

## The Perceptions of Individual Internet Users about E-Finance Applications

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**Abstract:** The Global Integration process, new regulations and the developments in the technology of internet have changed the nature and the structure of the financial services on a large scale. The fact that financial services have been carried out by using electronic communication and calculation has originated new field called e-finance. As a result of this, financial service suppliers have entered into a more active competition process in order to gain new customers. Technology, globalization, regulations, entrepreneurship, capital and competition have become the main components of the e-finance revolution. E-finance has focused on three main access fields. These are the access of electronic payments, the activities of the financial service activities and financial market activities. These services are used intensely by two sectors as individual and institutional. Institutional users are the companies and the other public and private sector firms. The individual users have also started to be important as at least the institutional users due to the increase of the competition. Therefore, the determination of the expectations, preferences, and advantageous components, which are the factors that incline internet users to e-finance, is very important for the financial institutions. In conclusion, for the purpose of determining individuals' perceptions about e-finance transactions, a face to face public survey has been conducted with the internet users and the results of this public survey have been tested in SPSS 11.5 programme in this study.

**Keywords:** Perception, e-finance, internet

### Introduction

The world is changing and developing very fast. Especially, the rapid developments in the information and the communication technologies have caused important structural changes in the financial system of many countries. The concept of change caused transforming by differentiating people and societies with the effects it has created. Technological change is continuously renewed in itself, but it has taken the entire world under its effect thanks to the internet technology. Internet has a process that was established for military purposes at the beginning and then that has taken the entire world under its effect. The developments in the technology of the internet have also changed the dimension and the operational format of the financial transactions. Thus, the prefix "e" which is very important in the e-world and which comes in front of each concept, has originated a new fact which is called e-finance with the beginning of the financial transactions on the internet.

In this study, it has been aimed to find out the views and perceptions of individual internet users about the e-finance applications. In this context, internet, e-finance concepts and development processes have been evaluated in the first part of the study; numerical determinations belonging to the e-finance outlook the World and Turkey have been carried out in the second part of the study. In the last part of the study, a face to face survey has been conducted with the people from different branches of business working in public sector in Turkey and One-way analysis of variance (Anova) has been tested in the SPSS 11.5 statistical programme to find out whether there is any difference in the perception of the e-finance transaction according to the individuals and their occupations. In addition, individuals' perception levels about e-finance applications have been shown with the concentration maps.

### 1. Internet and e-Finance

The worldwide and ever-growing global computer network is defined as internet (Akar and Kayahan, 2007:5). In this network, the communication among the computers is provided through high capacity telephone wires by means of a common language called internet protocol (Transmission Control Protocol/Internet Protocol) and there is no central authority that directs, manages and controls the communication in the internet

environment. In addition to this, the importance of the internet today has arisen from the common and easy access advantages stated below (Kınık, 2002: 2).

- Providing common and immediate communication ,
- Providing low-cost communication,
- Enabling interactive communication,
- Allowing electronic links to other information
- Not being able to control the communication from a certain central
- Providing a flexible communication environment

The history of the internet dates back to the access of the telegraph the patent of which was taken out by Cooke and Wheatstone in 1836. Another important development is the origination of the “Transatlantic Cable” which was laid from one side of the Atlantic Ocean to its other side between the years 1858-1866. The origin of the internet has started with the activation of the ARPANET<sup>1</sup> by DoD (U.S. Department of Defense). People started to communicate throughout a network in 1971. In this period, there were fifteen nodes (15 node<sup>2</sup> (23 host<sup>3</sup>) ) in ARPANET. In 1973 the first international connection has occurred between University College of London and Royal Radar Establishment. In 1990s the number of hosts have become 300.000. In 1993 the revolution of www started and the access of internet started financially and also among the banks. 1990s are the years in which the online banking transactions developed rapidly. Today, internet is the indispensable or the meaning of the life, shortly it is everything of the life. E-finance has not actually originated with the invention of the internet. In fact the first e-finance application dates back to the money transfer carried out to the far places by Western Union Corporation. Western Union applied the first consumer spending card in 1914. By the year 2006, this company achieved 147 million money transfer from consumer to consumer and 249 million money transfer from consumer to enterprise (Shahrokhi, 2008: 367).

