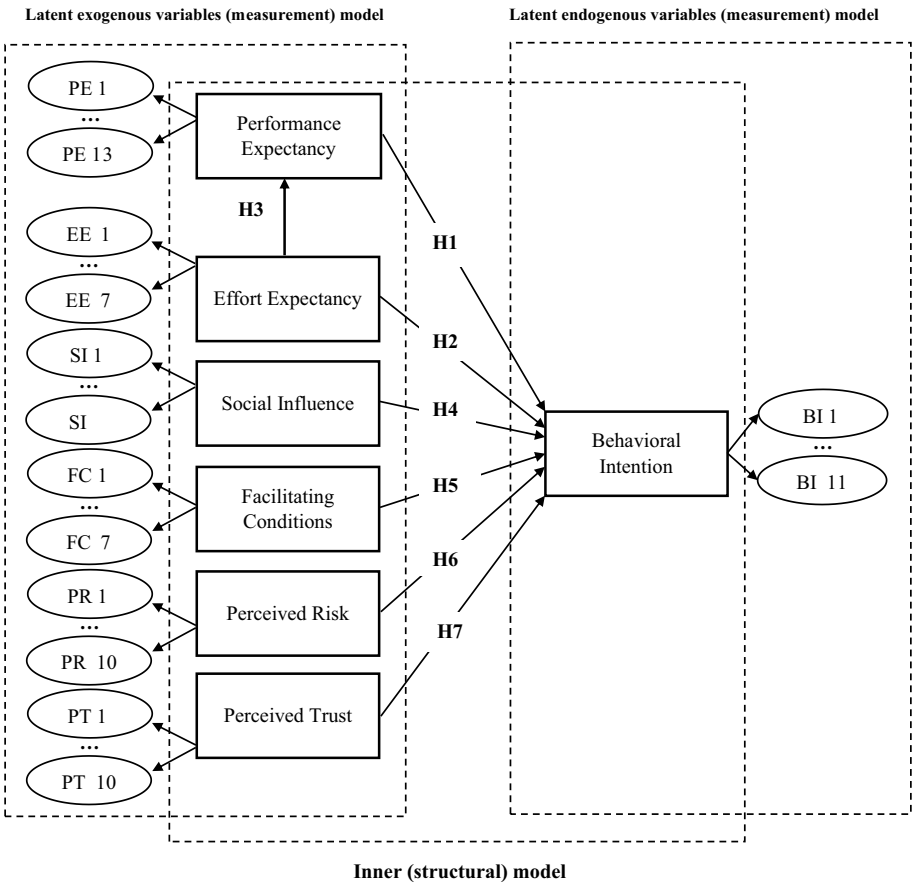

Fig. 1 Research model and hypotheses. Based on: Source: Venkatesh et al. (2003), Venkatesh et al. (2012), Rauniar et al. (2014), Faqih (2016), Nemeslaki et al. (2016), Mendoza-Tello et al. (2018), Moon and Hwang (2018), Arias-Oliva et al. (2019)

point. As shown earlier, UTAUT is applicable and useful in a broader crypto-acceptance context, and these related studies also provide relevant comparable benchmarks to our results. We aim to investigate whether the relationship between the extended UTAUT model factors is also relevant to a potential target market for a hypothetical social network-backed cryptocurrency (Fig. 1).

Venkatesh et al. (2003) considered the UTAUT model's performance expectancy the strongest indicator of behavioral intention. Namely, the perceived usefulness of the new technology seems to be the primary determinant of adoption, later confirmed by several other studies (Gunawan and Novendra 2017; Jariyapan et al. 2022). Thus, we propose the first hypothesis as follows:

H1 Performance expectancy positively affects behavioral intention to use a future social network-backed cryptocurrency.

Effort expectancy is a significant factor, especially in the early stages of adoption; later, its importance is gradually pushed into the background (Venkatesh et al. 2003). In the case of cryptocurrencies, it is also essential to determine how simple the individual considers the new payment method to be and whether they have basic technical familiarity, financial knowledge (Arias-Oliva et al. 2019), and understanding of blockchain technology to cope with the new technology. Therefore, we posit the second hypothesis as follows:

H2 Effort expectancy positively affects behavioral intention to use a future social network-backed cryptocurrency.

Similar to the original TAM and others (Davis 1986; Nemeslaki et al. 2016), we also examine the direct influence of EE on expected performance and the resulting indirect effect on the intention to use, which has been shown to be significant in the context of other innovative digital payment methods (Qu et al. 2022). Thus, the third hypothesis is presented as follows:

H3 Effort expectancy positively affects the performance expectancy of a future social cryptocurrency.

An individual's willingness to adapt can be significantly influenced by the reactions of people around them (Moon and Hwang 2018), particularly people important to them (e.g., friends and relatives). Social media users can be assumed to communicate with each other about new opportunities (Salem and Ali 2019), and it is common for them to request help from people who have already encountered the innovation (Chow et al. 2019). Hence, our fourth hypothesis is proposed as follows:

H4 Social influence positively effects behavioral intention to use a future social network-backed cryptocurrency.

Behavioral intention also depends heavily on the availability of facilitating environmental conditions. Such factors may include technical equipment and knowledge, compatibility of existing tools with the new product, or easily accessible customer service (Arias-Oliva et al. 2019). The last element of the UTAUT model covers these factors, referred to as facilitating conditions. Thus, we posit our fifth hypothesis as follows:

H5 Facilitating conditions positively affect behavioral intention to use a future social network-backed cryptocurrency.

In addition, we extended our research model with the constructs of perceived risk (PR) and perceived trust (PT). PR is a common addition to various TAM studies (Faqih 2016; Salem and Ali 2019; Palos-Sanchez et al. 2021) and may become a significant factor concerning new online payment solutions, as consumers might be afraid of theft and abuse (Askool et al. 2019) and the volatility of value. Furthermore, services are generally considered riskier than products (Humbani and Wiese 2017). Mashatan et al. (2022) emphasized the importance of PR, specifically highlighting the loss of personal data and fraud. Therefore, we present the sixth hypothesis as follows:

H6 Perceived risk negatively effects behavioral intention to use a future social network-backed cryptocurrency.

In their meta-analysis, Merhi et al. (2019) confirmed that PT has a critical impact on individuals' behavior; thus, trust is a frequent extension of UTAUT models, especially in financial services (Alalwan et al. 2017; Hamakhan 2020). Research on the diffusion of mobile payment services also confirms the crucial role of trust; a reliable brand needs to be built before people start using a service (Humbani and Wiese 2017). Privacy-related trust also became a growing issue for technology users (Ribeiro-Navarrete et al. 2021), especially in cryptocurrency. Perceived trust reflects how much trust users have in the technology itself, in online payments, companies, and social networking sites. Therefore, we posit our seventh and final hypothesis:

H7 Perceived trust positively effects behavioral intention to use a future social network-backed cryptocurrency.

Data collection and methodology

When creating the name of our study's hypothetical social network-backed cryptocurrency, we considered that the different interpretations and perceptions of words could significantly affect our results. We examined anonymous (Arifovic et al. 2017) and branded (Presthus and O'Malley 2017) alternatives used in previous research. The term "money" was considered the most neutral option. Referring to the Facebook social networking site, we chose the name "FB Money" to indicate that the crypto would be a payment option implemented by the social networking platform. In Hungary, Facebook remains the most popular social media site (Statcounter 2020); therefore, the participants could associate our currency with this platform, even if this

research design decision meant that the company's reputation might influence the responses (Yoon et al. 1993).

Our target group was Hungarian citizens using social networking sites whom we reached through Facebook, a communication platform of critical importance in our case; the questionnaire could only be interpreted by individuals familiar with Facebook, even if they did not use it regularly. The questionnaire for data collection was open for one month in March 2020. Although the sampling method was more convenience-based than focusing on representativity, the large sample size mitigated the potential distorting effects. The sample size was in the same range as similar studies (see Table 1), not focusing on any specific sub-group of the general population; thus, our sample represents a more general cross-section of society. In Sect. "Descriptive characteristics of the sample", we further elaborate on the sample's composition.

Although some mixed-method studies have been conducted in the field of crypto-acceptance (Thelwall 2018; Treiblmaier et al. 2020), we used the traditional questionnaire-based data collection in TAM/UTAUT studies. At the beginning of the questionnaire, particular emphasis was placed on providing a detailed description of the hypothetical cryptocurrency operated by a social networking site. We explained the basic working mechanism and practical use of FB Money to the respondents. For ease of understanding, the description did not emphasize the technical background, focusing instead on everyday usability and usefulness, suggesting why social networking site members would actively use such a payment instrument. We also provided some examples to help the respondents understand the function of FB Money and a summary of the blockchain technology behind it so that the security factor was adequately represented. Test respondents refined the description, which we modified according to their suggestions, enabling us to exclude bias due to misunderstandings. At the end of the description, the respondents were asked to declare their understanding of the FB Money concept.

