

MEASURING THE PUBLIC VALUE OF E-GOVERNMENT: EVIDENCE FROM TURKEY

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Abstract- Previous literature showed that there is a strong need for measuring the performance of e-government and acquiring empirical evidence on the impacts and outcomes of it. Moreover, empirical evidence is little regarding assessment of e-government impact from a public value perspective. Therefore, this study aims to measure the public value of e-government initiatives in Turkey. Empirical data were collected from e-government users across Turkey through questionnaire. Data were transformed into SPSS and analyzed by running descriptive statistics. Results showed Quality of Services and Functionalities of Services tend to create public value through contributing to Delivery of Public Services. Similarly, User Orientedness of Services, Organizational Efficiency and Openness of Public Organizations tend to create public value through contributing to Effectiveness of Public Organizations. Finally, Self-Development of Citizens, Trust and Environmental Sustainability tend to create public value through contributing to Achievement of Social Outcomes while Equity tends not to create public value.

Keywords- E-government, Public Value, Public Value Measurement, Turkey

I. INTRODUCTION

The World we live in has continuously been experiencing a dramatic change most of which originated from the influence of Information and communication Technologies (ICT). The latest technological developments have made the World become a digital world. It is obvious that increasing use of ICT has caused individuals, institutions and finally governments to transform the way they act and communicate. Also, transition from traditional societies to knowledge societies has caused a set of significant changes in the social, political, economic and cultural structure of nations as well as in the understanding of public administration across countries.

There are four main reasons of the transformations in governance, politics and society as a whole, [22]

- The changing role of knowledge,
- The changing forms of social organization and cooperation,
- Globalization and,
- Utilization of new ICTs.

Following the World Summit on the Information Society (WSIS) in 2003, as it is agreed, numerous projects were put into action in pursuit of delivering public service in a quality, faster, easier, cheaper, more transparent and eventually more effective way around the world [16].

Thus, e-Government has emerged as a new concept inevitably forcing countries to invest huge amount of money in e-Government projects all around the world. There is no doubt that developed countries have made substantial progress in public administration and public service delivery through Information and Communication Technologies. Nowadays e-Government can be considered as a must

rather than an option for the countries seeking for good governance, responding citizen expectations, remaining competitive in the international environment and keeping up with the latest developments in the field of science and technology. It is a virtual certainty that citizens around the World increasingly will put more and more pressure on public authorities to deliver more public values over the next several years [6].

Nevertheless, there seems to be an imbalance between the supply and demand of public services in most countries despite the extensive investments in e-government so far, which might be considered as a consequence of inappropriate ways of policy development rather than “evidence based” evaluation and selection of e-government policies [21, 29]. Accordingly, due to poor implementation and lack of effective management most of the e-government initiatives have failed. There seems to be a great gap between the expected results of e-government initiatives and the actual consequences [12]. Moreover, past experience in the field of e-government necessitates further attention by researchers for the assessment of e-government policies and e-government investments so that e-government decision makers could carry out more qualified and quantified preparation, execution and evaluation of e-government policies including their broader societal implications as well as longer term impacts and outcomes [29].

Due to the insufficiency of funds and resources, it is vitally important to assure effective allocation of scarce resources and to design better e-government policies that are evidence based especially in this time of economic turbulence. One way of achieving this might be to measure the impacts of e-government

investments from a public value perspective. Therefore, what has become so important as much as implementing e-government is assessing its performance, impacts and value for citizens. It is then important to pay greater attention to collect and interpret a variety of empirical evidence in order to assess the impacts, outcomes and value of e-government policies.

Although the contribution of e-government for countries and its potential for widening participation of citizens in policy-making process, enhancing access to information and removing barriers to public service are very well studied in the literature, there is an ample room for improvement.

Existing literature shows that there is a strong need for measuring the performance of e-government and acquiring empirical evidence on the impacts and outcomes of it especially in developing countries [34, 8, 33, 14, 4, 17, 2, 9, 25, 26, 27, 28, 15, 1] in addition to lack of empirical evidence regarding the assessment of e-government impact from a public value perspective. The applications of Impact Assessment in the public sector need to move beyond from cost-benefit analysis to the assessment of public value creation [7].