E-finance is defined as the provision of financial services by using electronic communication and computations (Allen, McAndrews ve Strahan, 2001: 5). In another definition e-finance can be defined as scatter of financial services by means of internet or online. E-finance operations mainly covers online intermediation ,insurance trade, banking and other financial activities (Shahrokhi, 2008: 366). In fact, e-finance applications are subheading of electronic trade applications. E-trade is the access of digital data processing technology and electronic communications to create ,to transform and to redefine relations in trade transactions in order to create value between two or more enterprises and between the individuals and enterprises (Andam, 2003: 32). As it can be seen in its definition, the concept and the applications of e-trade also covers the applications of e-finance.

The main factors that formed the e-finance revolution have been stated to be technology, globalization, regulations, entrepreneurship, capital and competition by Shahrokhi (2008: 367). These factors are affected intensively by the fund providers, users, regulators, investors and the other components in the markets. The sector is divided into five categories in the e-finance model. These are:

- 1-Business to business (B2B),
- 2-Business to Consumer (B2C)
- 3-Consumer to consumer (C2C),
- 4-Technical infrastructure support for the e-Finance platform
- 5-Institutional and regulatory environment factor that facilitate growth of e-commerce and e-finance

According to the categories and the contents given above ,it is seen that B2B includes reduction of application costs, unmediated or electronic intermediation, electronic transactions, integrated customer solutions and electronic fund system. B2C includes financial intermediation or online applications by means of portals ,e-banking or online banking, personal finance or wealth management and insurance fields. C2C includes online transactions and transactions cycle .In terms of technical infrastructure for the support of the e-finance platform, the relation between the financial services provided by financial technology partners and technology and service solutions has been shown in Table 1. As seen in the table, the developments in the –e-finance field have increased the competition while decreasing the financial service costs (Claessens, Glaessner ve Klingebiel, 2001: 7). As a result of this, there has been a more intensive competition, transaction speed and quality increase among the financial service suppliers.

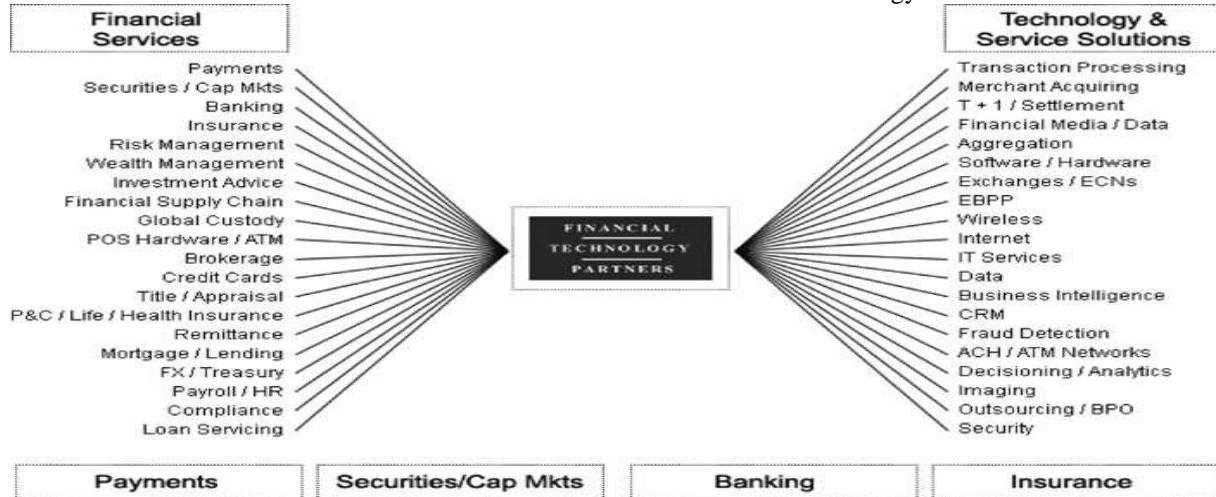
<sup>1</sup> ‘Internet’ in çıkış noktası, ABD Savunma Bakanlığı bünyesindeki “İleri Araştırma Projeleri Ajansı” (ARPA – Advanced Research Projects Agency) nın 1969 yılında kurduğu ARPANET ağıdır.

<sup>1</sup> The starting point of the internet is the network ARPANET established in 1969 by Advanced Research Projects Agency (ARPA) within the structure of USA Ministry of Defence

<sup>2</sup> a connection point or a device that is connected as a component a computer network

<sup>3</sup> The word meaning of “host” is to provide housing for. In fact its meaning in the world of internet is just this. In other words , it means a company which hosts websites on the Internet .

