

## Interest-Free Finance Model by Using Blockchain-Based Company Tokens: Research on Digital Turkish Lira (DTL) and Borsa Istanbul with Technology Acceptance Model (TAM)

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### Abstract

Since technology benefits people in many areas, its effectiveness is increasing day by day. For this reason, many products and services have been digitized and made available to people. Especially in the last period, with the development of blockchain technology, there has been a significant change in the financial sector. Blockchain technology, which offers a decentralized transaction network, has contributed significantly to the development of digital currencies. In this context, the Central Bank of the Republic of Turkey (CBRT) started to work on Digital Turkish Lira (DTL) in 2021. In this context, it will enable the company tokens, which are proposed to be issued as a sub-unit of DTL, which is planned to use blockchain technology in its infrastructure, to be used in the financing of businesses, while also allowing investors to invest in Turkish Lira assets. In the research, it has been suggested that the company tokens to be issued under DTL can be traded on the Borsa Istanbul (BIST) and invested, as well as the relevant tokens can be traded. The proposed model has been examined within the scope of the Technology Acceptance Model (TAM), which is frequently used in the research of technological innovations. The analysis process of the research was carried out with Structural Equation Modeling (SEM). The analysis of the research was carried out with the Smartpls 3 package program. Hypotheses H3, H5, and H8 were rejected and other hypotheses were accepted. When the results of the research were analyzed, it was determined that the factors affecting the intention to use the proposed company tokens were parallel to the literature. As a result of the analysis, it has been reached that the attitude and intention towards the use of company tokens in the proposed model are positive.

**Keywords:** Borsa Istanbul, COVID-19, Blockchain, Digital Turkish Lira (DTL), Technology Acceptance Model (TAM)



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# Interest-Free Finance Model by Using Blockchain-Based Company Tokens: Research on Digital Turkish Lira (DTL) and Borsa Istanbul with Technology Acceptance Model (TAM)

Yavuz Toraman

## I. Introduction

The technology that has developed in the last period is adding different products or services to human life every day. While some of these innovations are accepted and used by people, some are not used and terminate their activities. Technological innovations accelerated digitalization and caused radical changes in the industry and agriculture sectors, especially in the service sector. In the present study, blockchain technology, which has changed the perspective of the service sector, has been examined. Blockchain is used in the fields of education, health, information technologies, logistics and especially in the finance sector (Frizzo-Barker et al., 2020; Berdik et al., 2021). Since blockchain technology is a new technology for 10 years, its use in the first period was limited to businesses. However, with the development of the related technology, it is thought that its use will spread to the base in the future. For example, Ethereum's technology differs from Bitcoin's technology with smart contracts. Smart contracts changed the future of blockchain technology (Nakamoto, 2008; Balcerzak et al., 2022).

Blockchain technology is already used in the financial sector in the production of cryptocurrencies, interpersonal money transfers and payments. However, due to the lack of legal regulation, it does not have an active and healthy use. In the first process, cryptocurrencies were used in illegal processes thanks to its decentralized structure. Subsequently, the use of cryptocurrencies became widespread and secondary exchanges were established for cryptocurrencies. Cryptocurrency has turned into an investment tool with the subject of trading. Especially with the low interest policy of the USA, the abundant money in the market has turned to cryptocurrencies as in every field. As of 14.11.2022, the market value of Bitcoin is estimated to be \$321 Billion, and the total value of crypto assets is estimated at \$1.7 trillion (coinmarketcap, 2022). While the cryptocurrency market volume has increased so much, countries first intervened with legal regulations and then started to contribute to the crypto ecosystem by working on blockchain-based digital assets. In this context, countries such as Sweden, China, Uruguay, and Turkey are known to have started working on blockchain-based

cryptocurrencies (Mancini-Griffol et al., 2018; Toraman, 2022; Bordo and Levin 2017). With the development of technology, the content and methods of debt instruments change. For example, fan tokens, cryptocurrencies and metaverse coins are the leading ones. However, people with interest sensitivities have had different searches, especially in Muslim societies. In this context, the fact that cryptocurrency has become an investment tool has contributed to the formation of the model proposed in the current study. In the proposed model, company borrowings can be made through company tokens (AKÇE) to be created using blockchain technology.

Businesses are realized by using private sector bonds, bills or deposit/lease certificates in the debt markets. However, people with interest sensitivities have had different searches, especially in Muslim societies. Participation banking provides the opportunity to borrow sukuk interest-free, which was created in this context. This situation offered an alternative to countries where private sector bonds or bills were not in demand. After the first process, it has received a lot of demand.

