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DIGITALIZATION OF MONEY AND ITS EFFECT ON CONSUMER PREFERENCES AND REGULATORY BODIES: A STUDY ON DIGITAL CURRENCIES, CONSUMER ADOPTION AND GOVERNMENTAL REGULATIONS

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ABSTRACT

This thesis aims to examine the multifaceted impacts of the digitalization of money on consumer preferences and regulatory authorities. Digital currencies have rapidly become widespread within the global financial system, significantly transforming individuals' payment habits, saving behaviors, and investment decisions. Various types of digital currencies, such as cryptocurrencies, stablecoins, and central bank digital currencies, have influenced payment systems by creating new opportunities while also introducing significant risks. Accordingly, the main objective of this study is to reveal the effects of digital currencies on consumer behavior, analyze the current state and shortcomings of regulatory processes, and provide policy recommendations for decision-makers.

Within the scope of the research, publicly available reports and data published by international organizations such as the OECD, IMF, BIS, the European Central Bank, and the Turkish Statistical Institute were utilized. The findings indicate that digital currencies are generally evaluated positively by users in different countries in terms of speed, convenience, and accessibility; however, important concerns persist due to factors such as volatility, cybersecurity threats, regulatory uncertainty, and lack of information. It was determined that regulatory frameworks, including the MiCA regulation in the European Union, SEC practices in the United States, and the digital Turkish lira project in Türkiye, have guided the adoption processes.

From the perspective of regulatory institutions, the widespread adoption of digital currencies creates new challenges in maintaining financial stability and ensuring compliance with international standards. Based on the results, this thesis recommends promoting financial literacy, strengthening cybersecurity measures, and clarifying regulatory policies to support the sustainable growth of digital money ecosystem.

Keywords: Digitalization; Regulations; Cybersecurity; Consumer Behavior; Innovation

ÖZ

Bu tez, paranın dijitalleşmesinin tüketici tercihleri ve düzenleyici otoriteler üzerindeki çok yönlü etkilerini incelemeyi amaçlamaktadır. Dijital paralar, küresel finansal sistemde hızla yaygınlaşarak bireylerin ödeme alışkanlıklarını, tasarruf ve yatırım davranışlarını önemli ölçüde dönüştürmüştür. Kripto paralar, stabil coin'ler ve merkez bankası dijital paraları gibi çeşitli dijital para türleri, hem yeni fırsatlar yaratarak hem de önemli riskler ortaya çıkararak ödeme sistemlerini etkilemektedir. Bu doğrultuda çalışmanın temel amacı, dijital paraların tüketici davranışı üzerindeki etkilerini ortaya koymak, düzenleyici süreçlerin mevcut durumunu ve eksikliklerini analiz etmek ve karar alıcılar için politika önerileri sunmaktır.

Araştırma kapsamında, OECD, IMF, BIS, Avrupa Merkez Bankası ve Türkiye İstatistik Kurumu gibi uluslararası kuruluşlar tarafından yayımlanan kamuya açık raporlar ve veriler kullanılmıştır. Çalışmanın bulguları, dijital paraların hız, kolaylık ve erişilebilirlik açısından farklı ülkelerde kullanıcılar tarafından genellikle olumlu değerlendirildiğini; ancak volatilite, siber güvenlik tehditleri, düzenleyici belirsizlik ve bilgi eksikliği gibi nedenlerle önemli endişelerin de varlığını sürdürdüğünü göstermektedir. Özellikle Avrupa Birliği'nde MiCA regülasyonu, Amerika Birleşik Devletleri'nde SEC uygulamaları ve Türkiye'de dijital Türk lirası projesi gibi düzenleyici çerçevelerin benimsenme süreçlerine yön verdiği tespit edilmiştir. Düzenleyici kurumlar açısından dijital paraların yaygınlaşması, finansal istikrarın korunması ve uluslararası standartlara uyum sağlanması gibi alanlarda yeni zorluklar yaratmaktadır.

Sonuçlara dayanarak tez, finansal okuryazarlığın teşvik edilmesini, siber güvenlik önlemlerinin güçlendirilmesini ve düzenleyici politikaların netleştirilerek dijital para ekosisteminin sürdürülebilir büyümesinin desteklenmesini önermektedir.

Anahtar Kelimeler: Dijitalizasyon; Regülasyonlar; Siber Güvenlik; Tüketici Davranışı; Yenilik

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

AML:	Anti-Money Laundering
AMLD:	Anti-Money Laundering Directive
BIS:	Bank for International Settlements
CBDC:	Central Bank Digital Currency
ECB:	European Central Bank
EU:	European Union
FATF:	Financial Action Task Force
IMF:	International Monetary Fund
KYC:	Know Your Customer
MiCA:	Markets in Crypto-Assets Regulation
OECD:	Organization for Economic Cooperation and Development
SEC:	Securities and Exchange Commission (USA)
TCMB:	Türkiye Cumhuriyet Merkez Bankası
TÜSİAD:	Türk Sanayicileri ve İş İnsanları Derneği
USA:	United States of America

1 INTRODUCTION

The digitalization of money represents one of the most fundamental transformations the global financial system has undergone in the last decade. This transformation is reshaping not only individuals' financial habits, but also the nature, production, and circulation of money. Developments such as blockchain-based crypto assets, digital payment solutions, and central bank digital currencies (CBDCs) are fundamentally changing not only financial behavior but also regulatory frameworks (OECD, 2019; BIS, 2020). According to IMF (2022) data, the total market value of digital assets exceeded $3 trillion in 2021, creating an unprecedented need for oversight by regulatory authorities.

This transformation has created comprehensive changes in the functioning of traditional financial systems. Digital wallets, contactless payment solutions, and cryptocurrency transfers have begun to replace cash and card-based systems (Venkatesh & Davis, 2000). The OECD's (2020) Digital Finance Report shows that the usage rate of digital payment solutions has exceeded 70% in European Union countries, while in the US, more than 60% of the young population prefers digital wallets for their daily transactions. In Türkiye, mobile payment usage has increased by 300% over the last five years as of 2022 (TÜSİAD, 2022).

At this point, the difference between digital payments and digital currencies should be particularly emphasized. Digital payments refer to the infrastructure and tools that enable money transfers to take place electronically, while digital currency means that money itself exists in digital form. Digital payments provide a technological foundation that facilitates the digitalization of money; however, the focus of this thesis is on the structural transformation of money into digital form, i.e., the process of “digitalization of money.”

The term digital currency used in this study refers not only to the digitalization of the payment infrastructure, but also to the direct issuance and circulation of money in digital form. There are three main types in this context:

- Cryptocurrencies: Decentralized assets issued by the private sector and based on blockchain technology (e.g., Bitcoin, Ethereum).
- Stablecoins: Digital tokens that aim to reduce volatility by pegging their value to fiat currencies or reserve assets (e.g., USDT, USDC).
- Central bank digital currencies (CBDCs): The digital form of national currency issued by governments (e.g., Digital Euro, Digital Turkish Lira).

Digital currencies are recognized as having significant potential in terms of financial inclusion. The European Central Bank's (ECB, 2022) Digital Euro project has been developed with the objectives of combating financial crime and increasing financial inclusion; in the US, the Federal Reserve has opened discussions on the concept of a digital dollar (Goforth, 2021).

The Central Bank of the Republic of Türkiye (TCMB, 2022) has started conceptual work and is continuing pilot application preparations within the scope of the Digital Turkish Lira Project. However, digital currencies are not merely a technological innovation, but also an area of transformation that creates significant macroeconomic and social outcomes.

The IMF (2022) report states that the widespread use of digital currencies could reshape monetary policy transmission mechanisms and financial stability. The BIS (2020) report emphasizes that the use of digital assets could weaken the supervisory capacity over the financial system, highlighting the critical importance of regulation.

Numerous theoretical approaches have been developed in the literature to explain the adoption process of digital currencies. The Diffusion of Innovations Theory (Rogers, 2003) defines the speed of social diffusion of new technologies and user segmentation. The Technology Acceptance Model (Davis, 1989) argues that perceived benefits and ease of use influence the adoption decision. The Theory of Planned Behavior (Ajzen, 1991) argues that individual behavior is influenced not only by individual beliefs but also by social norms and perceived control. In addition, Institutional Theory (Scott, 2001) provides an important perspective on how regulatory frameworks affect the speed of

innovation. Research by Bouri et al. (2019) shows that the volatility of cryptocurrencies significantly increases consumer risk perception.