**Table 1.** The Realtoin Network fo Financial Technology Partners



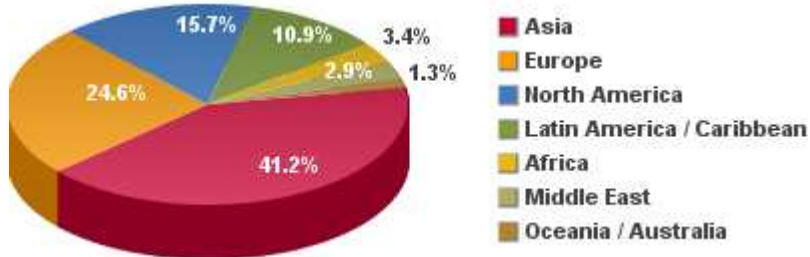
Resource: Shahrokhi, 2008: 378.

Finally, all governments even most of the market managers need to regulate and control the financial sector for the reasons of competition, anti-trust relations, consumer protection, safety and accuracy-maintainability. They need to analyze the last changes in the financial services and whether the existent applications are sufficient and they also need to analyze whether the traditional reasons are valid for regulation and control and in which fields the importance of competition policy and consumer protection has increased (Yörük, 2002. 11). Thus e-finance applications can be provided in more secure and more quality manner.

## 2. The Outlook of E-finance in the World and in Turkey

Internet technology is certainly one of the primary components that are effective on the financial system change. Therefore, when we look at the scatter of the world internet access in Figure 1, before looking at the e-finance access rates, it is seen that Asia Region comes first with 41,2 %. Europe follows this region with 24,6 % and North America region comes after with 15,7 %.

**Figure 1.** World Internet Users by World Regions



Resource: [www.internetworldstats.com/stats.htm](http://www.internetworldstats.com/stats.htm) (09.05.2009).

It is seen that Turkey ranks number thirteen in terms of the internet users' number with 26.500.000 people by the year 2008 when we look at the world internet statistics given in the Table 2. Turkey comes after Germany, England, France and Italy among the European countries. However, as this table has been prepared according to the population, some of the European countries have not been included. While Turkey is in the front ranks among the countries of which the number of users increasing between the period of 2000-2008, the leading countries in terms of users' number according to the population are Canada, Australia, Japan, America, South Korea, Germany and Spain respectively. In addition, Pakistan, Iran, Turkey, India, Indonesia and China are the most noticeable countries in terms of the number of users between the period of 2000-2008. Among the countries and regions that are not seen in this table because of their population but that display the best performance, Iceland ranks first with its population of 299 thousand and the access rate of 86.3 % . Sweden which has 9.1 million population and 7 million active internet users is in the front ranks with the rate of 75,6 % and New Zealand which has 4.2 million population and 3.2 million internet users is also in the front ranks with the rate 74.9 % . In addition, it should be stated that the internet access rates of the countries like Portugal, Holland, Denmark, Hong Kong and Luxembourg are also much above most of the other countries.

**Table 2.** 20 Countries Using the Internet Most in the World

	Country or Region	Internet Users	Penetration (Population)	% of World Users	Population	User Growth (2000-2008)
1	<u>China</u>	253,000,000	19.0 %	17.3 %	1,330,044,605	1,024.4 %
2	<u>United States</u>	220,141,969	72.5 %	15.0 %	303,824,646	130.9 %
3	<u>Japan</u>	94,000,000	73.8 %	6.4 %	127,288,419	99.7 %
4	<u>India</u>	60,000,000	5.2 %	4.1 %	1,147,995,898	1,100.0 %
5	<u>Germany</u>	52,533,914	63.8 %	3.6 %	82,369,548	118.9 %
6	<u>Brazil</u>	50,000,000	26.1 %	3.4 %	191,908,598	900.0 %
7	<u>United Kingdom</u>	41,817,847	68.6 %	2.9 %	60,943,912	171.5 %
8	<u>France</u>	36,153,327	58.1 %	2.5 %	62,177,676	325.3 %
9	<u>Korea, South</u>	34,820,000	70.7 %	2.4 %	49,232,844	82.9 %
10	<u>Italy</u>	34,708,144	59.7 %	2.4 %	58,145,321	162.9 %
11	<u>Russia</u>	32,700,000	23.2 %	2.2 %	140,702,094	954.8 %
12	<u>Canada</u>	28,000,000	84.3 %	1.9 %	33,212,696	120.5 %
13	<u>Turkey</u>	26,500,000	36.9 %	1.8 %	71,892,807	1,225.0 %
14	<u>Spain</u>	25,623,329	63.3 %	1.8 %	40,491,051	375.6 %
15	<u>Indonesia</u>	25,000,000	10.5 %	1.7 %	237,512,355	1,150.0 %
16	<u>Mexico</u>	23,700,000	21.6 %	1.6 %	109,955,400	773.8 %
17	<u>Iran</u>	23,000,000	34.9 %	1.6 %	65,875,223	9,100.0 %
18	<u>Vietnam</u>	20,159,615	23.4 %	1.4 %	86,116,559	9,979.8 %
19	<u>Pakistan</u>	17,500,000	10.4 %	1.2 %	167,762,040	12,969.5 %
20	<u>Australia</u>	16,355,388	79.4 %	1.1 %	20,600,856	147.8 %

