

The Impact of Technological Literacy on Financial Digitalization: A Study on Generations

Teknoloji Okuryazarlığının Finansal Dijitalleşme Üzerindeki Etkisi: Kuşaklara Yönelik Bir Araştırma

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Abstract

The ability of individuals to follow the technological developments in which they are involved, to perceive the technology of the age and to adapt it in line with their needs is expressed by the concept of technology literacy. The increasing technological literacy levels within societies have propelled companies towards digital transformations. Digitalization, an essential step for companies to efficiently utilize their resources, has begun to manifest its impact across all sectors. Technology, which is advancing at a high pace, has also started to transform the service sector. One of the foundations of the digital transformation of firms providing financial services is the ability of individuals to assimilate the innovations offered. It has brought about changes in both service production and communication channels with customers. This study is based on a sample of 463 individuals and includes findings on the level of technology literacy of different age groups and how this affects financial digitalization. The participants were reached by questionnaire method and the data obtained were analyzed by means of mean and standard deviation, t-test, regression, ANOVA and difference analysis through SPSS package program. In the results obtained, a significant relationship was found between technology literacy and financial digitalization and the difference of this relationship in terms of age generations was examined.

Keywords: Technology Literacy, Financial Digitalization, Age generations.

Öz

Bireylerin içerisinde bulunduğu teknolojik gelişmeleri takip edebilmesi, çağın teknolojisini algılayabilme ve ihtiyaçları doğrultusunda uyarlayabilme yeterliliği teknoloji okuryazarlığı kavramı ile ifade edilmektedir. Toplumların artan teknoloji okuryazarlık düzeyi ise firmaları dijital dönüşümlere sevk etmiştir. Firmaların kaynaklarını etkin ve verimli kullanabilmesi için önemli adımlardan biri olan dijitalleşme, tüm sektörlerde etkisini göstermeye başlamıştır. Yüksek bir ivme ile ilerleyen teknoloji, hizmet sektörünü de dönüştürmeye başlamıştır. Hizmet sektörlerinde hem hizmet üretimleri hem de müşterilerle iletişim kanallarında değişimi meydana getirmiştir. Finansal hizmet sunan firmaların dijital dönüşümlerinin temellerinden biri de bireylerin sunulan yenilikleri özümseyebilme düzeyidir. Bu çalışma, 463 kişilik bir örneklem üzerinden elde edilmiş ve farklı yaş gruplarına dair teknoloji okuryazarlık düzeyi ve bunun finansal dijitalleşmeyi nasıl etkilediğine dair bulguları içermektedir. Katılımcılara anket yöntemi ile ulaşılmış, elde edilen verilere SPSS paket programı aracılığıyla; ortalama ve standart sapma, t-testi, Regrasyon, ANOVA ve farklılık analizleri uygulanmıştır. Elde edilen sonuçlarda teknoloji okuryazarlığı ile finansal dijitalleşme arasında anlamlı bir ilişki tespit edilmiş ve bu ilişkinin yaş kuşakları özelindeki farklılığı incelenmiştir.

Anahtar Kelimeler: Teknoloji Okuryazarlığı, Finansal Dijitalleşme, Yaş kuşakları.

Introduction

According to the 2022 digitalization report published by We Are Social, the number of internet users has more than doubled in the last decade, reaching 4.95 billion people, which corresponds to 62.5% of the global population. The same report also indicates that the average daily internet usage time is 7 hours and 58 minutes (<https://wearesocial.com/us/>). In Türkiye, reports by TUBİSAD reveal that between 2019 and 2021, digitalization progressed rapidly, primarily driven by the transformation caused by the Covid-19 pandemic, and that these changes have established a permanent foundation (TUBİSAD, 2022). Internet technologies, which enable data transfer between different devices, have enhanced information sharing and accessibility. This development has rendered geographical boundaries less restrictive and subsequently altered individuals' perceptions of accessibility. In response to evolving demands, economic institutions have also begun to undergo significant transformations (Ghobakhloo, 2020: 869).

Technological advancements have significantly influenced different age groups, for which age-based limitations are increasingly debated. Although the effects of such advancements do not result in uniform needs across generations, they have highlighted distinct intergenerational differences. These varying needs are fundamentally shaped by differing perspectives, economic factors, and individual preferences.

In alignment with the needs of their target audiences, firms have adopted strategies that involve the development of web-based platforms and mobile applications, thereby differentiating from their previous operational models. The financial sector, like other industries, has aimed to address the emerging needs and expectations shaped by generational differences in the perception and use of technology.

In this study, a comprehensive literature review was conducted to examine prior research related to the topic. Based on this review, hypotheses were developed, followed by fieldwork through the administration of surveys. The collected data were analyzed, and conclusions were drawn accordingly.

1. Conceptual Framework

1.1. Technology Literacy

When the concept of technology, which is a Greek term, is examined etymologically, its most basic meaning is to find and put into practice alternatives that can make human life and business processes more comfortable with practical methods (Bunani et al., 2013: 33). As civilizations have advanced in age, technology has started to show its effect in every field with the increase in the accumulation of shared knowledge and the ease of access to this information, thus becoming a common development goal in different societies (İçli, 2001: 165-166).

As of the century we are in, technology has brought individuals to a different point in terms of social adaptation, routine lives, communication methods and cultural transfer compared to the past periods, which has revealed a new level of competence for individuals (Şenel & Gençoğlu, 2003: 48).

Technology literacy is one of the sub-headings of the concept of literacy. In its generally accepted definition, literacy is defined as the ability to organize the symbols in an existing alphabet in a meaningful way and to read the organized meaningful sequences. Today, it can be defined as the ability to perceive and adapt concepts in different disciplines and to make advantage/disadvantage distinctions for oneself (Koç & Karatekin, 2013: 142-145).

The concept of technological literacy can be defined as an individual's adaptation to technological developments. When the definition is expanded, it refers to the ability to follow and apply technology in order to continue multiple routines such as access to the level of information necessary for the individual to continue his/her daily life as a part of the society in which he/she lives within the framework of changing technological conditions, communication, way of doing business and financial tools (Özçelik and Yıldız 2019: 353).