Sukuk, which were introduced as financial instruments, were first introduced in the 1990s. Its use has become widespread day by day and continues to be used. In general, Sukuk have a share of around 20% from the Islamic finance sector. In this context, the volume of Sukuk as of 2019 was around 470 billion dollars (COMEC, 2020). In Turkey, the Islamic financial system is called participation banking and continues to develop. In Turkey, Albaraka Turk Participation Bank, Kuveyt Turk Participation Bank, Turkey Emlak Katılım Participation Bank, Türkiye Finans Participation Bank, Vakıf Participation Bank and Ziraat Participation Bank can be listed as examples of participation banking. The size of the assets of participation banks has exceeded 1 trillion Turkish lira by 2022. The share of participation banking in the sector is 8.26% (TKBB, 2022).

The fact that it has a share of around 10% in the banking sector in Turkey is an indication that the volume of participation banking will increase with new instruments in the future. Within the scope of the research, the interest-free financing model, which is close to Islamic sensitivity, has been studied. The said interest-free financing model is built on the Digital Turkish Lira (DTL), which is expected to contribute to the Turkish economy with the use of blockchain technology. The proposed model will enable individuals to invest and companies to find financing through blockchain-based DTL-affiliated company tokens. Individuals will form partnerships by taking the shares of the companies. The companies will provide financing with an interest-free public offering.

In the next parts of the research, literature, research methodology, analysis and results will be covered.

## II. Literature Review

Interest can be defined as the rental price, fee or price of money. The fee charged for the use of the capital for a certain period of time and for its use is called interest. Since the capital input is not a raw material used in the production of products or services and is a cost element, it does not comply with Islamic procedures. This situation causes those with Islamic sensitivities to approach the

issue of interest at a distance. Many studies have been carried out to include interest-sensitive individuals in the economic system. As a result of these studies, interest-free finance applications have been developed for interest-sensitive segments (Smith 2005; Wilson, 2004). Examples for some of the mentioned applications are discussed in the following paragraphs of study.

Mudaraba can be defined as the partnership established by the owner of the capital and the person who reveals his knowledge, skills and experience. In this partnership, the proportion of the shares held by the parties is certain. Finally, profit sharing is made according to the agreement rate. (Bayindir, 2005).

Musharaka has aspect that differs from Mudaraba. It allows more people to be involved in the partnership. In addition, partners can include both capital and knowledge, skills and experience in the partnership. Profit sharing is realized in line with the rates determined in the contract made in partnership with Musharaka (Yilmaz, 2012).

Murabaha is a bank or intermediary institution that makes the purchase with a certain profit rate in addition to the cost of the goods. It is then to give the goods to the original buyer in return for the amount and maturity specified in the contract. Institutions and organizations that allow individuals in Turkey to buy houses or cars in installments can be cited as examples of such businesses (Tok, 2009; Türker, 2010; Buyukakin and Onyilmaz, 2012).

Tawarruq is related to companies buying goods on a deferred basis in order to be able to borrow, and the deferred goods must be sold to someone other than the seller. The goods in question are sold at a lower price than the purchase price. The opposite is also possible. Goods purchased in chas can be sold on futures (Buyukakin and Onyilmaz, 2012; Türker, 2010).

Sukuk is known as a lease certificate in Turkey. Sukuk, which are similar to private corporate bonds, have no interest. Also, there is no fixed income. It offers the investor a share of the income from the invested asset. In this way, companies can borrow money. Sukuk offers its investors the right of partnership of that company (Wilson, 2004; Tok, 2009).

Ijarah is a fixed income interest free leasing transaction. The financial institution that performs the leasing process buys the goods on behalf of the requesting company and adds a profit share and performs the leasing process for a certain period of time. Companies use this route to purchase high-priced machinery and equipment (Bayindir, 2005; Buyukakin and Onyilmaz, 2012).

Salam is concerned with the process while the seller receives the price of the goods in advance and the delivery of the goods is made in the future determined process. There are sub-contracts related to the Salam contract (Ersin and Duran, 2017).

Takaful can be briefly defined as an interest-free insurance system. It is a certain community that comes together to try to protect itself. It is also known as cooperative insurance. The community, which comes together with a certain contract, invests the money they collect in non-interest-bearing instruments and divides the risk among them (Yildirim, 2014).