**Resource:** <http://www.internetworldstats.com/stats.htm> (09.05.2009)

When an evaluation has been carried out according to the statistic of Banks Association of Turkey about the access of internet for the field of e-finance, it is seen that the number of retail customers registered for internet banking and “logged in” at least once is 11.222.126 by December 2008. The total number of customers “logged in” at least once in one-year period is 5.946.652. The number of customers using internet banking has been given in the Table 3. As it is seen from the table, from 2006 to 2008 although it is a very short time like two years, increases that reached the double in the number of users were seen. Therefore, it is expected that the rates will increase in the following years. The statistics of internet banking belonging to the data of March 2009 published by the Banks Association of Turkey support this expectation

**Table 3.** Number of Customers Using Internet Banking According to the Years

	December 2006	December 2007	December 2008	March 2009
<b>Number of retail customers</b>				
Active (A) (that logged in at least once in the last three-month period)	2.605.673	3.795.627	4.613.670	4.838.000
Registered (B) (that logged in at least once)	15.510.826	8.908.956	11.222.126	11.793.000
Registered (C) (that logged in at least once in one-year period)		4.920.907	5.946.652	6.344.000
<b>Active(A) / Registered(B) Customer rate(percent)</b>	<b>17</b>	<b>43</b>	<b>41</b>	<b>41</b>
<b>Number of Institutional Customer</b>				
Active (A) (that logged in at least once in the last three-month period)	380.390	478.737	555.459	581.000
Registered (B) (that logged in at least once)	812.314	1.131.302	1.358.545	1.459.000
Registered (C) (that logged in at least once in one-year period)		588.211	687.737	710.000
<b>Active(A) / Registered(B) Customer rate(percent)</b>	<b>47</b>	<b>42</b>	<b>41</b>	<b>40</b>
<b>Number of Total Customer</b>				
Active (A) (that logged in at least once in the last three-month period)	2.986.063	4.274.364	5.169.129	5.419.000
Registered (B) (that logged in at least once)	16.323.140	10.040.258	12.580.671	13.252.000
Registered (C) (that logged in at least once in one-year period)		5.509.118	6.634.389	7.054.000
<b>Active(A) / Registered(B) Customer rate(percent)</b>	<b>18</b>	<b>43</b>	<b>41</b>	<b>41</b>

**Resource:** BAT (TBB).

According to the data of Banks Association of Turkey, the total number of financial transactions excluding the investment transactions carried out by using the internet banking is 57.942 thousand and the amount is 136.680 million TRY in the period of October-December 2008. The money transfer transactions covering EFT (electronic

fond transfer), money order and foreign exchange transfer comprise 84 % of the financial transaction volume excluding the investment transactions.

**Table 4 . The Outlook of Turkey's Financial Transactions in Internet Banking**

Items	December 2007		September 2008		December 2008	
	Number of transactions (Thousand)	Volume of transactions (Million TRY)	Number of transactions (Thousand)	Volume of transactions (Million TRY)	Number of transactions (Thousand)	Volume of transactions (Million TRY)
Money transfers	29.335	112.693	31.114	127.408	29.718	115.218
Payments	15.393	3.400	18.828	4.720	20.578	4.626
Credit card transactions	5.352	3.486	6.143	4.421	6.050	4.165
Other financial transactions	1.131	7.851	1.619	14.406	1.596	12.671
<b>Total</b>	<b>51.211</b>	<b>127.431</b>	<b>57.705</b>	<b>150.954</b>	<b>57.942</b>	<b>136.680</b>

**Resource:** BAT

The total number of financial transactions performed by using the internet banking excluding the investment transactions increased by 6.731 compared to the same period of the year before and increased by 237 compared to the previous three-month period. While the total volume of transactions was increasing by 9.249 million TRY, it decreased by 14.274 million TRY compared to the previous three-month period.