1.2. Digitalization

The concept of digitalization can be defined as the transfer of existing data to electronic systems such as computers and telephones or the transmission of data between two electronic devices (Şeker & Diri, 2021). The concept of digitalization,

which includes many technological innovations such as the Internet, 3D printers, cloud computing, has started to be used by public and private sectors (Gray and Rumpe, 2015: 1319). Digital transformations used by companies for consumer satisfaction are also preferred for controlling costs, the way of doing business and accurate business modeling (Rachinger et al., 2018: 114).

With the introduction of the internet concept in daily life and its adaptation to mobile devices, internet usage patterns have changed. This innovation, which allows access to the internet provider from anywhere, has created new demands from a consumer perspective. Firms, on the other hand, have taken software steps to develop new service channels due to this change, thus; artificial intelligence-supported applications for marketing, management of cost items, customer-product matching (Krasnyuk et al., 2020: 9006).

As companies turned to digital, consumers started to examine digital transformation tools in order to learn these channels, thus creating a two-way development process. The transformation processes, which accelerate with each new step, have tried to support new service channels with software containing higher algorithms in order to protect the market shares of companies, reach the right customer group for the product / service produced, determine advertising strategies, win potential customers, and ensure efficiency in items such as budgeting and auditing (Lenka et al., 2017: 94).

1.2.1 Digitalization and Technology Literacy

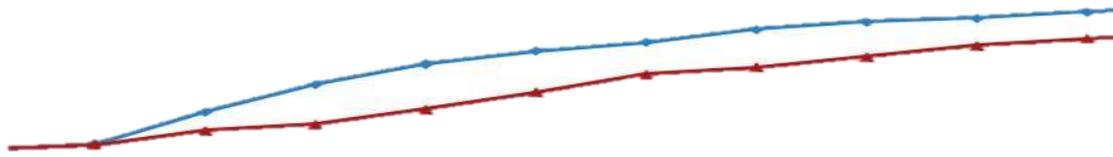
In line with the demands of end consumers, economic authorities have started to take new actions in line with technological innovations. Communication with consumers, categorization of consumers and marketing processes have started to be managed through virtual applications, applications and multiple internet resources made available through the electronic environment; therefore, a high level of technological literacy in the society has become a triggering factor in order to catch up with the technological level of the age (Altun, 2008: 32).

Technology literacy has become an inevitable necessity for individuals with the initiation of digital transformation processes by state legal entities and public institutions together with private enterprises (Erkut, 2020: 130). With the development of information and communication technologies, interactions between different societies have become more comprehensive. With these innovations, which have made geographical boundaries no longer a constraint, expectations for individuals and public and private enterprises have been reshaped when the consumer aspect is considered, so new steps have started to be taken in line with these expectations (Linkov, et al., 2018: 3).

1.2.2 Digitalization in Turkey

The concept of digitalization has been a factor that has changed countries, and public authorities have carried out different studies in order to adapt to these transformations. In Turkey, multiple steps have been taken in order to carry out public services through electronic media. These steps, which gained great momentum in the 1980s, have been taken to a different level, especially with the efforts made to improve the telecom infrastructure. In order to carry out the transformations carried out within the state legal entity in a healthy manner, the digital transformation office was established under the presidential organization. In addition to the increase in the quality of public services with these transformations, an added value was created on a country basis (Karasoy and Babaoğlu, 2020: 116-117).

When the report of the Ministry of Science, Industry and Technology -Digital Turkey's Roadmap (2018) is examined, studies have accelerated as a state policy since the 1960s, periodically programs have been made and development plans have been prepared. Currently, 11 development plans covering the years 2019-23 are in effect, digital transformations are included in the program under the title of "Digitalization in Industry", and the stages of processes such as infrastructure services, improvement of the current technology level are included in the plan, and in addition, a road map to guide public authorities for transformation has been determined (https://edergi.sanayi.gov.tr/File/Journal/2018/11/11_2018.pdf).

Chart 1. TurkStat 2023 Information Technology Usage

(Source: <https://www.tuik.gov.tr/>)

According to TURKSTAT's August 2023 graph, the ratio of households with internet access to the population in Turkey has reached 95.5%. The internet usage rate is 87.1% (TÜİK, 2023).

Table 1. TUBISAD Turkey Digital Transformation Index for 2022

	2019	2020	2021	2022
TURKEY DIGITAL TRANSFORMATION INDEX	2,94	3,06	3,21	3,12
A. Ecosystem Component	2,87	2,95	3,09	3,02
Dimension A.1: Legal Basis and Functioning	2,76	2,82	3,01	2,94
Dimension A.2: Innovation and Investment Climate	2,98	3,09	3,17	3,11
B. Competence Component	3,19	3,24	3,27	3,26
Dimension B.1: Infrastructure	2,34	2,27	2,32	2,44
Dimension B.2: Affordability	4,54	4,54	4,43	4,49
Dimension B.3: Skills	2,69	2,89	3,07	2,85
C. Usage Component	2,88	3,16	3,36	3,21
Dimension C.1: Individual Use	3,20	3,22	3,29	3,37
Dimension C.2: Business Use	2,77	3,32	3,41	3,10
Dimension C.3: Public Use	2,66	2,92	3,37	3,17
D. Transformation Component	2,81	2,88	3,14	2,97
Dimension D.1: Digitalizing Economy	2,36	2,18	2,25	2,16
Dimension D.2: Digitalizing Society	3,26	3,58	4,03	3,78

(Source: <https://tubisad.org.tr/>)

According to the table created by TUBISAD, the digital transformation index has increased over the years, while the change in sub-dimensions has followed a fluctuating course, the general index rate has been higher than other periods with a great acceleration between 2019 and 2020, and the reason for this is stated as the transformation becoming compulsory

with the closure process. In the following years, the increase continued again, but the rate of increase was low (TUBISAD, 2022).

1.2.3 Financial Digitalization

When we look at the origin of the concept of finance, it is seen that it is a French term and refers to the exchange of financial transactions/money within the scope of buying and selling. In today's sense, it is the market in which the flow of funds is maintained and which includes fund sources and transfers (Gündoğdu, 2016: 82-83). These markets, which include multiple actors such as fund holders, fund demanders and intermediaries in this exchange, are dynamic markets that closely follow current technological developments, and therefore, they experience digital transformations in the channels used by following the changing technological conditions in order to carry out processes such as investments, collection of savings and borrowing (Llewellyn, 2018: 11-12).