The first examples of interest-free finance worldwide were observed in Malaysia in 1940 and Pakistan in 1950. But no successful result was obtained. In the following period, Bank Islam Malaysia Berhad

(BIMB) was launched in Malaysia in 1983, and an important breakthrough was made in this field. While Malaysia is an important country in the Asian continent, Bahrain, Kuwait, Qatar, Saudi Arabia and United Arab Emirates are also important players in the Middle East as well as Africa. On the other hand, many financial institutions such as Citi Bank, Société Generale Goldman Sachs, Bank of America and HSBC have started their activities in this field due to the increasing volume in the Islamic finance sector, whose volume has increased since its inception (Bayindir, 2008; Tok, 2009; Yilmaz, 2012). The volume in this area, on the other hand, exceeds 3 trillion billion dollars. This situation can be easily understood from Figure 1. The 2023 Growth of Global Islamic Finance Total Asset (US\$ Billion) Estimate of Experts is approximately 4 trillion dollars (Ece, 2011).

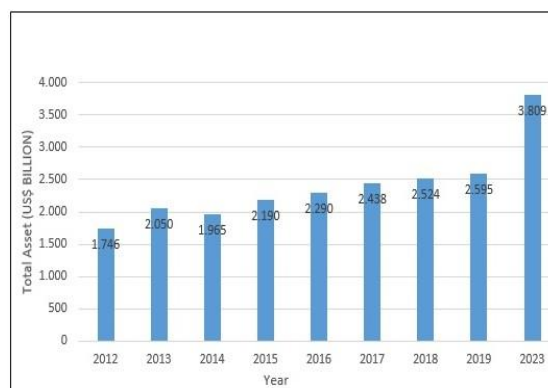


Figure 1. The 2023 Growth of Global Islamic Finance Total Asset (US\$ Billion) Estimate of Experts

Source: (COMEC, 2020)

In Turkey, the Islamic financial system is called participation banking and continues to develop. In Turkey, Albaraka Turk Participation Bank, Kuveyt Turk Participation Bank, Turkey Emlak Katılım Participation Bank, Türkiye Finans Participation Bank, Vakıf Participation Bank and Ziraat Participation Bank can be listed as examples of participation banks operating in this field. As can be seen in Figure 2, the asset size of participation banks has exceeded 1 trillion Turkish Liras in Turkey. Considering the size of the Turkish banking sector, the share of participation banking in the sector is 8.26% (TKBB, 2022).

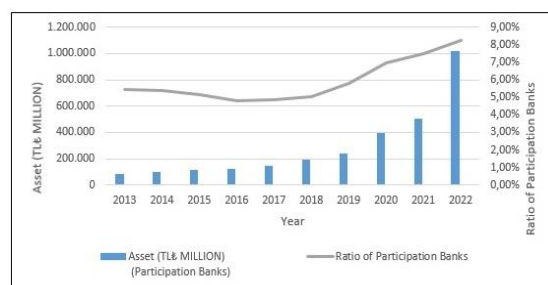


Figure 2. Development of Participation Banking Assets in Turkey

Source: (TKBB, 2022)

Participation banking in Turkey has been developing rapidly in the last period. In Turkey's future projection, it is aimed to increase the share of participation banking to 15%. In addition, one of the important goals of the international financial center project in Istanbul is to increase Turkey's share in the world's participation banking sector. In this context, the Central Advisory Board (CAB), which was established as a private institution under the Participation Banks Association of Turkey (TKBB) in 2018, and the regulations in the 2020 annual program of the Presidency can be shown among the studies supporting the development of participation banking (COMEC, 2020).

The model proposed in the current research allows both the future growth of the sector and the possibility of interest sensitive investors to invest in Turkish assets. Interest-free finance is shaped around participation banking in Turkey. However, with the blockchain technology, a different investment path has been exposed and forms the basis of the model proposed in the current research.

Blockchain technology allows users who are included in the system to transfer data to each other without a centralized administration. Since the data transfer process is encrypted and recorded as irreversible, it is considered reliable by the users (Elghaish et al., 2021; Yaqoob et al., 2022). Blockchain technology can be called as a distributed system of digital ledger. Thanks to its distributed system, transactions can be carried out on a 24/7 basis, without being connected to any center. Although blockchain technology was used in the field of finance in the first period, it has started to be used actively in many sectors day by day (Kshetri, 2021). Blockchain is used in fields such as education, logistics, health, tourism and information technologies. Blockchain technology has been included in the financial sector with Bitcoin, the cryptocurrency invented by Satoshi. Along with this, cryptocurrency sub-units have also started to be produced (Nakamoto, 2008). For example, a different cryptocurrency was created using the same blockchain infrastructure. These cryptocurrencies are called tokens. Tokens do not have independent blockchain networks. However, while cryptocurrencies are found to be risk-free thanks to their decentralized structure, their active use has not been realized immediately since there is no official (public) formation behind them. As the process progressed, the use of cryptocurrencies became widespread (Sunyaev et al., 2021).

