

From E-Government to T-Government: A Malaysian Citizens' Readiness Study

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Abstract—The Malaysian government has embarked on a transformational program that will not only drive the country's economic transformation but will also affect the public services delivery. This new agenda is in line with concepts of T-Government movement that has begun in Europe at the end of last decade. In this paper, we look into the readiness of Malaysian citizens towards the implementation of T-Government services. An empirical investigation is used through the construction of an instrument to gauge the citizens' readiness. Two important constructs used are the usage of e-government services and the perception of e-participation. The instrument was delivered through an online survey and distributed to Malaysian Internet users. Two hundred and thirty respondents took part in the survey and their responses were analysed to reveal usage pattern of current e-government services and their perception towards e-participation. The results of the analysis revealed two important findings. The first finding is that there is a high percentage of usage of e-government services amongst Malaysian Internet users. The second findings disclosed that a high usage is associated with positive perception towards e-participation. These findings have provided preliminary evidence for future work of citizen-centric requirements for T-Government services.

Index Terms—E-Government; Citizens' Readiness; Transformational Government; T-Government.

I. INTRODUCTION

In the era of information technology particularly when the Internet and World Wide Web continues to expand, it is not surprising to see organizations including all levels of governmental bodies leveraging on these approaches to deliver their services to the users. Many governments all over the world have implemented electronic government, or better known as e-government, in their effort to promote better service delivery mainly to the citizens and business communities alike. Fang [1] has describes e-government as "government activities that take place over electronic communication among all levels of government, citizens and the business community". Generally, e-government can be defined as "government's use of ICT, particularly, web-based applications, to enhance the access to and delivery of government information and services to citizens, businesses, employees and other agencies and entities" [2].

In the early 2000, transformational government (T-Government) has emerged as new trend in delivering public services using information and communication technology (ICT). Also known as Government 2.0, Connected Government, Open Government or Citizen-centric Government, it is all about the use of technology to encourage more open and transparent form of government, where the

public has a greater role in forming policy and has improved access to government information. The shift of perspective to transformational government will enable citizens to gain more efficient and timely access to data, information and services through the sharing and distribution of information within and through the government. Therefore, in T-Government services, citizen participation is a crucial element and must be managed carefully.

In keeping with worldwide trends, Malaysia has joined the bandwagon by announcing its e-government initiative as one of the flagship for the Multimedia Super Corridor project. With the aim to re-invent the way in which it operates, the Malaysian government has realized electronic government more than 16 years ago. In 2010, the Malaysian government has embarked on a transformational program that will not only drive the country's economic transformation but will also affect the public delivery services through the concept of connected government that addresses citizen centricity. The Tenth Malaysia Plan, which spanned between the years 2011 until 2015, has shown that 77% out of 13,483 government services have been provided online by the government of Malaysia [3] and this portrayed the huge investment made to ensure e-government a success [4]. The key question to ask now is, "After e-enabling its key customer facing or front office processes (e-government), is Malaysia prepared to transform their administrative and back office processes to encourage more open and transparent form of government (T-Government)?" One of the main indicators in answering this question is to look at adoption level of current e-government services in Malaysia to determine Malaysian citizens' readiness towards T-Government implementation. This research has conducted an empirical investigation to answer the question above as part of a larger research of determining the citizen-centric requirements in T-Government.

The organization of this paper is as follows, the second section of this paper discussed on the evolution of e-government models collected using literature reviews while the concept of transformational government and its differences with e-government is introduced in the third section. The background of Malaysia's e-government implementation is elaborated in the fourth section in order to get the basic understanding of the research context. Then, the method of the research will be discussed, followed by the analysis of the result. The discussion section highlights our observation of the scenario and the conclusion section summarized the key points of this paper.

II. E-GOVERNMENT EVOLUTION MODELS

Evolution is a process that involves gradual change and development. Evolution model is an important tool to

measure the growth of e-government initiatives. Since the year 2000, there have been many e-government evolution models proposed by individual researchers or practitioners of institutions, in order to determine and forecast e-government maturity state. Various kind of models ranging from four to six stages have been developed to characterize the state of e-government maturity, which start from static information-based websites at the lowest level to personalization of government services in the highest level [5-9]. The assumptions behind these evolution models are the information systems evolve through a series of stages that transform itself into a more matured entity [10] and the higher stages include the lower ones [11]. Various models have been discussed in the literature, four of interests are proposed by Baum and DiMaio [6], Balutis [12], United Nation [13] and Layne and Lee [5].

