Digital Government Evolution and Maturity Models: A Review

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Abstract

Governments around the world are facing the challenge of transformation and the need to reinvent government systems to deliver efficient and cost-effective services, information and knowledge through Information and Communication Technology (ICT) which later led to the establishment of e-Government (or Digital Government). This paper will discuss the definition of e-Government and Digital Government, supported by the details on the evolution of the Digital Government as well as the concept of maturity models that have been studied by previous scholars. This paper will also provide a review of the e-Government Maturity Models (later Digital Government Maturity Model) discussed in the literature. The Malaysian Government has been implementing e-Government initiatives since 1997 under the effort of Multimedia Super Corridor (MSC) but there is yet to be known any suitable models that have been used by Malaysian Government to measure the maturity level of its initiative in public service. Currently, it is known that Malaysian Government is using the commercial model produced by a particular consulting firm. By summarizing the extant research on the Digital Government Maturity Models, the purpose of this paper is to examine the Digital Government Maturity Model as well as contributing towards extending the existing literature and providing valuable information to the researchers in the Digital Government Research field.

Keywords: Digital Government, Digital Government Maturity Model (DGMM), digitization, digitalization, e-Government, maturity models, public sector

1. Introduction

At the beginning of the 21st century, governments at all levels find themselves armed with more tools to serve their citizens than at any other time in history. The explosive entry of technology into every facet of life has changed how people live, how they work, how companies do business and how governments serve their constituents. The momentum for new service delivery models is building throughout government and the result is the emergence of e-Government (later known as Digital Government).

Today, we find that tools, applications and emergent technologies being applied to the needs of citizens, service users, public servants and political leaders at all levels and in all branches of government. Mobile applications, open data, social

media, technical and organizational networks, the Internet of Things, sensors, data analytics and more are embedded in the working environment of government. Collectively, this set of developments has been labelled as 'Digital Government,' a concept that has broadened in scope from an early focus on the use of ICT for government administration to the more recent notion that information and technology influence administration, management and governance.

The year 2020 was significant in the global benchmarking of Digital Government, as governments are reminded more than ever about the importance and relevance of Digital Government with the global outbreak of the Covid-19 pandemic. While ICTs have been used in government as early as in other sectors of society, their uses and roles in public administration have received relatively little academic attention, especially in the developing country [1].

In one research database, the Digital Government Reference Library (formerly the Electronic Government Reference Library), there are 12,546 references to predominantly English-language peer-reviewed work in the study domains of e-Government (or Digital Government), digital governance and digital democracy [2]. In this Library, a significant majority of the academic references are on e-Government as compared to Digital Government as research on e-Government has started earlier. Hence, this paper will also contribute to Digital Government Research (DGR) as less attention has been given to the field yet.

1.1   Definition of e-Government and Digital Government

The definition of e-Government and Digital Government has been interchangeably used nowadays. Hence, it is important to have the same level of understanding of their definition for this paper. Since 2000, studies on e-Government have been developing [3]–[9] and hence, there are many definitions for e-Government and many authors, as well as institutions, define e-Government in their way. **Table 1** and **Table 2** lists the definition of e-Government and Digital Government from previous scholars.

Table 1. Definitions of e-Government

Author	Definition
Gartner (2000)	The continuous optimization of service delivery, constituency participation and governance by transforming internal and external relationships through technology, the Internet and new media.
Deloitte (2005)	The use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees.
Grönlund et al., (2006)	Applying information and information technology to all aspects of a government's business.
Gottschalk (2009)	The delivery of government services through the use of information technology.
Almarabeh & Abuali (2010)	Government use of information communication technologies to offer for citizens and businesses the

Author	Definition
	opportunity to interact and conduct business with government by using different electronic media.
United Nations Department of Economic and Social Affairs (UNDESA), (2014)	The use of ICT and its application by the government for the provision of information and public services to the people.
Almuftah, Weerakkody, & Sivarajah (2016)	The use of Internet and the World Wide Web to communicate, inform, interact, and deliver government information and services to the citizens by the private sector and government agencies.
Dwivedi et al. (2017)	The delivery of government information and services to citizens through the Internet or other digital means provides citizens with convenient access to such information and services, the ability to search and acquire them at their convenience without the restriction of geography and the ability to participate in open government.
Sangki (2018)	The integration of information technology to shorten the process of decision-making in the government, share information between its various sections or disclose public information to citizens for free access and increase the efficiency of government-to-citizen services.
Lannacci, Seepma, de Blok, & Resca (2019)	The use of IT to enable and improve the efficiency with which government services are provided to citizens, employees, businesses and agencies.
Meiyanti, Utomo, Sensuse, & Wahyuni (2019)	The ability of government to provide government information and services electronically, quickly and accurately to their citizens, with minimum costs and less effort through a single site on the Internet.