Today, cryptocurrencies using blockchain technology can be traded on exchanges. However, cryptocurrencies or tokens do not have a specific use for interest-free financing. A proposed model has been developed for both sustainable finance and interest-sensitive investors. The research model proposal is visualized in Figure 3 and Figure 4.

In the proposed model, it is aimed to enable companies to borrow with tokens linked to Digital Turkish Lira (DTL), which is planned to be created on a blockchain basis, or with a separate blockchain infrastructure. Figure 3 depicts the initial public offering, while Figure 4 shows that the shares of companies which become crypto assets are subject to daily purchases and trading in secondary exchanges.

The proposed model proposes to be able to borrow by performing public offering activities with institutions such as the Capital Markets Board (CMB) and Borsa Istanbul, as opposed to companies borrowing

without being tied to any central authority such as fan tokens. Figure 3 shows the borrowing (public offering) processes of investors and companies. Public offering can be explained as the first-hand sharing of securities owned by companies with the rest of society for the first time (Açıkgöz and Gökkaya 2017; Avcı et al., 2020). In addition, Takasbank and The Banks Association of Turkey, which operate together with Borsa Istanbul, will be able to examine the transactions as observers in these transactions. Public offerings in Turkey are made with the permission of the CMB and through Borsa Istanbul. For this reason, the names of official institutions are used in Figure 3.

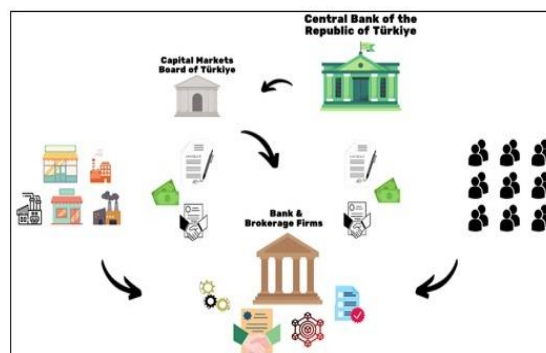


Figure 3. Proposal Model Section 1

Source: Author's own compilation

With the public offering, companies will be able to maintain their assets in a new index to be opened on Borsa Istanbul and borrow at more affordable costs. Investors will be able to trade the stocks they own on Borsa Istanbul. In addition, due to the fact that stocks are cryptocurrencies, they can be used by investors or people who buy them after the initial public offering in daily life for goods and services. While cryptocurrencies cannot be the subject of purchase, sale and intermediation at the moment, it is assumed that the law regarding the launch of DTL, whose pilot studies will start as of 2023, will be regulated. In this context, it may be possible in the future for company tokens affiliated with DTL to be subject to purchase, sale or intermediation.

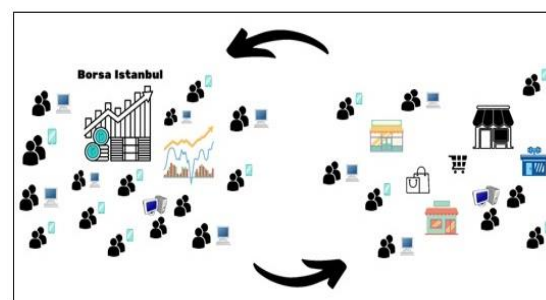


Figure 4. Proposal Model Section 2

Source: Author's own compilation

In the proposed model, companies can borrow through public offering, while investors will form a partnership with the public offering company without any interest. At the end of the year, they will receive their share

of the company's profits. Investors and company token holders will be able to sell their stocks on secondary exchanges or shop with company tokens, which are DTL's tokens. The fact that DTL is a token will both facilitate usage in shopping and increase investment in Turkish Lira assets.

In the proposed model, in order to protect investors and users, the public offering company will leave 30% of its revenue as collateral to company tokens in state banks (e.g. Ziraat Bank and Vakif Bank). Thus, the lowest level at which company tokens will fall after the initial public offering will be predetermined. Another issue is that short selling transactions will not be carried out in the index to be established for tokens in Borsa Istanbul.