The subjectiveness of the answers is explicitly accepted in UTAUT research, as all the constructs are conceptualized as perceived variables. To mitigate bias related to the formulation of questions (like leading, loaded, or ambiguous questions), we used statement structures from many earlier similar TAM/UTAUT studies, such as Venkatesh et al. (2012), Rauniar et al. (2014), Mendoza-Tello et al. (2018), Moon and Hwang (2018), and Arias-Oliva et al. (2019) (see also Appendix 1). Additionally, the measurement scales were consistent and intrusive questions were avoided.

The classic TAM framework recommends the inclusion of at least 10 indicators for each observed variable to provide a minimum reliability of 80 percent and ensure reliability and validity (Davis 1986, 1989). We aimed for as many questions as possible; however, to keep the number of questions low, following similar research (Faqih 2016; Nemeslaki et al.; 2016; Moon and Hwang 2018; Arias-Oliva et al. 2019; Askool et al. 2019), and maintain the respondents' patience, we eventually deviated from this guideline. Answering all questions took an average of 5–10 min. Two measurement items were later excluded based on a consensus regarding the difficulties of interpretation and

also because they were not integrand parts of the model. No other items were dropped during the statistical analysis.

The UTAUT statements were scored on a 7-point Likert scale, with a score of 1 corresponding to "strongly disagree" and a score of 7 corresponding to "strongly agree." Finstad (2010) found that compared to the 5-point Likert scale used in other studies (Sohaib et al. 2020; Alharbi and Sohaib 2021; Ter Ji-Xi et al. 2021; Koroma et al. 2022; Miraz et al. 2022; Sukumaran et al. 2022), the 7-point Likert scale is significantly more accurate, easier to use, and reflects the opinion of the respondent better. Hence, the 7-point scale is one of the most widely used options in this field of research, including many related adoption studies (Faqih 2016; Nemeslaki et al. 2016; Askool et al. 2019; Khechine et al. 2020; Treiblmaier et al. 2020; Foremar and Löwhagen 2021; Jariyapan et al. 2022; Mashatan et al. 2022; Quan et al. 2023).

To better understand the quantitative results, we asked the respondents to share their opinion and thoughts concerning FB Money at the end of the form. This open-ended question supported the interpretation and validation of the results.

Partial least square (PLS) path modeling was applied to test our hypotheses, a standard method for studying the complex relationships between latent variables in TAM/UTAUT models. Structural equation modeling (SEM) is a popular technique for latent variable modeling, and within the SEM family of models, the variance-based PLS (Kazár, 2014) aims to maximize explained variance and is one of the most used methods. First, the latent variables are estimated as linear combinations of the manifest variables (external model, see Fig. 1). Then the structural equations of the latent variables are estimated to minimize the variance of the residual term (internal model) (Füstös et al. 2004). The PLS-SEM algorithm is iterative, estimating the model's parameters by repeating the algorithm a fixed number of times up to a target value. The advantages of the PLS-SEM method include that it does not require a normal distribution in the case of manifest variables. Furthermore, it can be used with a relatively small sample (Hair et al. 2019; Henseler et al. 2009), and it seems particularly effective in the field of information systems research (Chin and Todd 1995). While network-based (Zhang and Kou 2022) or clustering methods (Li et al. 2022) are often applied to analyze data related to financial markets, PLS-SEM is a widespread technique in general behavioral science and IS research (Marcoulides et al. 2009); it also frequently used in the general field of technology adoption (Venkatesh et al. 2012). Most studies researching cryptocurrency user acceptance apply PLS-SEM as well (see Table 1); thus, this method provides comparable results.

We applied a specific model variant, consistent PLS (PLSc) (Dijkstra and Henseler 2015), which is well-calibrated and also more robust to specification errors (Dijkstra and Schermelleh-Engel 2014). Furthermore, the estimates do not converge to the actual values as the number of elements in the sample increases in the conventional PLS-SEM; conversely, they converge asymptotically in PLSc (Garson 2016). PLSc is recommended when the model contains common factors and composites when a general model for multiple uses is desired, and when the research sample follows a non-normal

Table 2 Descriptive statistics of the samplec

Age (years)	Relative frequency (%)	Facebook users in Hungary (%)*	IT skills	Mean**
13–17	1.73%	3.30%	The internet is part of my daily life	6.66
18–24	53.58%	17.20%	I regularly use social media platforms (Facebook, Twitter, Instagram)	6.11
25–34	20.74%	23.80%	I regularly use internet banking services	5.76
35–44	10.12%	21.00%	I regularly use online payment methods	4.89
45–54	7.41%	16.20%	I shop regularly on the internet	4.20
55–64	4.20%	10.30%	I monitor changes in online payment options	3.46
65 +	2.22%	8.10%	I regularly use alternative payment services (PayPal, Skrill)	3.18
Gender	Relative frequency (%)	Facebook users in Hungary (%)*	I regularly use mobile wallet services (like Apple Pay	2.31
Male	35%	47%	I have knowledge of cryptocurrencies and how they operate (like Bitcoin, Ethereum)	2.54
Female	65%	53%	I regularly use cryptocurrencies (like Bitcoin, Ethereum)	1.19

*Source: NapoleonCat (2019)

**Respondents indicated their level of agreement with the IT skill statements using a 7-point Likert scale, with a score of 1 corresponding to "Strongly disagree" and a score of 7 corresponding to "Strongly agree."

Table 3 Measures of construct reliability

Latent variables	Cronbach's *α*	*p* value	*CR*	*p* value	rho_A	*p* value	*AVE*	*p* value
Perceived Trust	0.954	0.000	0.953	0.000	0.962	0.000	0.674	0.000
Behavioural Intention	0.948	0.000	0.948	0.000	0.950	0.000	0.649	0.000
Performance Expectancy	0.943	0.000	0.943	0.000	0.953	0.000	0.588	0.000
Social Influence	0.941	0.000	0.940	0.000	0.951	0.000	0.641	0.000
Perceived Risk	0.937	0.000	0.935	0.000	0.939	0.000	0.591	0.000
Effort Expectancy	0.913	0.000	0.905	0.000	0.920	0.000	0.581	0.000
Facilitating Conditions	0.885	0.000	0.883	0.000	0.903	0.000	0.527	0.000

distribution (Dijkstra and Henseler 2015). We used the SmartPLS 3 program to perform the analyses (Ringle et al. 2015).

Results

Descriptive characteristics of the sample

We received 405 complete questionnaires, and as there were no invalid or incomplete responses, we could use the answers from all participants during the analysis. The predominance of young people emerges among the more than 6 million Hungarian Facebook users (Napoleoncat 2019) and our 405 respondents The average age of respondents was just over 29 years, with a mode and median of 24 years (see Table 2). This sample characteristic is not necessarily a distortion if we compare it with the trend that age seems to negatively correlate with cryptocurrency investments in general, partly rooted

in the different risk acceptance levels (Stix 2020). These demographic characteristics of crypto users are confirmed by German (Steinmetz et al. 2021) and Austrian (Stix 2020) studies, and also in Poland, where 80% of cryptocurrency investors are aged 18–45 (Statista 2021). While not representative of Hungarian society, our overall sample represents the general target group of potential social network-backed cryptocurrencies well.

We also assessed the respondents' subject-specific information technology (IT) skills and habits, i.e.,., whether they were active members of a social networking site, shopped online, or used online payment methods or cryptocurrencies (see Table 1). While most respondents agreed that the Internet was part of their daily lives, few knew or used alternative payment methods, mobile wallet services, or cryptocurrencies. This finding suggests that the survey questions referred to a hypothetical technology acceptance situation for our respondents, as intended.

Results of the PLS-SEM modeling

We examined indicators linked to a reflective measurement model and ran the PLS-SEM analysis with 1,000 iterations.

The Cronbach's α and composite reliability coefficients were used to test the reliability and consistency of the measurement model; in our case, these metrics for all constructs were above the generally accepted value of 0.7 (see Table 3). The average variance extracted (AVE) values, used as a test for convergent validity (Chin 2010; Mendoza-Tello et al. 2018), should ideally exceed 0.5, which is also satisfied by our model. Similarly, the reliability of the model is confirmed by the rho_A values introduced by Dijkstra and Henseler (2015).