With the 1929 economic depression, the stakeholders of the financial market aimed to revitalize cash circulation by turning to different alternatives in order to eliminate the distrust in financial markets and end the economic stagnation (Asadova, 2019: 211). Like all other businesses, profitability is the main goal in financial markets, so efforts to reduce cost items and increase efficiency at the same time are prioritized. The field of finance has also started digital transformations for profitability analysis, a strong financial structure and financial reporting (Hayrettin & Başkurt, 2021: 418).

1.2.3.1 Banking Sector

Banking is one of the oldest known stakeholders of financial markets, having existed since the days of the barter procedure (Sumer, 2019: 487). Banks, whose main purpose is to maintain the circulation of exchange instruments among financial actors and earn commission income from this, also provide services such as ensuring the security of precious metals or documents, offering alternatives for savings or investment, and creating borrowing conditions (Güçlüay, 2001: 298).

As in other sectors, the banking sector has also incorporated different technological developments into service production and entered into digital transformation processes. In line with the service understanding expected by consumers, banks have turned to web-based online applications, mobile banking, NFC, QR Code and Chatbot applications as an alternative to traditional ATM and branch channels. The digitalization process, which started for the operational units and IT teams of the banks in the first place, continued with software applications for the service channels provided to the customers and then continued in the customer experience offices where feedback can be examined (Kaur et al., 2020: 583-584).

An analysis of the digitalization report published by the Banks Association of Turkey at regular intervals shows that the digital transformation of banks in Turkey is progressing rapidly. When the usage rates of alternative service channels over the years are analyzed, it is seen that traditional channels (branches and ATMs), which had a high percentage share 5 years ago, were replaced by voice response systems (IVR/IVN) and then web-based applications over time, and as of 2020, banking applications produced by improving the internet access quality of mobile devices were preferred more than all other channels (<https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59>).

Alternative service channels used in the banking sector are as follows;

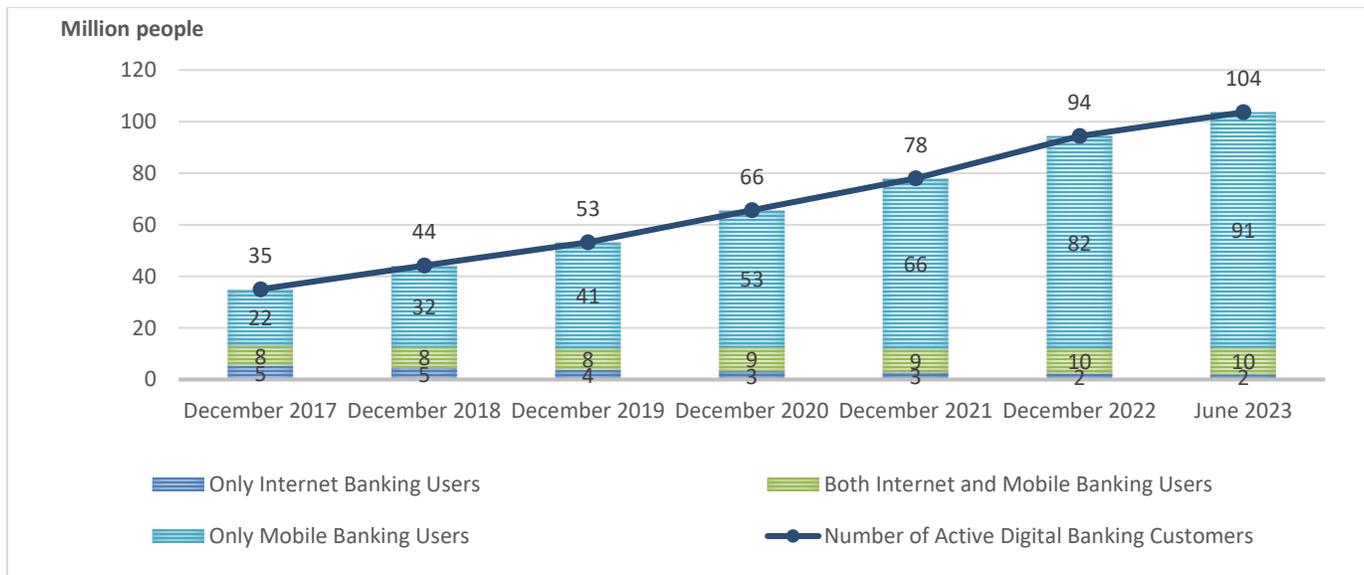
Voice Response Systems: Banks have started to provide services to their customers through IVR/IVN systems that they can connect to over the phone. These systems, which can be controlled through the main computer, are based on completing the necessary financial transactions in line with the voice commands given by customers with the support of artificial intelligence. These systems, which have more than one version, can offer different financial services according to the algorithms used in their infrastructure. These systems can be used for security confirmations, campaign notifications, information updates, payments and to verify the accuracy of transactions. The system that customers reach when they call is called "Interactive Voice Response (IVR)" and the system that makes outgoing calls to customers is called "Interactive Voice Notification (IVN)" (Peevers et al., 2011).

Internet Banking: This service, which is offered to individual or legal customers through different websites in accessing the services offered by the bank, is a channel through which customers can access service categories after accessing the website, where the first stage is the introduction of the customer's identity, the second stage is the encryption system, and the last stage is the security action is taken with the encryption system, and the security confirmation is obtained with instant

verification codes through verification tools. These systems, which mediate multiple transactions online, can be considered as the beginning of internet-based service channels (Özcan, 2007: 78).

Mobile Banking Channel: These applications, which can be accessed through applications accessible via mobile phone operating systems, are channels that provide access to menus by completing security steps with a password and instant verification code. Services such as deposits/withdrawals, transfers, and payments are offered through QR codes and NFC. Customers often prefer this channel for transactions that they can access 24/7 and complete quickly. As a strong market, banking quickly adapts to these changes and thus aims to maintain its current market power (Yavuz and Babuşçu, 2018: 33).