#### Projected Benefits of the Proposed Model:

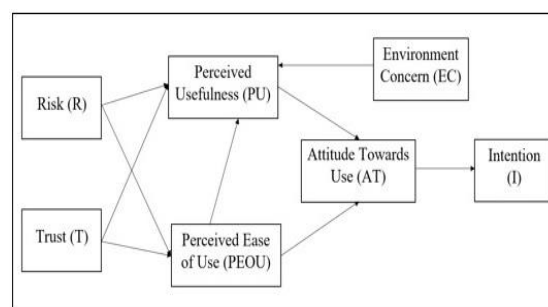
- As the Company Tokens to be used in trading are tied to DTL, the informal economy can be prevented.
- Tax injustice will be prevented in the system, as tax will be collected from the entire society by preventing the informal economy.
- Transactions with tokens will not be blocked and there is only monitoring as it will use the infrastructure of DTL. Cryptocurrency flow will be monitored.
- If the infrastructure of DTL is created with a smart contract system, notary transactions can also be performed.
- The decrease in the use of cash in the post-COVID-19 period will create an alternative to the increased use of digital payment methods.
- Monetary expansion will be possible without increasing the monetary supply of the Turkish lira.
- The seigniorage revenues will increase.

### III. Methodology

The model proposed in the study is of interest to anyone who can invest in its environment. However, since the proposal includes a technological innovation, individuals using smart devices (phones, tablets, etc.) were included in the study. In addition, the population of the research consists of individuals over the age of 18 who live in Turkey and have financial freedom. The research is limited to individuals living in Istanbul, Turkey. The convenience sampling method, which can only be achieved by including the people who can be reached in the research, was used in this research. (Kurtuluş, 2010; Büyükoztürk et al., 2008).

Due to COVID-19, the data of the study were collected by online survey method. The data of the research were collected through Google Forms between 10.07.2022 and 10.08.2022. The questionnaire the research was sent to 395 people and 275 responses were received. When the data were organized before the analysis of the research, a usable data set of 219 people were obtained.

While creating the conceptual model, the Technology Acceptance Model (TAM), which has been used in the acceptance of new technologies in the literature, and the independent variables were used. Conceptual model (Davis and Venkatesh, 1996) is shown in Figure 5.



**Figure 5. Conceptual Model**

AT: Attitude Towards Use, EC: Environment Concern, I: Intention, PEOU: Perceived Ease of Use, PU: Perceived Usefulness, R: Risk, T: Trust

**Source:** (Davis and Venkatesh, 1996)

The conceptual model was created based on the TAM. TAM has been frequently used by researchers in the acceptance processes of new technologies. It has undergone a complete change according to the changing demands and needs during the process (Venkatesh and Bala, 2008). By transforming the model, it has been tried to understand the usage processes of technological innovations more clearly. In this context, Unified Theory of Acceptance and Use of Technology (UTAUT), TAM-2 and TAM-3 have been developed. TAM lists the factors that affect the adoption of new technologies as perceived usefulness, perceived ease of use and attitude (Oyman et al., 2022).

TAM consists of Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude Towards Use (AT) and Intention (I). Furthermore, depending on the content of the study, researchers can add different exogenous variables to TAM. In this research, Trust (T), Risk (R) and Environment Concern (EC) variables are added in addition to TAM. With the existing variables, a total of 9 hypotheses were established in the conceptual model.

Intention is the most important factor affecting actual use. It consists of positive, negative or different thoughts of the users towards the system. Intention is an important factor in understanding the future use of the model proposed in the research. The H1 hypothesis was created by making use of the TAM literature. (Venkatesh, 2000; Yuen et al., 2021).

#### Hypotheses

*H1: Attitude Towards Use (AT) positively affects Intention (I)*

It is assumed that the attitudes of users towards using a particular technology are an important determinant of their thoughts towards the innovation in question. Attitude is related to the time interval before users start using a particular technology. It is assumed that the attitude is an important determinant of their thoughts towards the innovation in question. AT is an important factor in understanding the future use of the model proposed in the research. The H2 hypothesis was created by making use of the TAM literature (Ajzen, 1991; Hagger et al., 2022).

*H2: Perceived Usefulness (PU) positively affects Attitude towards Use (AT)*

Perceived usefulness refers to the degree to which people believe that their performance at work will increase when a new technology is used. Perceived ease of use indicates the degree to which people believe that their performance will increase when a new technology is used. It is the degree to which users believe that they will make less effort to complete transactions. PU and PEOU are important factors in understanding the future use of the model proposed in the research. The H3 and H4 hypotheses were created by making use of the TAM literature (Mao et al., 2020; Tao, et al., 2022).