Heterotrait–monotrait ratio of correlations (HTMT), as a measure of similarity, is used to assess discriminant validity in variance-based SEM. Based on a more permissive criterion (Henseler et al. 2015), adequacy regarding the HTMT values can be established; however, the correlation between PE and behavioral intentions (0.866) does not meet the Fornell–Larcker criterion (Fornell and Larcker 1981), being slightly higher than the square root of behavioral intentions (0.805) (Hair et al. 2014). The examination of cross-loadings is also a prominent approach for evaluating discriminant validity. In this case, each indicator's loading must be greater than all its cross-loadings (Henseler et al. 2015). Our model met this criterion; however, we see some close cross-loading values in instances where the correlation between two latent constructs is high. These include FC and EE, behavioral intention and PE, or behavioral intention and trust. This result is not unprecedented in TAM/UTAUT studies focusing on new technologies, where respondents form opinions without real experiences with the technology, and distinctions between latent factors are less prominent (Nemeslaki et al. 2016). In summary, our outer model passes both the reliability tests and the convergent validity criterion; however, we should be aware of the minor weaknesses concerning discriminant validity.

Regarding the inner model from a multicollinearity perspective, the inner variance inflation factor (VIF) values should not exceed a value of 5. In the case of our variables, all VIF values are below 3. Additional tests revealed no problem with the stop criterion (stopped after six iterations) and outlier values (Garson 2016).

Table 4 Path coefficients, *p*- and *t*-values, and explanation of the variance in the intention to use the hypothetical cryptocurrency

Connection	Path coefficients	*p*-value	*t*-value	f^2 value	Explained variance of Behavioural Intention (%)
Performance expectancy → behavioural intention	0.588	0.000***	11.788***	0.637	54.542
Effort expectancy → behavioural intention	0.123	0.011*	2.535*	0.029	11.379
Effort expectancy → performance expectancy	0.680	0.000***	23.262***	0.858	–
Perceived trust → behavioural intention	0.249	0.000***	5.920***	0.155	23.117
Perceived risk → behavioural intention	−0.082	0.008**	2.672**	0.026	−7.600
Social influence → behavioural intention	0.039	0.350	0.935	0.004	3.650
Facilitating conditions → behavioural intention	−0.035	0.424	0.800	0.003	−3.263

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

The standardized root mean square residual (SRMR) value should be highlighted as a critical measure to evaluate the fit in a reflective PLSc model. Although some consider SRMR values below 0.08 appropriate, other studies accept as much as 0.1 (Garson 2016). Based on the saturated model, our SRMR value of 0.077 can be considered good, and the result of 0.109 associated with the estimated model can be considered a borderline case. The R^2 shows the accuracy of the predictive ability of the model (Khalilzadeh and Tasci 2017). In our social network-backed cryptocurrency acceptance model, the R^2 value of behavioral intention is 0.82, i.e.,., the model can explain 82% of the variance of behavioral intention (Garson 2016). This explanatory power is significant in this research field and ensures strong predictive ability.

In PLS-SEM, testing the path coefficients is mainly performed by bootstrapping (Kazár 2014). Following the literature guidelines (Ringle et al. 2015), we performed this test by running 5,000 random subsamples. Our results confirmed that while the effects of all other model variables are significant, SI and FC do not significantly affect behavioral intention (see Table 4). The effect sizes (f^2, see also Table 4) measure the impact of the independent variables on the dependent variable, suggesting that PE has a significant (0.637) effect and PT has a moderate (0.155) one. At the same time, EE (0.029) and PR (0.026) have a weak effect on behavioral intention according to Cohen's (1988) criteria (see also Table 4). At the same time, EE has a strong effect (0.858) on PE (Garson 2016), confirming the original TAM hypothesis (Davis 1986) that this factor has a more indirect influence on behavioral intentions.

Discussion

Like similar studies (Arias-Oliva et al. 2019; Foremar and Löwhagen 2021; Jariyapan et al. 2022) (see Table 5 and Fig. 2), we found a strong positive association between PE and behavioral intention to use cryptocurrency. Moreover, consistent with these results, it is the strongest explanatory factor in the model, which is unsurprising; however, the

Table 5 research results in a comparative perspective. Source: Arias-Oliva et al. (2019), Jung et al. (2019), Foremar and Löwhagen (2021), Ter Ji-Xi et al. (2021), Jariyapan et al. (2022), Miraz et al. (2022)

Description	Model							
	This study		Arias-Oliva et al. (2019)	Jung et al. (2019)	Miraz et al. (2022)	Ter Ji-Xi et al. (2021)	Foremar and Löwhagen (2021)	Jariyapan et al. (2022)
Geographical focus	Hungary		Spain	South-Korea, China, Vietnam	Malaysia	Malaysia	Sweden	Pakistan
Technological focus	Social network backed cryptocurrency		Cryptocurrency	Cryptocurrency	Cryptocurrency	Cryptocurrency	Bitcoin	Cryptocurrency
Sample size	405		402	208	263	233	70	357
Theoretic context	UTAUT		UTAUT	UTAUT	Modifed UTAUT	UTAUT	TAM	TAM 3
Model coefficients								
Performance Expectancy → Behavioural Intention	0.588***	*H1* confirmed	0.764***	0.165*	−0.166	0.362**	0.706***	0.229***
Effort Expectancy → Behavioural Intention	0.123*	*H2* confirmed	0.078*	0.241**	–	0.198**	0.127	0.229**
Social Influence → Behavioural Intention	0.039	*H4* rejected	−0.041	0.364***	–	0,086	–	
Facilitating conditions → behavioural intention	−0.035	*H5* rejected	0.220***	0.187***	0.214**	0.136*	-	
Perceived risk → behavioural intention	−0.082**	*H6* confirmed	−0.017	–	–	−0.039	−0.085	−0.029
Perceived trust → behavioural intention	0.249***	*H7* confirmed	–	–	0.132**	–	–	
Effort expectancy → performance expectancy	0.680***	*H3* confirmed	–	–	–	–	0.323*	

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

[1] Internet Trust

[2] Government Trust

[3] Social Risk

size of this effect (54% of explained variance) suggests an especially utility-focused user attitude. The geography of these similar results (from Europe and Pakistan) and some contrasting results in East Asia, where PE had the weakest effect on the intention to use (Jung et al. 2019), suggest a cultural element might exist behind this factor of utility, which shall be further explored.

EE had a significant indirect effect (0.400) on behavioral intention through PE, while the direct effect was statistically significant but small (0.123). The original TAM studies already included this critical indirect effect of ease of use (Davis 1986), and some comparative studies (Foremar and Löwhagen 2021) also came to the same conclusion.

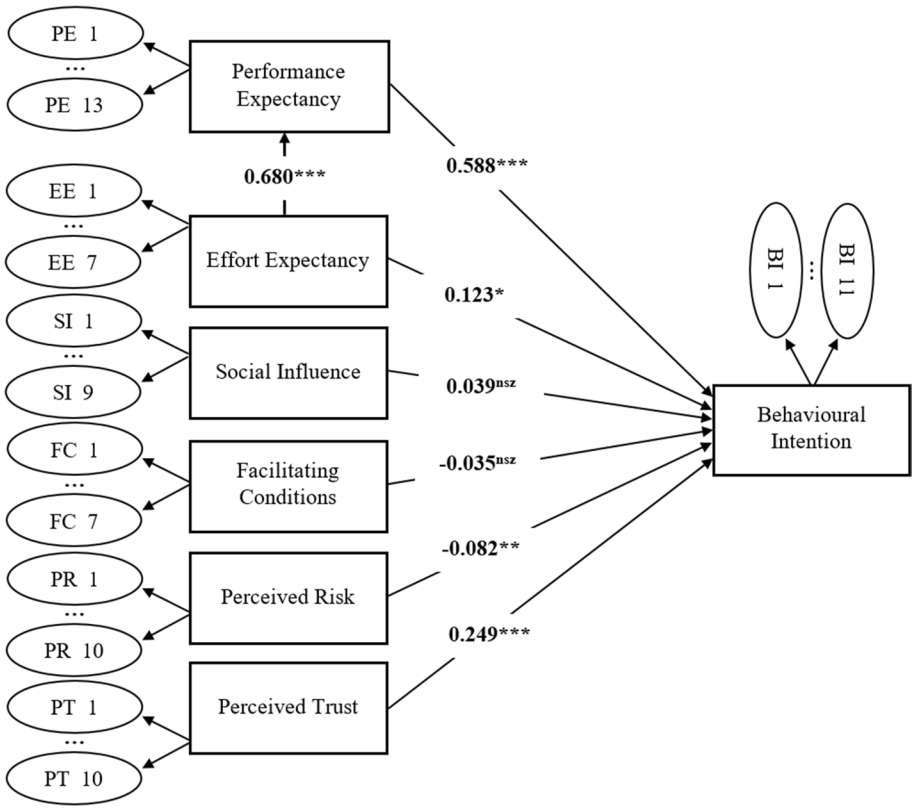

Fig. 2 Research model and PLS-SEM path coefficients. ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, ns not significant

This result suggests that ease of use is more of a necessity than a sufficient condition of a positive usage attitude; the potential user base considers a user-friendly interface a given. Overall, the original TAM relationships seem relevant in this hypothetical social network-backed cryptocurrency context; therefore, our results confirmed hypotheses H1, H2, and H3.

