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Is Cryptocurrency Technology Adoption Effective in Individuals' Investment Behavior?*

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ABSTRACT

Behavioral intentions of individuals occur as a result of positive or negative evaluations of any object or idea. It is a determinant that has a significant impact on transforming an individual's ideas into behavior. The structure and effectiveness of information in financial markets are vital to understanding the behavior of investors, because the digital economy that develops with crypto money is psychologically significantly different from the cash economy. Accordingly, this study examined the main intentions or motivational factors that persuade individuals to invest in cryptocurrencies and the way these factors affect the actual investment behavior. This was done in the context of behavioral considerations in finance through the Unified Technology Acceptance Model (UTAUT). As a result of the model estimation, it has been concluded that the performance expectation is an important factor behind the investment behavior, and its effect changes considering positive or negative news about the pricing of cryptocurrencies.

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1. Introduction

As a result of the abandonment of the dollar's indexation to gold in 1971, the period we are still in is defined as *Money 3.0*, which expresses the fact that money does not have a physical equivalent and turns into a purely conceptual acceptance. It is stated that this period in which human beings are in is in the process of maturation, but it will end in a short time (Birch, 2017). With the digital experiences of societies in the *Money 3.0* era, technology over money – which is a payment tool – becomes an essential distinguishing factor. *Money 4.0* period, which is a collective whole of technology and value chain organizations as a result of societies having a more comfortable and faster experience and institutions saving time and cost, makes its presence felt for the near future. As one of the added values that is thought to dominate this period, crypto money (digital money) showed itself in today's *Money 3.0* period. As a result of the meeting of the financial services sector with technology in the last ten years, it has changed the stagnation feature of this field and has initiated the transformation. The fact that the actors in financial services can transform into each other over time is a process of innovation and change brought about by the technology in question. The reform in communication with digital information technologies has brought up a new phenomenon and question that will change the structure of money and its definition.

The ability to digitally buy and sell tangible assets and transfer them is the crypto money, which is effective in the reform mentioned in financial services, and the blockchain technology, which is the infrastructure of these currencies (Polat & Akbıyık, 2019). The most innovative technology that comes with cryptocurrencies is that it has a decentralized structure. The database is not the storage of transactions on a single server, but the fact that all devices in the blockchain network act as servers and create a decentralized structure (Böhme et al., 2015). The worldwide cryptocurrency concept literature emerged in 2009 with the article titled "Bitcoin: A Peer-to-Peer Electronic Cash System" by a person or group named Satoshi Nakamoto. At first, the crypto money was called Bitcoin, which attracted attention from individual investors, gained popularity over time and attracted the attention of some institutions and organizations, and started to be used as a payment tool. Moreover, a new stock market has emerged in which an ordinary internet user investor coexists with licensed large investors with very high investment power. Today, it is seen that this technological infrastructure is used in the payments system, although it is at the beginning level. This situation signals that the Money 4.0 period, which will be experienced shortly, will be dominated by cryptocurrencies that are not dependent on a specific authority. It is foreseen that blockchain hybrid products, which also form the infrastructure of artificial intelligence and cryptocurrencies, will come to the fore (Claian et al., 2016). With the transition to the Money 4.0 process, it is thought that the role of cryptocurrencies and blockchain technology in the economy will reach profound dimensions (Birch, 2017). It is seen that the use of crypto money is increasing rapidly in payments. It is thought that this situation will facilitate economic and social life by positively affecting production, employment, and national income (Ekşioğlu, 2017). However, it should be said that there are some disadvantages in this regard, with illegal activities with cryptocurrencies, tax evasion, money laundering, and legal uncertainty being the most important ones.

Individuals often see cryptocurrencies as *"*used for illegal purposes only." On the other hand, it is seen that the opinions in the direction of "There are many innovative uses that are completely legal" are less in the individual sense. This prejudice against usability continues even in societies with high technological development (Popper, 2015). In a study of individuals' cryptocurrency usage attitudes, it was found that about 75% of them were highly doubtful about its security (CSBS, 2017). Many studies have examined the value formation determinants of this new medium of exchange and currency against traditional assets (e.g., Baur & McDermott, 2012; Feng et al., 2018; Hayes, 2017). The paramount importance of these studies is that the structure and effectiveness of information in financial markets are vital in understanding the behavior of investors (Madhavan, 2000). The reason is that it is thought that the digital economy that develops with crypto money differs significantly from the cash economy (Prelec & Loewenstein, 1998). For example, in a study examining individuals playing online games called Texas Hold'em, it was seen that individuals used chips instead of actual cash. As a result of chip use, it was determined that the act of gambling increased significantly (Lapuz & Griffiths, 2010). From this point of view, the variables shaping the behavior of investors, the factors behind the investment thought of individuals, and the necessity of examining other possible factors

besides financial factors are understood. Chatterjee and Rose (2012) suggest that more empirical research is needed on online spending and investment mechanisms. However, individuals' behavioral tendencies and intentions to continue using a particular technology can be predicted by their behavior towards that technology. Determining the main factors in investors' acceptance of crypto money technology is essential in knowing its effects on current and future investment behavior.