*H3: Perceived Ease of Use (PEOU) positively affects Attitude towards Use (AT)*

*H4: Perceived Ease of Use (PEOU) positively affects Perceived Usefulness (PU)*

Perceived usefulness refers to the degree to which people believe that their performance at work will increase when a new technology is used. Perceived ease of use indicates the degree to which people Trust (T), as one of the determinants of perceived usefulness, especially in online environments. This is because the situation will cause users to get the expected benefit from new technologies as their perception of the infrastructure of the technology in question and the people who manage the application. T is an important factor in understanding the future use of the model proposed in the research. H5 and H6 hypotheses were created by making use of the TAM literature (Pavlou and Gefen 2004 ;Su et al., 2022).

*H5: Trust (T) positively affects Perceived Usefulness (PU)*

*H6: Trust (T) positively affects Perceived Ease of Use (PEOU)*

Environmental or green values have become an important issue that people should consider in their decisions and behaviors to respect the environment. The number of individuals who are aware of environmental problems and try to act on these problems are constantly increasing. In this context, new technologies that do not harm the environment will affect the attitude of users. EC is an important factor in understanding the future use of the model proposed in the research. H7 hypothesis was created by making use of the TAM literature (Fraj and Martinez 2006; Belanche et al., 2012).

*H7: Environment Concern (EC) positively affects Perceived Usefulness (PU)*

Risk (R) is the degree to which users believe they will incur a loss to achieve the desired result. Risk describes users' expectations of potential losses due to the possibility that the system may engage in opportunistic behavior during the transaction. Reducing the associated risk for the technology in question will positively affect the perception, attitude and intention of users. R is an important factor in understanding the future use of the model proposed in the research. The H8 and H9 hypotheses were created by making use of the TAM literature. (Pavlou, 2002; Jarvenpaa and Leidner 1999; Khoza, et al., 2021; Habib and Hamadneh 2021).

*H8: Risk (R), positively affects Perceived Usefulness (PU)*

*H9: Risk (R), positively affects Perceived Ease of Use (PEOU)*

Finally, the structural equation model (SEM) was used in the analysis process of research. In SEM, the relationships between more than one independent variable and dependent variable are examined. Afterwards, the mediation effects between the variables are examined. In studies examining the relationships between more than one variable, SEM has generally been used in the literature (Hair et al., 2010). In the present study, Smart PLS 3 program was used in the analysis of structural equation models. In the analysis part of the current study, firstly, the reliability and validity of the data obtained from the variables were checked (Hair et al., 2017).

**Table 1: Results of the Measurement Model**

Items	Outer Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
AT1	0.842	0.882	0.928	0.811
AT2	0.919			
AT3	0.937			
EC2	0.681	0.641	0.801	0.576
EC3	0.874			
EC4	0.707			
I1	0.953	0.932	0.957	0.880
I2	0.945			
I3	0.916			
PEOU1	0.887	0.921	0.944	0.808
PEOU2	0.922			
PEOU3	0.908			
PEOU4	0.879			
PU1	0.873	0.903	0.932	0.775
PU2	0.926			
PU3	0.877			
PU4	0.843			
R1	0.900	0.901	0.938	0.834
R2	0.933			
R3	0.907			
T1	0.726	0.877	0.915	0.731
T2	0.891			
T3	0.912			
T4	0.879			

AT: Attitude Towards Use, EC: Environment Concern, I: Intention, PEOU: Perceived Ease of Use, PU: Perceived Usefulness, R: Risk, T: Trust

**Source:** Smartpls 3 Software Output

Items were measured on a 5-point Likert scale (1= strongly disagree; 5= strongly agree); AVE: Average Variance Extracted; CR: Composite Reliability. In analysis, attitude towards use, environment concern, Intention, perceived ease of use, perceived usefulness, risk and trust cronbach's alpha's composite reliability should be higher than 0.70. AVE values should be higher than 0.50. The results are shown in Table 2. The factor load of the EC variable was found to be 0.436. EC was excluded from the model because the factor loading of the variable was less than 0.70 (Hair et al., 2014).

#### IV. Findings

Finally, the structural equation model (SEM) was used in the analysis process of research. In SEM, the relationships between more than one independent variable and dependent variable are examined.

First of all, the normality analysis of the research data was carried out. In this context, the skewness and kurtosis values of the data were examined. The skewness and kurtosis values of the research data were found between -1.5 and +1.5. It shows that the data of the research has a normal distribution (Hair et al., 2010; Hair et al., 2014; Tabachnick et al. 2007).

Concerning the multicollinearity of the research, when the Variance Inflation Factors (VIF) values are examined briefly in terms of multiple connections, values were found to be between 1-5. VIF values between 1 and 5 are accepted in the literature (Hair et al., 2011; Hair et al., 2016; Daoud, 2017).