Therefore, the primary aim of this study is to assess the impacts of e-government initiatives from the Public Value (PV) perspective in Turkey. In order to fulfill this aim we administered questionnaire to e-government users in Turkey. The questionnaire tried to understand the perceptions of citizens regarding the PV of e-government indicating whether e-government creates PV in Turkey or not according to them.

We intended to assess the impact of e-government from the PV perspective because the history of e-government in Turkey dates back to first years of 1990s which indicates that enough time has passed and sufficient data have been accumulated for assessing the impacts of e-government from the PV perspective. Moreover, public value approach is a comprehensive and appropriate one particularly for taking account of social dimensions of e-government impact assessment. Last but not least, PV assessment of e-government takes place in the last stage of the evolution occurred in the nature of e-government impact assessment.

The study consists of six different sections. The second section represents the theoretical framework. In this section some general concepts and definitions related to e-government and PV were given. The third section includes information about the methodology of the study. The fourth section consists of the results of the analysis while the fifth section provides a discussion about the findings. The final section concludes the paper with future work suggestions.

II. THEORETICAL FRAMEWORK

Evaluation of e-government projects has an important role in the process of policy formulation and it helps policy makers move through the policy lifecycle [13]. In the context of e-government performance evaluation, impact assessment has been paid more attention recently as a result of rapid development of e-government. In addition to cost-benefit analysis, efficiency and effectiveness, impacts and outcomes of e-government has been considered in impact assessment of e-government projects [18]. Most of the e-government impact assessment approaches have a focus on improving democracy, developing public trust, supporting personal development of stakeholders, furthering equity and creating value through e-government [18].

Correspondingly, there has been a shift in the focus of e-government performance assessment from readiness to availability to uptake and ultimately to impact assessment over time [13]. Impact assessment of e-government projects focuses on some factors such as equity, trust, efficiency, citizens' development, public value and reducing corruptions [18]. The concept of public value, as a result, has become a popular tool for understanding, evaluating and designing public policies, measuring the performance of governments and the total benefits that flow from government actions as well as e-government [24, 19, 23, 11, and 26].

Most studies carried out on e-government evaluation fails to reflect the kind of evidence of benefits that are required to have an actual influence on policy formulation. For this reason, it is necessary to approach e-government from a PV perspective. PV approach can contribute to decision making, performance assessment and, particularly in the context of e-government, to build a bridge between the information technology and broader policy communities [19]. Likewise, impact assessment of public sector ICT policies and investments is required to take account of both efficiency and other broader impacts regarding public value [7]. Further, research on public value assessment of e-government projects is not sufficient as argued by [30].

As the proponent of the concept of public value, Mark Moore [24] argues that the aim of managerial work in the public sector is to create PV just as the aim of managerial work in the private sector is to create private value. He argues that in the public sector value is rooted in the preferences and perceptions of individuals. Public sector managers must work hard to define what is valuable for citizens as well as to produce that value.

Generating PV depends on the achievement of objectives set by public administrations such as increased equity and public trust, reduced poverty and

social exclusion, and the delivery of public services to the citizens [20, 7 and 18]. PV can be created by establishing and operating a public institution that meets citizens' desires [24], and improving the quality of public services and achieving desired outcomes [20].

Kelly, Mulgan and Muers [20] argue that government can do numerous things that the public would value. But, there are three mainly important categories of value; services, outcomes and trust. One thing cannot be defined as valuable for the mere reason of being desirable. One thing is of value only when individuals or the public are willing to give something in return for it. The way that citizens sacrifice for government is not limited with monetary terms (i.e. taxes/charges), these also include granting coercive powers (e.g. in return for security), disclosing private information (e.g. in return for more personalized information/services), sacrifice of time (e.g. as a school governor or a member of the Territorial Army), or other personal resources such as blood. In event that the citizens want the government to produce something but they want to give nothing in return, this means that it is not of real public value. Moreover, operations of public organizations on the provision of public services should be guided by what is valuable to citizens [24]. For this reason, the ultimate goal of public programs, policies and government actions, including e government, is to create value for citizens and the society as a whole [18]. Similarly, Kearns [19] acknowledge that there are three significant sources of public value:

- Delivery of high quality services: there is a set of factors that drive user perception in relation to services such as service availability, user satisfaction, perceived importance of services, fairness of service delivery and the cost.
- Achievement of outcomes: these outcomes can be considered as desirable by the public namely improvements in health, reduction in poverty or Environmental sustainability.
- Trust in public institutions: it helps citizen to accept government action and feel a sense of association with it.

For this reason, better understanding and addressing the citizen's needs and expectations and realizing to what degree the users of e-government should be empowered is necessary to create public value for citizen [5]. Thus, Public Value is a useful framework that presents a broader way to measure performance of government and to guide policy making processes. Since this approach takes the total impact of government into consideration, it could be beneficial for improving policy decisions and thus for a better relationship between government and public [20].

In line with the increasing popularity of PV concept in assessing the impacts of e-government projects various measurement frameworks were developed by researchers:

Grimsley, Meehan and Gupta [10] developed an evaluative design framework based upon the concept of PV. Their framework focuses on outcomes, services and trust as well as user satisfaction as factors that would create public value. They argue that user satisfaction and trust are underpinned by experiential dimensions of well-informedness, personal control and influence. The framework is based on an examination of a significant, live case study in London, UK

Bai [1] developed a framework for measuring public value of e-government. According to the framework there are three sources of public value creation through e-government namely a) Delivery of Public Services, b) Effectiveness of Public Organizations, c) Development of Trust. In the framework for example, value created through the Delivery of Public Services is assessed by the value of services available, importance, choice, fairness, cost savings and citizens' satisfaction. Value created through Effectiveness of Public Organizations is assessed considering the value of efficiency, citizens' perceptions, and interactive communication. Finally, the value created through Development of Trust is assessed through security and privacy, transparency, trust and participation. Figure 21 represents the framework.

In the framework of Harrison et al [11], they argue that value can be produced by value-generating mechanisms; detecting these mechanisms allows to determine the means by which a government action is related to the production of one or more public values. Value-generating mechanisms are defined as being; Efficiency, Effectiveness, Intrinsic enhancements, Transparency, Participation, Collaboration. For example, transparent, participative, or collaborative government activities may have the impact of enabling a citizen to derive substantive financial, social, political or strategic values and/or intrinsic value related to government itself. Accordingly transparency, participation, and collaboration are meaningful when they enable groups of people to pursue their objectives.

A measurement scale was developed by [18] through quantitative and qualitative research. After the quantitative survey, he formed a final measurement scale that has three dimensions of public value of e-government: Delivery of Quality Public Services, Effectiveness of Public Organizations, and Achievement of Socially Desirable Outcomes. These three major dimensions have their sub-dimensions. Therefore the value of Delivery of Public Services (DPS) can be measured by the value of a) Quality of information online (Qua_1,2,3,4,5), b) Functionalities of services (Ser_1,2,3,4,5,6) and c) User-orientation of services (Uso_1,2,3,4,5,6,7); the value of Effectiveness of Public organizations (EPO) can be

measured by the value of a) Organizational efficiency (Eff_1,2,3,4,5,6), b) Openness of public organizations (Ope_1,2,3,4,5,6,7,8) while the value of Achievement of Socially Desirable Outcomes (ASO) measured by the value of a) Equity (Equ_1,2,3,4,5,6), b) Self-development of citizens (Self_1,2,3,4,5), c) Trust (Tru_1,2,3,4,5) in e-government, and d) Environmental sustainability (Env_1,2,3,4,5,6) [18]. We intended to make use of Karunasena's framework because; firstly, our aim was to conduct a quantitative study. Secondly, Sri Lanka and Turkey ranked very close in terms of e-government development index (EGDI) [32]. Thirdly, the framework was tested and validated in Sri Lanka and lastly, both Turkey and Sri Lanka are developing countries.