Information, which forms the basis of financial investment decisions, can affect the prices of investment instruments. It has the feature of covering all data and news – micro/macro, positive/negative, or disclosed/undisclosed. For this reason, all kinds of information coming to the market have value in terms of financial investment decisions. Individual investors, the basic unit of the investment hierarchy (Barak, 2008), also make decisions regarding their investments in line with this information. A rational investor aims to achieve the highest return with the lowest risk. While deciding for any investment vehicle, the risk and expected return of the investment are the two main criteria. Among the two investment alternatives with the same risk level, there is a tendency to choose the one with the higher return and the one with the lower risk between the two investment alternatives with the same expected return. However, the highly volatile cryptocurrency market is also speculative. While investors can make significant gains in a short time, they can also experience significant losses in a short time. Despite all these negativities, the demand for the crypto money market is increasing rapidly today. David Gerard (2018) emphasized that "Bitcoin is more about psychology than technology" in understanding the cryptocurrency market dynamics and examining the reactions. Investors are defined as "investors who start portfolio management more as a hobby and try to manage their funds with little or no professional support" (Gerard, 2018:1). This situation indicates that investors' thoughts on risk and return are not professional like institutional investors. Gerard states that psychological characteristics are highly effective in investment decisions.

When investors are not fully informed, they may exaggerate negative news about a vehicle in their market perceptions. Perception is "the process of selecting, organizing and interpreting information inputs to create a meaningful view of the world" (Kotler, 2000:428). Individuals' perceptions of the risks associated with investment instruments play a decisive role in the demand for these instruments (Hilferding, 1981). Since most individual investors are afraid of the unknown, the way risk is perceived has become one of the critical issues that behavioral finance focuses on. According to behavioral finance, the concept of risk, which impacts investment decisions, is subjective. As a result of this subjectivity, perceived risk is more critical than expected risk. Risk perception is defined as "the subjective judgment of individuals about the severity and characteristics of risk" (Gürsoy et al., 2008:22). On the other hand, perceived risk perception can be expressed as a tendency towards different behaviors as a result of the possibility of different perceptions and interpretations of the existing stimuli regarding the investment to be made by individuals. At this point, it becomes necessary to examine the stimuli that cause differences in the investment behavior of individuals. Considering the environmental factors, it is possible to come across investment talks in every environment today. Reasons such as the widespread use of the Internet, the development of technology, and the increase in social platforms are effective in investment behavior. While it was more challenging to access information for individual investors in the past, due to the development of technology, many opportunities have emerged from observing the comments of other market participants. Many investors make investment decisions by determining the news in the market in line with their ideas. According to behavioral finance, giving different weights to information is a behavioral trend as common as searching for confirmatory information. In general, pessimistic investors respond to positive information/news, while optimistic investors respond weakly to negative information/news (Duong et al., 2017). In this way, objectivity deteriorates in decision-making behavior and deviates from rationality. Therefore, in order to understand the dynamics of crypto money technology, which is in increasing demand, it is necessary to examine its effect on investors. Although there exist a few studies in the literature to determine the different behavioral characteristics of crypto money investors, no study has been found on how this new technology is evaluated by individuals and how it affects investment decisions. For this reason, the source of motivation in the article is the necessity of focusing on the critical factors that should be considered in the crypto money market, which is still developing and has a chaotic structure. The study aims to analyze the determinants of changing money technology from the perspective of investor behavior. Various

theories have been developed to reveal how investors adapt to technology. In recent years, it is known that many studies have analyzed Bitcoin and its effect. The main common feature in these studies is the investigation of the acceptance of cryptocurrencies and the reason users use or make investment decisions. Therefore, the question "What are the main intentions or motivational factors that persuade individuals to invest in cryptocurrencies and how do these factors affect the actual investment behavior?" was examined through the Unified Technology Acceptance Model.

2. Conceptual Framework and Hypothesis Development

Various theories have emerged regarding the acceptance and adoption of technology in continuous development. The Technology Acceptance Model (Davis et al., 1989), Diffusion of Innovation Theory (Rogers, 1995), Unified Technology Acceptance Model, and Planned Behavior Theory (Tajeddini et al., 2021, 2022; Taylor & Todd, 1995) are among the accepted theories in the literature. In this part of the study, the most widely used theories in the field of social psychology, which were developed to explain attitudes and behaviors, are mentioned (Ajzen, 1985; Cheng & Terry 2008; Fishbein & Ajzen, 1975). Thus, the Unified Technology Acceptance Model will be explained.

The Technology Acceptance Model (Davis, 1986) is widely used to predict users' acceptance of information technologies and explain their behavior (Davis & Venkatesh, 1996; Tajeddini & Nikdavoodi, 2014; Davis & Venkatesh, 1996). Reasoned Action and Planned Behavior Theory is frequently used because of its solid theoretical infrastructure and testability. Behavioral theories in psychology are the basis of theories examining technology acceptance and use. While Reasoned Action Theory uses theoretical basis and infrastructure, Technology Acceptance Model explains the relationship between variables (Davis, 1989; Gamage & Tajeddini, 2022). In this respect, it is expressed as an adapted version of the Reasoned Action Theory. Planned Behavior Theory is similarly a theory used to explain the complex structure of behavior. The feature that distinguishes it from the Reasoned Action Theory is the perceived behavior control, which also expresses individuals' perceptions about the ease or difficulty of performing the perceived behavior.