**Table 2: Discriminant Validity Analysis based on Fornell-Larcker Criterion**

	AT	EC	I	PEOU	PU	R	T
AT	0.900						
EC	0.436	0.759					
I	0.812	0.378	0.938				
PEOU	0.827	0.351	0.806	0.899			
PU	0.861	0.438	0.823	0.893	0.880		
R	0.681	0.270	0.688	0.662	0.662	0.913	
T	0.700	0.456	0.649	0.724	0.681	0.680	0.855

AT: Attitude Towards Use, EC: Environment Concern, I: Intention, PEOU: Perceived Ease of Use, PU: Perceived Usefulness, R: Risk, T: Trust

Source: Smartpls 3 Software Output

The correlation between the variables is shown in Table 2. Correlation analysis, also known as the Fornell-Larcker Criteria Table, is obtained by taking the square root of AVE values (Hair et al., 2017). When Table 2 is examined, it is observed that there exists a positive relationship among the data. These results are in parallel with other studies in the literature. There is a positive relationship among variables in the literature as well (Davis et al., 1989; Khoza, et al., 2021).

**Table 3: Hypotheses Results**

Hypotheses	Path	Original Sample	T Statistics	P Values	Result
H1	AT→I	0.812	16.770	0.000	Supported
H2	PU→AT	0.607	3.411	0.001	Supported
H3	PEOU→AT	0.285	1.498	0.134	Not Supported
H4	PEOU→PU	0.785	10.144	0.000	Supported
H5	T→PU	-0.045	0.559	0.576	Not Supported
H6	T→PEOU	0.509	4.491	0.000	Supported
H7	EC→PU	0.147	2.790	0.005	Supported
H8	R→PU	0.134	1.742	0.082	Not Supported
H9	R→PEOU	0.316	2.613	0.009	Supported

p<0,05, AT: Attitude Towards Use, EC: Environment Concern, I: Intention, PEOU: Perceived Ease of Use, PU: Perceived Usefulness, R: Risk, T: Trust

Source: Smartpls 3 Software Output

The hypotheses results are shown in Table 3. The hypothesized model was estimated based on bootstrapping with 1000 subsamples in the Smart PLS 3. Hypotheses 1, 2, 4, 6, 7 and 9 were supported while Hypotheses 3, 5 and 8 were not supported. Of the 9 relationships tested, 6 were found to be significant at p < 0.5.

Firstly, Attitude towards Use had a positive effect on Intention ( $\beta = 0.812, p < 0.5$ ). Perceived Usefulness had a positive effect on Attitude towards Use ( $\beta = 0.607, p < 0.5$ ). Perceived Ease of Use had a positive effect on Perceived Usefulness ( $\beta = 0.785, p < 0.5$ ). Trust had a positive effect on Perceived Ease of Use ( $\beta = 0.509, p < 0.5$ ). Environment Concern had a positive effect on Perceived Usefulness ( $\beta = 0.147, p < 0.5$ ). Risk had a positive effect on Perceived Ease of Use ( $\beta = 0.316, p < 0.5$ ). As a result, the hypotheses, constructed according to TAM showed similar results to the literature. However, Perceived Ease of Use had no influence on Attitude towards Use ( $\beta = 0.285, p > 0.5$ ). Trust had no influence on Perceived Usefulness ( $\beta = -0.045, p > 0.5$ ). Risk had no influence on Perceived Usefulness ( $\beta = 0.134, p > 0.5$ ). Even though these three hypotheses have been denied, they will still be analyzed on indirect and total effects since this study includes the mediator effect.

**Table 4: Specific Indirect Effects**

Path	Original Sample	T Statistics	P Values	Result
T→PEOU→PU	0.400	4.400	0.000	Supported
R→PEOU→PU	0.248	2.419	0.016	Supported
PEOU→PU→AT	0.477	3.488	0.001	Supported

p<0,05, AT: Attitude Towards Use, EC: Environment Concern, PEOU: Perceived Ease of Use, PU: Perceived Usefulness, R: Risk, T: Trust

Source: Smartpls 3 Software Output

Table 4 indicates the indirect effect, as the study has a mediation effect. When the Specific Indirect Effects in the research model are examined, full mediation effect is seen in all of the rejected hypotheses. In this context, a positive and significant effect can be mentioned in all hypotheses in the conceptual model (Hair et al., 2017).