### **3. The Perceptions of Individual Internet Users About E-Finance Application**

#### **3.1. The Aim and Content Of The Research**

In this study, it has been aimed to to determine the choices, expectations and perceptions of individual internet users' who work in different duties and positions in public. The questionnaire was performed face to face on the public employees within the content of the study in Afyonkarahisar City. The first part of the questionnaire consists of the questions about the individual information of employees. Additionally, there are also some questions about work position and e-finance applications in public. In the last part, it is required from the employees to evaluate the e-finance applications with five point likert type questions.. In the evaluation of the results, aggregation and one-way variance analysis were performed by using SPSS 11.5 statistical programme.

#### **3.2. The Findings and The Comments Of The Research**

It has been determined that Cronbach alpha reliability study supplies 0.8261 data reliability before mentioning the evaluations on research data. The results obtained from the formed frequency tables are summarized as follow:

According to data, it has been determined that 57.7 % of those who filled the questionnaire is female and 42.3 % of them is male. It is seen that great majority of subjects are in the young and middle age group. According to data 38 % of them is in 25-35 age group, 32 % of them is in 35-45 age group and 15 % is in 45 and over 45 age group. The summarized results about the occupational and the educational states of those who filled the questionnaire are given in Table 5. It is understood that those who filled the questionnaire are predominantly civil servant and they have bachelor degree. These results show that this study aims at more conscious and educated audiences as it is proper for the aim of the study. On the other hand, it predominantly is determined that those who choose the other part in occupational choice are the academics.

**Table 5.** Occupation and Education Status of the Participants

<b>Occupation</b>	<b>Frequency</b>	<b>Percent ( % )</b>
worker	18	8,0
Civil servant	127	56,4
Director	37	16,4
Top Director	3	1,3
Retired	3	1,3
Other	37	16,4
<b>Total</b>	<b>225</b>	<b>100,0</b>
<b>Education Status</b>	<b>Frequency</b>	<b>Percent ( % )</b>
Primary school	2	,9
Secondary School	30	13,3
Associate Degree	36	16,0
Licence	99	44,0
Master Degree	58	25,8
<b>Total</b>	<b>225</b>	<b>100,0</b>

Findings about personal internet access and its aims have been shown in Table 6. Accordingly, 99 % of the participants have stated that they connect to the internet. Furthermore, it has been found out that a large proportion as 70% of them connect to the internet everyday and above 90 % of them connect to the internet once a week. In terms of the internet access aim, it is concluded that large majority of them as 51,6 % use internet for the purpose of receiving news. The access of internet for the purpose of receiving news was also in the first rank with a large proportion as 76 % in the internet access study carried out by Turkish Statistical Institute(TSI) throughout Turkey. Therefore, it is understood that the result of this study is in harmony with the results throughout Turkey. The access of internet for the purpose of research has become in the second rank. The fact that there have been academicians based participants in the study can be concluded to be one of the reasons of this choice to be effective. When we look at the other aims of the access, it is concluded that financial purposes like banking transactions bill payments comes after respectively. This result is an important indicator of that e-finance access frequency is supported by public based individual users.

**Table 6.** The Frequency and Purposes of Internet .

<b>Access of Internet</b>	<b>Frequency</b>	<b>Percent ( % )</b>
Yes	223	99,1
No	2	,9
<b>Total</b>	<b>225</b>	<b>100,0</b>
<b>Frequency if Internet Access</b>	<b>Frequency</b>	<b>Percent ( % )</b>
Everyday	159	70,7
Every three days	28	12,4
Once a week	20	8,9
Forthnightly	8	3,6
Once a month	9	3,6
<b>Total</b>	<b>224</b>	<b>99,1</b>
<b>The Purpose of the Internet Access</b>	<b>Frequency</b>	<b>Percent ( % )</b>
News	116	51,6
Game	4	1,8
Bill Payment	4	4,8
Bankacılık işlemleri	17	10,6
Messenger	7	3,1
Research	59	20,2
Exchange and fund pursuit	1	,4
Others	17	7,6
<b>Total</b>	<b>225</b>	<b>100,0</b>

The questions in the 5 point likert scale have been prepared to determine the assessments of the participants in the survey study about e-finance applications clearly, and they have been ranged from “1 most

important” to “5 have no importance” and between minimum 1 and maximum 5 values. The meaning of these values are: “2” important , “3” no difference “4” less important. The values on which that participants concentrated and the average and standard deviation values are shown in Table 7. According to this, it is concluded that the concreation among the participants is in the zones numbered 2 and 1 in terms of the necessity of internet for its contribution to financial transactions, payments, banking transactions and shopping while the concentration is in the zones numbered 1 and 2 respectively in terms of the use of time. Consequently, it has been determined that the necessity of internet in terms of financial transactions is perceived to be important by individual users on the concentration map prepared for perception level of e-finance transactions.