Gunawan and Novendra (2017) examined the acceptance of Bitcoin, revealing the significant influence of FC; several other studies later confirmed its role as an essential predictor of behavioral intention to use and adopt cryptocurrencies (Arias-Oliva et al. 2019; Jung et al. 2019; Ter Ji-Xi et al. 2021; Miraz et al. 2022). Conversely, Venkatesh et al. (2003) found that if PE and EE are present, the effect of FC becomes insignificant. Our results are more in line with this reasoning; thus, hypothesis H5 was rejected. This result could partly be explained by the difficulty for the respondents to assess the available support, which depends mainly on the specific characteristics of the future cryptocurrency technology and related services. This situation should be later reexamined under real technology adoption circumstances. Another potential reason for the non-significant effects might be that many facilitating condition items were generally rated above 4 (see Appendix 1), reflecting the respondents' faith in the provider's future support; however, one of the items referring to the respondents' own experiences with cryptocurrencies had a low average value (2.31). These mixed effects of the respondents' positive expectations regarding the platform and low evaluations of their relevant experience might cancel each other during the analysis.

Similarly, the predictive value of SI concerning the use of FB Money is negligible and cannot be considered significant; thus, hypothesis H4 was also rejected. Although Arias-Oliva et al. (2019) had a similar conclusion, these results do not generally fit the current theory that SI (ranging from the opinions of close friends to the "herd effect") is a critical determinant of the adoption and trading of cryptocurrencies (Moon and Hwang 2018), and the empirical evidence confirming this hypothesis (Faqih 2016; Gunawan and Novendra 2017; Jung et al. 2019). Nevertheless, SI was not a determinant factor in several more recent studies either (Khechine et al. 2020; Ter Ji-Xi et al. 2021). Ter Ji-Xi et al. (2021) suggest that respondents' concerns about the unfamiliar technology may not leave room for SI, which might also be the case in our Hungarian sample, as discussed in the following paragraphs.

Similar to other Hungarian technology acceptance studies (Nemeslaki et al. 2016), trust in the Internet and social networking technologies was found to be a significant factor ($p < 0.001$) with a moderately positive effect on usage intentions, confirming hypothesis H6. Faqih (2016) and Merhi et al. (2019) reported similar results, confirming that trust is a key factor in technology acceptance settings with embedded digital payment instruments. Interestingly, Moon and Hwang (2018) and Mendoza-Tello et al. (2018) found a significant direct effect of trust on usage intentions and a significant indirect effect via PE. This seldom-researched relationship can be explored by future studies, especially as our results highlight the role of trust as the second strongest influential factor following PE. Wherever money is involved, users become distrustful. In our sample, the trust items with the lowest average (under 3) and mode (1) focused on data and money protection and the level of abuse. These results suggest a clear focus for any future action plan of crypto issuers and regulators intending to build consumer trust.

The other side can be the influence of PR, which shows a small but significant adverse effect on behavioral intention ($p < 0.01$); thus, hypothesis H6 can be accepted. Similar cryptocurrency studies emphasize the importance of PR in influencing intention to use (Palos-Sanchez et al. 2021; Mashatan et al. 2022); however, other studies in different countries found that risk perception had no significant effect (Arias-Oliva et al. 2019; Jariyapan et al. 2022; Sukumaran et al. 2022). Hungary's cryptocurrency users community is presently very small, at 1.48% of the population versus 3.54% in Malaysia or 11.50% in Pakistan, where some benchmark studies were conducted (tripleA 2022). This small community may indicate why risks and trust are still issues for potential users here, suggesting that this may change over time when blockchain technology and cryptocurrencies become more prevalent.

The questionnaire also included qualitative, open-ended questions to help interpret the quantitative results, and almost half of the 60 text responses focused on PRs, raised concerns, doubts, and trust issues. Several of these were related to perceived security weaknesses of the social networking platform and potential privacy and data theft issues, reinforcing the significant role of risk perception. These answers might help us to identify the top concerns, the effect of which might be explored in further quantitative studies.

Conclusions

This study aimed to better understand the potential future of the cryptocurrency market by exploring users' perceptions of a hypothetical cryptocurrency backed by a prominent social networking company. Such research is necessary as cryptocurrencies become part of everyday business and private life, as diverse supply and demand seem to be growing, although a dangerous level of volatility can characterize the market. Stakeholders and regulators need to understand the users' perspective more, not only regarding the existing but also concerning the up-and-coming technologies. The originality of our research is underlined by the fact, that while some empirical data are available regarding cryptocurrency acceptance, only a handful of studies focus on Europe, and none examine future technologies.

Our research confirmed the relevance of the UTAUT model in the context of user acceptance of a fictitious social network-backed cryptocurrency in Central-Eastern Europe—a technology and a geographic area previously unexplored. We found that users would be influenced primarily by the expected usefulness of the new technology and—mostly indirectly—by its ease of use. Furthermore, we tested several new variables as we extended the UTAUT model with the hypothesized effects of perceived risk and trust. Results support the common assumption (Nemeslaki et al. 2016) that Hungarian consumers are sensitive to technological risks, and trust is a critical determinant of their openness toward innovations. The sensitivity of financial transactions magnifies this general effect; hence, trust became the second most influential predictor of technology acceptance in our case.

Theoretical implications

The results of this study provide important contributions to technology acceptance and cryptocurrency literature. Regarding technology acceptance, the general UTAUT extensions of the original TAM (SI and FC) seem less significant influencers of crypto-acceptance than other technology-specific extensions, such as perceived risks and trust. Future studies can also test, corroborate and build on this result. This approach is interesting because a large portion of the current crypto-acceptance research builds on UTAUT instead of TAM, and a significant literature stream focuses on SI (e.g., herd behavior) on the cryptocurrency markets (Raimundo Júnior et al. 2022). This present study builds on the results of Ter Ji-Xi et al. (2021), showing that in the early adoption stage of a new kind of cryptocurrency, users see themselves as less influenced by peer opinion and behavior. The relationships identified between user perceptions and usage intentions can help understand and predict future user behavior.

Regarding cryptocurrency literature, our added value includes a step toward exploring future trends. The speed of technological change underlines the importance of investigating potential future trends instead of only examining the past, which is where the original idea of TAM and UTAUT becomes useful by exploring the users' perspective regarding technologies not currently available or in use. We believe that more similar studies are needed.

This research is also valuable in that the related literature is primarily focused on the financial aspects of cryptocurrencies, such as investment, valuation, returns, and

forecasting (Xu et al. 2019; Sebastião and Godinho 2021; Fang et al. 2022); however, understanding the attitudes of everyday users is also necessary to disseminate the technology to a broader audience and help it become more widely used.

Furthermore, our results could benefit future cryptocurrency research focusing on Central Europe, a seriously under-researched region.

Finally, from a methodological point of view, our study confirmed that applying the Consistent PLS-SEM method in technology adoption research is an appropriate and effective choice and can be a tool for joining the mainstream international discourse. A common understanding regarding suitable research models and analytic methodology can make the proposed international, intercultural comparisons feasible.

Managerial implications

The future of non-state cryptocurrencies, including potential social network-backed cryptocurrencies described here, is very uncertain, highlighting this study's importance. Throughout the centuries, money, as a public good, has been intertwined with the sovereign state, and it could only gain trust if it had a proper institutional background. Although some new cryptocurrencies do not satisfy these conditions (Mersch, 2019), new ideas and solutions are being developed daily; thus, one of the reasons it is worthwhile to monitor potential user acceptance continuously is to integrate these results into technology and business decisions and policy development. Our results suggest that when introducing a new cryptocurrency, issuers should ensure that users perceive the new technology to be useful, value-adding, reliable, and low-risk. Issuers should preemptively deal with potential users' concerns regarding data and money protection and the level of abuse. Overall, large social networking sites have the resources and tools to implement and operate a system like FB Money. With the proper marketing and support, it could be a popular and secure solution for users, which they would use primarily because of its ease of use, usefulness, and reliability. Our practical suggestions are similar to Quan et al.'s (2023); a clear information campaign, trust-building communication, and developing effort-minimizing and risk-mitigating user-centric technology could be instrumental to a successful launch. Although some temporary success stories exist regarding word of mouth (WoM) marketing in crypto markets, we agree with Ter Ji-Xi et al. (2021) that WoM is not a deciding element for sustainable market entry.