To help public administrators understand e-government, Layne and Lee [5] have described different stages of e-government development and their focus was on growth model for a fully functional e-government. United Nations' four-stages of online services growth [13] has focused on citizen-oriented services but the Gartner group's [6] and Balutis' model [12] emphasis were on characteristics and capabilities of web services. Balutis [12] concluded that more than 50% of government agencies' web sites in his study disseminate information, 34% allow transactional activities while only 4% of them is in the transforming rung [14]. This shows that apart from United Nation's model, all the other three models are still concentrating effort in the supply side of e-government while none addressed the issue of citizens' demand or requirements of the users of e-government. Table 1 shows a summary of the reviewed models.

These evolution models revolve around four stages of e-government maturity. In general, the first stage of these models being a web presence with basic information delivery while the second stage is associated with web sites with downloadable forms. A complete end-to-end transaction reflects the third stage in most of the models whilst all of them agreed on a final phase for e-government being services that are unified and offered through a one-stop portal. While Balutis [12] and Baum and DiMaio [6] defined it as 'transformation', Layne and Lee [5] termed it as 'horizontal integration' and United Nation [13] characterized it as 'connected'. These connotations refer to an e-government maturity level where services are integrated, unified, seamless and citizen-focused. It is in this highest stage of e-government evolution that gave birth to the concept of transformational government [15].

The advance to transformational stage is a complex one [14]. Earlier stages are characterized by its incremental changes while transformational phase is a major leap from the previous ones. Thus, why authors like Siau & Long [16] and Chang & Victor [10] have proposed e-government transformation model to understand the evolutionary path better.

Table 1
Reviewed E-Government Evolution Models

Reference	Phases or stages	Explanation
<i>Layne and Lee (2001)</i>	Stage 1: cataloguing	E-government websites containing static and basic information
	Stage 2: transaction-based e-government	Enabling online transaction such as filling up forms and providing receipts

Reference	Phases or stages	Explanation
<i>Baum and DiMaio (2001)</i>	Stage 3: vertical integration	Integration of government functions at different levels such as local, state and federal government.
	Stage 4: horizontal integration	Integration across different functions from separate systems for a unified and seamless service
	Phase 1: web presence	Generic and static web sites containing basic information
	Phase 2: interaction	Web sites equipped with basic search engine, downloadable forms, links to other sites and email addresses
<i>Balutis (2001)</i>	Phase 3: transaction	Users can carry out entire transactions online
	Phase 4: transformation	A transparent government organizations where all services and processes are unified, integrated and personalized
	Phase 1: information dissemination	E-government initiatives deliver information
	Phase 2: forms only	Web sites provide only forms to the users
<i>United Nations (2010)</i>	Phase 3: end-to-end electronic transaction	Services enabling transaction between government and users
	Phase 4: transforming government	Government change focus and structure to provide unified services that are transparent to users
	Stage 1: emerging	Government websites provides limited information and basic services
	Stage 2: enhanced	Using downloadable forms, websites provide one-way or simple two-way interaction between government and citizens
<i>United Nations (2010)</i>	Stage 3: transactional	Citizens can perform complete and secure end-to-end transactions
	Stage 4: connected	Government transform the way it communicates with citizens by incorporating citizens' participation in government's decision making

III. DIFFERENCES BETWEEN TRANSFORMATIONAL GOVERNMENT AND E-GOVERNMENT

When discussing transformational government, various researchers have offered different definition to explain the concept [17-20]. For instance, Ho [17] explains transformational government in terms of the way such governments operate; Janssen and Shu [18] define it based on its fundamental characteristics while Borrás [19] and Dwivedi and Janssen [20] view it with a focus on process of transformation and back office reengineering respectively. Realizing that these definitions are context and focus dependent, lack of clarity of the precise meaning is indeed similar to e-government where it has been claimed that there is an absence of a universal definition [21]. Nevertheless it has been found that countries today are experiencing a progression of e-government maturity level towards realizing T-Government [15,22]. It is the maturity level that distinguishes clearly between e-government and T-Government in that the former is a traditional, agency-centric in vertical-silos model while the latter has transformed to a one-stop, citizen-centric model driven at whole-of-government [19,23]. Therefore, according to Borrás [19], the four major ways T-Government evolves from e-government are; it transforms services around citizen and business user, it aims to e-enabled the frontline of public services, it empowers the citizen, and finally, it promotes cross-government efficiency.