Chart 2. Distribution of the Number of People Using Digital Channels in the Last 5 Years by Year



(Source: <https://www.tbb.org.tr/>)

When the data of the bank customers participating in the study between 2001 and 2023 are analyzed, it is seen that digitalization has increased rapidly. When the research is detailed on the channels used by customers, it is seen that internet banking is actively used before on a yearly basis. As of 2019, it is seen that users primarily turn to mobile and the usage rates of internet and mobile channels continue in close numbers, and as of 2020, the mobile application is ahead of other channels. In addition, the number of active digital banking channel users has increased approximately 3 times in the last 5 years.

1.2.3.2 Fintech

The term FinTech is used as an abbreviation for financial technologies and means something different from entrepreneurship (Arner et al., 2015: 1275). This term, which emerged as a result of the blending of technology and financial disciplines, is based on the realization of financial transactions with high technologies and the ability to complete transactions without the supervision of central authority. Its fast speed, high flexibility in adapting to changes and satisfaction-oriented services have increased its share in the financial market over time, thus becoming an alternative to traditional channels (Puschmann, 2017: 70).

Fintech, which is a more practical area due to the procedures and audits that are subject to the services offered by the banking sector for asset management, debt payment, money transfer, public payments, crypto transactions, financial agenda control, which consumers frequently do; has been an effective force in the transformation of traditional banking systems (Sabry, 2021: 32).

1.3 Age Generations

Age generations, which we can call peer groups, are the grouping of individuals according to their birth intervals. Individuals in the same generation are groups whose reactions, expectations and knowledge levels are common because they experience similar responsibilities, technological development levels and similar social progress due to the common

aspects of the period in which they were born (Çavuşoğlu & Yalçın, 2021: 1030-1032). Although it is not possible to separate them with a clear boundary, age groups born at different times due to global paradigms can be categorized for reasons such as the economic conditions and cultural changes they witnessed during their lifetime. Generations may react differently to technological developments due to the differences in the life processes they are exposed to (Demiraskeroğlu, 2017: 102-103).

Between 1925-45: Also called the silent generation. They have a traditionalist structure, respect for authority and social concerns are at the forefront. They witnessed the 1929 economic depression (Karaman and Aykın, 2021: 191).

Between 1946-64: This age group, which is also referred to in the literature as the Baby Boomers, witnessed the Second World War and the Cold War, and therefore overcame slightly more difficult processes in terms of demography and sociology. They outnumber other age groups (Berkup, 2014: 69-70).

1965-80: Called Generation X or the shadow generation. They witnessed the rapid development of technology from the beginning of the adaptation of simple machines to daily life to the acquisition of personal computers. This generation, which witnessed computer technology, was also able to follow the global agenda through the internet (Adıgüzel et al. 2014: 162).

Between 1981-95: They are also referred to as Generation Y or Millennials. This generation, which can follow the processes of negative events such as international terrorism activities or natural disasters simultaneously by using digital tools, has experienced the processes of incorporating mobile phones into daily life (Tolbize, 2008: 4).

Between 1996 and 2002: They can also be called Generation M. This is the peer group in which existing systems started to be developed as multifunctional rather than technological inventions and individuals can now adapt to more advanced software (Yelkikalan et al., 2010: 471).

Age group born in 2003 and later: This generation, known as Generation Z, is also individuals whose parents are intertwined with technology, so this age group, which is raised by both systems and families with the latest generation technologies, characterizes technology as a necessity and usual. They differ from other age groups in terms of access to information, information sharing and adaptation to new technologies (Mercan, 2016: 63-65).

2. Methodology

2.1 Purpose of the Study

In this study, the impact of technology literacy on financial digitalization is examined because the transformation of financial markets with developing technologies has caused financial markets to move away from their traditional structure. The main purpose of this study is to examine the difference in the effects of market transformations according to different age groups witnessing the changes in financial markets and their technology literacy levels.

The research data were obtained by questionnaire method, and the research was conducted on a sample of 463 people between the ages of 18-60. Ethics committee approval for the study was obtained from Erzurum Technical University Institute of Social Sciences Ethics Committee.

2.2. Hypothesis Development and Research Model

Pantielieva et al. in 2018 examined the reasons for the difficulties in front of digitalization and mentioned the effects of digitalization on the 4th industrial revolution. In the data obtained from the study conducted by Shukla in 2019, it was emphasized how important financial transformation is in terms of accessibility and time concept. Again, with the study conducted by Ustaömer in 2019, the infrastructure works carried out by the Turkish banking sector in the digital transformation process and the inferences made about the importance of this were included. In the study conducted by Akgüneş in 2020, crypto assets were examined as an alternative to registered banking and CMB, and the importance of digital transformation of financial markets was emphasized through the example of Bitcoin. As a result of this study, it was observed that users turn to these channels due to the supervisory pressure of central authorities and the pressure they create for this reason.

Volodymyr et al. in 2020 investigated the level of security provided by security measures used in electronic environments for financial instruments and concluded that they are more innovative and practical than traditional methods. In 2021,

Demirez et al. studied the transformation processes of the banking sector, and as a result of the study, it was concluded that digital transformations are more easily accessible and innovative by consumers.

The research model was created within the framework of the above data.

Figure 1. Research Model



When the research model is examined, it is seen that the model consists of 2 different variables: technology literacy and financial digitalization. The independent variable is Technology Literacy and the dependent variable is Financial Digitalization.

Based on the studies in the literature and the research model, the following hypotheses were established;

H1: Technology literacy has an impact on financial digitalization.

H2: The level of technology literacy of the participants differs according to the age generation they belong to.

H3: The level of financial digitalization differs according to the age generation of the participants.

H4: The level of technology literacy of the participants differs according to their occupations.

H5: The level of financial digitalization differs according to the occupation of the participants.

H6: The level of technology literacy of the participants differs according to their monthly net income.

H7: The level of financial digitalization differs according to the monthly net income of the participants.

H8: The level of technology literacy of the participants differs according to the frequency of following financial developments.

H9: The level of financial digitalization differs according to the frequency with which the participants follow financial developments.

H10: The level of technology literacy of the participants differs according to the frequency of following digital developments.

H11: The level of financial digitalization differs according to the frequency with which the participants follow digital developments.

2.3. Scales Used in the Study

The first scale used for the research was created by Yiğit, E. Ö. in 2011 to be used in his doctoral thesis, while the second scale was created by Uraz Kaya, I. in 2020 for his master's thesis and the scales were accessed through TOAD (<https://toad.halileksi.net/>).