Limitations and directions for future research

Finally, we would like to highlight the limitations of the present study. An important constraint is the sample's composition, as age, gender, or even level of education can significantly impact the measurement items and directly or indirectly on the intention to use (Faqih 2016; Treiblmaier et al. 2020; Sukumaran et al. 2022). Thus, we propose to test our model on samples of different compositions in the future. It would be advisable to look at differences between countries or regions, as different cultural or regulatory contexts might influence the user acceptance process (Jung et al. 2019; Quan et al. 2023). Many studies investigated the attitudes toward cryptocurrencies by examining a sample of qualified individuals (IT professionals, company executives, and investors) with relevant IT or business skills (Sohaib et al. 2020; Alharbi and Sohaib 2021; Palos-Sanchez et al. 2021; Jariyapan 2022; Sukumaran et al. 2022). This study's approach targeted the

general population (Treiblmaier et al. 2020), which could be a more advisable choice to understand cryptocurrencies' widespread use.

In addition to testing the research model presented, further examination of our database reveals other statistically significant relationships, such as the positive correlation between PE and SI or between FC and EE and between PR and PT; however, we did not expand our model with these interrelationships for two reasons. First, to test the UTAUT model in its original, internationally comparable format concerning the new technology, and second, to avoid an overfitted model, which could have weakened the generalizability of our results (Koltai 2013). Still, these might inspire future model extensions.

Although our study surveyed a hypothetical situation, which is common in TAM research, it is also a limitation—knowing that the implementation's actual business, technological, and regulatory characteristics could significantly affect the use of a future social network-backed cryptocurrency. New technology-enabled methodologies, such as behavioral data sciences (Saura et al. 2022), may provide different tools to analyze big sets of real-world data when it becomes available. Social media-backed cryptocurrencies might become part of the newly emerging metaverse concepts (Belk et al. 2022), thus providing new opportunities for related research.

Appendix 1

Table 6

Table 6 Indicators in the questionnaire and related statistics. *Source*: Behavioural intention, Performance expectancy and Effort expectancy: Venkatesh et al. (2003), Venkatesh et al. (2012), Rauniar et al. (2014), Nemeslaki et al. (2016), Mendoza-Tello et al. (2018), Moon and Hwang (2018), Arias-Oliva et al. (2019); Social influence and facilitating conditions: Venkatesh et al. (2003), Venkatesh et al. (2012), Rauniar et al. (2014), Mendoza-Tello et al. (2018), Moon and Hwang (2018), Arias-Oliva et al. (2019); Perceived trust: Rauniar et al. (2014), Nemeslaki et al. (2016), Mendoza-Tello et al. (2018), Moon and Hwang (2018); Perceived risk: Faqih (2016), Mendoza-Tello et al. (2018), Moon and Hwang (2018), Arias-Oliva (2019)

Indicator names	Questionnaire items (statements rated on a 7-point Likert scale, 1 corresponding to "strongly disagree" and the score of 7 corresponding to "strongly agree")	Mean	Median	Mode	Std. deviation	Factor loading
BI_1	I would use the FB Money	3.52	4	5	1.829	0.130
BI_2	I would try FB Money without any uncertainty	2.90	3	1	1.776	0.121
BI_4	I would encourage others to use FB Money	2.88	3	1	1.603	0.119
BI_5	I could see myself using FB Money	3.83	4	5	1.880	0.124
BI_6	I would be happy to accept money in FB Money	3.05	3	1	1.823	0.118
BI_7	I think I will use cryptocurrencies in the future	3.22	3	1	1.798	0.108

Table 6 (continued)

Indicator names	Questionnaire items (statements rated on a 7-point Likert scale, 1 corresponding to "strongly disagree" and the score of 7 corresponding to "strongly agree")	Mean	Median	Mode	Std. deviation	Factor loading
BI_8	I think that in the future I will use cryptocurrencies created and operated by social networking sites	2.99	3	1	1.698	0.125
BI_9	Whenever possible, I would use FB Money over other payment methods	2.42	2	1	1.624	0.127
BI_10	I would support the operation and spread of FB Money	2.90	3	1	1.727	0.131
BI_11	If I had a better understanding of how FB Money works, and could be sure of its reliability, I would be much more willing to try it	4.88	5	7	1.918	0.104
PE_1	I would find FB Money useful	3.92	4	4	1.812	0.133
PE_2	I would take the usage of money much more seriously through FB Money	2.57	2	1	1.685	0.101
PE_3	FB Money would make shopping easier for me	3.81	4	5	1.910	0.117
PE_4	FB Money would make me shop more often	3.07	3	1	1.799	0.095
PE_5	Using FB Money would increase my opportunities to get the products and services I need	3.28	3	1	1.882	0.103
PE_6	Using FB Money would help me to meet my needs faster	3.70	4	1	1.942	0.115
PE_7	Using FB Money would raise my standard of living	2.45	2	1	1.545	0.098
PE_8	FB Money would increase my efficiency when buying products and services	3.41	3	1	1.852	0.109
PE_9	FB Money would make certain products much easier to buy	3.89	4	1	1.993	0.109
PE_10	I would find FB Money useful in my personal life	3.05	3	1	1.758	0.126
PE_11	Using FB Money would improve my financial situation because it would give me much more control over my assets	2.23	2	1	1.555	0.093
PE_13	I would be much more careful about how I spend my FB Money than with traditional money	2.45	2	1	1.709	0.050
EE_1	Using FB Money seems simple and straightforward to me	4.34	5	5	1.793	0.171
EE_2	Compared to the current payment options. FB Money would make using money much faster	4.44	5	5	1.829	0.209
EE_3	I could quickly learn how to use FB Money	5.18	5	7	1.669	0.145
EE_4	Compared to the current payment options, FB Money would make it much easier to use money	4.11	4	5	1.809	0.228

Table 6 (continued)

Indicator names	Questionnaire items (statements rated on a 7-point Likert scale, 1 corresponding to "strongly disagree" and the score of 7 corresponding to "strongly agree")	Mean	Median	Mode	Std. deviation	Factor loading
EE_5	It would be easy for me to use FB Money	4.65	5	6	1.850	0.179
EE_6	I could soon get to the stage where I'm explaining to others how to use FB Money	4.59	5	6	1.906	0.156
EE_7	It would be easy for me to learn how to use FB Money	5.00	5	6	1.758	0.152
SI_1	People I care about would think I should use FB Money	2.81	3	1	1.631	0.142
SI_2	People around me would support me in using FB Money	3.17	3	1	1.671	0.140
SI_3	People I care about would certainly try FB Money	3.45	3	4	1.670	0.136
SI_4	My friends would probably follow me if I started using FB Money	3.48	4	4	1.675	0.158
SI_5	People around me would give me advice on how to use FB Money	3.74	4	5	1.782	0.082
SI_6	People whose opinions are valuable to me would want me to use FB Money	2.95	3	1	1.624	0.148
SI_7	FB Money would be popular among my friends	3.65	4	4	1.745	0.148
SI_8	On social networking site there would be people to help me when I have difficulties using FB Money	4.38	5	5	1.797	0.097
SI_9	People who influence me would think I should use FB Money	3.10	3	2	1.647	0.146
FC_1	The social networking site would have enough knowledge to run its own cryptocurrency	4.21	4	4	1.855	0.151
FC_2	I have the necessary knowledge to use FB Money	3.79	4	5	1.912	0.192
FC_3	The social networking site has the right communication channels for me to get the right technical assistance	4.53	5	6	1.811	0.176
FC_4	I could get help if I run into difficulties using FB Money	4.94	5	7	1.690	0.163
FC_5	I was already well acquainted with similar cryptocurrencies	2.31	2	1	1.641	0.154
FC_6	The social networking site would provide sufficient support to solve problems encountered when using FB Money	4.21	4	5	1.739	0.197
FC_7	The social networking site would build a proper payment system to allow me to shop at my convenience	4.18	4	5	1.788	0.254
PT_1	I have full confidence that the internet is safe enough for online shopping	3.63	4	3	1.812	0.078

Table 6 (continued)