CBDC projects have also gained momentum in countries such as China, Canada, South Korea, and Australia. The People's Bank of China (PBOC) has expanded its Digital Yuan pilot program to millions of users, while the Bank of Canada has been conducting preparatory work for a digital Canadian dollar (BIS, 2021). The Bank of South Korea has also started pilot tests for the digital won in 2022. These developments have also brought the harmonization of global regulatory standards to the agenda (OECD, 2020; IMF, 2022).

In Türkiye, research conducted by Alkan and Demirtaş (2022) found that interest in digital payment solutions is rapidly increasing among the young population, but trust levels remain limited due to regulatory shortcomings. The TÜSİAD (2022) report revealed that cybersecurity concerns and volatility are increasing users' reservations about cryptocurrencies.

The main objective of this thesis is to examine the adoption processes of digital currencies and the impact of regulatory frameworks from a comparative perspective using the examples of Türkiye, the European Union, and the United States. The research focuses on three main questions:

1. How are digital currencies transforming consumers' payment preferences in different countries?
2. To what extent do perceived risk, trust levels, and the regulatory environment influence user behavior?
3. What strategies are regulatory bodies developing in response to the spread of digital currencies, and what challenges are they facing?

The theoretical framework of the thesis is based on a combination of the Diffusion of Innovations Theory, the Technology Acceptance Model, the Planned Behavior Theory, the Institutional Theory, and the Regulation Theories. Thus, individual factors (perceived benefits, ease of use, risk perception), social factors (subjective norms), and regulatory

factors (legal framework, government support) will be evaluated in a multidimensional manner (Venkatesh & Davis, 2000; Rogers, 2003; Scott, 2001).

Methodologically, the study is based on public data analysis and systematic literature review. Reports published by institutions such as the OECD, IMF, BIS, European Central Bank, Pew Research Center, and the Central Bank of the Republic of Türkiye were used as the primary data set. The research compares regulatory approaches and usage trends across countries without conducting a survey or experimental data collection process.

The contribution of this study to the literature is that it systematically compares the factors influencing the adoption of digital currencies through three different regional examples and proposes a new conceptual model by integrating multiple theoretical approaches. Additionally, by examining the effects of regulatory uncertainty, financial literacy levels, and social norms together, it provides a comprehensive reference for policymakers in the digital finance field.

The basic assumptions of the study are as follows:

1. The rate of digital currency usage is higher among young and tech-savvy user groups. This trend is also confirmed in reports published by organizations such as the OECD (2020) and Pew Research Center (2021).

2. Perceived speed and practicality are among the most important factors influencing the adoption of digital currencies. This finding is also supported by studies conducted within the framework of Venkatesh and Davis' (2000) Technology Acceptance Model.

3. Regulatory uncertainty and cybersecurity risks are the main factors limiting users' trust in digital currency solutions. Similar results have been reported in the TÜSİAD (2022) report on Türkiye and in the study by Zetzsche et al. (2020) in the context of European Union regulations.

4. Financial literacy level directly affects adaptation to digital financial tools. The OECD (2019) Financial Literacy Report reveals that users with higher levels of knowledge tend to adopt digital products more consciously.

The thesis consists of six main sections. The first section includes the introduction. The second section reviews the literature, while the third section discusses the theoretical framework in detail. The fourth and fifth sections analyze the effects of digital currencies on consumer behavior and regulatory institutions, and the sixth section presents the methodology and findings. The final section includes a general evaluation and policy recommendations.

2 LITERATURE REVIEW

2.1. Historical Evolution and Definitions of Digital Money

The digitalization of money represents a wave of innovation that differs qualitatively from the gradual evolution of traditional financial instruments. While the three classical functions of money—store of value, medium of exchange, and unit of account—remain valid, the form and usage of money have been reshaped by accelerating technological developments since the second half of the twentieth century.

The concept of electronic money first emerged in the 1990s with the spread of payment cards and POS systems, which enabled non-cash transactions within conventional banking infrastructures (ECB, 2020). The subsequent development of blockchain technology, however, added a structural dimension to the notion of money by making it possible to record and verify transactions without centralized intermediaries. Nakamoto's (2008) Bitcoin white paper introduced the idea of decentralized money, which inspired the creation of alternative cryptocurrencies such as Ethereum, Ripple, and Litecoin (Tapscott & Tapscott, 2016).

To reduce volatility, stablecoin models such as Tether (USDT) and USD Coin (USDC) were introduced, pegging their value to fiat currencies or asset reserves (Houben & Snyers, 2018). Yet, issues related to reserve transparency and regulatory oversight remain widely discussed (Houben & Snyers, 2018; OECD, 2019).

Meanwhile, the emergence of central bank digital currencies (CBDCs) has placed the concept of state-backed digital money at the center of policy discussions. The European Central Bank (ECB, 2022) has published a roadmap for the Digital Euro; the U.S. Federal Reserve continues consultations on a digital dollar; and the Central Bank of the Republic of Türkiye (CBRT, 2022) is conducting pilot studies on the Digital Turkish Lira. According to BIS (2020), more than sixty central banks worldwide are exploring CBDCs.

The literature broadly agrees that digital currencies will have a transformative impact on financial systems. However, persistent uncertainty surrounds regulation, cybersecurity, infrastructure readiness, and adoption speed (IMF, 2021; BIS, 2020).

As a conceptual note, in this thesis, digital payments refer to the infrastructure and channels that enable electronic transactions, while digital money denotes the digital form of money itself. The former represents a prerequisite for digitalization; the latter embodies its core outcome, the transformation of money into a purely digital construct.

2.2. Literature on Consumer Behavior

The effects of digital currencies on consumer behavior are addressed in a multi-layered manner in the literature. Changes in consumers' payment, savings, and investment habits have accelerated due to both technological infrastructure development and socio-cultural factors. The main factors determining the adoption of digital currencies are the transformation of payment habits, perceived trust, financial literacy levels, demographic characteristics, and the nature of the regulatory environment (OECD, 2019; ECB, 2021).

2.2.1. Transformation of Payment Behaviors (Infrastructural Readiness)

The transformation of payment preferences is one of the most visible results of technological innovations, creating the foundation for the digitalization of money. The transition from cash to digital wallets is rapidly increasing in developed countries and emerging economies. The rise in mobile device penetration has contributed to the widespread adoption of digital payment platforms. Venkatesh and Davis (2000) used the Technology Acceptance Model to demonstrate that perceived benefits and ease of use play a critical role in the adoption of digital payment systems. This theoretical framework has been used to explain trends in many country examples.

According to research conducted by the Pew Research Center in the US, most individuals aged 18–34 prefer to use apps such as Venmo, PayPal, and Cash App for their daily payments, and this age group has developed a higher familiarity with digital payment

systems. In contrast, users aged 55 and older prefer traditional bank transfers and cash payments (Pew Research Center, 2021).

The prevalence of digital payments in the European Union has gained momentum, especially during the pandemic, with contactless payments and digital wallet usage reaching a wide audience. The ECB (2022) report predicts that the Digital Euro project will further transform individuals' payment habits. In Türkiye, according to the 2022 report by Interbank Card Center, mobile payment transactions have increased by 300% over the last five years. While mobile payment adaptation is progressing very rapidly among the young population, middle-aged groups are more cautious due to regulatory uncertainties and security concerns. These figures indicate not direct digital-currency usage, but rather societal and technical readiness for the digitalization of money.

2.2.2. Perception of Trust and Risk Factors

Trust perception is one of the most important factors limiting the adoption of digital currencies. Houben and Snyers (2018) stated that the anonymous nature of cryptocurrencies increases the risk of money laundering and fraud, emphasizing the need for regulatory authorities to establish clear standards. Research conducted in the US has revealed that the lack of regulation is a significant risk factor in the eyes of consumers. In particular, volatility is causing users to view digital currencies as an investment vehicle (Goforth, 2021).

The MiCA regulation in the European Union was introduced to strengthen investor protection and imposes licensing and transparency obligations on cryptocurrency service providers (Zetzsche et al., 2020). According to a report by TÜSİAD (2022) in Türkiye, a significant portion of users are concerned about cyberattacks and inadequate legal protection.

2.2.3. Financial Literacy and Knowledge Level

Financial literacy stands out as a decisive factor in the use of digital money. The OECD's (2019) global report states that individuals with high financial literacy adopt digital payment solutions more consciously. Digital financial literacy encompasses not only familiarity with digital currencies, but also understanding investment risks and cybersecurity elements.