In order to call a concept as innovation, it is sufficient that it is not in a known or recognized design and has never been used by individuals/institutions before (Rogers, 1995). Models have been rearranged as researchers' perceptions of technology may vary depending on applications and regions in different situations (Szajna, 1996). Another reason for revising and expanding the Technology Acceptance Model is that system designers generally receive feedback on the ease of use and utility. However, they do not receive enough actionable feedback on essential aspects of information technologies (Wixom & Todd, 2005). In addition to the Technology Acceptance Model, models such as Technology Acceptance Model 2 (Venkatesh & Davis, 2000) and Technology Acceptance Model 3 (Venkatesh & Bala, 2008) are also included in the literature with the addition of different variables to the model to explain the acceptance of new technologies. In addition, there are also non-theorized uses of models called the Unified Technology Acceptance Model (Agrebi & Jallais, 2015; Chen et al., 2002; Gamage et al., 2022; Moon & Kim, 2001; Natarajan et al., 2017). However, in the technology acceptance studies in the literature, it is stated that the need for a combined model arises because the selection of one of the models ignores the different contributions provided by the others (Venkatesh et al., 2003). For this reason, the Unified Theory of Acceptance and Use of Technology (UTAUT) was created to combine the theories and models used in literature to explain the information systems usage behavior. The model that emerged via the consideration of researches on the intention to use technology in the fields of information technologies, psychology, and sociology is given in Figure 1.

The UTAUT model has four main determinants, namely intention to use, performance expectation, social impact, and facilitating conditions. Although these are the main determinants, they are the key factors that directly affect the behavioral intention of individuals to use new technologies. Creating the model revealed that attitude, self-efficacy, and technology anxiety are not directly determining factors.

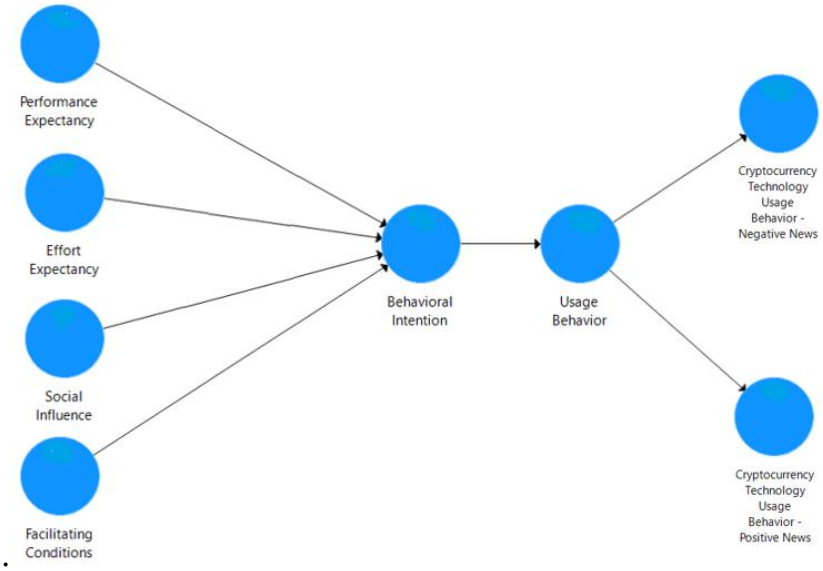

Figure 1. Research Model
Source: Venkatesh et al. (2003, p:447).

Table 1. Definitions of Constructs of the UTAUT Model and Research Hypotheses

Constructs	**Definition (Goswami & Dutta, 2016, p. 53)**	**Research Hypotheses**
Performance Expectancy	The degree to which an individual believes that their use of technology will help them achieve gains in facilitator performance	H_{1a}: The performance expectation regarding the use of crypto currency technology has an effect on the usage intention. H_{1b}: The performance expectation regarding the use of cryptocurrency technology has an impact on the actual investment behavior.
Effort Expectancy	Individuals' expectations regarding the ease of use of technology	H_{2a}: The expectation of effort regarding the use of cryptocurrency technology has an impact on the usage intention. H_{2b}: The expectation of effort regarding the use of cryptocurrency technology has an impact on the actual investment behavior.
Social Influence	The degree to which an individual believes it is important to start and continue using technology by those he or she deems important.	H_{3a}: Social influence on the use of cryptocurrency technology has an impact on the intention to use it. H_{3b}: The social impact on the use of cryptocurrency technology has an impact on the actual investment behavior.
Facilitating Conditions	Expected level of organizational and technical infrastructure that can support technology use	H_{4a}: Facilitating conditions for the use of cryptocurrency technology have an impact on the intention to use it. H_{4b}: Facilitating conditions for the use of cryptocurrency technology have an impact on the actual investment behavior.
Behavioral Intention	An indicator of the readiness of individuals to perform a certain behavior	H_5: The intention to use cryptocurrency technology has an impact on the actual investment behavior.

According to the UTAUT model, performance and effort expectancy, and social impact are independent variables that determine the intention to use technology. Behavioral intention and facilitating conditions variables are the variables that determine technology usage behavior (Table 2). The Unified Technology Acceptance Model contributes to the literature by including the combined explanatory power and critical regulatory effects of each model but preserving the basic structure (Venkatesh et al., 2003). Studies in the literature have revealed that the UTAUT model successfully integrates previous models, explaining the change in behavioral intention and usage behavior better than previous models (Kijsanayotin et al., 2009). In this direction, in Table 1, the tudies addressing the

question "What are the main intentions or motivation factors that persuade individuals to invest in cryptocurrencies?" are listed. These studies have discussed and examined the crypto money market based on the Technology Acceptance Model.