For another perspective of e-government maturity, the failure of various e-government projects has triggered the necessity of having T-Government as a remedial justification in order to improve the level of competency and cost saving of the delivery system in the public sector, which was initially anticipated through electronic service delivery [20]. The emergent of terms such as “e-government 2.0”, “Government 2.0” and “eGov. 2.0” have been stated as another paradigm [24,25] within the practice community, which consequently leads to increasing efforts of transformational government. However, there is yet an impending research to focus on T-Government theory in order to enhance clarity on the definition and principles of transformational government.

IV. MALAYSIA’S E-GOVERNMENT

Electronic government or e-government is one of the seven flagships of the Multimedia Super Corridor initiative, which was launched in August 1996. The main aim for the development of e-government in Malaysia is to improve the convenience, accessibility and quality of delivery of government services as well as improve the information flows and processes in order to increase the speed and quality of policy development, coordination and enforcement [26]. The scope of e-government in Malaysia includes all government agencies, civil servants, business community and citizens.

After sixteen years since the launching of e-government flagship, much has been achieved in the Malaysian public sector scenario. The advancement of information and communication technology has evolved from the use of computers at government service counters in the 70’s to the use of web portals at the turn of the century. E-government has become an integral part of the public service delivery system with over 10,000 public services offered over the Internet [3].

During the Tenth Malaysia Plan, the Malaysian government has embarked on efforts to adopt a whole-of-government approach in delivering its services. The aim calls for “re-inventing government” using information technology to ensure effective and efficient delivery of services for the people of Malaysia, enabling the government to become more responsive to the needs of its citizens. The speed and quality of policy development, co-ordination and enforcement will also improve through connectivity and facilitation of information flow and processes with the government [27].

Out of 193 countries surveyed in the United Nations E-Government Survey for the year 2016, Malaysia has been listed in 60th ranking of E-Government Development Index (EGDI) and 40th ranking in E-Participation Index. The survey measures e-government effectiveness in the delivery of basic economic and social services to people in six sectors, namely education, health, labor and employment, finance, social welfare and environment [28]. The noteworthy finding on Malaysia’s e-government development efforts has offered an insight of its competitiveness in terms of e-government implementation as compared to other countries around the world. It is a significant indicator of Malaysia’s readiness to move one step ahead to further transform the relationship between public sector and users of public services to make it more transparent, collaborative and participatory thus becoming a citizen-centric government. In order to move ahead, we need to understand the adoption level of current e-government services in Malaysia to determine Malaysian

citizens’ readiness towards T-Government implementation.

V. RESEARCH METHODS AND FINDINGS

A self-administered questionnaire was designed with the following specification: Section I contains four demographic items on respondent’s age, gender, years of Internet usage and Internet accessibility. Section II of the questionnaire focuses on collecting information on participants’ experience on e-government and their thoughts on e-participation.

The instrument was distributed electronically among Malaysian Internet users using email and social media networks. According to Malaysian Communication and Multimedia Commission [29], Malaysian Internet users consist of 66.6% of the population thus, the sampling of this research, which consist of only Malaysian Internet users are acceptable as this group is a majority of the populations. The Internet users were used as sample as they are more likely to be the early adopters of T-Government services. The selection of respondents is partly in line with suggestion by Gauld et al. [30] who said that consumers with low income, old age, less education and female gender are less likely to use e-government services. Convenient sampling is used where two hundred and thirty respondents took part in the survey over the period of two weeks. Their responses were analyzed to reveal their usage pattern of current e-government services and their perception towards e-participation. As a control mechanism, the respondents’ name and identity card number were made mandatory in the survey so that only Malaysian citizens’ data will be counted and double entries can be eliminated. Descriptive statistics were used to analyze and present result from the empirical data of the respondents. The findings and outcomes of the survey are presented in table, charts and descriptive analysis for discussion and learning.