Indicator names	Questionnaire items (statements rated on a 7-point Likert scale, 1 corresponding to "strongly disagree" and the score of 7 corresponding to "strongly agree")	Mean	Median	Mode	Std. deviation	Factor loading
PT_2	Overall, I trust social networking sites (Facebook)	3.03	3	1	1.691	0.101
PT_3	Overall, I could trust a social networking site (Facebook) that offers direct shopping	3.02	3	1	1.642	0.127
PT_4	Overall, I would be able to trust a social networking site (Facebook) that offers direct purchasing once the right regulations are in place	4.17	4	6	1.745	0.123
PT_5	I have full confidence that the legal and technical systems in place for online shopping will protect me	3.52	3	3	1.740	0.092
PT_6	I would feel safe my data and money when using FB Money	2.99	3	1	1.757	0.129
PT_7	I believe that FB Money would help reduce the number of abuses	2.81	2	1	1.674	0.125
PT_8	I think I could trust online purchases made on social networking sites (Facebook)	3.15	3	1	1.750	0.134
PT_9	I would trust companies when using FB Money	3.28	3	1	1.759	0.133
PT_10	I would trust the social networking site (Facebook) to properly control and monitor FB Money	3.18	3	1	1.820	0.135
PR_1	Using FB Money seems risky to me	4.91	5	5	1.605	0.132
PR_2	There are too many uncertainties about using FB Money	4.80	5	5	1.625	0.137
PR_3	I doubt that the FB Money system would work properly	4.22	4	4	1.689	0.138
PR_4	If I were using FB Money, I would be concerned about the potential for abuse due to lack of regulation	4.84	5	6	1.718	0.112
PR_5	I doubt that FB Money will necessarily increase people's well-being and satisfaction	5.04	5	7	1.705	0.144
PR_6	If I used FB Money, I would worry about losing my money	4.58	5	5	1.807	0.107
PR_7	Compared to other instruments/investments, FB Money is much riskier	4.20	4	4	1.705	0.116
PR_8	If I used FB Money, I would be worried about possible attacks	4.64	5	5	1.713	0.110
PR_9	I believe that the FB Money introduced on the social networking site would work poorly	3.86	4	3	1.736	0.139
PR_10	I would consider FB Money mostly just a scam	3.32	3	1	1.903	0.118

* The marked items were excluded from the analysis based on the researchers' consensus regarding the difficulties of interpretation. As these exclusions were made before any statistical analysis, they have no effect on the final results

Abbreviations

AVE	Average variance extracted
ANN	Artificial neural network
CR	Composite reliability
EE	Effort expectancy
FC	Facilitating conditions
HTMT	Heterotrait-monotrait ratio of correlations
IPMA	Importance-performance map analysis
MCFA	Multilevel confirmatory factor analysis
MSEM	Multilevel structural equation modelling
PE	Performance expectancy
PLS-SEM	Partial least square structural equation modelling
PLSc	Consistent partial least square structural modelling
PR	Perceived risk
PT	Perceived trust
SEM	Structural equation modelling
SI	Social influence
SRMR	Standardized root mean square residual
TAM	Technology acceptance model
TRI	Technology readiness index
UTAUT	Unified theory of acceptance and use of technology
VIF	Variance inflation factor

Acknowledgements
We thank the survey participants for their willingness to participate in this study.

Author contributions
MR collected and analysed the presented survey data and wrote the initial analysis. MA was a major contributor in planning the research design and writing the manuscript. All authors read and approved the final manuscript.

Funding
This research received no external funding.

Data availability
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Competing interests
The authors declare that they have no competing interests.

Received: 21 September 2022 Accepted: 6 May 2023
Published online: 21 February 2024

References

Ajzen I, Fishbein M (1980) Understanding attitudes and predicting social behavior. Prentice-Hall, Englewood Cliffs
Akartuna EA, Johnson SD, Thornton A (2022) Preventing the money laundering and terrorist financing risks of emerging technologies: an international policy Delphi study. Technol Forecast Soc Change 179:121632. https://doi.org/10.1016/j.techfore.2022.121632
Alalwan AA, Dwivedi YK, Rana NP (2017) Factors influencing adoption of mobile banking by Jordanian bank customers: extending UTAUT2 with trust. Int J Inf Manage 37(3):99–110. https://doi.org/10.1016/j.ijinfomgt.2017.01.002
Alharbi A, Sohaib O (2021) Technology readiness and cryptocurrency adoption: PLS-SEM and deep learning neural network analysis. IEEE Access 9:21388–21394. https://doi.org/10.1109/ACCESS.2021.3055785
Arias-Oliva M, Pelegrín-Borondo J, Matías-Clavero G (2019) Variables influencing cryptocurrency use: a technology acceptance model in Spain. Front Psychol 10:475–487. https://doi.org/10.3389/fpsyg.2019.00475
Arifovic J, Duffy J, Jiang JH (2017) Adoption of a new payment method: theory and experimental evidence. Staff Working Paper/Document de travail du personnel 2017-28. Bank of Canada. https://www.bankofcanada.ca/2017/07/staff-working-paper-2017-28/. Accessed 30 March 2020.
Askool S, Pan Y, Jacobs A, Tan C (2019) Understanding proximity mobile payment adoption through technology acceptance model and organisational semiotics: an exploratory study. In: UK Academy for Information Systems Conference Proceedings, University of Oxford, St Catherine's College. https://aisel.aisnet.org/ukais2019/38/
Belk R, Humayun M, Brouard M (2022) Money, possessions, and ownership in the metaverse: NFTs, cryptocurrencies, Web3 and wild markets. J Bus Res 153:198–205. https://doi.org/10.1016/j.jbusres.2022.08.031
Bezovski Z (2016) The future of the mobile payment as electronic payment system. Eur J Bus Manag 8(8):127–132
Bloomberg Businessweek (2019) Sources of brand discovery for Generation Z in the United States as of March 2019. Statista. https://www.statista.com/statistics/1024725/sources-brand-discovery-generation-z-us/. Accessed 30 March 2020