Table 2. Literature Review

Authors	Research
Lee (2015)	It was taken into account that privacy is determined by the impact of users' concerns about their data and the perceived ease of use of the cryptocurrency. The effect of the privacy variable on the perceived usefulness of Bitcoin was identified.
Junadi & Fenrianto (2015)	The relationship of Bitcoin and cryptocurrency with perceived security and the way consumers use Bitcoin was determined.
Folkinshteyn & Lennon (2016)	The impact of privacy provided to consumers using Bitcoin and its impact on perceived ease of use and thus acceptance were identified.
Diniz et al. (2016)	The effect of trust on perceived usefulness was investigated and the effect of this variable on Bitcoin adoption was determined.
Gunawan & Novendra (2017)	It was determined that facilitating conditions have a positive effect on the intention to use cryptocurrencies.
Mendoza-Tello et al. (2018)	It found that the perceived usefulness of the intention to use cryptocurrencies in electronic payments was the most influential factor. In addition, no direct effect of social influence on intention to use was found.
Schaupp & Festa (2018)	It was determined that the social influence and perceived behavioral control variable are important on the intention to use cryptocurrencies.
Shahzad vd. (2018)	In the acceptance study conducted in China, it was stated that both perceived usefulness and perceived ease of use have a significant effect on the intention to use Bitcoin.
Arias-Oliva et al. (2019)	In their study with university-educated adults with basic internet knowledge in Spain, they stated that perceived risk was not an effective variable. It was determined that the performance expectation of the cryptocurrency was the most influential variable in consumer behavior.
Chow et al. (2019)	It was determined that facilitating conditions have a positive effect on the intention to use cryptocurrencies.
Öksüz Karademir & Kuş (2020)	It was shown that the most effective variables in the tendency of crypto money ownership in Turkey were facilitating conditions and performance expectation. Coin-optimists saw cryptocurrencies as a means to achieve their goals. It was observed that observers act in line with the information they had obtained, and finally, coin-skeptics did not own crypto money due to economic loss.
Kabak & Çelik (2020)	It was determined that the most effective variables of perceived risk and intention to use cryptocurrencies are perceived risk, trust, perceived pleasure, perceived usefulness, perceived ease of use, perceived speed of access, and cost.
Gupta et al. (2020)	In the study, in which investor intention was scaled, it was determined that the least influential factor was effort expectancy, and the most influential factor was social impact.
Alazab et al. (2021)	Using structural equation modeling, it was found that UTAUT models positively affect the key factors that affect supply chain employees' willingness to adopt blockchain.
Steinmetz et al. (2021)	It was found that knowledge and trust mediate the basis of investing in cryptocurrencies through the UTAUT model.
Fitrianie et al. (2021)	Both performance and effort expectancy were found to be positively correlated with the intention to use new technologies such as health support applications.
Almarashdeh et al. (2021)	Performance and effort expectancy were found to be positively correlated with the intention to use bitcoin technologies.
Zhu et al. (2022)	Both performance and effort expectancy were found to be positively correlated with the intention to use new technologies such as health support applications.

Several studies, given in Table 2, indicate that cryptocurrencies exist in the modern digital world. When evaluated in general, the behavioral intentions of individuals occur as a result of positive or negative evaluations of any object or idea. It is a determinant that has a significant impact on transforming individuals' ideas into behavior (Kotler, 2000). For this reason, it is possible to examine the effect of crypto money technology, which has a volatile nature, on the investment behavior of individual investors.

The scale developed by Grable and Lytton (1999) was used to determine the actual investment behavior, which is aimed to be examined for the purpose of the study. The relevant scale has been adapted for how individuals will invest if they have money and money is donated to them. At the same

time, in the case of positive and negative news about the crypto money market, it was desired to determine their behavior according to the probability of winning and losing in their investments. The main reason for making this distinction is that the decisions made by people in the markets are not rational and many factors that vary from person to person are effective in market behavior. Investors are under the influence of striking information, sometimes ignoring all other statistical data, in their decisions due to the effect of the availability heuristic (a mental tool that can be used to solve various problems when the available knowledge and time are limited). Especially in the crypto money market, the information given under the heading "flash news" in large print from time to time can cause an excessive reaction in the markets. Investors may have a common reaction to any good news and rarely sell (Frazzini, 2006). In the literature, some studies indicate that the cryptocurrency market can be a speculative asset due to the frequency of bubble price formation (Agosto & Cafferata, 2020; Geuder et al., 2019). Veronesi, in his study in 1999 on the effect of positive and negative news on financial assets, concluded that bad news has a great effect in good times of the markets, but good news has a weak effect in bad times (Veronesi, 1999). Tetlock et al. (2008) stated in their studies that negative media language is effective on investors and asset prices. The news creates a positive or negative perception in terms of its structure. To determine the existence of the sequential reaction of investors in 19 local markets to information about companies through the media, Engelberg and Parsons (2011) found a strong relationship between the presence or absence of a local media network and the size of the business volume. In addition, when investors could not reach the media due to severe weather conditions, the normal relationship between business volume and media network disappeared. There are many different studies on the effect of news on investment instruments. However, no study has been found in the literature on the role of news-bound investment decision-making in determining the actual behavior. For this reason, the possible situations mentioned in examining the factors behind the investment behavior in crypto money technology are included in the model. The related questions are given in Appendix 2. In the literature, no study has been found that includes how individuals evaluate this new technology, how it affects investment decisions, and the relevant technology's characteristics in the actual behavior. In this direction, it is aimed that the study will contribute to the literature from an interdisciplinary perspective.

3. Materials and Methods

3.1 Data Collection

A structured online survey technique was used to determine the main intentions that determine crypto money technology use and investigate its effect on investor behavior. The research universe consisted of individual investors over the age of 18 who were Internet users and had made at least one cryptocurrency purchase-sell transaction in 2021. The study sample was determined as 216 individuals, who were selected via the convenience sampling method of individual investors over the age of 18 living in Turkey. For sample selection, first the "Simple Random Sampling" method was deemed appropriate. However, it became impossible to conduct a survey in this way because people have time constraints, the threshold of distrust and tolerance in the society is low, and the word "crypto money" in the survey is similar to "similar concepts" heard from various sources and creating negative impressions. For this reason, the "convenience sampling" method was deemed appropriate for sampling selection. For the questions to measure the same feature, it was necessary to reach at least twice the number of items in the sample (Kline, 1994). SPSS version 25.0 and SmartPLS version 3 statistical programs were used to analyze the data. In addition, the structural equation modeling and analysis was carried out at a 95% confidence level to examine the variables that affect the investment decisions of crypto money investors. Many statistical analyses can be performed simultaneously with the help of structural equation modeling. SEM measures whether there is a causal link between unobservable variables through observable variables (Arı et al., 2015).