Table 2 shows the respondents’ profile of the two-hundred and thirty Malaysian Internet users. Majority of 72% respondents are from the age range of 31 to 39 years old, which is the age range of mature Malaysian workforce. It is followed by 10% who are in the age range of 18 to 25 years old, 9% are between 26 to 30 years old, 8% are 40 to 49 years old and only 1% of respondents aged 50 years and older. This finding shows that citizens in the age range of 31-39 years old are most likely to be the early adopters of T-Government initiatives in Malaysia.

Table 2
Respondents’ Profile

Age	<18	18-25	26-30	31-39	40-49	>=50
%	0%	10%	9%	72%	8%	1%

The research needs to know how long the respondents have been using the Internet because it influences their readiness towards e-participation. Results illustrated in Figure 1 shows that 71% of the respondents have been using the Internet for more than 10 years, 21% between 6 to 10 years and 7% between 1 to 5 years. The result also shows that none of the respondents is a beginner user. Thus, we can conclude that majority of the respondents of the survey which represents the Malaysian urban citizens are experienced Internet users.

Figure 2 illustrates the representation of the Internet access point usage by Malaysian citizens. The top accessible point is at home, which contributes 93% of the sample size and work place contributes the second higher accessible point of 80%.

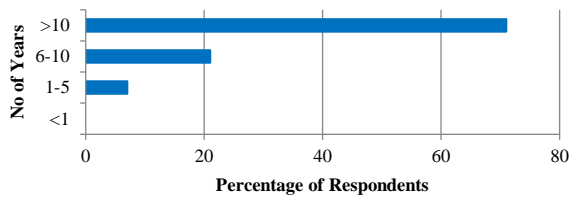


Figure 1: Number of years using internet

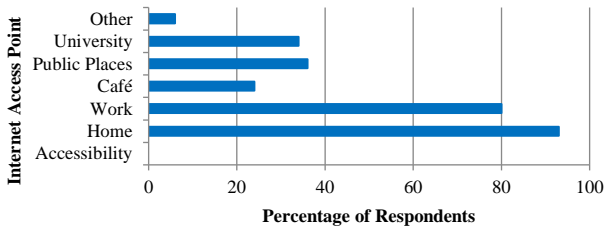


Figure 2: Internet access points

These findings indicate that good Internet infrastructure is available from most homes and offices in Malaysia. Besides that, public places, universities and cafes are other places where Malaysian citizens' get their access to the Internet. The varieties of Internet access points reflect that the need of Internet facilities in Malaysia is high. It also tells that most Malaysian carries Internet enabled mobile gadgets like smart phone and tablet computer with them wherever they go.

The survey also observed on the channels that the citizens prefer when seeking government services as shown in Figure 3.

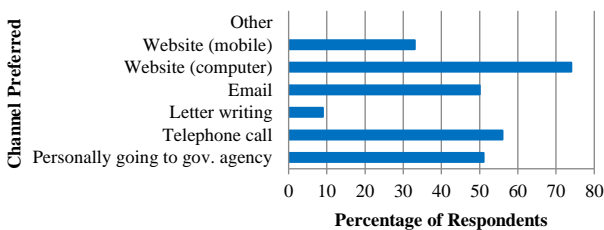


Figure 3: Channel preferred for using e-government services

Majority of the citizens, which accounts for 74% of the respondents favour to seek services from government websites via desktop computer, 56% chooses telephone call and 51% would physically go the government agency to get the services needed. Apart from that, 50% of them prefer email communication and only 33% of the respondents seek for services by browsing applications from mobile devices. The percentage of this statistic may add up to more than 100% because respondents can select more than one option at a time.

From the survey, we have also found out that 93% of the respondents have had experiences interacting with government agencies using online services, as depicted in Figure 4. This shows that majority of Malaysian citizens are willing to use e-government services provided to them.

So, what services do they use? Figure 5 shows the percentage of e-services distribution used by Malaysian citizens. The most popular type of e-services for Malaysian citizen is tax filing and the second most used e-services are job application and university or school application services. Taxpayers also prefer to pay tax online where 31% of them

trust the multiple kinds of tax payment services provided in e-government services. Another 31% of Malaysian citizens prefer to use e-services to get online support in government portals rather than calling up help-desks. Citizens also used e-services for voters' registration while other e-services show insignificant presence.