Brenig C, Accorsi R, Müller G (2015) Economic analysis of cryptocurrency backed money laundering. Paper presented at the 23rd European Conference on Information Systems, Münster, Germany https://dblp.org/db/conf/ecis/ecis2015.html
Cabanzo J (2022) Evaluation of cryptocurrencies adoption in colombia via unified theory of acceptance and use of technology (UTAUT). Dissertation, Linnaeus University.
Campino J, Brochado A, Rosa Á (2022) Initial coin offerings (ICOs): why do they succeed? Financ Innov 8(1):1–35. https://doi.org/10.1186/s40854-021-00317-2
Centobelli P, Cerchione R, Esposito E, Oropallo E (2021) Surfing blockchain wave, or drowning? Shaping the future of distributed ledgers and decentralized technologies. Technol Forecast Soc Change 165:120463. https://doi.org/10.1016/j.techfore.2020.120463
Chang SE, Chen YC, Lu MF (2019) Supply chain re-engineering using blockchain technology: a case of smart contract based tracking process. Technol Forecast Soc Chang 144:1–11. https://doi.org/10.1016/j.techfore.2019.03.015
Chang V, Baudier P, Zhang H, Xu Q, Zhang J, Arami M (2020) How Blockchain can impact financial services–The overview, challenges and recommendations from expert interviewees. Technol Forecast Soc Change 158:120166. https://doi.org/10.1016/j.techfore.2020.120166
Chin WW (2010) How to write up and report PLS analyses. In: Esposito Vinzi V, Chin WW, Henseler J, Wang H (eds) Handbook of partial least squares how to write up and report PLS analyses. Springer, Berlin, Heidelberg, pp 655–690
Chin W, Todd P (1995) On the use, usefulness, and ease of use of structural equation modeling in MIS research: a note of caution. MIS Q 19(2):237–246. https://doi.org/10.2307/249690
Chow YY, Sugathan SK, Kalid KS, Arshad NI (2019) What determines the acceptance of cryptocurrency in Malaysia? an analysis based on UTAUT2. Paper presented at the 23rd Pacific Asia Conference on Information Systems, X'ian, China
Cohen J (1988) Statistical power analysis for the behavioral sciences, 2nd edn. Lawrence Erlbaum, Hillsdale
Crosby M, Pattanayak P, Verma S, Kalyanaraman V (2016) Blockchain technology: beyond bitcoin. Appl Innov Rev 2:6–19
Davis FD (1986) A technology acceptance model for empirically testing new end-user information systems: theory and results. Massachusetts Institute of Technology, Cambridge
Davis FD (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q 13(3):319–340. https://doi.org/10.2307/249008
Davis FD, Bagozzi R, Warshaw PR (1989) User acceptance of computer technology: a comparison of two theoretical models. Manage Sci 35(8):982–1003. https://doi.org/10.1287/mnsc.35.8.982
Dijkstra TK, Henseler J (2015) Consistent partial least squares path modeling. MIS Q 39(2):297–316. https://doi.org/10.25300/MISQ/2015/39.2.02
Dijkstra TK, Schermelleh-Engel K (2014) Consistent partial least squares for nonlinear structural equation models. Psychometrika 79(5):585–604. https://doi.org/10.1007/s11336-013-9370-0
Eriksson K, Kerem K, Nilsson D (2005) Customer acceptance of internet banking in Estonia. Int J Bank Mark 23(2):200–216. https://doi.org/10.1108/02652320510584412
European Central Bank (2012) Virtual currency schemes. https://www.ecb.europa.eu/pub/pubbydate/html/index.en.html. Accessed 30 March 2020
Fang F, Ventre C, Basios M, Kanthan L, Martinez-Rego D, Wu F, Li L (2022) Cryptocurrency trading: a comprehensive survey. Financ Innov. https://doi.org/10.1186/s40854-021-00321-6
Faqih K (2016) An empirical analysis of factors predicting the behavioral intention to adopt Internet shopping technology among non-shoppers in a developing country context: does gender matter? J Retail Consum Serv 30:140–164. https://doi.org/10.1016/j.jretconser.2016.01.016
Finstad K (2010) Response interpolation and scale sensitivity: evidence against 5-point scales. J Usability Stud 5(3):104–110
Foremar M, Löwhagen J (2021) Acceptans av bitcoin : Ett föreslaget ramverk. Dissertation, Uppsala University.
Fornell C, Larcker DF (1981) Evaluating structural equation models with unobservable variables and measurement error. J Mark Res 18(1):39–50. https://doi.org/10.1177/002224378101800104
Füstös L, Kovács E, Meszéna GY, Simonné MN (2004) Alakfelismerés: Sokváltozós statisztikai módszerek. Új Mandátum Könyvkiadó, Budapest
García-Corral FJ, Cordero-García JA, de Pablo-Valenciano J, Uribe-Toril J (2022) A bibliometric review of cryptocurrencies: how have they grown? Financ Innov 8(1):1–31. https://doi.org/10.1186/s40854-021-00306-5
García-Monleón F, Danvila-del-Valle I, Lara FJ (2021) Intrinsic value in crypto currencies. Technol Forecast Soc Change 162:120393. https://doi.org/10.1016/j.techfore.2020.120393
Garson GD (2016) Partial least squares: regression & structural equation models. Statistical Associates Publishers, Asheboro
Gunawan FE, Novendra R (2017) An analysis of Bitcoin acceptance in Indonesia. ComTech 8(4):241–247. https://doi.org/10.21512/comtech.v8i4.3885
Hair JF Jr, Black WC, Babin BJ, Anderson RE (2014) Multivariate data analysis. Pearson Education Limited, Harlow
Hair JF, Risher JJ, Sarstedt M, Ringle CM (2019) When to use and how to report the results of PLS-SEM. Eur Bus Rev 31(1):2–24. https://doi.org/10.1108/EBR-11-2018-0203
Hamakhan YTM (2020) The effect of individual factors on user behaviour and the moderating role of trust: an empirical investigation of consumers' acceptance of electronic banking in the Kurdistan Region of Iraq. Financ Innov 6(1):1–29. https://doi.org/10.1186/s40854-020-00206-0
Henseler J, Ringle CM, Sinkovics RR (2009) The use of partial least squares path modeling in international marketing. Adv Int Mark 20:277–319. https://doi.org/10.1108/S1474-7979(2009)0000020014
Henseler J, Ringle CM, Sarstedt M (2015) A new criterion for assessing discriminant validity in variance-based structural equation modelling. J Acad Mark Sci 43(1):115–135. https://doi.org/10.1007/s11747-014-0403-8
Hobbs LR (2020) Facebook's Libra: The social media giant's pursuit of global financial inclusion. N C Bank Inst 24(1):331–363

Humbani M, Wiese M (2017) A cashless society for all: determining consumers' readiness to adopt mobile payment services. J Afr Bus 19(3):409–429. https://doi.org/10.1080/15228916.2017.1396792
Jariyapan P, Mattayaphutron S, Gillani SN, Shafique O (2022) Factors influencing the behavioural intention to use cryptocurrency in emerging economies during the COVID-19 pandemic: based on technology acceptance model 3, perceived risk, and financial literacy. Front Psychol 12:814087. https://doi.org/10.3389/fpsyg.2021.814087
Jung K, Park J, Phan, NQ, Bo C, Gim G (2019) An international comparative study on the intension to using crypto-currency. In: Lee R (ed) Applied Computing and Information Technology. The 19th International Arab Conference on Information Technology, Islamic University of Lebanon, Lebanon. Studies in Computational Intelligence, vol 788. Springer, Cham. pp. 104–123. https://doi.org/10.1007/978-3-319-98370-7_9
Kazár K (2014) A PLS-útelemzés és alkalmazása egy márkaközösség pszichológiai érzetének vizsgálatára. Stat Szle 92(1):33–52
Khalilzadeh J, Tasci ADA (2017) Large sample size, significance level, and the effect size: solutions to perils of using big data for academic research. Tour Manage 62:89–96. https://doi.org/10.1016/j.tourman.2017.03.026
Khechine H, Raymond B, Augier M (2020) The adoption of a social learning system: intrinsic value in the UTAUT model. Br J Edu Technol 51(6):2306–2325. https://doi.org/10.1111/bjet.12905
Koltai J (2013) A strukturális egyenletek modellezésének bemutatása egy komplex dizájnú kutatás (ISPJ) adatain keresztül / Demonstration of structural equations modeling through data from a complex research design. Szociológiai Szemle 23(2):31–51
Koroma J, Rongting Z, Muhideen S, Akintunde T, Simeon AT, Dauda S, Sawaneh II (2022) Assessing citizens' behavior towards blockchain cryptocurrency adoption in the Mano River Union States: Mediation, moderation role of trust and ethical issues. Technol Soc 68:101885. https://doi.org/10.1016/j.techsoc.2022.101885
Lansiaux E, Tchagaspanian N, Forget J (2022) Community impact on a cryptocurrency: Twitter comparison example between Dogecoin and Litecoin. Front Blockchain 5:829865. https://doi.org/10.3389/fbloc.2022.829865
Lee Y, Kozar AK, Larsen K (2003) The technology acceptance model: past, present, and future. Commun Assoc Inf Syst 12(50):752–780. https://doi.org/10.17705/1CAIS.01250
Levey S (2022) Statement by Diem CEO Stuart levey on the sale of the Diem Group's assets to silvergate. https://www.diem.com/en-us/updates/stuart-levey-statement-diem-asset-sale/. Accessed 20 August 2022.
Li T, Kou G, Peng Y, Yu PS (2022) An integrated cluster detection, optimization, and interpretation approach for financial data. IEEE Trans Cybern 52(12):13848–13861. https://doi.org/10.1109/TCYB.2021.3109066
Marcoulides GA, Chin WW, Saunders C (2009) A critical look at partial least squares modeling. MIS Q 33(1):171–175. https://doi.org/10.2307/20650283
Mashatan A, Sangari MS, Dehghani M (2022) How perceptions of information privacy and security impact consumer trust in crypto-payment: an empirical study. IEEE Access 10:69441–69454. https://doi.org/10.1109/ACCESS.2022.3186786
Mendoza-Tello JC, Mora H, Pujol-López FA, Lytras MD (2018) Social commerce as a driver to enhance trust and intention to use cryptocurrencies for electronic payments. IEEE Access 6(10):50737–50751. https://doi.org/10.1109/ACCESS.2018.2869359
Merhi M, Hone K, Tarhini A (2019) A cross-cultural study of the intention to use mobile banking between Lebanese and British consumers: Extending UTAUT2 with security, privacy and trust. Technol Soc 59:101151. https://doi.org/10.1016/j.techsoc.2019.101151
Mersch Y (2019) Money and private currencies: reflections on libra. Paper presented at the European Central Bank Legal Conference, Frankfurt am Main. https://www.ecb.europa.eu/press/key/date/2019/html/ecb.sp190902~aedded9219.en.html
Miraz MH, Hasan MT, Rekabder MS, Akhter R (2022) Trust, transaction transparency, volatility, facilitating condition, performance expectancy towards cryptocurrency adoption through intention to use. J Manag Inf Decis Sci 25(S5):1–20
Moon Y, Hwang J (2018) Crowdfunding as an alternative means for funding sustainable appropriate technology: acceptance determinants of backers. Sustainability 10(5):1456–1473. https://doi.org/10.3390/su10051456
Murphy H, Stacey K (2019) Where it all went wrong for Facebook's Libra. Financial Times online. https://www.ft.com/content/6e29a1f0-ef1e-11e9-ad1e-4367d8281195. Accessed 20 August 2022.
Murphy H, Stacey K (2022) Facebook Libra: the inside story of how the company's cryptocurrency dream died. Financial Times online. https://www.ft.com/content/a88fb591-72d5-4b6b-bb5d-223adfb893f3. Accessed 20 August 2022.
Murphy H (2022) Facebook owner Meta targets finance with 'Zuck Bucks' and creator coins. Financial Times online. https://www.ft.com/content/50fbe9ba-32c8-4caf-a34e-234031019371. Accessed 20 August 2022.
Nagy S, Hajdú N (2021) Consumer acceptance of the use of artificial intelligence in online shopping: evidence from Hungary. Amfiteatru Econ 23(56):155–173. https://doi.org/10.24818/EA/2021/56/155
Napoleoncat (2019) Facebook users in Hungary as of December 2019, by age and gender of users (in percentage). Statista. https://www.statista.com/statistics/1029767/facebook-users-hungary-age-gender/. Accessed 30 March 2020.
Nemeslaki A, Aranyossy M, Sasvári P (2016) Could on-line voting boost desire to vote? —technology acceptance perceptions of young Hungarian citizens. Gov Inf Q 33(4):705–714. https://doi.org/10.1016/j.giq.2016.11.003
Palos-Sanchez P, Saura JR, Ayestaran R (2021) An exploratory approach to the adoption process of bitcoin by business executives. Mathematics 9(4):355. https://doi.org/10.3390/math9040355
Presthus W, O'Malley NO (2017) Motivations and barriers for end-user adoption of bitcoin as digital currency. Proced Comput Sci 121:89–97. https://doi.org/10.1016/j.procs.2017.11.013
Qu B, Wei L, Zhang Y (2022) Factors affecting consumer acceptance of electronic cash in China: an empirical study. Financ Innov 8(1):1–19. https://doi.org/10.1186/s40854-021-00312-7
Quan W, Moon H, Kim S, Han H (2023) Mobile, traditional, and cryptocurrency payments influence consumer trust, attitude, and destination choice: Chinese versus Koreans. Int J Hosp Manag 108:103363. https://doi.org/10.1016/j.ijhm.2022.103363
Raimundo Júnior GDS, Palazzi RB, Tavares RDS, Klotzle MC (2022) Market stress and herding: a new approach to the cryptocurrency market. J Behav Financ 23(1):43–57. https://doi.org/10.1080/15427560.2020.1821688