3.2 Sample Profile

As stated earlier, the sample consisted of individual investors over 18 who had traded cryptocurrencies at least once. Considering the gender, the rate of men (63.4%) was higher than that of women (36.6%). With regard to educational degree, the primary (0.9%) and undergraduate (46.3%) levels were the least and the most frequent ones, respectively. When participants' monthly income was examined, it

was seen that the highest was 5000 Turkish Liras (14.4%), while it was determined that there were more participants from the high-income group. Participants stated that the daily usage hours of devices such as smartphones, computers, and tablets were at most 5 hours (22.7%) and at least 14 hours and above (7.5%). The most frequently used social media platform was Twitter (36.6%), while LinkedIn was the least used (0.5%). The most frequently used social media platform to follow current developments in cryptocurrencies was found to be Twitter (79.6%), while the least used one was WhatsApp (1.9%). While making any investment decision, the participants stated their most basic expectations as "desire for high returns" (50%), "desire to protect capital" (7.9%), "desire for continuous income" (26.9%), and "reduction of portfolio risk" (15.3%). The participants thought that the shares on social media are effective in the crypto money market (94.4%), and it is necessary to follow the thoughts of the people related to the subject (89.4%). In addition, shares about cryptocurrencies on social media were not wanted to be missed (81%), and missing news/talks were said to create a feeling of uneasiness (58.3%). While the news/shares made on Twitter were believed to affect the crypto money investment movements (75.5%), it was thought that these news/shares are also effective in the bear/bull phases of the crypto money market (87%). Looking at the performance of the participants to date, they identified crypto money as the first investment tool (74.5%). They also ranked cryptocurrencies in second place, albeit lower (56%).

3.3 Measurement Scales

Scale items were prepared on a 5-point Likert scale, taking into account UTAUT's theoretical scale items derived from the article of Venkatesh et al. (2003), who was the first researcher to propose the UTAUT model. Ethics committee approval was obtained for the study from Beykent University on October 8, 2021.

3.4 Statistical Methodology

Structural equation modeling (SEM) was used to examine the suitability of the proposed model for the analysis of the data of the sample consisting of 216 participants. SEM is a comprehensive statistical estimation technique that reveals the relationship between observed and latent variables and analyzes the proposed theoretical model (Schumacker & Lomax, 2004). This technique is used in many fields such as economics, behavior, social sciences, and medicine (Raykov & Marcoulides, 2006). SEM analysis was carried out using the SmartPLS 3 computer program.

4. Findings

Unlike the covariance-based SEM, the PLS technique works similarly to multiple regression analysis. Therefore, it is precious in exploratory research (Hair Jr et al., 2014). The PLS method has no assumptions about data distribution and sample size. It is known that PLS-based structural equation modeling gives more reliable and valid results (Afthanorhan & Afthanorhan, 2013). The conceptual model of the research given in Figure 1 has been estimated, and the fit indices are X^2/df, respectively: 2.12, SRMR: 0.07, NFI:0.81. It was determined that the fit indices showed an acceptable level of fit (Jörg et al., 2016). Additionally, the Standardized Root Mean Square (SRMR) coefficient calculated for the entire sample measures the overall model fit that is particularly suitable for PLS. In our study, the value of this coefficient was determined as 0.07, and it was observed that the model was fit according to the proposed limitation to obtain levels less than 0.08. At the same time, the R^2 value calculated in the model explains 76% of the variance. Within the scope of the analysis, VIF values were examined to see if there was a multicollinearity problem in the model. Results were obtained, confirming lack of multicollinearity with the obtained VIF values (VIF<5). Model validity, on the other hand, depends on ensuring convergent validity. Composite Reliability (CR) and Cronbach Alpha (CA) values for each structure should be greater than 0.70 (Hair et al., 1998). At the same time, the Average Variance Extracted (AVE) value for each structure should be higher than 0.50 (Fornell & Larcker, 1981). The relevant results are given in Table 3.

As a result of the scale's Cronbach Alpha coefficient being 0.96, integrity was provided to explain a homogeneous structure. It was observed that the CR and CA values were 0.70 and above, and the AVE value was higher than 0.80. It was determined that the obtained values were acceptable and the construct validity was sufficient (Hair et al., 1998). In addition, the suitability of the obtained data was

checked for explanatory factor analysis considering initially missing values, inverse items, normality of the data set, sample size, and sample fit. The construct validity of the scale KMO (Kaiser-MeyerOlkin) was found to be 0.83, and Bartlett test value was obtained to be p= 0.000. At the same time, the discriminant validity of the measurement model was checked by comparing the square root of the AVE value of each construct and the correlation between that construct and other constructs. The relevant results are given in Table 4.

