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Analyzing Information Technology Status and Networked Readiness Index in Context of Diffusion of Innovations Theory

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Abstract

Although it's known that communication started with human existence, its becoming a scientific discipline coincide with early 20th century. Because mass media became common in these years and made its presence felt especially via press during World War One. The need of researching the effect of mass media has a great share in communication to become a discipline. The years between 1920-1940, as well as its problematical sides, are known as "strong effect" period. Even such similes like "hypodermic needle" or "magic bullet" were used for this period. Nevertheless, after understanding that the effect is not strong as predicted with a research performed during 1940 presidential election in USA, "limited effect" period started in communication science history. The next process belonged to a period which shaped around the idea that audience is active and central. "Adoption of innovation model", discussed in this study, is one of the theories that showed up in this period. Communication scientist Everett Rogers firstly presented this model in his book named "Diffusion of Innovations", published in 1962. The theory is predicated on the fact that "mass media has a significant effect on diffusion of innovations through society, however this effect is not so strong and it's important to figure out which of individual impact, presence of social conditions and mass media has the biggest effect". Besides, by means of the development of Information and Communication Technologies (ICT), it's also a fact that we are transforming into networked information societies. Within this scope, the aim of this study is researching impacts to readiness levels of countries in the areas of social and economic issues, individual and business usage and digital content of decision making factors presented in the context of Diffusion of Innovations Theory and trying to comment the gained statistical results.

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1. Introduction

It won't be wrong to think together researches, theories and approaches over mass media with discussions over modernity. The problem is, beyond what mass media did to people or the capability of it, the effect of technology over society. If needed to a little bit more generalize, the main problem is which of them will take the priority while society and technology relation discussions. Two opinion have been expressed related this issue and continue their existence. The first one gives the priority to society while the second to technology. The ones who bring the society forward continue their analyses within the disciplines of sociology, social psychology, psychology, anthropology, economy etc. The ones who bring the technology forward focus on relationship between modernism and industrialization. Accordingly, modernism is a process which progresses based on industrialization, technologic improvement in other words. (Güngör, 2011)

On the other hand approximately every technological improvement related with communication discipline discussed in critical context in its historical process. Debates in both cultural and political economy areas are still going on. It's possible to say that both post-structural and postmodernist approaches live on these debates. In the present situation, the factors that direct the technology politics are being questioned. However, assessing the technological improvements under the communication roof is one of the research interest of communication science and therefore critical approaches will always be.

In diffusion of innovations model which came into literature with Everett Rogers' book with the same name written in 1962, innovation is assessed as an idea, practice or object perceived by an individual, group or society as "new" (Rogers, 1995). Rogers developed his model in the "audience-based communication apprehension" period that audience is active. Within this context, diffusion of innovations model not only tests several hypothesis, but also questions to what extent mass media play an active role in diffusion of innovations.

2. Literature Review And Hypotheses

An individual seeks information at various stages in the innovation-decision process in order to decrease uncertainty about an innovation's expected consequences (Jindřichovská and Purcareia, 2012). Individuals vary in their willingness to take risks in adopting a new idea or product. A few individuals accept the risk of adopting a new idea or product before anyone else while most people are reluctant to adopt this new idea or product and prefer to wait until other people have tried it first (Valente, 1996).

According to Rogers, who defines innovation as an idea, practice, or object that is perceived as new by an individual or other unit of adoption, it's not important whether an idea or invention is "objectively" new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea or invention for the individual determines his or her reaction to it and so if the idea or invention is new to this individual, it is accepted as an innovation (Rogers, 1995). Diffusion, on the other hand, can be described as the overall spread of an innovation, the process by which an innovation is communicated through certain channels over time among the members of a social system (Oldenburg and Glanz, 2008).

As one of the most influential theories of communication in marketing, the focus of diffusion theory is on the means by which information about an innovation is disseminated (Chang, 2010).