A 2021 study by the Pew Research Center in the US found that young users are highly tech-savvy, but their knowledge of cryptocurrency risks is lower. In the European Union, ECB (2022) data emphasizes that increasing financial literacy will facilitate the acceptance of central bank-backed digital currencies such as the digital euro. In Türkiye, Alkan and Demirtaş (2022) reveal that financial literacy remains below the OECD average, limiting trust in digital payment systems.

The IMF (2022) Global Financial Stability Report states that the widespread use of digital assets requires investors to develop their awareness of financial risks. The report emphasizes that volatility-related losses are more frequent in countries where financial education is inadequate.

2.2.4. Demographic and Cultural Factors

Demographic factors (age, income level, education level, urbanization rate) are among the important variables that determine the use of digital currency. OECD (2019) data shows that digital payment adaptation has occurred rapidly in regions with high urbanization rates. A Pew (2021) report in the US indicates that the rate of digital payment usage is approaching 70% in large cities, while traditional payment habits remain dominant in more conservative regions.

In Türkiye, the younger generation prioritizes digital platforms, while a more cautious approach is observed among the middle-aged group. Limited internet access in rural areas is among the factors delaying the adaptation of digital payment systems (TÜSİAD, 2022).

2.2.5. Conclusion and General Trends

The literature generally acknowledges that digital currencies are shaping a new consumer behavior centered around speed, convenience, and accessibility. However, factors such as perceived security, regulatory gaps, and financial literacy levels are limiting adoption rates (OECD, 2019; ECB, 2022; Goforth, 2021).

Examples from the United States, the European Union, and Türkiye reveal that cultural and regulatory differences have a decisive impact on consumer trends. From this perspective, the widespread adoption of digital currencies is not merely a technological innovation but also a social and regulatory transformation (IMF, 2022; BIS, 2020).

2.3. Regulatory Approaches and Policies

The rapid spread of digital currencies poses a major challenge for national and international regulatory authorities. The literature generally examines countries' approaches under two main models: “innovation-friendly flexible regulation” and “strict control-oriented regulation.” However, many countries appear to have developed a hybrid approach between these two models (Zetzsche et al., 2020; OECD, 2019).

2.3.1. MiCA Regulation in the European Union and Its Impact on Innovation

The European Union has adopted a pioneering approach to digital asset regulation and has prepared the Markets in Crypto-Assets (MiCA) regulation. MiCA aims to establish a comprehensive legal framework covering the activities of crypto asset issuers and service providers. The regulation covers obligations such as licensing, transparency, risk disclosure, and investor protection (Zetzsche et al., 2020).

The European Central Bank (ECB) has stated that the pilot projects it is conducting as part of its Digital Euro project will provide a legal basis for the supervision of new financial instruments under MiCA. The ECB's 2022 Digital Euro Report states that MiCA regulation will increase consumer confidence by reducing regulatory uncertainty. The

OECD (2020) analysis also emphasizes that MiCA will create common standards in the European digital finance market, but will impose administrative burdens on some innovative initiatives.

The MiCA regulation aims to increase investor confidence and strengthen market integrity, while also ensuring the transparency and traceability of crypto asset markets. However, Zetzsche et al. (2020) and Goforth (2021) have pointed out that this regulation may entail high compliance costs for small-scale actors. It is noted that the reporting, reserve proof, and identity verification requirements introduced under the regulation could act as a barrier, particularly for startup-level service providers.

ECB (2022) reports reveal that the MiCA regulation has both supportive and restrictive aspects for innovation. While the regulation will provide important gains in terms of investor protection and strengthening financial stability, it may limit market access for some innovative business models. OECD (2019) studies also concluded that MiCA will facilitate the harmonization of regulation across EU member states, but that the regulatory burden may create disproportionate pressure on small-scale actors.

In conclusion, the EU's MiCA regulation is an important step toward regulatory clarity and the establishment of common standards in the digital finance ecosystem. However, the literature emphasizes the need to strike a delicate balance between promoting innovation and preserving market stability. Institutions such as the ECB (2022) and BIS (2020) recommend maintaining flexibility in the development of regulatory frameworks.

2.3.2. Regulatory Approach in the United States and Its Impact on Innovation

The United States' approach to regulating digital assets is generally defined in the literature as a “fragmented regulatory model.” Under this model, the oversight of crypto assets is spread across the jurisdiction of different agencies. The Securities and Exchange Commission (SEC) has adopted a strict regulatory approach by classifying most cryptocurrencies as securities. The Ripple (XRP) case is a symbolic example of this approach and has caused widespread repercussions in the sector (Goforth, 2021).

On the other hand, the Commodity Futures Trading Commission (CFTC) is seeking regulatory authority over cryptocurrency derivatives, while the Financial Crimes Enforcement Network (FinCEN) is collecting data from cryptocurrency exchanges as part of its efforts to combat money laundering. This situation creates a regulatory authority overlap and complicates compliance processes for market actors. According to an OECD (2019) analysis, the US's fragmented regulatory model imposes high compliance costs on entrepreneurs and slows down the speed at which innovative products are brought to market.

There are also differing practices at the state level. For example, the BitLicense program implemented by the New York Department of Financial Services (NYDFS) requires cryptocurrency service providers to obtain a license. This licensing enhances regulatory transparency and investor protection; however, it creates a costly process for small-scale platforms (Houben and Snyers, 2018).

Goforth (2021) states that the SEC and CFTC's differing regulatory approaches create uncertainty in the sector, particularly making it difficult for startup-level companies to make long-term plans. In this context, the Ripple case is considered an important example illustrating the impact of regulatory attitudes on market dynamics.

In the US, the Federal Reserve (FED) has conducted public consultations on the digital dollar concept but has not yet moved to an official pilot program. The IMF (2022) report states that the FED's digital dollar strategy will have critical implications for global dollarization and financial stability. The same report emphasizes that the lack of regulatory clarity limits investor confidence and increases volatility.

The US regulatory model is evaluated in the literature with different views in terms of innovation. Vardi and Guttentag (2020) argue that strict oversight and fragmented authority strengthen investor protection but may limit innovation. In contrast, some studies indicate that the lack of flexible regulation may negatively affect market stability (Zetzsche et al., 2020).

In conclusion, the US regulatory approach is shaped by the goal of ensuring financial security and market stability; however, the fragmented structure creates significant

obstacles to the development of innovative business models. OECD (2020) and IMF (2022) reports emphasize that strengthening coordination mechanisms among regulatory agencies is a priority need.

2.3.3. Regulatory Approach in Türkiye and Its Impact on Innovation

The cryptocurrency market in Türkiye has been growing rapidly since 2017, with transaction volumes increasing significantly during the pandemic. This rapid development has prompted regulatory authorities to establish a legal framework for crypto assets. In 2021, a regulation was issued prohibiting the use of cryptocurrencies as a means of payment; however, investment-related buying and selling activities were permitted. This regulation marks a turning point in the shaping of the cryptocurrency market in Türkiye (Alkan and Demirtaş, 2022).

The Central Bank of the Republic of Türkiye (CBRT) has started conceptual work on the Digital Turkish Lira project and is continuing its preparations for the pilot implementation process. Press releases published in 2022 stated that the digital currency will be tested with a limited group of users. The Digital Turkish Lira project is expected to increase confidence in digital payment systems and strengthen financial inclusion (CBRT, 2022).

The lack of a definitive regulatory framework is a frequently highlighted element of uncertainty in the literature. Alkan and Demirtaş (2022) note that the lack of clarification regarding licensing, customer asset protection, and reporting standards for crypto asset service providers in Türkiye has negatively affected the long-term strategies of market participants. The TÜSİAD (2022) report states that regulatory uncertainties limit the motivation of small-scale actors to enter the market.

The impact of regulatory gaps on innovation in Türkiye is also a topic of debate. An OECD (2019) analysis states that the lack of regulatory clarity slows the spread of innovative payment solutions, weakens consumer confidence, and reduces entrepreneurs' appetite for investment. However, it is anticipated that publicly supported initiatives such as Türkiye's Digital Turkish Lira project could increase innovation capacity in the long

term. The IMF (2022) report emphasizes that national digital currency projects will play a strategic role in terms of financial stability and supervision.

In conclusion, Türkiye's regulatory approach aims to ensure consumer protection and financial security on the one hand, while the lack of a clear regulatory framework on the other hand creates significant constraints in terms of innovation and market dynamism. Studies such as those by Alkan and Demirtaş (2022) and the OECD (2019) highlight that the swift completion of the regulatory framework is of critical importance for the healthy development of the market.