Table 3. Composite Reliability and Convergent Validity

Factors	Cronbach's alpha	Rho_A	Composite reliability	Average extracted variance (AVE)
Performance expectancy	0.917	0.918	0.941	0.801
Effort expectancy	0.925	0.925	0.947	0.816
Social influence	0.887	0.895	0.922	0.748
Facilitating conditions	0.848	0.849	0.908	0.768
Behavioral intention	0.863	0.862	0.917	0.788
Usage behavior	0.916	0.920	0.941	0.800

Table 4. Discriminant Validity (Fornell-Larcker Test)

	Mean	Std. Dev.	BI	EE	FC	PE	SI	UB
BI	4.44	0.79	0.888					
EE	4.14	0.99	0.810	0.903				
FC	3.86	0.75	0.742	0.832	0.876			
PE	4.36	0.80	0.846	0.818	0.706	0.895		
SI	4.08	0.98	0.721	0.834	0.846	0.707	0.865	
UB	4.24	0.88	0.867	0.869	0.747	0.880	0.740	0.895

Note: BI: behavioral intention; EE: effort expectancy; FC: facilitating conditions; PE: performance expectancy; SI: social influence; UB: usage behavior.

The diagonal elements represent the square root of the AVE, and the elements outside the diagonal line represent the correlation coefficients between the latent variables. As a result of these comparisons, it was observed that discriminant validity was achieved because the square root values of AVE were larger. In addition, CV values for the model structures were found to be greater than 0.00 (OE&ERI: 0.59; SME: 0.59; LME: 0.68), which confirmed the predictive relationship of exogenous structures and endogenous structures. Therefore, it has been determined that the values of the path coefficients can be analyzed to evaluate the structural model. Related coefficients and hypothesis results are given in Table 5.

Table 5. SEM Results for the UTAUT Model

Relationship	Std. Beta	T-value	P-values	Decision
BI → UB	0.867	27.855	0.000*	Supported
PE → BI	0.540	6.130	0.000*	Supported
UB → CN	0.370	4.648	0.000*	Supported
UB → CP	-0.302	2.520	0.012*	Supported
EE → BI	0.212	1.634	0.103	Not supported
FC → BI	0.166	1.721	0.086	Not supported
SI → BI	0.021	0.186	0.852	Not supported

Note: CP: Cryptocurrency technology usage behavior – Positive news;
CN: Cryptocurrency technology usage behavior – Negative news
*p < .5

Path coefficients express the intensity of the relationship between dependent and independent variables. Supported and rejected hypotheses are shown in Table 5. In addition, according to the UTAUT model, behavioral intention is assumed to be the most significant determinant of actual behavior. All other factors indirectly affect the predictive behavior through behavioral intention (Davis et al., 1989). When the supported hypotheses are examined, it is seen that only the performance expectation has an effect among the factors in the model. Statistically significant indirect effects of the model are given in Table 6.

Table 6. Indirect Effects

Relationship	Path	P-values
PE → BI → UB	-0.262	0.013
BI → UB → CP	-0.142	0.021
PE → BI → UB → CP	0.321	0.000
BI → UB → CN	0.174	0.001
PE → BI → UB → CN	0.468	0.000

It has been determined that the effect of performance expectation on the actual cryptocurrency investment behavior is revealed through the usage intention and perceived usage behavior. The model proposed in Figure 1 is re-estimated with statistically significant variables, and the actual results are given in Figure 2.

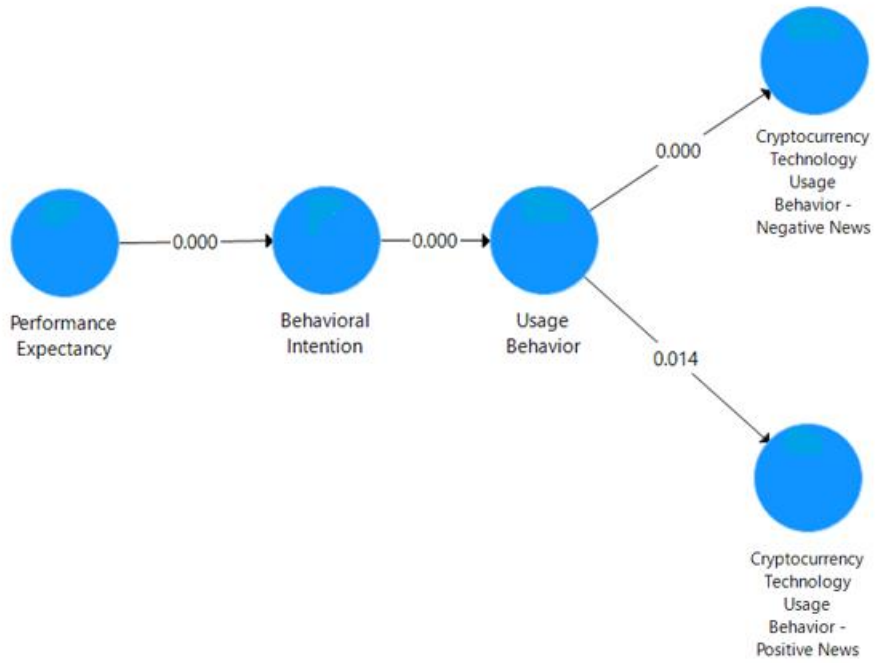

Figure 2. Results of the Proposed Model
Note: p < .5 (based on 2 tail and bootstrap test with 500 samples).

As a result of the analysis, it was concluded that the research hypotheses were supported and the performance expectation was an effective factor. In addition, it was determined that performance expectation is more effective on the investment behavior in the event of negative news in the crypto money market than positive news.