Rogers allege that an individual's decision about an innovation is a process that occurs over time and consists of a series of actions, which depicted in Fig.1. This innovation-decision process consists of five actions including knowledge, persuasion, decision, implementation and confirmation. Process starts with knowledge phase, which a decision-making unit is exposed to the innovation's existence and gains some understanding of how it functions. After knowledge phase, persuasion phase which the decision-making unit forms a favorable or unfavorable attitude toward the innovation occurs. Decision is the phase that the decision-making unit engages in activities that lead to a choice to adopt or reject the innovation. The fourth phase of innovation-decision process is implementation phase which occurs when the decision-making unit puts an innovation into use. Process ends with confirmation which occurs when the decision-making unit seeks reinforcement of an innovation-decision already made, but he/she may reverse this previous decision if exposed to conflicting messages about the innovation (Rogers, 1995).



Fig. 1. Innovation-decision process phases

Some scholars extend the stages to include considerations of the routinisation of the innovation so that its adoption no longer seems innovative and issues of infusion when the innovation is applied to its full potential (Nutley, 2002).

The diffusion process typically involves both mass media and interpersonal communication channels. However, in today's informatics age, information technologies such as internet and smart phones and especially web 2.0 technologies including social networks like Facebook, represent formidable tools of diffusion, combining aspects of both interpersonal interaction and mass media (Rogers, Singhal and Quinlan, 2009). The dynamics of this process results in the formation of new norms and institutions and so a great variety of social or technological innovations spread in a population through the network of individual interactions by allowing individuals to interact independently of their physical proximity (Montanari and Saberi, 2010).

From this point of view, a number of studies have tried to model social networks using diffusion of innovations. Valente (1996) tries to create a social network threshold model of the diffusion of innovations based on adopter categories. Guardiola et al. (2002) propose a simple model of diffusion of technological innovations with costs. Montanari and Saberi (2010) also try to answer if the structure of online social networks favor the spread of all innovations and specify the impact of the structure of a social network on the spread of innovations. Acemoglu, Ozdaglar and Yildiz (2011) focus on the linear threshold model where each individual requires exposure to potentially multiple sources of adoption in his/her neighborhood before adopting the innovation himself/herself. Budak, Agrawal and El Abbadi (2012) aim to model user behavior automatically determining which users are driven by their local relations and which users are better defined through adopter categories, therefore capturing the complexity of human behavior while Luu et al. (2012) address the relationship between social network properties and diffusion process and so incorporate the skewed degree distribution of social networks into macro-level diffusion models.

In the context of adopting an innovation, Rogers divides the adopters into five categories using the normal frequency distribution: The innovators, early adopters, early majority, late majority and laggards. Rogers calls the area lying to the left of the mean time of adoption minus two standard deviations includes the first 2.5 percent of the individuals to adopt an innovation as the innovators. Early adopters, included in the area between the mean minus one standard deviation and the mean minus two standard deviations take the next 13.5 percent. The next 34 percent of the adopters, called early majority, are included in the area between the mean date of adoption and minus one standard deviation. Between the mean and one standard deviation to the right of the mean are located the next 34 percent to adopt the new idea, the late majority and the last 16 percent are called laggards (Rogers, 1995).

This five adopter categories and the approximate percentage of individuals included in each are located on the adopter distribution in Fig 2.

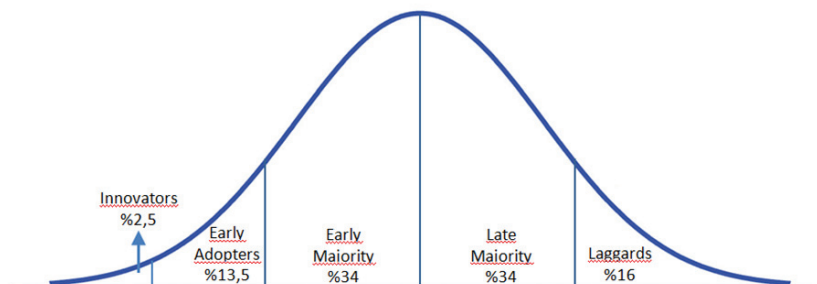


Fig. 2. Adopter categorization on the basis of innovation

Innovators, which can be defined as the first comply with the new ideas, are the individuals that do not hesitate to take risks, are open and yield easily to innovations. The individuals in this category have more resources than the

others and take critical role in diffusion of innovations. According to Rogers, this early knowers are more educated, intelligence and literate than subsequent groups and have more social participation. Although early adopters do not have as much resources as innovators, they are in advance than later adopters in the areas of education, literacy and social participation and they have a role in conformity of social system to innovation. Early majority is the early adopting part of majority to innovation. Innovation-decision process takes longer for them than early adopters and they position themselves rather observing priors' decisions. Late majority is the majority part of the society which adapts to innovations lately. They wait till a great majority of social system applies the innovation. Laggards take the bottom of the innovation categories. They have a traditional and conservative structure and approach to innovations with suspicion. They have very restricted resources and in order to accept an innovation they wait until it becomes definite.