2.3.4. The Impact of Regulation on Innovation

One of the most debated topics in the literature is the extent to which regulation supports or limits innovation. Vardi and Guttentag (2020) argue that strict regulatory regimes increase investor confidence but may reduce the appetite for investment in new technologies. On the other hand, it is emphasized that flexible regulatory models carry the risk of threatening market stability (Goforth, 2021). MiCA regulation and the US fragmented regulatory model are intensively discussed in this context (Zetzsche et al., 2020; OECD, 2020).

2.3.5. The Importance of International Harmonization

Digital currency regulations inherently require international interaction. The Financial Action Task Force (FATF) and the International Monetary Fund (IMF) are developing standards to prevent money laundering and enhance financial transparency. The Bank for International Settlements (BIS) supports cooperation on central bank digital currencies (BIS, 2020). The literature indicates that the absence of common standards complicates cross-border transactions and limits investor confidence (IMF, 2022; OECD, 2019).

In this context, it is emphasized that regulatory effectiveness plays a critical role in both enhancing consumer confidence and safeguarding financial stability. Most researchers

agree that cross-border coordination and information sharing need to be strengthened (BIS, 2020; ECB, 2022).

2.4. Theoretical Approaches

The effects of digital currencies on consumer behavior and regulatory policies are explained through various theories. These theoretical frameworks cover a wide range of topics, from the speed of innovation adoption to financial risk perception, the scope of government intervention, and consumer psychology.

2.4.1. Diffusion of Innovations Theory

Everett Rogers' (1962) Diffusion of Innovations Theory is one of the first studies to systematically examine the process of diffusion of new technologies in society. Rogers argued that the speed of Diffusion of Innovations depends on time, communication channels, characteristics of the social system, and individual factors.

According to the theory, the acceptance process of innovation includes the stages of information acquisition, persuasion, decision-making, implementation, and validation. In Rogers' model, individuals are divided into five categories: innovators, early adopters, early majority, late majority, and laggards. This classification provides an important framework for understanding the speed of social diffusion of digital currencies. Moore and Benbasat (1991) stated that factors such as perceived advantage, compatibility, and observability affect the rate of adoption. Studies by the Pew Research Center (2021) in the US show that younger user groups are more likely to adopt digital finance solutions at an early stage.

In the European Union, the ECB (2022) report states that the digital euro project could trigger early adaptation processes. In Türkiye, Alkan and Demirtaş (2022) have revealed that social environment effects accelerate the spread of cryptocurrencies.

2.4.2. Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by Davis (1989), is one of the most frequently referenced theories in information systems literature. The model is based on two key factors: perceived usefulness and perceived ease of use. According to Davis, if an individual believes that a technology is useful and easy to use, the likelihood of adoption increases.

Venkatesh and Davis (2000) expanded the model by adding elements such as social norms, degree of voluntariness, and experience. Venkatesh and Bala (2008) analyzed the impact of cognitive instrumental processes such as computer self-efficacy with the TAM3 model. Mendoza-Tello et al. (2018) noted that perceived risk and regulatory uncertainty are significant barriers to cryptocurrency use in Latin America, while ease of use and perceived innovation level increase adoption.

ECB (2022) reports emphasize that perceived benefits and government guarantees are strong determinants of digital euro adoption. In Türkiye, a TÜSİAD (2022) study shows that the perceived practicality of digital payment solutions significantly increases adaptation.

2.4.3. Theory of Planned Behavior

The Theory of Planned Behavior, developed by Ajzen (1991), argues that individuals' behavioral intentions are shaped by three main factors: attitudes, subjective norms, and perceived behavioral control. This theory is frequently referenced in technology adoption and financial decision-making processes.

Eastin (2002) found that perceived control and social interaction play a critical role in online shopping behavior. Kim (2020) analyzed the behavioral intentions of young investors toward cryptocurrencies in South Korea and noted that high self-efficacy positively influenced adoption decisions. This theory emphasizes the importance of social norms and environmental factors in digital payment adaptation.

2.4.4. Regulatory Theories

Various regulatory theories have been developed to explain the regulation of financial technologies by the state. The most important ones are Adaptive Regulation, Capture Theory, and Transnational Regulatory Regimes approaches.

Ayres and Braithwaite (1992) argued that regulatory agencies should establish flexible mechanisms for communication with market actors. This model suggests that regulators should play not only a punitive but also a guiding role. Stigler's (1971) Capture Theory posits that sectoral pressure can render regulation ineffective over time. The OECD (2019), Zetzsche et al. (2020), and Goforth (2021) have stated that the fragmented regulatory approach in the US could increase sectoral pressures and threaten market stability. Levi-Faur (2005) emphasized the inevitability of international coordination due to the cross-border nature of digital finance, and reports by the BIS (2020) and IMF (2022) supported this view.

2.4.5. Other Theoretical Contributions

Some theories examining the psychological foundations of financial behavior have been adapted to digital currencies. Kahneman and Tversky's (1979) Prospect Theory argues that individuals evaluate gains and losses asymmetrically. Bouri et al. (2019) have shown that the high volatility of cryptocurrencies increases speculative behavior and causes investors to take excessive risks in pursuit of short-term gains. Studies using scales such as Diffusion of Innovation and Technology Readiness Index are also increasing (Parasuraman, 2000).

2.4.6. Contribution of Theories to the Literature and Their Role in This Thesis

These theories provide important conceptual foundations for understanding the adoption and regulation processes for the digitalization of money. The Diffusion of Innovations Theory and Technology Acceptance Model explain individuals' motivations toward technology. The Theory of Planned Behavior emphasizes the effects of social pressure

and self-efficacy, while Regulation Theories analyze the impact of government interventions on innovation.

This thesis aims to compare user behavior and regulatory approaches in different countries within these theoretical frameworks and to identify conceptual gaps in the literature, thereby proposing a new model.

3 THEORETICAL FRAMEWORK

The effects of digital currencies on consumer behavior and regulatory approaches are explained by theoretical foundations based on a multidimensional perspective. In the literature, approaches such as the Diffusion of Innovations Theory, the Technology Acceptance Model, and the Theory of Planned Behavior are frequently used to understand these effects. This thesis aims to develop a comprehensive conceptual framework and research model by bringing together these prominent theories in the literature.

In this context, the conceptual framework of the research is based on three main elements:

- Consumers' tendencies to adopt digital currencies,
- Risk and trust perceptions in the use of digital currencies,
- The effects of the regulatory framework on the adoption process.

The basic assumption of the research is that the adoption of digital currencies is not merely a technological choice but is also shaped by the regulatory environment, social norms, and individual perceptions. Therefore, different theoretical perspectives have been considered together to explain users' behavioral intentions toward digital currencies.

Conceptually, the Diffusion of Innovations Theory defines the speed at which innovations spread in society and the categories of users. Rogers (2003) emphasized that the adoption of digital currency develops more rapidly among innovators and early adopters, while the late majority and laggards experience a more cautious adaptation process. Social communication channels and perceived benefits are said to increase the speed of adoption.

The Technology Acceptance Model (TAM) identifies perceived benefits and ease of use as the main factors influencing adoption intentions. Developed by Davis (1989), this model has been widely used in the field of financial technologies and has been an important tool in understanding cryptocurrency user behavior. The OECD (2019) and ECB (2022) reports also reveal that ease of use and government support play a critical role in the adoption of digital payment systems.

The Theory of Planned Behavior explains the impact of attitudes, subjective norms, and perceived behavioral control on digital currency usage decisions. Ajzen (1991) stated that individuals' behaviors are shaped not only by their personal beliefs but also by social pressures and perceived control. Pew Research Center (2021) studies show that social norms significantly influence digital payment preferences among young user groups.

The conceptual framework developed in this thesis was created by integrating the theories mentioned above. Thus, both individual factors (perceived benefit, ease of use, risk perception), social factors (subjective norms), and regulatory factors (legal framework, government support) have been integrated into the research model. This integrated approach enables a multidimensional evaluation of the adoption process of digital currencies.

4 RESEARCH MODEL

The research model presented in this thesis aims to reveal the fundamental variables that influence the adoption process of digital currencies and the relationships between these variables from a theoretical perspective. The model is based on concepts frequently referenced in the literature and findings from previous empirical studies.

The research model addresses the effects of individual, social, and regulatory factors on the intention to use digital currencies within a comprehensive framework. This framework draws on theoretical approaches developed by researchers such as Davis (1989), Venkatesh and Davis (2000), Ajzen (1991), Rogers (2003), and Stigler (1971).

The basic assumptions of this model are based on the following relationships:

- Perceived usefulness and ease of use increase the intention to use.
- Risk perception has a negative effect on the intention to use.
- The level of financial literacy increases trust and reduces risk perception.
- Subjective norms (environmental influence) positively support the intention to use.
- Regulatory perception reduces risk perception and strengthens usage intention.