III. METHODOLOGY

This study aims to collect empirical evidence regarding the assessment of e-government impact from a public value perspective and therefore to measure the public value of e-government initiatives in Turkey. In order to achieve this aim following research questions have been formulated.

1. What creates public value through Delivery of Public Services in Turkey?
2. What creates public value through Effectiveness of Public Organizations in Turkey?
3. What creates public value through

Achievement of Social Outcomes in Turkey?

We made use of quantitative method and designed a descriptive study to be able to successfully answer our research questions. We administered a questionnaire to e-government users in Turkey and the questionnaire was adapted from Karunasena [18]. The questionnaire consists of two parts. First part asks for demographic information while the second part consists of variety of questions regarding the dimensions of PV of e-government. Questions of the questionnaire were designed in the form of seven point Likert-type scale. Close-ended answers were ranging from strongly agree to strongly disagree. The questionnaire was sent to 1200 e-government users in Turkey and 520 responses were received and 356 of them were valid.

Translation of the questionnaire was made using back-translation method. In order to ensure an accurate translation three different translators were asked for making the back-translation procedure. In order to ensure face and content validity three different academicians were asked to read the definition of the constructs and then check the items of the scale whether the items were capturing the constructs or not. In addition to this, the academicians were asked to compare the definition of the constructs and check the content of the scale for ensuring that the scale reflects what is indicated in the definition of the constructs. Following this, the questionnaire was

adopted according to feedback of academics and then distributed to citizens.

Once the data were collected then they were transformed into SPSS. Since the research questions of this study are in descriptive nature, descriptive analysis of data was carried out. Independent samples t-test and Analysis of Variance test were run in order to compare the differences of mean scores between different groups.

Exploratory Factor Analysis was run using the extraction method of Principal Component Analysis and the rotation method of Varimax with Kaiser Normalization. The alpha reliability of the scale for all factors are greater than 0.70, indicating that the scale had good reliability.

IV. RESULTS

Results of Factor Analysis and Reliability Analysis for the questionnaire were presented in the Table1. Those items with a factor loading greater than 0.5 were retained whereas those items with a factor loading lower than 0.5 were eliminated. After performing Factor Analysis the items *uso_1*, *ope_4*, *ope_6*, *ope_7*, *uso_5* and *equ_2* were deleted since they did not have factor loadings greater than 0.45. What is more, the item *ser_2* was deleted since it had cross-loading on multiple factors. Similarly, the item *equ_3* had a factor loading on Trust factor rather than on equality factor. However, it is understood in the content analysis conducted by three different academics that this item did not fit the Trust scale in terms of content. For his reason, the item *equ_3* was deleted too.

Table I Reliability and Factorial validity of the Questionnaire

	F1	F2	F3	F4	F5	F6	F7	F8	F9
Ser_4	.738								
Ser_5	.722								
Ser_6	.687								
Ser_3	.658								
Ser_1	.634								
Uso_3	.650								
Uso_7	.627								
Uso_4	.593								
Uso_6	.561								
Uso_2	.532								
Self_4		.775							
Self_5		.742							
Self_3		.738							
Self_1		.710							
Self_2		.685							
Eff_4		.675							
Eff_3		.656							
Eff_1		.626							
Eff_2		.615							
Eff_5		.591							
Eff_6		.569							

Tru_3	.791	
Tru_4	.789	
Tru_2	.769	
Tru_5	.717	
Tru_1	.711	
Ope_1	.779	
Ope_8	.688	
Ope_5	.628	
Ope_3	.557	
Ope_2	.529	
Qua_3	.726	
Qua_4	.694	
Qua_2	.676	
Qua_5	.603	
Qua_1	.544	
Env_2	.657	
Env_5	.653	
Env_4	.647	
Env_6	.624	
Env_3	.612	
Env_1	.576	
Equ_1	.736	
Equ_5	.681	
Equ_6	.557	
Equ_4	.538	
Cronbach's		
Alpha	.855.780.916.877.905.865.830.858.903	

Analysis of descriptive statistics shows that the mean score given by citizens to Functionalities of Services is 5.39; User Orientedness of services is 4.97; Self-development of citizens is 4.08; Organizational efficiency is 4.60; Trust is 4.96; Openness of public organizations is 4.36; Quality of services is 5.23; Environmental sustainability is 4.39; and Equality is 3.11. The highest mean score was given to Functionalities of services as being 5.39 whereas the lowest mean score went to Equity as being 3.11. The results are illustrated in the table 2 in greater detail.