3. Methodology

3.1. Research Goal

In this survey, secondary data belong to The Global Information Technology Reports of World Economic Forum has been used in order to discuss Rogers' Diffusion of Innovation theory with a deductive approach, and definitional and inferential analysis have been conducted over the database generated for this purpose.

Some Measures of Central Tendency and Measures of Dispersion are used in descriptive statistical methods, while ANOVA, Correlation Analysis and Kruskal-Wallis, a non-parametric test are used in inferential statistical methods. Accordingly, gained results have been discussed comparatively within the context of diffusion of innovations and Turkey data have been assessed on yearly basis.

3.2. Sample and Data Collection

The Global Information Technology Report, firstly published in 2002, has been published for 13 years and consists of three parts: The Current Networked Readiness Landscape and Rewards and Risks of Big Data, Country/Economy Profiles, and Data Tables. The reason of using data from The Global Information Technology Report in this survey is the fact that this report acts as an important resource in unfolding the situation in global scale of information and communication technologies which feed innovation. Besides these technologies today provide resources to the opportunities that enhance the economic and social welfare, and increase their functions day by day.

In this regard, the country data in Country/Economy Profiles section of The Global Information Technology Report 2012/2013/2014 and 2015 are used in this survey. In this report country data are grouped in ten sections and these ten sections constitute a Networked Readiness Index (NRI) for each country. Table 1 depicts this ten sections. Table 2 also shows the levels used in scoring from 1 to 7. In this assessment semantic differential scale was used and with this scale measurements were conducted in range level.

Table 1. Networked Readiness Index Sections

1st pillar: Political and regulatory environment	6th pillar: Individual usage
2nd pillar: Business and innovation environment	7th pillar: Business usage
3rd pillar: Infrastructure and digital content	8th pillar: Government usage
4th pillar: Affordability	9th pillar: Economic impacts
5th pillar: Skills	10th pillar: Social impacts

Table 2. Levels used in scoring NRI

Circling	Definitions
Circling 1	means you agree completely with the answer on the left-hand side
Circling 2	means you largely agree with the left-hand side
Circling 3	means you somewhat agree with the left-hand side
Circling 4	means your opinion is indifferent between the two answers
Circling 5	means you somewhat agree with the right-hand side
Circling 6	means you largely agree with the right-hand side
Circling 7	means you agree completely with the answer on the right-hand side

3.3. Analyses and Results

3.3.1. Inferential Analysis

Network Readiness Index (NRI) according to Economies by Income

• Based on Generalization 11-4: *The consequences of the adoption of innovations usually tend to widen the socioeconomic gap between the earlier and later adopting categories in a system.*

In order to test the Generalization 11-4 of Rogers’ Diffusion of Innovations model, a database has been generated including the data sets of World Economic Forum’s Global Information Technology Report and World Bank’s Country Classification by Income, and quantitative research techniques has been performed over this database. Rogers make inference in this generalization that *“The consequences of the adoption of innovations usually tend to widen the socioeconomic gap between the earlier and later adopting categories in a system”*. From this point of view, it’s been analyzed if this gap has been widened in terms of economically although not socioeconomically.

Table 3 represents the Network Readiness Index (NRI) averages of the countries, which World Bank categorize as “High Income”, “Upper Middle Income”, “Lower Middle Income” and “Low Income, on yearly basis. According to this table, it can be seen that at every levels except low income level NRI averages are increasing steadily from 2012 to 2015. This outcome indicates that, regardless of the level of income, NRI of countries are increasing year by year and can be assessed “positive“in terms of development.