5. Results

What are the main intentions or motivational factors that persuade individuals to invest in cryptocurrencies, and how do these factors influence the actual investment behavior? This question was discussed in this article in the context of behavioral finance. When analyzing the results, it should be emphasized that all variables are well-measured and have discriminant validity and that all proposed hypotheses are met. The main innovations of this research were both the model developed for cryptocurrencies and the interdisciplinary perspective. A high explanatory capacity was achieved by developing a new model. In this research, the main objective was to examine the determinants behind the behavior in the cryptocurrency market. After the working model was created and the results were analyzed, it was observed that the variable that had the most significant impact on the actual investment behavior was performance expectation. Performance expectancy is defined as the degree to which individuals believe that the use of a particular technology will be beneficial in improving performance in their activities. Based on Venkatesh's (2003) findings, it is perceived that people will adopt blockchain technology if they believe it will yield positive results. Therefore, it is seen that

performance expectation has a positive effect on behavioral intention, perceived usage behavior, and the resulting investment behavior. The essential building block of perceived advantage, which means the degree to which an innovation is perceived to be more advantageous than the current one, is performance expectation within the scope of adaptation of the innovation (Moore & Benbasat, 1991).

Most researchers agree that performance expectation is essential and necessary as a background for the intended use (e.g., Al-Amri et al., 2019; Alzahrani et al., 2019; Arias-Oliva et al., 2019). In product and service design for a new cryptocurrency (or innovation efforts for existing ones), the focus should be on performance as the most critical adoption factor. Significant marketing efforts must be made to ensure that potential investors in the cryptocurrency market perceive this value. The greater the added value a cryptocurrency offers, the more likely it is to be used. Therefore, focusing on performance usability is recommended in the cryptocurrency market. It is one of the possible future scenarios for the cryptocurrency market, which is the reason for making the final recommendation for end-users and brokers to use to improve our work. This scenario is the possibility for cryptocurrencies to become national currencies (Lansky, 2018). Another critical point is that when examining the investment behavior realized in the study, a distinction is made according to positive and negative information. Many studies show that positive and negative news in the crypto money market can affect the price in the literature. With the information they are exposed to, people can make decisions without rational analysis as required. Deviations from irrational decisions occur in financial transactions and many economic issues. It has been concluded that the performance expectation is important behind the investment behavior in case of positive or negative news in terms of pricing of cryptocurrencies. At the same time, this result coincides with the participants' statement of their investment preferences considering their performance to date. While individuals determined crypto money as the first investment tool (74.5%), they also determined it as the second, albeit lower. In short; It is possible to say that cryptocurrencies are very often preferred as both the first and the second investment tool. In addition, looking at the predicted model, it was seen that the performance expectation was more effective in the investment behavior in case of negative news in the crypto money market. In this context, the performance expectation variable should be shaped not as the effect of the innovation on the individual's performance but within the scope of expressing the performance expected from the innovation. As a result, investors believe that negative news coming to the market while using the said technology will contribute more to their investment performance. Although there is a study with similar results in the literature (Arias-Oliva et al., 2019), it has been determined that the perceived ease of use is generally more effective (Folkinshyten & Lennon, 2016; Kabak & Çelik, 2020; Shahzad et al., 2018). The performance expectation built within each individual model is a strong indicator of intention (Taylor & Todd, 1995: 563; Thompson et al., 1991: 128; Venkatesh & Davis, 2000: 192). It is also known that performance expectation is inspired by the perceived ease of use model (Venkatesh et al., 2003: 447). When evaluated in general, it would not be wrong to say that the most effective situation for investors in crypto money technology is performance expectation.

This study is valuable for policymakers and government organizations to understand the citizen perception toward the adoption of cryptocurrencies as a mode of exchange, which assists in creating parameters for cryptocurrencies. Governments throughout the world have had different reactions to the innovative technology, with countries such as China totally banning cryptocurrency trade through to countries like the US that have begun applying similar regulations to cryptocurrency, equities, and other securities. Given the implications for countries seeking to change their approach to technology application, future research should explore how the adoption process of new technologies changes throughout the technology's lifecycle. As technology evolves, countries should incorporate various technological components into a more streamlined adoption, improving their competitiveness, ease of doing business, and political stability capabilities. Countries have to adapt their decisions in various economic environments as the economic environment evolves. For this reason, investor behavior should be investigated in the implementation of the new digital economy and its adaptation in countries. As seen in the results obtained, individuals are not rational in their decisions in the crypto money market. According to the results, individuals are in performance expectation. However, in order to examine the irrationality in investment behavior, it is necessary to examine the investment decisions. Since there is no such study in the literature, a new model has been proposed. It has been seen that the use of the proposed model is appropriate in order to see how the investors react to the

positive and negative news in the market. Therefore, this model showed that it is both possible and necessary to evaluate both technology factors and market conditions together in examining the decisions of investors. At the same time, it has been shown that the UTAUT model can be adapted to different disciplines and that with innovations, variables that increase the explanatory power of the model can be technically added (Venkatesh et al., 2003).

6. Future Research and Limitations

There may be limitations in terms of the participants examined within the scope of the study. Since participants are individuals using cryptocurrency technology, they can be seen as early adopters of new ideas or personality traits that are open to innovators. It should not be ignored that the research findings obtained may change when the sample group changes. For this reason, it is thought that obtaining a larger balanced sample as much as possible and performing multi-group analyses may yield more satisfying results. At the same time, the inclusion of variables such as market volatility, heuristics, and psychological biases in other studies that will be discussed based on behavioral finance may contribute to reaching more comprehensive results. In addition, this study can be considered not only in terms of individual investors but also in terms of institutions and organizations in crypto money technology.