Table II Descriptive Statistics

	Mean	Std. Deviation
Ser	5.3994	1.17279
Uso	4.9719	1.07378
Self	4.0809	1.62688
Eff	4.6072	1.27501
Tru	4.9646	1.33865
Ope	4.3669	1.35119
Qua	5.2315	1.03272
Env	4.3933	1.33919
Equ	3.1163	1.27656

According to independent samples t test, the mean score given by females to the performance of e-government in terms of Functionalities of services (M = 5.56; SD = 1.12) is significantly higher $t = 2.48$; two-tailed $p = .01$ than those of males (M = 5.25; SD = 1.20).

Similarly, the mean score given by females to the performance of e-government in terms of its

contribution to Self-development of citizens (M = 4.29; SD = 1.59) is significantly higher $t = 2.39$; two-tailed $p = .01$ than those of males (M = 3.88; SD = 1.63).

In the same way, the mean score given by females to the performance of e-government with respect to Openness of public organizations (M = 4.53; SD = 1.30) is significantly higher $t = 2.19$; two-tailed $p = .02$ than those of males (M = 4.21; SD = 1.37).

Considering education level, the results of one-way ANOVA test indicate there is a statistically significant difference between different groups. The mean scores for Self-development of citizens, Organizational efficiency, Trust, Openness of public organizations and Equity are significantly different as the p values are lower than .05.

With respect to the performance of e-government in terms of its contribution to Self-development of citizens, the mean scores of people with an education level of post graduate are significantly different from the mean scores of people with an education level of high school & lower and undergraduate having p values of respectively .000 and .000.

In the same way, when we look at the performance of e-government in terms of its contribution to Organizational efficiency, the mean scores of people with and education level of post graduate are significantly different from the mean scores of people with an education level of high school & lower and undergraduate.

When it comes to the performance of e-government in terms of its Trust, again, the mean scores of people with and education level of post graduate are significantly different from the mean scores of people with an education level of high school & lower and undergraduate.

According to the results for the performance of e-government in terms of its contribution to Openness of public organizations, the mean scores of people with an education level of post graduate are significantly different from the mean scores of people with an education level of high school & lower and undergraduate, having p values of respectively.

Regarding the performance of e-government in terms of its contribution to Environmental sustainability the mean scores of people with an education level of post graduate are significantly different from the mean scores of people with an education level of high school & lower and undergraduate.

Likewise, as to the performance of e-government in terms of its contribution to Equality the mean scores of people with an education level of post graduate are significantly different from the mean scores of people with an education level of high school & lower and undergraduate.

V. DISCUSSION

It can be inferred from an overview of the results of the questionnaire that people highly value these nine

critical factors and e-government in Turkey seems to create public value in terms of Quality of services, Functionalities of services, Organizational efficiency, Self-development of citizens, Trust, Environmental sustainability, User orientedness of services, and Openness of public organizations except for Equity. It would not be mistaken to argue that if the mean score given by citizens to performance of e-government is greater than 4 for a certain critical factor then it can be claimed that e-government creates public value for this individual factor.

We can now answer our research questions 1, 2, 3, accordingly.

1. What creates public value through Delivery of Public Services in Turkey?

Analysis of empirical findings showed that Quality of services, User orientedness of services and Functionalities of services tend to create public value through Delivery of Public Services as the mean score is greater than four for each of these factors.

2. What creates public value through Effectiveness of Public Organizations in Turkey?

Similarly, Organizational efficiency and Openness of public organizations tend to create public value through Effectiveness of Public Organizations as the mean score is greater than four for each of these factors.