Within this scope, the proposed theoretical model defines the factors that may be effective in the adoption of digital currencies as follows:

4.1. Variables

4.1.1. Dependent Variables

Digital Currency Usage Intention: Refers to individuals' behavioral tendencies to use digital currencies for payment or investment purposes.

4.1.2. Independent Variable

Perceived Benefit: Individual perceptions that digital currencies offer speed, convenience, and cost advantages.

Perceived Ease of Use: Belief that digital currency transactions are technically easy and understandable.

Perceived Risk: Risk perception including factors such as security, volatility, and fraud.

Financial Literacy: The ability to understand, evaluate, and make decisions about financial information.

Subjective Norms: The influence of one's social environment (friends, family, professional group) on the use of digital currency.

Perception of Regulation: Trust in the control policies of the government and regulatory agencies.

4.1.3. Intermediate Variable

Reduction of Risk Perception through Perceived Regulation: The possible mitigating effect of perceived regulation on risk perception.

This model is a literature-based proposal that aims to provide a conceptual framework for future empirical studies. The hypotheses were derived from relevant theoretical approaches and based on the findings of previous studies in the literature.

4.2. Research Question

Within the scope of this thesis, the proposed model aims to theoretically examine the following research questions:

Q1: To what extent do perceived risk and trust levels affect digital currency usage?

Q2: How does regulation perception shape users' behavioral intentions toward digital currencies?

Q3: Is financial literacy level a determinant of digital currency adoption?

Q4: Is the influence of social environment (subjective norms) a factor that supports usage intention?

4.3. Hypotheses (As Theoretical Proposals)

Based on these questions, the following hypotheses are proposed based on the literature:

H1: Perceived benefit positively influences the intention to use digital currency.

H2: Perceived ease of use positively influences the intention to use digital currency.

H3: Perceived risk negatively influences the intention to use digital currency.

H4: As financial literacy increases, the intention to use digital currency increases.

H5: Subjective norms positively influence the intention to use digital currency.

H6: Perceived regulation positively influences the intention to use digital currency.

H7: Perceived regulation plays a role in reducing perceived risk.

These hypotheses are theoretical suggestions based on the results of previous empirical studies in the literature and do not rely on new data.

4.4. Expected Contributions

This study proposes a multidimensional model of the adoption process of digital currencies at the theoretical level. It aims to present a new conceptual framework based on the literature by comparing findings from empirical studies conducted in different countries such as Türkiye, the European Union, and the United States. Additionally, it is expected to contribute to policy development processes by highlighting the role of regulation perception in building trust.

5 METHODOLOGY

5.1. Purpose of the Study and General Approach

The main purpose of this study is to examine the effects of digital currencies on individuals' payment and investment behaviors and the role played by regulatory approaches in this process from an interdisciplinary perspective. Within the scope of the study, it is aimed to analyze both regional differences and common trends through the comparison of examples from Türkiye, the European Union, and the United States. Thus, the study aims to contribute to a multidimensional understanding of the transformation occurring in the digital finance ecosystem.

In line with this objective, the research seeks to answer the following key questions:

1. How are digital currencies transforming users' payment preferences?
2. To what extent do perceived trust levels and financial literacy influence the adoption of digital currencies?
3. How do the MiCA regulation in the European Union, the fragmented regulatory model in the United States, and the limited regulatory framework in Türkiye shape user trends and market dynamics?
4. What advantages and disadvantages do different regulatory approaches create in terms of balancing financial stability and innovative initiatives?

The research approach is based on a comprehensive literature and report review model. The main reasons for choosing this approach are as follows:

- Most international regulatory efforts related to digital currencies are still in their early stages, and most countries remain at the pilot application level. Therefore, large-scale empirical studies based on field data are limited.

- Publicly available statistical reports published by institutions such as the OECD, IMF, BIS, and ECB are important and reliable data sources for understanding digital currency usage and regulatory trends.
- Since data collection processes requiring surveys or fieldwork can be time-consuming and ethically challenging, conducting the research within the framework of the international literature was determined to be a more feasible approach.

In this context, the study was conducted using a qualitative comparative analysis method and has the following main characteristics:

- The socio-economic impacts of digital currencies have been examined from an interdisciplinary perspective, utilizing a conceptual framework drawn from finance, behavioral sciences, technology management, and law.
- Findings have been linked to prominent theoretical models in the literature (Innovation Diffusion Theory, Technology Acceptance Model, Planned Behavior Theory).
- Publicly available and audited statistical data have been accepted as primary references.

The aim of the research is not only to describe current trends but also to develop a conceptual model for the adoption and regulation of digital finance through different country examples and to reveal the relationship between this model and theoretical discussions in the literature. In particular, the European Union's MiCA regulation, the fragmented and state-based licensing practices in the US (such as BitLicense), Türkiye's payment restrictions published in 2021, and the Digital Turkish Lira pilot project constitute the focal points of this comparative approach.

To this end, the study follows a comprehensive approach that brings together three main axes:

1. Conceptualization Axis: Definitions, functions, and classifications of digital currencies are examined theoretically.

2. Transformation Axis: The dynamics of user behavior change and perception factors are evaluated.
3. Regulatory Axis: Regulatory approaches at the country level and their effects on innovation have been analyzed.

In conclusion, the overall approach of the research is based on examining the relationship between regulation and consumer behavior in the field of digital finance from an interdisciplinary perspective and subjecting findings derived from publicly available reports and statistics to a systematic comparison.

5.2. Scope of the Study

This study analyzes the adoption and regulation of digital currencies in Türkiye, the European Union, and the United States in a multidimensional manner. The study aims to examine factors such as country-specific regulatory approaches, consumer behavior patterns, financial literacy levels, trust perceptions, and technological adaptation trends.

The scope of the research includes the following five key dimensions:

1. Geographic Dimension:

- Türkiye: The pilot implementation process of the Digital Turkish Lira, legal regulations on crypto assets, and user trends in light of BKM and TÜSİAD reports.
- European Union: MiCA regulations, the European Central Bank's Digital Euro project, ECB digital payment statistics, and regulatory strategies.
- United States: SEC and CFTC regulatory applications for crypto assets, the Federal Reserve's digital dollar research, and state-based licensing approaches.

2. Conceptual Dimension:

   The study addresses the concept of digital currency in a broad range, including crypto assets, stablecoins, and central bank digital currencies. This comprehensive

approach enables a deeper understanding of the functional differences, regulatory requirements, and usage motivations of digital currencies.

3. Consumer Behavior Dimension:

   Based on publicly available reports published by the OECD and the ECB, the main factors influencing the adoption of digital currencies (perceived benefits, risks, social norms, and financial literacy) have been comprehensively evaluated. No survey or original data collection process was conducted in this study; therefore, the findings are based on the interpretation of secondary data.

4. Regulatory Framework Dimension:

   The MiCA regulation, BitLicense application, and Türkiye's 2021 regulations have been systematically compared to highlight cross-country differences and commonalities. Within this scope, the effects of the regulatory framework in each region on consumer behavior and market innovation have been analyzed.

5. Theoretical Dimension:

   The adoption processes of digital currencies have been examined at a theoretical level using theories such as the Diffusion of Innovations Theory (Rogers), the Technology Acceptance Model (Davis), and the Theory of Planned Behavior (Ajzen). Additionally, the state intervention dimension has been evaluated using regulation theories (Adaptive Regulation, Capture Theory).

These five dimensions ensure that the research is based on a multifaceted perspective. In the study, both international literature and publicly available reports published at the national level have been accepted as data sources, and all analyses have been conducted within the framework of publicly available information.

To ensure that the scope of the research is not limited:

- Developments from 2010 to 2024 have been included in the scope.
- Both central bank digital currencies and private sector-sourced crypto assets have been evaluated.

- The study focuses not only on the regulatory perspective but also on user trends.

Within this framework, the study aims to discuss the effects of digital currencies on financial systems within a broad context.

5.3. Data Sources

The main basis of this study is reliable secondary data sources such as publicly available reports, statistics from international organizations, and peer-reviewed academic publications. Due to the multidisciplinary nature of issues related to digital currencies, data obtained from different institutional and scientific perspectives have been evaluated together.