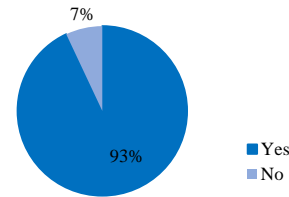


Figure 4: Interaction with e-government services

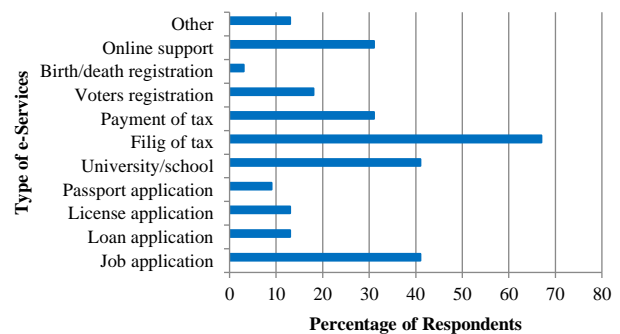


Figure 5: Usage of e- services

When asked for the reasons why they choose to use online services, the respondents gave several causes as illustrated in Figure 6. 89% of them said that the main reason is because the Internet is time saving, as many tasks can be done online without leaving the house or office. This is followed by 84% who said that Internet is a convenient facility, while 68% of them agreed that e-services are cost saving. Apart from 48% who said that using online services reduced paper usage, another 42% liked it because it can be used for online tracking. Another 36% of them believed that e-government services are easy to navigate; hence they prefer to interact with the government electronically. The other reasons cited are trialability, availability in other languages and their friends or relatives also use e-government services.

However, there were also problems faced by the citizens when using the e-government services. Half of the respondents reported that the online support is inadequate and 46% claimed that service is often unavailable. 34% said that the information placed on the website is too much and leads to confusion while 32% commented that the websites are not user-friendly because they often face difficulties when using it. Lastly, there were 16% of the respondents who cited that they do not trust the information security in e-government services.

Another important issue that we wanted to know is that, do citizens think that it is important for the government to listen to their feedbacks, needs and opinions? Our discovery showed almost all respondents agreed that yes, it is important for the government to listen to citizens' feedbacks, needs and opinions when doing decision making as depicted in Figure 7.

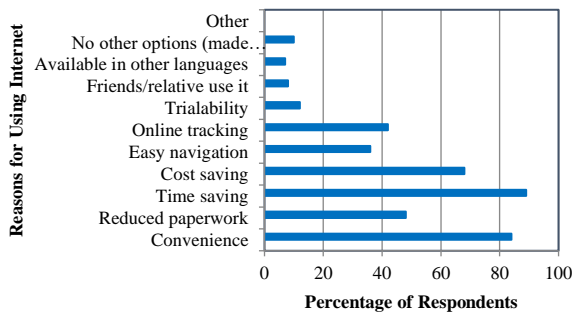


Figure 6: Reasons for using e-government services

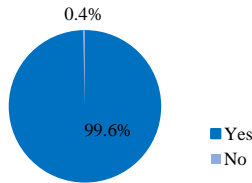


Figure 7: Importance of government listening to citizens needs

Another finding from the survey is that, 80% of the respondents had never been involved in government’s planning and decision making, be it physically or using electronic medium. Thus, the most appropriate question next is whether the citizens are interested to participate in government’s planning and decision-making? The result shows that majority of them, which account for 92%, are interested in joining e-participation initiatives. The most voted medium for the implementation of e-participation in the order of preferences are online survey, online discussion forum, online voting, email and online chat. The statistics analyzed are shown in Figure 8 and Figure 9 respectively.

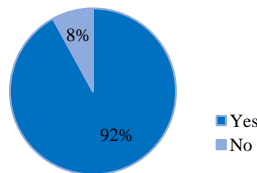


Figure 8: Citizens' interest in joining e-participation

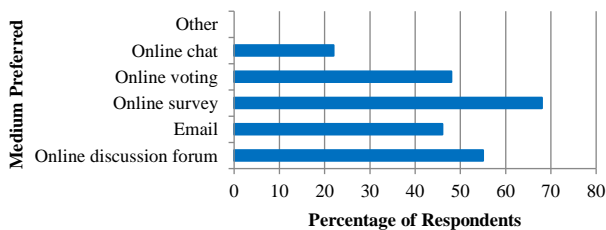


Figure 9: Preferred medium for e-participation

VI. DISCUSSION

Using two important constructs, which are ‘usage of e-government services’ and ‘perception of e-participation’, this study attempt to anticipate the readiness of Malaysian citizens towards adopting transformational government services. Main findings for both constructs are summarized and tabulated in the tables below.