On the contrary, NRI averages of countries according to income levels decrease from high income level to low income level and the gap between them widens year after year (Fig. 3). The biggest difference between NRI levels belongs to the value between high income and upper middle income levels in 2015 as 1,173049. Also the difference between high income and low income levels is 2,081049 as of 2015 while it was 1,889207 in 2012. These results match up with Rogers’ Generalization 11-4. This result also support digital gap, a cyber-culture theory discussed in literature in the context of globalization.

Table 3. NRI Averages (of Countries) according to Income Levels, on yearly basis

Income Level	NRI Averages			
	2012	2013	2014	2015
High Income	4,894461	4,923355	4,977449	5,058417
Upper Middle Income	3,739859	3,768441	3,838093	3,885368
Lower Middle Income	3,331697	3,388983	3,475281	3,521616
Low Income	3,005254	2,990522	2,954767	2,977368

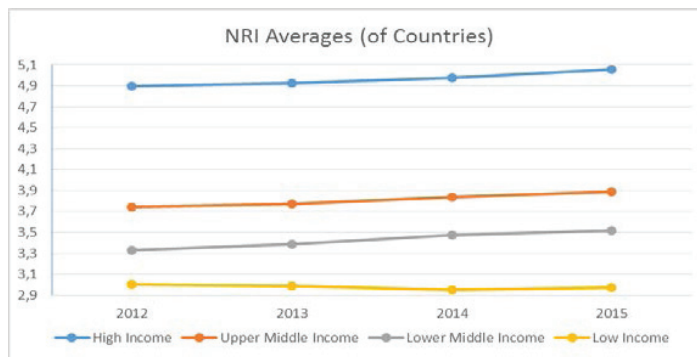


Fig. 3. NRI Averages according to Income Levels, on yearly basis

In order to test if this gap statistically significant, ANOVA analysis has been conducted for the data belong to 2015 and statistically significant results (p=0,000) obtained. In Post-hoc analysis, used for finding out from which group the gap derive, the results show that all group are significantly different (p=0,000 and p=0,007) between each other. The related results are depicted in Table 4.

Table 4. ANOVA and Post-hoc Analyses

NRI Values					
Income Groups	N	Subset for alpha = 0.05			
		1	2	3	4
Low Income	24	2,9668			
Lower Middle Income	35		3,5216		
Upper Middle Income	39			3,9038	
High Income	50				5,0520
Sig.		1,000	1,000	1,000	1,000

ANOVA					
Year 2015					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	88,964	3	29,655	118,520	,000
Within Groups	36,030	144	,250		
Total	124,994	147			

Multiple Comparisons

Year 2015 / Tukey HSD							
(I) Income Group	(J) Income Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval		
					Lower Bound	Upper Bound	
HI	UMI	1,14822*	,10686	,000	,8705	1,4260	
	LMI	1,53039*	,11024	,000	1,2438	1,8169	
	LI	2,08518*	,12422	,000	1,7623	2,4080	
UMI	HI	-1,14822*	,10686	,000	-1,4260	-,8705	
	LMI	,38217*	,11647	,007	,0794	,6849	
	LI	,93696*	,12977	,000	,5996	1,2743	
LMI	HI	-1,53039*	,11024	,000	-1,8169	-1,2438	
	UMI	-,38217*	,11647	,007	-,6849	-,0794	
	LI	,55478*	,13257	,000	,2102	,8994	
LI	HI	-2,08518*	,12422	,000	-2,4080	-1,7623	
	UMI	-,93696*	,12977	,000	-1,2743	-,5996	
	LMI	-,55478*	,13257	,000	-,8994	-,2102	

Government Usage and Social Impacts Relations

- Based on Generalization 8-13: *Opinion leaders are more innovative than their followers.*

Rogers make inference in this generalization that “*Opinion leaders are more innovative than their followers*”. From this point of view, the relationship between *Government Usage* and *Social Impacts*, each one is an subindex that constitutes an NRI value for each country, have been analyzed on the assumption that governments are somewhat opinion leaders for societies