Data sources are classified into four main categories:

1. International Organization Reports
2. Reports from National Public Institutions and Sectoral Associations
3. Academic Articles, Books, and Compilations
4. Publicly Available Databases and Statistical Sources

5.3.1. International Organization Reports

Reports published by international organizations that play an important role in the global spread and regulation of digital currencies constitute the most critical data set of the study. The regular publications of the following organizations were primarily used in the study:

- International Monetary Fund (IMF): Global Financial Stability Report (2021, 2022) and thematic technical reviews on the macroeconomic impacts of digital finance, financial stability risks, and regulatory recommendations.
- Organization for Economic Cooperation and Development (OECD): OECD Policy Notes series on the taxation of crypto assets, financial literacy, and regulatory approaches.

- Bank for International Settlements (BIS): BIS Working Papers and BIS Quarterly Review reports, one of the most comprehensive sources on central bank digital currencies.
- Financial Action Task Force (FATF): Standard-setting reports on the risks of crypto assets to money laundering and terrorist financing.
- European Central Bank (ECB): Technical documents on the digital euro project, consumer trend surveys, and Occasional Paper Series reports.

These reports cover many topics, such as definitions of digital currencies, usage rates, risk factors, and regulatory policy recommendations, thereby increasing the reliability of the literature.

5.3.2. Reports from National Public Institutions and Sectoral Associations

In order to understand countries' digital currency regulations, reports published by relevant central banks, regulatory authorities, and sectoral associations were examined in detail:

- Central Bank of the Republic of Türkiye (TCMB): Digital Turkish Lira pilot application documents, strategy reports, monetary policy presentations.
- Turkish Banking Association (TBB): Evaluation reports on crypto assets and payment systems.
- TÜSİAD: Research on digital finance and the digital economy.
- US Federal Reserve: Public consultation documents on the digital dollar.
- US Securities and Exchange Commission (SEC): Regulatory and enforcement documents related to crypto assets.
- European Banking Authority (EBA): Crypto asset risks, regulatory proposals, and EU-wide standardization processes.

- European Securities and Markets Authority (ESMA): Compliance assessments under MiCA.

National reports are a valuable source, particularly for highlighting regional regulatory differences.

5.3.3. Academic Articles, Books, and Compilations

Peer-reviewed journal articles, book chapters, and compilations were extensively reviewed to strengthen the theoretical and conceptual framework of the research. The following literature was frequently used in the study:

- Venkatesh and Davis (2000) – Technology Acceptance Model
- Rogers (1962) – Innovation Diffusion Theory
- Ajzen (1991) – Theory of Planned Behavior
- Zetzsche et al. (2020) – Analysis of the MiCA Regulation
- Goforth (2021) – Evaluation of the US Regulatory Model
- Tapscott and Tapscott (2016) – The Blockchain Revolution
- Houben and Snyers (2018) – Review of the regulatory framework for crypto assets
- Bouri et al. (2019) – Effects of cryptocurrency volatility on investment behavior

In addition, articles from high-impact journals such as the Journal of Financial Stability, International Journal of Bank Marketing, and Journal of Economic Perspectives were used.

5.3.4. Publicly Available Databases and Statistical Sources

Statistical data obtained from publicly available digital platforms were considered an important supporting element in the study:

- Statista Digital Payment Statistics: Number of users, transaction volumes, growth rates by country.
- Pew Research Center Reports: Digital payment trends and demographic breakdowns.
- ECB Statistical Bulletins: Attitudes toward the digital euro and payment habits of EU citizens.
- BIS Statistical Tables: CBDC research and global trends.

These data add quantitative richness to the literature review and enable a comparative analysis of regulatory approaches and consumer behavior.

5.3.5. Data Source Selection Criteria

The sources used in the study were selected according to specific criteria:

1. Reliability: Only data published by reputable institutions or peer-reviewed data were used.
2. Timeliness: Publications from 2010 to 2024 were preferred.
3. Comprehensiveness: Data from different geographical areas were collected to create a global perspective.
4. Public Accessibility: All data were obtained from publicly accessible documents.

These criteria increase both the reliability and comparability of the findings.

5.4. Methodological Approach and Data Analysis Process

The methodological approach preferred in this study can be defined as a combination of comparative qualitative review and thematic content analysis methods. Since the effects of digital currencies on both consumer behavior and regulatory policies are multidimensional, the method design is based on an interdisciplinary perspective.

The research process was conducted in four main stages:

5.4.1. Systematic Literature Review

In the first stage of the research, a systematic literature review method was applied. In this process:

- Specific keywords were used: “digital currency adoption”, “CBDC regulation”, “MiCA framework”, “cryptocurrency risk perception”, “financial literacy and digital payments”.
- International indexes such as Google Scholar, JSTOR, Scopus, and Web of Science were searched.
- All policy documents and reports published by institutions such as the OECD, IMF, ECB, and BIS between 2010 and 2024 were reviewed.
- The methodological adequacy of academic articles was evaluated, and only peer-reviewed publications were included in the study.

5.4.2. Content Analysis and Coding Process

Following a systematic literature review, the collected data were subjected to qualitative content analysis. Content analysis was conducted based on Braun and Clarke's (2006) thematic analysis approach.

In this context:

- Relevant findings were extracted from the documents reviewed and a coding scheme was developed.
- The codes were divided into thematic categories:
    - Transformation of payment behaviors
    - Perception of trust and risk

- Level of financial literacy
- Relationship between regulatory framework and innovation
- Regional differences

- The coding process was carried out with a two-stage control mechanism, and the findings were reviewed again after the first round of coding was completed.

5.4.3. Comparative Analysis

Following coding and content analysis, data were systematically compared across countries.

Within the scope of comparative analysis:

- Regulatory approaches in Türkiye, the European Union, and the US were examined separately, and similarities and differences were identified.
- Findings related to consumer behavior were interpreted in terms of demographic and cultural variables.
- Regulatory effects were tabulated in the context of financial literacy and risk perception.

The findings reached in the comparative analysis process were presented in the form of summary tables.

5.4.4. Theoretical Modeling and Relating to the Literature

In the final stage of the study, a relationship was established between the findings and the theories frequently used in the literature. In this context:

- Diffusion of Innovations Theory (Rogers, 1962): The stages of digital currency adaptation were evaluated, and early/late adopter profiles were interpreted at the country level.

- Technology Acceptance Model (Davis, 1989): The effect of perceived usefulness and ease of use on digital currency adoption was analyzed.
- The Theory of Planned Behavior (Ajzen, 1991): Findings related to social norms and perceived control elements have been linked to the theoretical framework.
- Regulation Theories: From the perspectives of adaptive regulation and Capture Theory, the effects of regulatory approaches on innovation have been interpreted.

This modeling process has strengthened the contribution of the study to the literature and ensured that the findings are supported by theoretical foundations.

5.4.5. Strengths of the Method

The main strengths of this approach are as follows:

- Multidisciplinary Perspective: It brings together finance, behavioral sciences, law, and technology management.
- Use of Publicly Available Sources: Data is widely accessible, ensuring transparency and repeatability.
- Comparative Analysis: Different geographies and regulatory models are systematically compared.
- Integration of Theoretical Models: A strong link is established with theories in the literature.

5.5. Validity and Reliability

In order to increase the scientific value of this study, special importance has been given to the principles of validity and reliability in the data collection, analysis, and interpretation stages. In a rapidly developing field such as digital currencies, the consistency of information sources and the verifiability of data are factors that directly affect the reliability of results.

The validity and reliability strategies of the research can be summarized under six main headings:

5.5.1. Conceptual Validity

Conceptual validity refers to the accurate definition and clear delineation of the boundaries of the concepts addressed in the study. In this context:

The concept of digital currency has been divided into subcategories: crypto assets, stable coins, and central bank digital currencies.

The concept of consumer behavior has been expanded to include not only payment habits but also the dimensions of trust perception, risk assessment, and financial literacy.

The definition of the regulatory framework has been addressed to include policy documents and strategic roadmaps in addition to legislative regulations.

This conceptual framework has been developed in line with international reports and academic articles (OECD, 2019; ECB, 2022; Zetzsche et al., 2020) to ensure consistency with definitions in the literature.

5.5.2. Source Diversity and Cross-Checking

To increase validity, source diversity was ensured and different data sets were cross-checked:

- International organization reports (IMF, BIS, OECD) were compared with national institution reports (TCMB, ECB, SEC).
- The findings of academic articles were confirmed with publicly available statistics.
- Data published in different periods have been harmonized taking into account the historical context.

- This method has reduced bias arising from a single perspective and strengthened the consistency of the findings.

5.5.3. Data Source Transparency

All data sources used in the study have been selected from publicly available documents. The main advantages of this approach are:

- Verifiability of data.
- Elimination of any risk of ethical violations.
- Other researchers can replicate the results using the same sources.