Table 3
Usage of E-Government Services Main Findings

Criteria	Value	%
Age	31 to 39 years old	72
Usage of Internet	Above 10 years	71
Internet access point	Home	93
Preferred e-government channel	Website (computer)	74
Interaction with e-government services	Yes	93
Usage of e-services	Tax filing	67
Reason of usage	Time saving	89
Problem faced	Inadequate online support	50

Table 3 shows the findings from the first construct. From the survey, we have found that majority of the respondents are in the age range of 31 to 39 years old. They are the IT literate citizens who have been using Internet for more than 10 years and have computers with Internet access in their homes as well as in their offices. This finding represents proper IT infrastructure is already in place to support implementation of T-Government. Malaysian citizens prefer to access e-government services using websites in their desktop computer though quite a number of them still choose the traditional channels. It also can be said that Malaysian citizens are familiar with government e-services as 93% of the respondents have had experience using it, mainly to file their income tax and apply for school, university or government posts. The most popular reasons cited for using online services is time saving although inadequate online support has been mentioned as the main drawback when transacting online. This result give indication about the importance of e-government services to Malaysian citizens thus the government need to overcome the weaknesses of services provided so that more people would want to interact online with government agencies.

Meanwhile, the findings in Table 4 provided some information to gauge the perception of e-participation among Malaysian citizens. E-participation refers to a government’s effort in using ICT for disseminating policy planning and seeking citizens’ inputs in planning and decision-making. From the survey, almost all the respondents unanimously agreed that it is important for government to listen to citizens’ feedbacks, needs and opinions, although 80% of them had never been involved in government’s planning and decision making before. This reflects their awareness of putting citizens at the centre when designing and planning e-government services. It is notable that majority of the respondents would be interested to join e-participation initiatives if it is available, citing the preferred e-participation channels would be online survey and online discussion forum.

Table 4
Perception of E-Participation Main Findings

Criteria	Value	%
Government listening to citizens’ feedbacks	Yes	99.6
Participation experience	No	80
Joining e-participation initiatives	Yes	92
Suitable e-participation medium	Online survey	68

The results of the analysis of the survey revealed two important findings. The first finding is that there is a high percentage of usage of e-government services amongst Malaysian Internet users. The second findings revealed that a high usage is associated with positive perception towards e-participation, which is a crucial component in

transformational government. Thus, by looking at adoption level of current e-government services in Malaysia, we can forecast that Malaysian citizens' will be ready to move towards T-Government implementation after taking into consideration the organizational, technical as well as user factors to be readily implemented.

VII. CONCLUSION

Provision of e-services through government portal is an evolving process, which needs improvement. Exploitation of modern ICT helps government to get maximum benefits and provide more responsive services to its citizens. The success of T-Government services is when citizens adopt and use e-government services [31], which relates to the concept of 'public and personal value' proposed by Millard [32]. Based on United Nations four-stage model [13], the findings from the study show that Malaysia is in the "Transactional" stage of online services growth. It is notable that the Malaysian government is committed to transforming the public service by becoming more citizen-centric and enhancing the productivity, efficiency, and effectiveness of service delivery [3]. Malaysian government has provided considerable e-government initiatives for its citizens and the IT literate users are exploiting on the services provided effectively. However, there is other segment of the population who has no inclination to the e-services facilities provided but prefer the traditional way of getting government services. For this group, the government needs to identify the weakness points in delivering its e-services and work to improve it to an acceptable level. Government e-services need to be aggressively marketed to users so that its full potential is exploited. Only when acceptance of e-government services is high, then Malaysia can move on to offer more open and transparent form of government, following the footsteps of other global e-government leaders.

This research is still in progress with the aim to propose a model that looks into demand requirements. These findings have provided preliminary evidence for future work of establishing a citizen-centric model for transformational government services when the research is completed.

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