For this purpose, Rogers’ adopter categorization on the basis of innovation (Innovators (% 2,5) - Early adopters (% 13,5) - Early Majority (% 34) - Late Majority (% 34) – Laggards(% 16)) has been taken and countries have been adapted this categorization based on their 2015 NRI values. Within 142 countries included to scoring, the first 4 countries in the 2,5 percent have been called *innovators*, 19 countries in the next 13,5 percent have been called *early adopters*, 48 each subsequent in the 34 percent have been respectively called *Early Majority* and *Late Majority* and, 16 countries in the last 16 percent have been called *Laggards*. The related data have been depicted in Table 5 and Fig.4, visually. When the Government Usage and Social Impacts values according to these groups have been examined, it’s been seen that Government Usage values of early adopting groups are lower than Social Impacts values and on the contrary for later. In other words the shorter adopting innovation period is, the more the ratio of social impact to government usage increases while the less the adoption level of innovation is, the more the ratio of government’s usage level to its followers’ increases.

The term of *opinion leader* came into communication literature in 1940. While U.S. presidential election, according to the public choice survey conducted by Lazarsfeld, mass media content doesn’t have a direct effect on individuals. This effect is at restricted level and become at two-stage, beginning with through the opinion leader. So it’s normal that opinion leaders are the people/ institutions who gain the prestige in society according to others with

their knowledge, education levels and economic conditions. It can be said that these specifications of opinion leaders have started the limited effects period in communication period.

Table 5. Government Usage and Social Impacts Relations for 2015

Government Usage - Social Impacts Relations - 2015		
Adopter Categories	Government Usage	Social Impacts
Innovators	5,473235679	5,832450996
Early adopters	5,083784024	5,465121963
Early Majority	4,326914578	4,579936635
Late Majority	3,555929622	3,599955043
Laggards	2,878229568	2,706930301

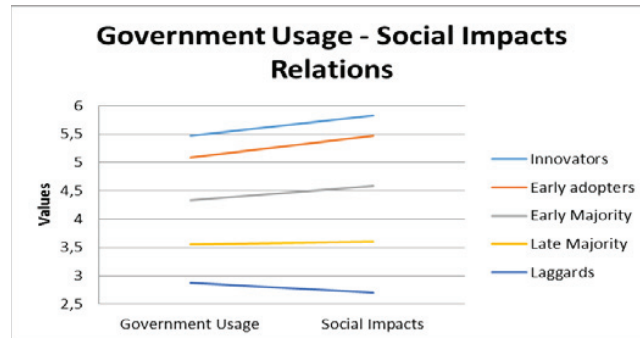


Fig. 4. Government Usage and Social Impacts Relations for 2015

In order to test if this result is statistically significant, a “k” coefficient unit has been specified as $k = \text{Social Impacts} / \text{Government Usage}$ and subjected to Kruskal-Wallis test. In conclusion it has been observed that there’s a significant difference ($p=0,000$) between adopter categories in terms of Social Impacts/Government Usage ratio. The related results are depicted in Table 6.

Table 6. Kruskal Wallis Test for Government Usage and Social Impacts Relations

Ranks				Test Statistics ^{a,b}	
Adopter Categories	N	Mean Rank	Social Impacts / Government Usage Ratio		
Innovators	4	92,00	Chi-Square	df	39,517
Early adopters	19	98,26			
Early Majority	48	87,19			
Late Majority	48	62,42			
Laggards	23	32,04			
Total	142		Asymp. Sig.		,000

a. Kruskal Wallis Test
b. Grouping Variable: Adopter Categories

Adopter Categories and Adult Literacy Rate (within the context of Individual Usage)

- Based on Generalization 7-4: *Earlier adopters are more likely to be literate than are later adopters.*

Rogers make inference in this generalization that “*Earlier adopters are more likely to be literate than are later adopters*”. 142 countries whose data are available has been categorized according to Rogers’ adopter categorization on the basis of innovation using Individual Usage, an NRI subindex, as the categorization criteria. In this analysis, because literacy is concerned with individuals as a term, government and business usage indexes have been excluded.

In order to test if there is significant difference between adopter categories, Kruskal-Wallis test has been conducted and it has been observed that there’s a significant difference ($p=0,000$) between adopter categories in terms of adult literacy rates. In other words, literacy rate of the early adopters significantly differ from later and this result support Rogers’ Generalization 7-4. The related results are depicted in Table 7.