Table 2. Definitions of Digital Government

Author	Definition
OECD (2014)	The use of digital technologies, as an integrated part of governments' modernisation strategies, to create public value. It relies on a digital government ecosystem comprised of government actors, non-governmental organisations, businesses, citizens' associations and individuals which supports the production of and access to data, services and content through interactions with the government.
Gil-Garcia, Dawes, & Pardo (2018)	The public sector's use of information and communication technologies (ICTs) with the aim of improving information and service delivery, encouraging citizen participation in the decision-making process and making government more accountable, transparent and effective.

(Gartner, 2019)	A government designed and operated to take advantage of digital data in optimizing, transforming and creating government services.
Jussupova, Bokayev, & Zhussip (2019)	An advanced model of e-Government, which uses new digital technology solutions for collecting, processing, storing, and transmitting the information.
Scholl (2020)	The use of information technology to support government operations, engage citizens and provide government services.

From the list of definitions that have been chronologically mentioned in **Table 1** and **Table 2**, three (3) key points can be recognized from it, that is:

i. Government;
ii. use of Information and Communication Technologies; and
iii. provision of services.

As the e-Government field of research has changed, it has also matured. The term "electronic government" was first coined in 1993 by the US National Performance Review, becoming a prominent term around 1997 [21]. The fact is Digital Government was coined from e-Government and it has been framed by the OECD (Organization for Economic Cooperation and Development) Recommendation of the Council on Digital Government Strategies [17].

Summarizing the above, with the development of digital technologies, new forms of representation, storage and processing of information using complex search engines, information aggregation and the formation of integrated space, it can be concluded that the next stage of e-Government is Digital Government. Hence, Digital government is an advanced model of e-Government, which uses new digital technology solutions for collecting, processing, storing and transmitting information.

Therefore, the definition of Digital Government by Scholl (2020) will be used and referred to for this paper. Prof. Hans Jochen Scholl is among the top 10 prominent scholars in Digital Government Research and in 2018, the UK-based think tank Apolitical named him one of the 100 most influential individuals in Digital Government worldwide. He is also the foundational member, past president of the Digital Government Society and the draft writer as well as proposer of its mission statement.

2. The Importance of Digitalizing the Government Services

Nowadays, citizens expect that governments reduce the administrative burden for businesses and governments can achieve this goal by digitalizing the public service [22]. Gartner (2019) defines digitalization as the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business. Through digitalization, governments can provide services that meet the evolving expectations of citizens and businesses even in a time of tight budgets and complex

challenges such as income inequality, geopolitical instability and aging populations. People not only favour digital services and government participation but digital services can also empower citizens and increase their engagement with the government. [23]. Alvarenga, Matos, Godina, & Matias (2020) affirm that the public sector is influenced by a growing need for competition, performance standards, monitoring, measurement, flexibility, emphasis on results, customer focus and control.

However, it is necessary to understand the nature of public service and relate it to the importance of digitalizing the government. The organization of public service involves many various types of business processes. When laws or regulations are changed, these processes and their support systems have to be adapted. Within one policy layer, the process of adaptation starts with legislation drafting followed by a chain of processes varying from translating these law texts into specifications, design of processes and supporting systems, development of these processes and systems and finally implementation and use [25]. A complicating factor is that there is more than one layer of government and often there is an interaction between those layers. Hence, there exists the need for digitalization in government with the ultimate purpose is to serve the public with the best service delivery.

Few scholars that have been studied related to the importance of digitalizing the government services has been summarized in the following Figure 1.