**Table 7.** The Concentration Map for the Perception Level of E-finance Transaction

<b>Propositions</b>	<b>N</b>	<b>Average</b>	<b>S.Deviation</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The necessity of internet for financial transactions today	225	1,7911	0,86907	74	115	19	11	6
The necessity of internet for payments	225	2,1467	1,09821	60	116	22	10	17
The necessity and contribution of internet for banking transactions	225	2,0933	1,09185	70	105	22	15	13
The necessity and contribution of internet for shopping	225	2,2756	1,14353	54	109	24	22	16
The necessity and contribution of internet for the use of time	225	1,7644	0,93187	105	87	20	7	6

One-way variance analysis has been carried out in Table 8 for the purpose of determining whether there is a meaningful difference among the individual internet users according to different occupations. Accordingly, it has been found out that there is 0,05 difference in the significance level among the individual internet users in terms of the first and third questions , but there is no significant difference in terms of the other three questions.

**Table 8.** The Results of One-Way Analysis of Variance  
(Differences in Perceptions of E-finance according to Individual Participants' Occupations )

<b>ANOVA</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
The necessity of the internet for financial transactions	Between Groups	7,119	5	1,424	2,124	<b>,011</b>
	Within Groups	162,063	219	,740		
	Total	169,182	224			
2 The necessity of the internet for payments	Between Groups	8,387	5	1,677	1,403	,224
	Within Groups	261,773	219	1,195		
	Total	270,160	224			
3. The necessity of the internet for banking transactions	Between Groups	19,354	5	3,871	3,422	<b>,005</b>
	Within Groups	247,686	219	1,131		
	Total	267,040	224			
4. The necessity of the internet in terms of its contribution to shopping	Between Groups	12,134	5	2,427	1,893	,097
	Within Groups	280,781	219	1,282		
	Total	292,916	224			
5. The necessity of the internet in terms of the access of time	Between Groups	4,665	5	,933	1,076	,374
	Within Groups	189,850	219	,867		
	Total	194,516	224			

## General Evaluation and the Result

The study carried out forms an important substructure in terms of perceptions and awareness of the individuals in different occupations about e-finance applications. In addition, the differences among the perceptions of e-finance in terms of occupations can also be determined. Accordingly, the effectiveness of better banking, insurance or other online financial transactions and the closeness of them to consumers can show disparity. Today the more effective working of banking transactions depends on electronic substructure to be formed. In contemporary banking, e-finance applications and its transformation will multiply the efficiency; will lead to decrease in the general management expenses; will increase the financial security; will make the financial management activities more efficient; will become a bridge between rural and urban areas by facilitating the

communication; will form new and different job opportunities; will raise the ability of money access by increasing savings and therefore will provide the increase of general economic performance. Electronic operations and internet access in Turkey and in the world have been evaluated in the study. Especially in recent years crucial discrepancies have been seen in Turkey in the access of internet. This state has also affected the e-finance operation in the same way. It is seen that e-finance operations are largely perceived by the individuals and there have been individual awareness in terms of e-finance applications on the concentration map which is formed for the purpose of determining perception levels in the study. Therefore, it is expected that these applications will continue by increasing in progressive times. In addition, financial institutions, which perform e-finance transactions, will be able to decide how they can approach to their costumers and how they can fulfill their costumers' choices and expectations by looking at this studies. In the study, one-way variance analysis is carried out in order to determine whether there is difference between the individual occupations and the perception of e-finance applications. In this analysis, it has been determined that there are differences at the significance level of 0.05, between the necessity of internet in terms of financial operations and the necessity of internet in terms of banking operations. It is thought that this difference results from individual internet users' occupational variety. In conclusion, performing the financial transactions by means of internet technology, which is accepted as e-finance revolution, will be one of the most important market developments in the future as it is today. Besides these developments, providing consumers' allegiance depends on the formation of financial info and technological substructure in the direction of consumers' needs and expectations. The success is very close for the financial institutions that can achieve this process.

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