It can also be said that Rogers’ this inference and NRI bases Individual Usage values can meet at media literacy.

Media literacy basically includes the processes that the audience/reader can reach, assess and analyze media texts. The first media literacy book in the world was published in 1994. It's also gaining popularity in Turkey for 15 years. Within this scope, it can be said that there is a belatedness in either cases. Because long term effects of mass media have been the key issues of critical studies. Under these circumstances, media literacy which points conscious audience/reader mass is becoming a more important issue. On the other hand, with the existence of new media today, media literacy concept is being transformed into social media literacy. Nowadays, these media have become the main problematic issue of critical studies upon culture especially. Therefore It can be said that media literacy has become an important area needs to be focused deeply.

Table 7. Adopter Categories and Adult Literacy Rate (within the context of Individual Usage)

Ranks				Test Statistics ^{a,b}	
Adopter Categories		N	Mean Rank	Adult Literacy Rate	
Adult Literacy Rate	Innovators	4	119,75	Chi-Square	75,312
	Early adopters	19	99,92	df	4
	Early Majority	48	96,80	Asymp. Sig.	,000
	Late Majority	48	55,23	a. Kruskal Wallis Test	
	Laggards	23	20,78	b. Grouping Variable: Adopter Categories	
Total		142			

Use of Virtual Social Networks - E-Participation Index

- Based on Generalization 5-12: *Mass media channels are relatively more important at the knowledge stage and interpersonal channels are relatively more important at the persuasion stage in the innovation decision process.*

Rogers make inference in this generalization that “*Mass media channels are relatively more important at the knowledge stage and interpersonal channels are relatively more important at the persuasion stage in the innovation-decision process*”.

With the acceptance the fact that social networks have transformed the media and mass media models take the form of multipoint-to-multipoint anymore instead of traditional point-to-multipoint, it's been tested if there's a significant correlation between *e-participation index* and *use of virtual social networks* within the context of diffusion of innovations and observed that there's a significant positive correlation. The related results are depicted in Table 8.

According to the result, the degree of the correlation between e-participation index and use of virtual social networks is 61,3 percent. This degree can be assessed as a significant rate and shows that e-participation points the use of virtual social networks (or vice versa) at that degree. Nowadays individuals include social networks considerably into their daily lives. Notwithstanding individuals have considerably different uses and gratifications, they take and share messages with different shape and content and so interact. This also means that Blumler and Katz's uses and gratifications approach is confirmed. So diffusion on innovation can be occurred in this kind of media in various ways. Consequently it can be said that Rogers' inference for Generalization 5-12 has been verified finitely. Because no other analysis has been conducted related with the phases like knowledge and persuasion of innovation-decision process. This situation can be assessed in the scope of constraint of studying with secondary data.

Table 8. Use of Virtual Social Networks and E-Participation Index Correlation

Descriptive Statistics				
		Mean	Std. Deviation	N
Use of Virtual Social Networks		5,5269	,73758	140
E-Participation Index		,4738	,25386	140
Correlations				
		Use of Virtual Social Networks	E-Participation Index	
Use of Virtual Social Networks	Pearson Correlation	1	,613**	
	Sig. (2-tailed)		,000	
	N	140	140	
E-Participation Index	Pearson Correlation	,613**	1	
	Sig. (2-tailed)	,000		
	N	140	140	

** .Correlation is significant at the 0.01 level (2-tailed).

Adopter Categories - Tertiary Education Gross Enrollment Rate (within the context of Individual Usage)

Based on Generalization 5-1, 7-3 & 7-18:

- Generalization 5-1: *Earlier knowers of an innovation have more education than later knowers.*
- Generalization 7-3: *Earlier adopters have more years of education than later adopters have.*
- Generalization 7-18: *Earlier adopters have a more favorable attitude toward education than later adopters.*

Rogers’ generalizations related with education can be summarized as “*In terms of diffusion of innovations, early knowers and adopters’ education level is higher than laterers’.*”

For the purpose of testing the Rogers’ Generalizations 5-1, 7-3 and 7-18, 139 countries whose data are available has been categorized according to Rogers’ adopter categorization on the basis of innovation using Individual Usage, an NRI subindex, as the categorization criteria. In this analysis, because tertiary education enrollment is concerned with individuals as a term, government and business usage indexes have been excluded. In order to test if there is significant difference between adopter categories, Kruskal-Wallis test has been conducted and it has been observed that there’s a significant difference (p=0,000) between adopter categories in terms of tertiary education gross enrollment rates. In other words, tertiary education gross enrollment rates of the early adopters significantly differ from laterers. The result complies with Rogers’ Generalizations 5-1, 7-3 and 7-18. The related results are depicted in Table 9.