2.4. Sampling Process, Data Collection Tool and Method

The sample size in the study was determined by the formula $n = \frac{NPQZ^2}{(N-1)d^2 + PQZ^2}$ (Oktay et al., 2013). In the study, the number of participants to be surveyed was determined as 384 with a 5% margin of error and 95% confidence interval.

The survey was shared in online forms and a sample of 463 people was reached. Since the questions were asked to individuals with different demographic characteristics, care was taken to ensure that there were groups of people whose occupation, income level, gender and frequency of application and use of information technologies were not the same.

2.5. Data Analysis and Findings

For the data obtained; t-test, deviation, regression, ANOVA, frequency and percentage analyses were performed using the SPSS package program.

Table 2. Reliability Analysis

Variables	N	Cronbach's Alpha
Technology Literacy	22	0,953
Financial Digitalization	14	0,947
Overall Reliability	36	0,970

In the reliability analysis applied, Cronbach's Alpha value was examined in order to examine the consistency of the scales within themselves and values in the range of 0.81-1.00 were obtained, so it can be said that the scales are reliable.

Table 3. Demographic Information of Participants

Variable		Category.		Frequency		Percentage	
Gender		Woman		218		47,1	
		Male		245		52,9	
		<i>Total</i>		<i>463</i>		<i>100</i>	
Variable	Category.	Frequency	Percentage	Variable	Category.	Frequency	Percentage
Generations	1965- 1979	79	17,1	Education Status	Middle School	19	4,1
	1980-1994	150	32,4		High School	67	14,5
	1995-2002	156	33,7		Associate degree	56	12,1
	2003 and onwards	78	16,8		License	215	46,4
	<i>Total</i>	<i>463</i>	<i>100</i>		Postgraduate	106	22,9
				<i>Total</i>	<i>463</i>	<i>100</i>	
Profession	Student	105	22,7	Monthly Net Income	17.000 TL and below	138	29,8
	Paid-Private	126	27,2		17.001 TL-30.000 TL	126	27,2
	Paid-Public	167	36,1		TL 30.001 TL-45.000 TL	101	21,8
	Self-employment	37	8,0		45.001 TL-60.000TL	69	14,9
	Retired	28	6,0		60.000 TL and above	29	6,3
	<i>Total</i>	<i>463</i>	<i>100</i>		<i>Total</i>	<i>463</i>	<i>100</i>

When the data presented in the table are analyzed collectively, several demographic insights emerge. Of the participants, 47.1% were male and 52.9% were female. Regarding educational attainment, 4.1% of respondents had completed secondary school, 14.5% high school, 12.1% held an associate degree, 46.4% held a bachelor's degree, and 22.9% had pursued postgraduate education. In terms of the type of high school graduated from, 2.8% were graduates of Science High Schools, 3.7% from Social Sciences High Schools, 61.8% from Anatolian High Schools, 20.7% from vocational high schools, and 10.6% from other various types of high schools. An analysis of generational distribution shows that 17.1% of participants were between the ages of 20–30, 33.7% between 31–40, 32.4% between 41–50, and 17.1% between 51–59. Considering occupational status, 22.7% identified as students, 27.2% as private-sector employees, 36.1% as public-sector employees, 8% as self-employed, and 6% as retirees. Lastly, with respect to monthly net income, 29.8% of the participants reported earning 17,000 TL or less, 27.2% between 17,001–30,000 TL, 21.8% between 30,001–45,000 TL, 14.9% between 45,001–60,000 TL, and 6.3% reported earning above 60,001 TL.

2.5.1. Participants' Use and Frequency of Application of Information Technologies and Their Tendency to Follow Financial and Digital Developments

Trends in the frequency with which respondents follow and implement technological developments and financial changes are presented in the table below.

Table 4. Use and Frequency of Application of Information Technologies and Tendency to Follow Financial and Digital Developments

Variable	Category	Frequency	Percentage	Variable	Category	Frequency	Percentage
How often do you follow financial developments?	Do Not Follow	33	7,1	How often do you follow digital developments?	Do Not Follow	24	5,2
	I Rarely Follow	102	22,0		I Rarely Follow	73	15,8
	I Follow Occasionally	154	33,3		Occasionally I follow	154	31,3
	I Usually Follow	129	27,9		I Usually Follow	167	36,1
	I always follow	45	9,7		I Always Follow	54	11,7
	Total	463	100		Total	463	100
How often do you use information technology applications (Word, Excel, PowerPoint, etc.)?	2 hours a week	179	38,7	What is your level of use of Information Technologies Applications (Word, Excel, PowerPoint, etc.)?	I know very well	61	13,2
	1-2 hours a day	100	21,6		I know it well	219	47,3
	2-3 hours a day	55	11,9		I am interested but I don't have enough information	82	17,7
	More than 3 hours a day	129	27,9		I know very little	101	21,8
	Total	463	100		Total	463	100

The frequency of participants' following financial developments is as follows: 7.1% do not follow, 22% rarely follow, 33.3% occasionally follow, 27.9% usually follow, 9.7% always follow. The frequency of participants' following digital developments is as follows: 5.2% do not follow, 15.8% rarely follow, 31.3% occasionally follow, 36.1% usually follow, 11.7% always follow.

The distribution of the participants' answers to the question "How often do you use Information Technologies Applications (Word, Excel, PowerPoint, etc.)?" is as follows: 38.7% of the participants stated that they spend 2 hours a week, 21.6% 1-2 hours a day, 11.9% 2-3 hours a day, and 27.9% more than 3 hours a day. When we look at the distribution of the answers to the question "What is your level of use of Information Technologies Applications (Word, Excel, PowerPoint, etc.)?", 13,2% of the participants answered as "I know very well", 47,3% as "I know well", 17,7% as "I am interested but I do not have enough knowledge", 21,8% as "I know very little".