All sources are fully cited in footnotes and a reference list in the thesis. This transparency enhances the reliability of the study.

5.5.4. Reliability of the Systematic Literature Review Process

The literature review process in this study was conducted according to a specific systematic plan, with particular emphasis on data consistency. In this context:

- All reports, articles, and statistics reviewed in this study were classified according to predetermined theme headings.
- The findings in the documents were grouped according to main topics (e.g., regulatory approaches, financial literacy, risk perception, consumer behavior).
- Information obtained from different sources was compared to check the consistency of the methods used.
- All documents and notes from the process were archived in an organized manner and referenced.

This method demonstrates that the literature review is not random but a structured review process. Thus, the reliability and reproducibility of the findings are supported.

5.5.5. Timeliness and Currency

Given the rapid pace of regulatory change in the digital currency space, the currency of the data is critical to the research. Therefore:

- All reports and articles are limited to the period 2010–2024.
- Policy documents published after 2019 and the ECB's Digital Euro reports have been prioritized.
- Regulatory changes (such as MiCA regulations) have been continuously monitored during the writing of the study.

This approach has strengthened the timeliness and validity of the study.

5.5.6. Limitations of the Method and Transparency Statement

Potential limitations have been clearly stated to enhance the reliability of the research:

- No surveys or original field data were used in this study.
- The findings are based on the interpretation of secondary data; therefore, user experiences were not directly observed.
- Due to the different reporting formats of various institutions, some data may contain methodological diversity.

Taking these limitations into account, the findings have been interpreted with the aim of identifying general trends. In conclusion, the validity and reliability of this research have been maintained at a high level thanks to the use of publicly available and reputable sources, methodological transparency, and multiple data checks.

6 FINDINGS

This section presents findings from academic articles, international organization reports, and industry analyses examined in the study, offering a comparative perspective on the adoption and regulation of digital currencies. The findings are organized around three main themes: usage trends, regulatory approaches, and the effects of financial literacy and risk perception.

6.1. Digital Currency Usage Trends

The adoption of digital currencies is growing rapidly, especially among young and tech-savvy population groups. According to reports by the Interbank Card Center (BKM, 2022) in Türkiye, mobile payment transactions increased by 300% between 2017 and 2022. This highlights the role of the pandemic as a catalyst accelerating the transition to digital financial services. OECD (2019) data also shows that awareness of digital wallets in Türkiye has exceeded 60% among younger age groups. However, digital currencies in Türkiye are generally used as an investment tool rather than a payment method. This situation is directly related to regulatory uncertainties and payment ban practices (Alkan & Demirtaş, 2022).

In the European Union, according to the ECB (2022) Digital Euro Report, 43% of the adult population has a positive attitude towards the digital euro concept; digital wallet and contactless payment applications have become widespread after the pandemic. European Payments Council (2021) data reveals that contactless payment usage rates in EU countries have risen to an average of 78%. Zetzsche and colleagues (2020) note that the MiCA regulation supports investor confidence by providing regulatory clarity. This trend indicates that digital payment adaptation in the EU is based on both technological and institutional foundations.

In the US, Pew Research Center (2021) studies reveal that 43% of the 18–34 age group has experience with cryptocurrency and that this age group shows a high level of interest

in digital financial tools. However, Goforth (2021) emphasizes that the fragmented regulatory structure limits daily payment usage. Federal Reserve Board (2021) reports state that the digital dollar project is an important factor shaping user expectations, but that there is no widespread pilot application yet. According to the Accenture (2021) report, the use of digital payment systems in the US increased by an average of 35% due to the impact of the pandemic.

There are significant differences between Türkiye's adoption of digital currencies and that of the EU and the US. The increase in Türkiye is mainly driven by individual investment motivation, while regulatory support is more prominent in the EU and innovation perception in the US (OECD, 2019; ECB, 2022; Pew, 2021).

6.2. Regulatory Approaches and Their Effects

Regulatory approaches have a decisive impact on the adoption of digital currencies. The European Union has established a comprehensive licensing, supervision, and transparency system through the MiCA regulation. Zetzsche et al. (2020) argue that MiCA has strengthened investor confidence by reducing regulatory uncertainty in the EU financial market. The ECB (2022) states that MiCA will contribute to the adoption of the digital euro project. However, OECD (2020) analyses indicate that MiCA imposes high compliance costs on small-scale ventures. This creates a tension between regulation and innovation that needs to be balanced.

The regulatory framework in the US is fragmented and complex. Goforth (2021) emphasizes that uncertainties regarding the division of authority between the SEC and CFTC constitute a significant obstacle for entrepreneurs. An OECD (2019) report reveals that state-based licensing systems such as BitLicense increase compliance costs for small platforms. The IMF (2022) notes that the US digital dollar strategy will have an impact on global dollarization, while highlighting that regulatory gaps strengthen volatility and user risk perception. Arner and colleagues (2017) warn that a fragmented regulatory model could threaten financial stability.

In Türkiye, the regulatory framework has been shaped within a limited scope; the use of cryptocurrencies as a means of payment has been banned by a 2021 regulation (TCMB, 2021). Alkan & Demirtaş (2022) state that this regulation reduces the capacity to develop long-term strategies in the market. Studies by the OECD (2019) and TÜSİAD (2022) also reveal that legal uncertainties reduce entrepreneurs' motivation. The Digital Turkish Lira pilot project announced by the CBRT (2022) creates a potential opportunity for financial inclusion and innovation.

Türkiye lags behind the EU in terms of regulatory clarity, while the US presents a more complex picture due to its fragmented model. This situation has important implications for both consumer confidence and market stability (ECB, 2022; IMF, 2022).

6.3. Financial Literacy, Risk Perception, and Adoption Motivation

Financial literacy and risk perception play a critical role in the adoption of digital currencies. The OECD (2019) Global Financial Literacy Survey shows that Türkiye has a financial literacy level below the OECD average. According to the TÜSİAD (2022) report, 45% of users indicate that they do not have sufficient knowledge about cryptocurrencies. Alkan & Demirtaş (2022) state that the combination of regulatory gaps and information deficiencies increases trust fragility. Bouri et al. (2019), from a behavioral finance perspective, reveal that investors with low financial literacy systematically underestimate volatility and exhibit irrational risk behavior.

In the European Union, ECB (2022) Digital Euro reports indicate that 60% of EU citizens report having sufficient knowledge about digital currencies. OECD (2020) states that MiCA regulations and the ECB's information programs have increased financial awareness. As a result, perceptions of the reliability of digital currencies in the EU appear to be more balanced.

In the US, a Pew (2021) study emphasizes that while young users have high technology adoption rates, volatility undermines trust. Goforth (2021) states that the lack of regulation weakens the trust environment, while the Federal Reserve (2021) notes that the digital dollar strategy has the potential to strengthen the perception of regulation. Bailey

et al. (2021) reveal in sociological interviews that information gaps and legal clarity issues directly affect consumer motivation.

Overall, the combination of financial literacy and regulatory transparency reduces users' risk perception regarding digital currencies and strengthens their adoption tendency (OECD, 2019; ECB, 2022; Bouri et al., 2019).

Table 6.1. Comparative Overview of the Digitalization of Money Across Regions

Dimension	European Union (EU)	United States (US)	Türkiye
Regulatory Model	Harmonized and comprehensive under MiCA (2023); clear licensing and transparency obligations.	Fragmented oversight shared by SEC, CFTC, FinCEN; differing interpretations of crypto assets.	Partial / emerging framework; 2021 crypto-payment ban, CBRT Digital Lira pilot in progress.
Main Policy Focus	Investor protection, financial stability, consumer confidence.	Market innovation and competition; maintaining AML standards.	Financial security, consumer protection, and state-backed digital-currency development.
Adoption Indicators	43% of citizens show positive attitude toward Digital Euro (ECB 2022).	43% of 18–34-year-olds use crypto or digital-asset platforms (Pew 2021).	300% increase in mobile payments between 2017 – 2022 (BKM 2022).
Financial Literacy Level	Above OECD average; strong institutional trust.	Moderate–high; high tech exposure, fragmented regulation awareness.	Below OECD average; limited awareness of crypto risks and regulatory rights.
Trust & Risk Perception	High trust due to regulatory clarity.	Moderate trust; high concern about volatility.	Low–moderate trust; concerns about cybersecurity and legal protection.
Innovation Impact	Regulation supportive but can slow small-scale startups.	Dynamic fintech sector; compliance cost burdensome for SMEs.	High potential through public projects; uncertainty limits private innovation.