**Table 5: Results of R<sup>2</sup> and R<sup>2</sup> Adjusted**

Items	R <sup>2</sup>	Radj <sup>2</sup>
AT	0.758	0.753
I	0.660	0.657
PEOU	0.577	0.569
PU	0.823	0.816

AT: Attitude Towards Use, I: Intention, PEOU: Perceived Ease of Use, PU: Perceived Usefulness,

Source: Smartpls 3 Software Output

The R<sup>2</sup> values and Radj<sup>2</sup> values of research are shown in Table 5. The R<sup>2</sup> value of the Intention to use the dependent variable of research was found to be 0.660, and

the Radj<sup>2</sup> value was found to be 0.657. R<sup>2</sup> value of the Attitude towards Use was found as 0.758, and the Radj<sup>2</sup> value was found to be 0.753. Attitude Towards Use, which is the leading indicator of Intent, is very important. R<sup>2</sup> value of the Perceived Usefulness was detected as 0.823, and the Radj<sup>2</sup> value was found to be 0.816. In this context, it can be said that a significant part of the factors that affect people's acceptance of their motivation do use the proposal model (Hair et al., 2016; Agustina, 2019).

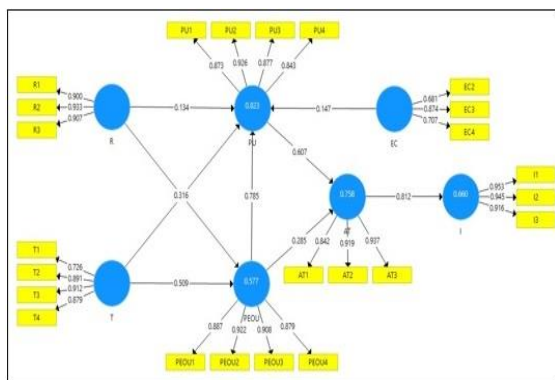


Figure 6. Path Analysis of Research

Source: Smartpls 3 Software Output

Figure 6 shows the model of research. All the research applications have been conducted accordingly to the shown figure. The figure shows the factor loadings, R<sup>2</sup> value and original sample of model.

## V. Conclusion

Technology continues to develop and spread to a wide base. New technologies are used in a different field every day. The version of technologies used in the past is updated. Every technological device that comes into use accelerates the digitalization process of human life.

One of the most important innovations that have entered human life in the last period is digital / cryptocurrencies created using blockchain technology and its infrastructure. In this research, the subject of interest-free financing with the Digital Turkish Lira (DTL) to be created with the blockchain infrastructure and the company tokens to be issued due to it is discussed. Interest-free financing will both enable companies to borrow at more affordable costs and encourage people to invest in Turkish Lira assets.

Since the interest-free financing model with company tokens using the blockchain infrastructure proposed in the research is a technological product, the Technological Acceptance Model (TAM), which is frequently used in the literature, was created using the theoretical infrastructure. TAM research topic, which is frequently used in the acceptance of new technologies in the literature, plays an important role in determining the factors affecting the active use of technology or innovation and determining its degree (Davis and Venkatesh 1996; Su et al., 2022; Ajzen, 1991). According to TAM, intention and attitude are important factors in people's actual use of the relevant technology. Acceptance of the H1 hypothesis shows that intention and attitude are positively and significantly affected. This is very important in terms of the use of the technology in question (Venkatesh and Bala

2008). The relationship of attitude, which is an important determinant of intention, with perceived usefulness and perceived ease of use is very important. The positive and significant effect of PU on attitude, the acceptance of the H2 hypothesis, and the indirect effect of PEOU are among the important results of the present study (Venkatesh, 2000). In the relations of R, EC and T, which are the external factors of the research, exhibit results parallel to the literature. The rejections of H5 and H8 show that the proposed model, which indirectly affects PU, is reliable and risk-free (Toraman, 2021). In previous studies, it was determined that while cryptocurrencies such as Bitcoin and Ethereum were found to be risk-free, they were not actually reliable. The lack of a strong structure behind the determinations was seen as the most important reason. However, in the research conducted on cryptocurrencies such as DTL, which is the state behind it, it has been seen that there is no trust problem (Toraman, 2022a; Toraman, 2022b). Likewise, the model proposed in the current study is seen as reliable and risk-free. Here, the inclusion of state institutions in the system is the most important factor.

Finally, the proposed model allows interest-free financing. With Istanbul International Finance Center Project, which is in progress, funds will be transferred to Turkey from Muslim countries with interest sensitivity. In addition, Turkey, which is in the middle of Europe, Asia and Africa, will become an important trade center in the environment of the recent Ukraine-Russia war., the civil war and confusion in the Middle East. The company tokens to be issued based on DTL, which will be launched on the blockchain-based market, will enable easier money transfer between Turkey and the countries of the region in this process.

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