2.6. Findings between Participants' Technology Literacy and Financial Digitalization Variables

Table 5. Correlation between Technology Literacy and Financial Digitalization

Generations	Variables	Technology Literacy	Financial Digitalization	Arithmetic Mean	Standard Deviation
1965-1979	Technology Literacy	1	0,907**	3,15	1,019
	Financial Digitalization	0,907**	1	3,17	1,135
1980-1994	Technology Literacy	1	0,840**	3,55	0,725
	Financial Digitalization	0,840**	1	3,76	0,770
1995-2002	Technology Literacy	1	0,725**	3,671	0,779
	Financial Digitalization	0,725**	1	3,84	0,904
2003 and onwards	Technology Literacy	1	0,702**	3,51	0,784
	Financial Digitalization	0,702**	1	3,70	0,911

When the questions prepared to evaluate the scale questions created for Technology Literacy and the information about the standard deviation and arithmetic mean values for the answers of the participants are examined;

It was calculated as 3.15 for Generation X (1965-1979 age group), 3.55 for Generation Y (1980-1994 age group), 3.67 for Generation M (1995-2002 age group) and 3.51 for Generation Z (born in 2003 and later).

When the responses in the Financial Digitalization scale are examined; 3.17 for Generation X; 3.76 for Generation Y; 3.84 for Generation M; and finally 3.70 for Generation Z. In line with these data, it was determined that Generation M had the highest average for both scales, while Generation Z had the lowest average.

It is seen that all p values in the table are $p < .001$. The fact that the r values in the table are in the range of $0.70 < r \leq 1$ in all generations reveals that there is a strong positive relationship between technology literacy and financial digitalization.

Table 6. Regression Analysis ANOVA Data for Technology Literacy and Financial Digitalization

Generations	Dependent Variable	Independent Variable	F	Significance
1965-1979	Financial Digitalization	Technology Literacy	358,172	0,000
1980-1994			355,867	0,000
1995-2002			170,658	0,000
2003 and onwards			73,637	0,000

When the data in the table are examined, the F value for Financial Digitalization is calculated as 358,172 for Generation X, 355,867 for Generation Y, 170,658 for Generation M, and 73,637 for Generation Z, and the significance value for all age groups is 0.000. Accordingly, the proposition that Technology Literacy can affect Financial Digitalization can be realized statistically.

Table 7. Regression Analysis between Technology Literacy and Financial Digitalization

Variables	Generations	Non-Std. Beta	Std. Beta	T	p-value	VIF	Hypothesis	Decision
Independent Variable: Technology Literacy	1965-1979	0,814	0,907	18,925	0,000	1,000	H _{2A}	Acceptance
	1980-1994	0,792	0,840	18,864	0,000	1,000	H _{2B}	Acceptance
	1995-2002	0,624	0,725	13,064	0,000	1,000	H _{2C}	Acceptance
	2003 and later	0,604	0,702	8,581	0,000	1,000	H _{2D}	Acceptance
Dependent Variable: Financial Digitization								
Generations	R	R ²	Adjusted R ²	Durbin-Watson				
1965-1979	0,907	0,823	0,821	2,159				
1980-1994	0,840	0,706	0,704	1,888				
1995-2002	0,725	0,526	0,523	2,173				
2003 and onwards	0,702	0,492	0,485	2,366				

When the R values in the table are examined, the result obtained is that the R value for all generations is $-1 < R < 1$, which expresses the level of relationship between Technology Literacy and Financial digitalization for all age groups. When the R² values in the table are analyzed, it is determined that $0 < R^2 < 1$ for all generations. Looking at the Durbin-Watson values, there is no autocorrelation since it is in the range of $1.5 < DW < 2.5$ for all generations. The p value is calculated as 0.00 for all age groups. Since $P < 0.05$, it is determined that the Technology Literacy variable can be used to predict the Financial Digitalization variable. The coefficients of standardized beta values in the table are as follows for generations; 0.907 for Generation X; 0.840 for Generation Y; 0.725 for Generation M; and finally 0.702 for Generation Z. Based on the results obtained, it is seen that the dependent variable is most affected by the independent variable in Generation X and $VIF = 1.00$ in all generations and since this value is less than 10, it is concluded that there is no multicollinearity between variables.

2.7. Difference Analyses

Table 8. ANOVA Test Results in Terms of Age Variable

Variable	Age	N	Average	Std. Deviation	F	p
Technology Literacy	1965-1979	79	3,5898	0,83659	0,108	0,283
	1980-1994	150	3,5988	0,73789		
	1995-2002	156	3,4551	0,89185		
	2003 and Above	78	3,4301	0,83354		
Financial Digitalization	1965-1979	79	3,7486	0,99986	1,661	0,175
	1980-1994	150	3,7890	0,83674		
	1995-2002	156	3,5847	0,96818		
	2003 and Above	78	3,5797	0,97816		

From a generational perspective, it is seen that the perceptions of the participants regarding the variables Technology Literacy $p(,283) > 0.05$ and Financial Digitalization $p(0.175) > 0.05$ do not have a significant difference.

Table 9. ANOVA Test Results According to Education Level

Variable	Education Status	N	Average	Std. Deviation	F	p
Technology Literacy	Middle School	19	2,9139	1,13756	9,903	0,000
	High School	67	3,0889	1,01379		
	Associate degree	56	3,5511	,98931		
	License	215	3,6040	,72325		
	Postgraduate	106	3,7161	,56166		

Financial Digitalization	Middle School	19	2,8647	1,29732	10,075	0,000
	High School	67	3,2569	1,20663		
	Associate degree	56	3,5702	1,04300		
	License	215	3,8302	0,81754		
	Postgraduate	106	3,8383	0,64413		

It is seen that there is a significant difference in the perceptions of Technology Literacy $p(0,000 < 0,05)$, Financial Digitalization $p(0,00) < 0,005$ variables. It was observed that the average of undergraduate and graduate participants was higher than the average of high school participants, and at this point, the participants with high school education differed from the participants with undergraduate and graduate education in the Technology Literacy variable. In the Financial Digitalization variable, the averages of undergraduate and graduate participants were higher than those of high school and secondary school participants, and at this point, a difference was determined.

Table 10. ANOVA Test Results in terms of Occupational Status

Variable	Occupational Status	N	Average	Std. Deviation	F	<i>p</i>
Technology Literacy	Student	105	3,5377	0,79256	14,078	0,000
	Paid-Private	126	3,6948	0,71424		
	Paid-Public	167	3,5974	0,72975		
	Self-employment	37	3,2801	0,93906		
	Retired	28	2,5292	1,07773		
Financial Digitalization	Student	105	3,6959	0,93005	11,310	0,000
	Paid-Private	126	3,9065	0,78950		
	Paid-Public	167	3,7169	0,82569		
	Self-employment	37	3,4189	1,09020		
	Retired	28	2,6939	1,29565		

In terms of profession, it is seen that the perceptions of the participants regarding the variables Technology Literacy $p(0,000) < 0,005$ and Financial Digitalization $p(0,000) < 0,005$ have a significant difference. For the Technology Literacy and Financial Digitalization variables, it was seen that the participants whose occupational group is retired and the participants of the Student, Paid Private and Paid Public occupational groups differed, and it was determined that they had the lowest average.