Although there are several reasons of parallelism between tertiary education gross enrollment rate and earlier adoption of innovations, demographic aspect is one of the significant factors. Because the generation who enroll to tertiary education today is conceptualized with the definitions of “network generation”, “generation z” and “digital natives”. Internet make a relatively significant contribution to their education. In this respect, it can even be said that they act as opinion leaders in society in some cases

Table 9. Tertiary Education Gross Enrollment Rate (within the context of Individual Usage)

Ranks				Test Statistics ^{a,b}	
Adopter Categories		N	Mean Rank	Tertiary education gross enrollment rate	
Tertiary education gross enrollment rate	Innovators	4	115,50	Chi-Square	76,257
	Early adopters	19	105,21	df	4
	Early Majority	47	93,19	Asymp. Sig.	,000
	Late Majority	47	50,87	a. Kruskal Wallis Test	
	Laggards	22	22,64	b. Grouping Variable: Adopter Categories	
	Total	139			

Capacity for innovation - Extent of staff training (at Business Level)

Based on Generalization 5-1 & 7-18:

- Generalization 5-1: *Earlier knowers of an innovation have more education than later knowers.*
- Generalization 7-18: *Earlier adopters have a more favorable attitude toward education than later adopters.*

In this entry innovation-education relationship has been aimed to be tested. Within this context, similar generalizations to the fifth entry of this survey have been used but the inference has been tested at business level at this time.

For this purpose the two factors, *Capacity for innovation* and *Extent of staff training* factors of Business Usage category from NRI have been used and researched if there’s a significant correlation between them. So correlation analysis has been conducted and observed that there’s a significant positive correlation (p=0,000) with 74,4 percent between them. The result complies with Rogers’ Generalizations 5-1 and 7-18. The related results are depicted in Table 10.

New media also transforms business processes. Therefore businesses try to make their personnel compatible to this process with on-the-job training activities and provided infrastructural equipment. So the personnel educated in this scope converge in a sense, in other words become more productive embodying different working techniques. Home Office practices can be given as instance to that.

Table 10. Capacity for innovation and extent of staff training relation (at Business Level)

Descriptive Statistics			
	Mean	Std. Deviation	N
Capacity for innovation	4,7338	,77524	143
Extent of staff training	4,0210	,64749	143

Correlations			
		Capacity for innovation	Extent of staff training
Capacity for innovation	Pearson Correlation	1	,744**
	Sig. (2-tailed)		,000
	N	143	143
Extent of staff training	Pearson Correlation	,744**	1
	Sig. (2-tailed)	,000	
	N	143	143

** . Correlation is significant at the 0.01 level (2-tailed).

4. Conclusion

In this survey, secondary data belong to The Global Information Technology Reports of World Economic Forum has been used in order to discuss Rogers' Diffusion of Innovation theory with a deductive approach, and definitional and inferential analysis have been conducted over the database generated for this purpose.

A number of hypothesis selected from Rogers' diffusion of innovations model have been tested over a database constituted by secondary data and compliance have been observed notwithstanding some constraints. Rogers put forward this model in 1962 and the tested data belong to 2012-2015 period. So, though new analyses have been conducted NRI based, it's very important that Rogers' inferences are applicable even approximately fifty years later. In this sense, this survey has taken photograph of two different periods and tried to reveal at what rate they coincide by overlapping them. Related assessments have been developed within the scope of issues like "knowledge gap", "opinion leadership", "media literacy", "uses and gratifications approach", "network generation" and "convergence". Some of these issues can be discussed as positive in scope of technology-society relations while some others can be discussed with critical perspective. Consequently, a number of effects, whether traditional or in new media, continue by transforming but relatively without indicating no differences.

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