3. What creates public value through Achievement of Social Outcomes in Turkey?

Finally, Self-development of citizens, Trust and Environmental sustainability tend to create public value through Achievement of Social Outcomes as the mean score is greater than four for each of these factors while Equity tends not to create public value as the mean score is below four for this factor.

Considering education level, the results of one-way ANOVA test indicate that there is a statistically significant difference between the means regarding the perceived public value of Self development of citizens, Organizational efficiency, Trust, Openness of public organizations and Equity according to different groups.

The responses were ranging from one to seven. Therefore any mean score above four indicates that a particular factor tends to create public value according to perceptions of citizens. Since the mean performance score was 5.23 for Quality of services, 5.39 for Functionalities of services, 4.60 for Organizational efficiency, 4.08 for Self-development of citizens, 4.96 for Trust, 4.39 for Environmental sustainability, 4.97 for User Orientedness and 4.36 for Openness of public organizations it can be claimed that e-government in Turkey tends to create public value through these particular factors.

However, in terms of Equity the mean performance score was 3.1163. Since the mean performance score for Equity was lower than four it can be claimed that e-government in Turkey tends not to create public

value through this particular factor. The reason for this may be lack of provision of e-government content in local languages. Moreover, there is no training opportunities provided by government for people living in rural areas. Last but not least, there is a lack of adequate and appropriate content for ethnical minorities on government web sites. All these missing criteria have an impact on poor performance of e-government in creating public value through equity.

CONCLUSIONS AND FUTURE WORK

We tried to assess the impacts of e-government in Turkey from the Public Value perspective since the previous literature has stressed that there is a strong need for obtaining empirical evidence on the impacts and outcomes of e-government. To this end, we collected empirical data through survey questionnaire and then tried to measure the Public Value of e-government in Turkey.

As a result of the study it was understood that nearly half of the people in Turkey tend not to know much about e-government and its gainings. This conclusion was made based on the responses from citizens. Most of the citizens gave a score of '4' for almost all items in the questionnaire which corresponds to 'I have no idea about this'. This result can push us to make such a conclusion that nearly half of the people seem not to know very well about e-government.

Moreover, looking at the results of questionnaire, it may be possible to make an inference that Turkish government needs to pay further attention on increasing the public value through Delivery of Public Services by improving Functionalities of services, User orientedness of services and Quality of services.

In order to increase the public value through Effectiveness of Public Organizations government needs to pay further attention on improving Organizational efficiency and Openness of public organizations. With respect to increasing public value through Achievement of Social Outcomes government may need to pay more attention to improving Self-development of citizens, Trust, Environmental sustainability and particularly Equity. Another outstanding result is that government seems to fail in creating public value through Achievement of Social Outcomes due to poor performance of e-government regarding Equity. It is obvious from the results that this area requires particular attention.

This study provides several contributions to both scientific literature and practical life. With respect to scientific side, this study contributed to existing literature by providing empirical evidence on assessing the impact of e-government from a Public Value perspective. Another contribution might be that

we tested and validated Karunasena's [18] framework of Public Value of e-government. When it comes to practical side, our study provides important implications to public authorities. Further, the results of the study can help public administrators see the strengths and the weaknesses of current e-government initiatives in terms of Delivery of Public Services, Effectiveness of Public Organizations and Achievement of Social Outcomes. Also, such an evidence helps policy makers eliminate problem areas in terms of Public Value creation. Thus, based on our results, public policy makers can make evidence-based decisions regarding e-government investments which can lead to better results and impacts and effective resource allocation as well.

Although the study conducted a quantitative survey the scale was developed by Karunasena [18] not by the researcher himself. Another limitation to this study is that we employed the final measurement framework developed by Karunasena [18] based solely on his quantitative survey results as we intended to conduct a quantitative study too. Further research can be done by gathering data from a larger and more representative sample. Another limitation is that we only used quantitative method for this study therefore leaving a room for further qualitative studies.

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