Table 11. ANOVA Test Results for Different Income Groups

Variable	Occupational Status	N	Average	Std. Deviation	F	<i>p</i>
Technology Literacy	17,000 and below	138	3,3870	0,91350	2,928	0,021
	17001- 30.000	126	3,4654	0,91099		
	30.001- 45.000	101	3,5545	0,77259		

	45.001- 60.000	69	3,7391	0,59182		
	60.001 and above	29	3,7555	0,45037		
Financial Digitalization	17,000 and below	138	3,5140	1,05857	2,319	0,056
	17001- 30.000	126	3,6672	1,01777		
	30.001- 45.000	101	3,7207	0,88900		
	45.001- 60.000	69	3,9068	0,60390		
	60.001 and above	29	3,8128	0,61930		

According to Table 20, it is seen that in terms of different income groups, participants' perceptions of Financial Digitalization $p(,056) > 0.05$ variables do not have a significant difference. In terms of different income groups, it is seen that the participants' perceptions of the variables of Technology Literacy $p(0,000) < 0.05$ have a significant difference. It was seen that the Technology Literacy variable differed with the participants in the income group of 17,000 TL and below, the income group of 45,001- 60,000 TL and the income group of 60,001 TL and above. It was determined that the highest average was found in participants with an income of 60,001 and above.

Table 12. ANOVA Test Results for Following Financial Developments

Variable	Occupational Status	N	Average	Std. Deviation	F	p
Technology Literacy	I do not follow	33	3,2025	1,01723	4,809	0,001
	I rarely follow	102	3,3382	0,88828		
	I follow occasionally	154	3,5024	0,79965		
	I usually follow	129	3,6896	0,70798		
	I always follow	45	3,7434	0,79212		
Financial Digitalization	I do not follow	33	3,4502	1,16051	3,624	0,006
	I rarely follow	102	3,4419	0,98947		
	I follow occasionally	154	3,6929	0,93650		
	I usually follow	129	3,8344	0,82800		
	I always follow	45	3,8810	0,81541		

According to Table 22, it is seen that the participants in terms of different income groups have a significant difference in the variables of Technology Literacy $p(,001) < 0.005$ and Financial Digitalization $p(,006) < 0.05$. For both variables, it was observed that the participants who rarely follow differed from the participants who usually follow. It is seen that the averages of the participants who tend to Follow Usually are higher.

Table 13. ANOVA Test Results in Terms of Following Digital Developments

Variable	Occupational Status	N	Average	Std. Deviation	F	p
Technology Literacy	I don't follow	24	2,7614	1,12418	14,278	0,00
	I rarely follow	73	3,2080	0,94104		
	I follow occasionally	145	3,4476	0,77312		
	I usually follow	167	3,7123	0,64957		
	I always follow	54	3,8822	0,76757		
Financial Digitalization	I do not follow	24	2,8095	1,28082	11,566	0,00
	I rarely follow	73	3,3865	1,06638		
	I follow occasionally	145	3,6123	0,90823		
	I usually follow	167	3,8944	0,77741		
	I always follow	54	3,9656	0,74847		

Technology Literacy $p(,000) < 0.05$ and Financial Digitalization $p(,000) > 0.05$ in terms of different income groups.

In terms of the tendency to follow digital developments in the Technology Literacy variable, it was found that the participants who gave the answer "*I Usually Follow*" differed from the participants who gave the answers "*I Do Not Follow*" and "*I Rarely Follow*". The respondents who answered *I Always Follow up* differed from the respondents who answered *I Do Not Follow Up* and *I Rarely Follow Up*. Financial Digitalization variable In terms of the tendency to follow digital developments, it was found that the participants who answered "*Usually Follow*" differed from the participants who answered "*Never Follow*", "*Rarely Follow*" and "*Occasionally Follow*". It was found that the respondents who answered *I Always Follow Up* differed from the respondents who answered *I Do Not Follow Up* and *I Rarely Follow Up*, and it was observed that the averages of the respondents who answered *I Usually Follow Up* and *I Always Follow Up* were higher for both variables.

Table 14. ANOVA Test Results in terms of frequency of use of Information Technology Applications

Variable	Occupational Status	N	Average	Std. Deviation	F	p
Technology Literacy	2 hours a week	179	3,3911	0,94899	2,866	0,036
	1-2 hours a day	100	3,5705	0,66010		
	2-3 hours a day	55	3,7174	0,60326		
	More than 3 hours a day	129	3,5772	0,82072		
Financial Digitalization	2 hours a week	179	3,5367	1,08927	2,708	0,045
	1-2 hours a day	100	3,8157	0,79027		

	2-3 hours a day	55	3,8455	0,72840		
	More than 3 hours a day	129	3,6960	0,87003		

Technology Literacy $p(,036) < 0.05$, Financial Digitalization $p(,045) < 0.05$ in terms of different income groups.

When Technology Literacy and Financial Digitalization variables are examined in terms of the frequency of use of Information Technology Applications;

When the same data were analyzed, it was found that the average of the participants who answered *2 hours a week* differed from the participants who answered *2-3 hours a day*, and the average of the participants who answered *2-3 hours a day* was higher than the participants who answered the other answers.