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Appendix 1: Turkish UTAUT Scale

No	Mark (x) your level of agreement with the following statements.	1	2	3	4	5
1	I find crypto money technologies useful.	☐	☐	☐	☐	☐
2	Cryptocurrency technologies allow me to make my investments faster.	☐	☐	☐	☐	☐
3	Cryptocurrencies improve my investment performance.	☐	☐	☐	☐	☐
4	I find it flexible, as I can access cryptocurrency technology whenever I want.	☐	☐	☐	☐	☐
5	The cryptocurrency market allows me to access more information than traditional markets (stock market, foreign exchange, etc.).	☐	☐	☐	☐	☐
6	I find the use of cryptocurrencies clear and understandable.	☐	☐	☐	☐	☐
7	It is easy for me to gain proficiency in cryptocurrency technology.	☐	☐	☐	☐	☐
8	I find cryptocurrency technology easy to use.	☐	☐	☐	☐	☐
9	Using cryptocurrency transactions is easy to learn.	☐	☐	☐	☐	☐
10	People around me think that I should trade cryptocurrencies.	☐	☐	☐	☐	☐
11	People important to me think that I should trade cryptocurrencies.	☐	☐	☐	☐	☐
12	Social media platforms support the use of cryptocurrencies.	☐	☐	☐	☐	☐
13	People around me support me in using crypto money.	☐	☐	☐	☐	☐
14	I have the necessary resources to use the technologies required in cryptocurrency trading.	☐	☐	☐	☐	☐
15	I have sufficient knowledge to perform cryptocurrency trading.	☐	☐	☐	☐	☐
16	The technologies used in the crypto money market are similar to those of other traditional markets (stock exchange, foreign exchange, etc.).	☐	☐	☐	☐	☐
17	I can find someone to help me solve the problems I encounter with cryptocurrencies.	☐	☐	☐	☐	☐
18	I intend to use crypto money technologies in the future.	☐	☐	☐	☐	☐
19	I predict that I will use crypto money technology in the future.	☐	☐	☐	☐	☐
20	I plan to use cryptocurrency technology in the future.	☐	☐	☐	☐	☐
21	I think that crypto money technology will be used in daily transactions.	☐	☐	☐	☐	☐
22	I like to discover new things using cryptocurrency technology.	☐	☐	☐	☐	☐
23	Using cryptocurrency technology is a good thing.	☐	☐	☐	☐	☐
24	I use cryptocurrency technology frequently.	☐	☐	☐	☐	☐
25	Cryptocurrency transactions are more accessible than traditional currencies (dollars, euros, etc.).	☐	☐	☐	☐	☐

Appendix 2: Questions for Realized Investment Behavior

1. The investment alternatives in any period are presented to you below. Considering that you are in a period with the following news in both traditional money and crypto money markets, you are expected to make an investment decision with your 1000 TL. What is the investment you will make with your 1000 TL?

☐ I do not invest.
☐ Gold always wins in the long run.
☐ I buy foreign currency with 1000 TL.
☐ I buy cryptocurrencies with 1000 TL.
☐ I divide my 1000 TL equally between both of them.
☐ I buy a higher amount of foreign currency and less cryptocurrencies.
☐ I buy more cryptocurrencies and less foreign currency.
☐ I buy cryptocurrencies with only a part of 1000 TL, and I do not spend the rest.
☐ I buy foreign currency with only a part of 1000 TL, and I do not spend the rest.
☐ Other

2. The investment alternatives in any period are presented to you below. Considering that you are in a period with the following news in both traditional money and crypto money markets, you are expected to make an investment decision with 1000 TL GRANTED TO YOU (GIVEN AS A GIFT NOT YOUR OWN MONEY). What is the investment you will make with your 1000 TL?

☐ I do not invest.
☐ Gold always wins in the long run.
☐ I buy foreign currency with 1000 TL.
☐ I buy cryptocurrencies with 1000 TL.
☐ I divide my 1000 TL equally between both of them.
☐ I buy a higher amount of foreign currency and less cryptocurrencies.
☐ I buy more cryptocurrencies and less foreign currency.
☐ I buy cryptocurrencies with only a part of 1000 TL, and I do not spend the rest.
☐ I buy foreign currency with only a part of 1000 TL, and I do not spend the rest.
☐ Other

3. The investment alternatives in any period are presented to you below. Considering that you are in a period with the following news in both traditional money and crypto money markets, you are expected to make an investment decision with your 1000 TL. What is the investment you will make with your 1000 TL?

☐ I do not invest.
☐ Gold always wins in the long run.
☐ I buy foreign currency with 1000 TL.
☐ I buy cryptocurrencies with 1000 TL.
☐ I divide my 1000 TL equally between both of them.
☐ I buy a higher amount of foreign currency and less cryptocurrencies.
☐ I buy more cryptocurrencies and less foreign currency.
☐ I buy cryptocurrencies with only a part of 1000 TL, and I do not spend the rest.
☐ I buy foreign currency with only a part of 1000 TL, and I do not spend the rest.
☐ Other

4. The investment alternatives in any period are presented to you below. Considering that you are in a period with the following news in both traditional money and crypto money markets, you are expected to make an investment decision with 1000 TL (GIVEN AS A GIFT TO YOU, NOT YOUR OWN MONEY). How will you invest with your 1000 TL?

☐ I do not invest.
☐ Gold always wins in the long run.
☐ I buy foreign currency with 1000 TL.
☐ I buy cryptocurrencies with 1000 TL.
☐ I divide my 1000 TL equally between both of them.
☐ I buy a higher amount of foreign currency and less cryptocurrencies.
☐ I buy more cryptocurrencies and less foreign currency.
☐ I buy cryptocurrencies with only a part of 1000 TL, and I do not spend the rest.
☐ I buy foreign currency with only a part of 1000 TL, and I do not spend the rest.
☐ Other