Rauniar R, Rawski G, Yang J, Johnson B (2014) Technology acceptance model (TAM) and social media usage: an empirical study on Facebook. J Enterp Inf Manag 27(1):6–30. https://doi.org/10.1108/JEIM-04-2012-0011
Ribeiro-Navarrete S, Saura JR, Palacios-Marqués D (2021) Towards a new era of mass data collection: assessing pandemic surveillance technologies to preserve user privacy. Technol Forecast Soc Change 167:120681. https://doi.org/10.1016/j.techfore.2021.120681
Ringle CM, Wende S, Becker JM (2015) SmartPLS 3. SmartPLS GmbH, Boenningstedt. https://www.smartpls.com/
Salem S, Ali N (2019) A proposed adoption model for blockchain technology using the unified theory of acceptance and use of technology (UTAUT). Open Int J Inf 7(2):75–84
Saura JR, Ribeiro-Soriano D, Palacios-Marqués D (2022) Assessing behavioral data science privacy issues in government artificial intelligence deployment. Gov Inf Q 101679:1–17. https://doi.org/10.1016/j.giq.2022.101679
Schierz PG, Schilke O, Wirtz BW (2010) Understanding consumer acceptance of mobile payment services: an empirical analysis. Electron Commer Res Appl 9(3):209–216. https://doi.org/10.1016/j.elerap.2009.07.005
Sebastião H, Godinho P (2021) Forecasting and trading cryptocurrencies with machine learning under changing market conditions. Financ Innov. https://doi.org/10.1186/s40854-020-00217-x
Sohaib O, Hussain W, Asif M, Ahmad M, Mazzara M (2020) A PLS-SEM neural network approach for understanding cryptocurrency adoption. IEEE Access 8(1):13138–13150. https://doi.org/10.1109/ACCESS.2019.2960083
Statcounter (2020) Social media stats Hungary. Statcounter. https://gs.statcounter.com/social-media-stats/all/hungary. Accessed 30 March 2020.
Statista (2021) Share of people investing in cryptocurrency in Poland from 2018 to 2021, by age. Statista. https://www.statista.com/statistics/1304137/poland-share-of-people-investing-in-cryptocurrency/. Accessed 20 August 2022.
Statista (2022) Social media usage in Hungary - statistics & facts. Statista. https://www.statista.com/topics/6592/social-media-usage-in-hungary/#dossierKeyfigures. Accessed 20 August 2022.
Steinmetz F, von Meduna M, Ante L, Fiedler I (2021) Ownership, uses and perceptions of cryptocurrency: results from a population survey. Technol Forecast Soc Chang 173(121073):1–19. https://doi.org/10.1016/j.techfore.2021.121073
Stix H (2020) Which factors drive consumers to adopt crypto-assets? Results from an Austrian survey. The European Money and Finance Forum, SUERF Policy Note 180:1–11. https://www.financialforum.be/en/articles/which-factors-drive-consumers-adopt-crypto-assets-results-austrian-survey
Sukumaran S, Bee TS, Wasiuzzaman S (2022) Cryptocurrency as an investment: the Malaysian context. Risks (MDPI) 10(86):1–17. https://doi.org/10.3390/risks10040086
Swan M (2017) Anticipating the economic benefits of blockchain. Technol Innov Manag Rev 7(10):6–13. https://doi.org/10.22215/timreview/1109
Ter Ji-Xi J, Salamzadeh Y, Teoh AP (2021) Behavioral intention to use cryptocurrency in Malaysia: an empirical study. Bottom Line 34(2):170–197. https://doi.org/10.1108/BL-08-2020-0053
Thelwall M (2018) Can social news websites pay for content and curation? The SteemIt cryptocurrency model. J Inf Sci 44(6):736–751. https://doi.org/10.1177/0165551517748290
Treiblmaier H, Leung D, Kwok AOJ, Tham A (2020) Cryptocurrency adoption in travel and tourism—an exploratory study of Asia Pacific Travellers. Curr Issue Tour 24(22):3165–3181. https://doi.org/10.1080/13683500.2020.1863928
tripleA (2022) Cryptocurrency across the world. tripleA. https://triple-a.io/crypto-ownership-data/. Accessed 20 August 2022.
Venkatesh V, Morris MG, Davis GB, Davis FD (2003) User acceptance of information technology: toward a unified view. MIS Q 27(3):425–478. https://doi.org/10.2307/30036540
Venkatesh V, Thong JY, Xu X (2012) Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. MIS Q 36(1):157–178. https://doi.org/10.2307/41410412
Wang Y, Lucey BM, Vigne SA, Yarovaya L (2022) The effects of central bank digital currencies news on financial markets. Technol Forecast Soc Change 180:121715. https://doi.org/10.1016/j.techfore.2022.121715
We Are Social, Hootsuite, Datareportal (2022a) Most popular social networks worldwide as of January 2022, ranked by number of monthly active users (in millions). Statista. https://www.statista.com/statistics/272014/global-social-networks-ranked-bynumber-of-users/. Accessed 20 August 2022.
Xu M, Chen X, Kou G (2019) A systematic review of blockchain. Financ Innov. https://doi.org/10.1186/s40854-019-0147-z
Yaffe-Bellany D, Griffith E, Livni E (2022) Cryptocurrencies melt down in a 'Perfect Storm' of fear and panic. The New York Times. https://www.nytimes.com/2022/05/12/technology/cryptocurrencies-crash-bitcoin.html. Accessed 20 August 2022.
Yoon E, Guffey HJ, Kijewski V (1993) The effects of information and company reputation on intentions to buy a business service. J Bus Res 27(3):215–228. https://doi.org/10.1016/0148-2963(93)90027-M
Zhang H, Kou G (2022) Role-based multiplex network embedding. In: Proceedings of the 39 th International Conference on Machine, Learning, Baltimore, Maryland, USA, PMLR 162

Publisher's Note