Table 15. ANOVA Test Results in terms of Level of Use of Information Technologies Applications

Variable	Occupational Status	N	Average	Std. Deviation	F	p
Technology Literacy	I know very well	61	3,9844	0,36721	28,065	0,000
	I know it well	219	3,6743	0,58088		
	I am interested but I don't have enough information	82	3,4346	0,92902		
	I know very little	101	2,9761	1,07100		
Financial Digitalization	I know very well	61	4,0773	0,38050	17,594	0,000
	I know it well	219	3,8490	0,69734		
	I am interested but I don't have enough information	82	3,5209	1,08347		
	I know very little	101	3,1938	1,24098		

It is seen that there is a significant difference in the perceptions of the variables of Technology Literacy $p(,000) < 0.05$, Financial Digitalization $p(,000) > 0.05$ in terms of Different Income Groups. In terms of the level of use of Information Technology Applications in the Technology Literacy variable, it was found that the participants who answered *I Know Very Well* differed from the participants who answered *I Know Well*, *I Am Interested But I Do Not Have Sufficient Knowledge* and *I Know Very Little*. Participants who answered *"I Know Well"* differed from participants who answered *"I Know Very Little"*. In terms of the level of use of Information Technology Applications in the Financial Digitalization variable, it was found that the participants who answered *I Know Very Well* differed from the participants who answered *I Am Interested But Not Well Informed*, *I Know Very Little* and *I Know Very Well*. The participants who answered *I Know Well* differed from the participants who answered *I'm Interested But I Don't Know Enough* and *I Know Very Little*. For both variables, it was determined that the average of the participants who answered *I Know Very Well* was higher.

2.8 Data and Hypotheses

The findings corresponding to the proposed hypotheses, derived from the conducted analyses, are summarized in the table below.

Table 16. Data and Hypotheses

Hypothesis	Conclusion
H ₁ : Technology literacy has an impact on financial digitalization.	✓

H ₂ : The level of technology literacy of the participants differs according to the age generation they belong to.	X
H ₃ : The level of financial digitalization differs according to the age generation of the participants.	X
H ₄ : The level of technology literacy of the participants differs according to their occupations.	✓
H ₅ : The level of financial digitalization differs according to the occupation of the participants.	✓
H ₆ : The level of technology literacy of the participants differs according to their monthly net income.	✓
H ₇ : The level of financial digitalization differs according to the monthly net income of the participants.	X
H ₈ : The level of technology literacy of the participants differs according to the frequency of following financial developments.	✓
H ₉ : The level of financial digitalization differs according to the frequency with which the participants follow financial developments.	✓
H ₁₀ : The level of technology literacy of the participants differs according to the frequency of following digital developments.	✓
H ₁₁ : The level of financial digitalization differs according to the frequency with which the participants follow digital developments.	✓

3. Conclusion and Recommendations

The study aims to determine the impact of technology literacy on financial digitalization and how it differs across age generations. The study was conducted on a sample of 463 individuals between the ages of 18-60. The participants were reached by questionnaire method and two different scales were used in the preparation of the questionnaire. The responses of the participants were analyzed with the SPSS program.

The results of the analysis are similar to the results of the studies conducted by Silik and Aydın (2017) and Yiğit (2021) in terms of technology literacy. The results obtained from the financial digitalization scale overlap with the study conducted by Irmak and Kılıç (2021).

For the data obtained in the study, reliability analysis was performed first and no problems were found, and frequency distributions were determined to access demographic information. When the relationship between technology literacy and financial digitalization was examined, a strong positive relationship was found for all generations in the correlation analysis. When the ANOVA test results obtained from the data were analyzed, the significance value was calculated as 0.000 for all generations. Accordingly, it is statistically determined that technology literacy affects financial digitalization.

The majority of the data consisted of male participants who were born between 1995 and 2002, have a bachelor's degree, are public employees, and have a monthly net income between TL 17,001 and TL 30,000. The majority of the participants stated that they occasionally follow financial and digital developments, have a good knowledge of information technologies and spend at least 2 hours a week on information technologies.

In the analysis of the technology literacy level of the participants, it was determined that the age range with the highest average of technology literacy and financial digitalization is Generation M. The fact that Generation M has a high average in both variables can be explained by the fact that the level of education graduated is undergraduate and that they have a registered and regular professional income.

It has been observed that banks maintain their importance in financial transactions, however, it has been observed that the tendency towards digital channels has increased, but at this point, it has been concluded that Generation Z is prone to making transactions from the branch, and in the data obtained from the financial digitalization scale, it has been concluded that the knowledge level of Generation Z at the point of digitalization is low, and it can be said that the reason is that the education processes of Generation Z are still continuing and they cannot reach sufficient financial literacy and the monthly earnings level they can manage is low. For Generation X, the financial savings gained by long-term working life and the search for alternatives for its utilization are thought to be a positive factor especially for technology literacy.

When the difference analyses are examined, it is seen that the education factor is an important factor in increasing individuals' communication with the field of finance and following financial developments at the level of technology literacy and financial digitalization. Participants who follow financial and digital developments, have a high frequency of information technology use and allocate a certain amount of time to these applications also have higher averages.

Finally, when the results obtained are interpreted as a whole, it is seen that technology literacy affects financial digitalization for all age groups, but the highest averages increase with income, occupation and education level. For this reason, compared to Generation X and Generation Z, Generations Y and M have higher averages. Therefore, in addition to increasing the income and education levels of individuals, exposing them to information technologies will increase their technological literacy and the level of financial digitalization will improve.

Financial markets, which play a critical role in the sustainability of macroeconomic policies, should adopt incentive-based strategies to address the evolving needs of governments, consumers, and firms. Encouraging citizens to engage more actively with digital platforms through government incentives, combined with educational initiatives aimed at raising awareness and enhancing technological literacy—particularly by focusing on the concept of technology itself—will contribute to a more robust and sustainable financial digitalization process. However, the legal boundaries and restrictions imposed by central banks and other regulatory bodies can occasionally hinder the progress of digitalization. State-supported digital transformation and its subsequent influence on the financial sector may offer various benefits for governments, including enhanced tax auditing, increased traceability of financial assets, and the prevention of terrorism financing. Considering all these advantages, financial digitalization holds strategic importance for states, and it is anticipated that this significance will position them more competitively in global markets as they take forward-looking steps.

Yazar Katkıları: Fikir- ÇG (%50), AA (%50); Tasarım- % ÇG (%50), AA (%50); Denetleme- ÇG (%30), AA (%70); Kaynaklar- ÇG (%70), AA (%30); Veri Toplanması ve/veya İşlemesi ÇG (%70), AA (%30), Analiz ve/veya Yorum- ÇG (%80), AA (%20); Literatür Taraması- ÇG (%100); Yazıyı Yazan- ÇG (%100); Eleştirel İnceleme- AA (%100).

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