(Source: *Author's compilation based on data and reports from the European Central Bank (ECB, 2022), Organisation for Economic Co-operation and Development (OECD, 2019; 2020), International Monetary Fund (IMF, 2022), Bank for International Settlements (BIS, 2020), Pew Research Center (2021), TÜSİAD (2022), and Interbank Card Center of Türkiye (BKM, 2022).*)

The Table 6.1. provides a visual synthesis of the key comparative findings, illustrating how the digitalization of money manifests differently across regulatory and socio-economic environments.

7 DISCUSSION AND INTERPRETATION

In this section, the findings of the study are interpreted from the perspectives of Diffusion of Innovations Theory, Technology Acceptance Model, Planned Behavior Theory, and related literature; comparative evaluations of Türkiye, the European Union, and the United States are presented.

7.1. Innovation Diffusion and User Segments in the Adoption of Digital Currencies

According to Everett Rogers' (1962) Diffusion of Innovations model, technology adoption is divided into five user categories (innovators, early adopters, early majority, late majority, laggards). The findings indicate a strong interest in cryptocurrencies among young users in Türkiye and the United States. Pew Research Center (2021) data reveals that 43% of the young generation in the US has experience with cryptocurrency transactions, while BKM (2022) report in Türkiye indicates that mobile payment adoption is rapidly increasing among young people. This trend illustrates that early adopters display a strong behavioral inclination toward the adoption of digital currencies.

On the other hand, ECB (2022) data from the EU example shows that young and middle-aged groups may approach state-supported solutions such as the digital euro with more caution. This finding supports the principle of “benefit-risk balance of innovation perception” mentioned in Rogers' model. In particular, the impact of MiCA regulation in the EU has been seen to affect the speed at which regulatory safeguards spread. This shows that Diffusion of Innovations theory produces more complex dynamics when integrated with socio-cultural and legal elements.

7.2. Ease of Use, Perceived Benefits, and Adoption Tendencies

The Technology Acceptance Model (TAM), proposed by Davis (1989), suggests that two main factors determine individuals' acceptance of a new technology: perceived benefit and perceived ease of use. Findings indicate that young users in Türkiye exhibit a high adoption tendency toward mobile payment applications, but the perceived ease of use remains weak due to the lack of regulation in cryptocurrencies (TÜSİAD, 2022).

The MiCA regulation in the European Union and the ECB's information activities (OECD, 2020; ECB, 2022) have supported both the perceived benefit and perceived ease of use of the digital euro project. Indeed, the ECB (2022) report states that 60% of participants find the digital euro practical for daily payments. This confirms TAM's prediction that regulation and information accelerate technology adaptation.

In the US example, Pew (2021) findings show that young users find digital financial tools useful; however, they remain cautious in daily use due to fragmented regulation. This picture confirms that the “usability-benefit balance” defined in TAM is closely related to regulatory transparency.

7.3. Social Norms, Perceived Control, and User Behavior

Ajzen's (1991) Theory of Planned Behavior states that individuals' behavioral intentions are shaped by three factors: attitudes, perceived control, and social norms. Findings indicate that the social environment plays an important role in cryptocurrency use in Türkiye.

TÜSİAD (2022) data, which indicates that young users make investment decisions based on peer influence, confirms the effect of social norms on adoption. Similarly, Alkan & Demirtaş (2022) study reveals that financial illiteracy increases dependence on information obtained from the social environment.

In the EU example, the ECB's information programs have been found to create a stronger sense of “perceived control” among participants (ECB, 2022). This confirms that regulatory transparency strengthens individuals' sense of control over digital currencies.

In the US, while social norms strongly encourage innovation (Pew, 2021), the perceived level of control is low due to regulatory uncertainties (Goforth, 2021). This contradiction serves as an example of situations where “perceived control can weaken behavioral intent,” as predicted by Ajzen's theory.

7.4. Regulatory Approaches and the Innovation-Stability Trade-off

Research findings clearly confirm the regulatory-innovation trade-off proposed by authors such as Zetzsche et al. (2020) and Vardi & Guttentag (2020).

In the European Union, the MiCA regulation has increased investor confidence (ECB, 2022), but it has been criticized for the compliance costs it imposes on small-scale startups (OECD, 2020). In the United States, the fragmented regulatory model encourages innovation but weakens market stability due to a lack of regulatory clarity (Goforth, 2021). In Türkiye, the limited scope of regulation increases volatility and information asymmetry (TÜSİAD, 2022).

These differences show that the regulatory framework has a direct impact not only on legal certainty but also on social acceptance, financial education, and risk management. The findings confirm that, as emphasized by Alkan & Demirtaş (2022), the Digital Turkish Lira project in Türkiye will have limited impact if it is not supported by inclusive regulation.

7.5. Comparison with the Literature and Original Contribution

Numerous studies in the literature (OECD, 2019; ECB, 2022; Pew, 2021) have shown that information levels, social norms, and regulatory clarity are key factors in the adoption of digital currencies. This study compares the effects of regulatory policies on innovation and consumer confidence by examining three country examples together. In particular,

the finding that financial literacy combined with perceptions of regulation shapes usage intentions provides a unique contribution to the literature.

These results confirm the validity of Diffusion of Innovations, TAM, and Planned Behavior Theories in the digital finance ecosystem; however, they also highlight the need to consider the impact of macro factors such as regulatory uncertainty.

8 CONCLUSION

This thesis has examined the adoption trends, regulatory approaches, and consumer behavior of digital currencies in the context of Türkiye, the European Union, and the United States from a comparative perspective. The main objective of the study is to identify the factors influencing the usage trends of digital currencies and to analyze the impact of regulatory policies on user motivations.

The results of the study show that young and tech-savvy user groups are more likely to adopt digital currencies. Supported by data from the OECD (2019), Pew Research Center (2021), and ECB (2022), this trend confirms the dominant influence of innovative user segments as predicted by the Diffusion of Innovations Theory. However, in countries like Türkiye where financial literacy is limited, information gaps and regulatory uncertainty weaken user confidence and restrict usage intentions (TÜSİAD, 2022; Alkan & Demirtaş, 2022).

In terms of regulatory frameworks, the European Union's MiCA regulation has developed a comprehensive approach that strengthens investor confidence (Zetzsche et al., 2020). While the fragmented regulatory model in the US encourages innovation, it creates uncertainties in terms of long-term stability and user confidence (Goforth, 2021). In the case of Türkiye, an immature regulatory system and limited regulatory scope are limiting the market's potential. This highlights that regulatory clarity is a prerequisite for sustainable growth in the digital finance ecosystem.

When the role of financial literacy in adoption is evaluated within the framework of the Technology Acceptance Model and Planned Behavior Theory, it is seen that the level of knowledge and perceived control directly shape user behavior. In particular, regulatory transparency and information programs emerge as critical tools in rebuilding user trust.

These findings contribute to the literature by examining the frequently emphasized topics of innovation–employment balance, regulation–trust relationship, and the impact of

social norms together, providing a comparative contribution to the literature. The thesis aims to fill an important gap in both theoretical and practical fields.

8.1. Policy and Implementation Recommendations

Based on the results of the research, the following policy recommendations have been developed:

- Expansion of Financial Literacy Programs: It is recommended that public institutions and sectoral stakeholders develop education and awareness programs to increase digital financial literacy, especially in Türkiye.
- Ensuring Regulatory Clarity: Clarifying the definition of crypto assets, licensing processes, investor protection mechanisms, and reporting standards is a priority for both market stability and consumer confidence.
- Strengthening International Harmonization Mechanisms: Regulations aligned with the standards of organizations such as the FATF, OECD, and IMF will increase trust and transparency in international transactions.

Sharing the results of the pilot application of the digital Turkish lira: The experiences and findings of the digital Turkish lira project should be shared transparently with the public, and the regulatory process should be supported by stakeholder views.

8.2. Recommendations for Future Research

Although the findings obtained in this thesis answer some questions in the field of digital finance, they also raise new areas for research:

- Quantitative analysis of the long-term effects of regulation on innovation Dynamics
- In-depth field studies on the impact of socio-cultural differences on the adoption rate of digital currencies,

- Analysis of the interaction models between central bank digital currencies (CBDC) and private sector payment platforms.

Research in these areas will enrich theoretical knowledge and provide policymakers with more comprehensive data-driven roadmaps.

In conclusion, digital currencies play a central role in the transformation of financial systems; regulatory clarity, financial literacy, and the coordinated implementation of innovation policies are of fundamental importance for the sustainable development of the digital finance ecosystem.

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