To improve the quality and efficiency of service delivery

To encourage citizen participation in democratic institutions and processes

To increase the transparency of administrative processes

Source: [26]–[28]

Figure 1. The Importance of Digitalizing the Government Services

Discussion on the importance of digitalization government services is as follows:

a. **To improve the quality and efficiency of service delivery** is by allowing citizens to interact with computers to achieve objectives at any time and any location and eliminates the necessity for physical travel to the government offices. Improved accounting and record-keeping can be noted through computerization and information and forms can be easily accessed, hence reduce processing time;

b. **To encourage citizen participation in democratic institutions and processes** - Citizen engagement drives the success of digital government by increasing the acceptance and uptake with the government through digital channels. This helps governments scale up services while reducing cost without compromising sustainability. It improves governance and creates a more informed government. This marks the shift in viewing citizens as customers of the government rather than subjects, which dictates a higher degree of interaction and engagement. Engaged citizens can make important contributions to policies and programs related to every aspect of city life and government services. It reinforces government success by introducing a critical and honest feedback mechanism as well as building public trust in their leadership. [29]

c. **To increase the transparency of administrative processes** - Digital Government can be used as a tool to fight against corruption. At the same time, Digital Government facilitates the swift delivery of complete information. The broad dissemination of information helps empower citizens and facilitate informed decision-making. The transparency of information will also instill a sense of accountability among government leaders and drive effective governance.

However, since early 2020, the global COVID-19 pandemic has redesigned the role of the Digital Government. The utilization of conventional Digital Government services is becoming more widespread as social distancing drives online interaction and Digital Government platforms are being used to manage the crisis through innovative ways. While quarantine restrictions have brought many normal economic and social activities to a halt, Digital Government is undergoing a stress test. When physical interaction is impossible or discouraged, Digital Government solutions become vitally important. Countries with strong, versatile Digital Government systems in place have been able to provide clear, up-to-date information to the public, local authorities and health providers while also working with other stakeholders to reduce the spread of misinformation as well as to address cybersecurity and data privacy issues. In short, the emerging pandemic has created opportunities for Digital Government to serve the public in new and vital ways. This fact is supported by the e-Government Survey 2020 performed by the United Nations Department of Economic and Social Affairs which found that more countries and municipalities are pursuing Digital Government strategies, some of which are radically different from those guiding earlier Digital Government initiatives [30].

3. The Evolution of Digital Government

In the 1990s, the term digitization referred to a process from preparation and conversion to presentation and archiving of analog hardcopy documents of all kinds into digital [31]. Media like hardcopies still played significant roles at the start of this conversion process from analog to digital. In parallel, all kinds of new documents were first produced in digital form and the era of analog transaction processing and documentation is visibly drawing to its end. Digitalization has been referred to as the increasing reliance and functioning of society on digital data,

documents, structures and processes. Hence, digitization is a preliminary and essential process to the first phase of societal digitalization. Figure 2 illustrates the progression of Government from Analogue to Digital.
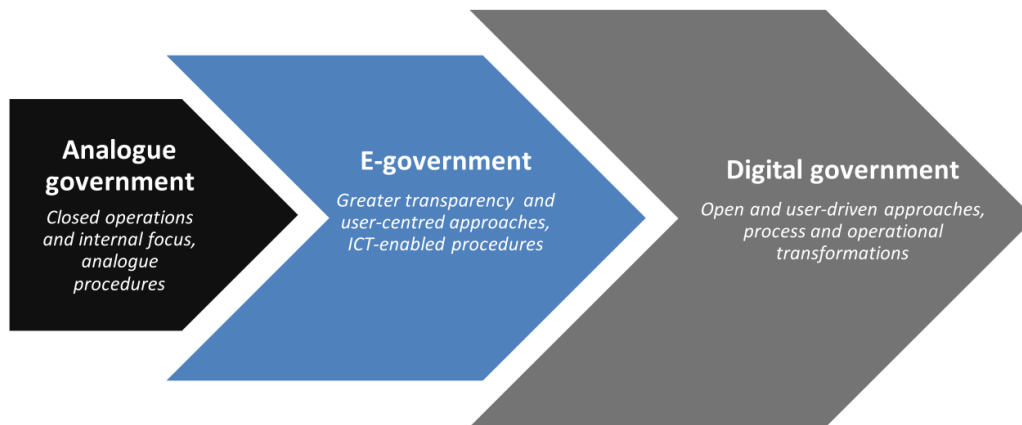

Figure 2. Progression Towards the Digital Transformation of Government (OECD, 2014)

The second phase of Digital Government, which began in the mid of the second decade of the 21st Century, promises to be more transformational than the first phase. To become fully digital, governments need to adopt and use digital technologies and data as strategic components of their efforts to modernize the public sector. Digital technologies and data reuse need to be integrated with core processes and activities in order to establish new ways of working and promote greater openness and collaboration. This requires new governance and institutional frameworks and the development of new capabilities and skills able to sustain a digital public sector culture [32].

3.1 The Evolution of Digital Government in Malaysia

The Multimedia Super Corridor (MSC) in Malaysia was conceptualised in 1996 to focus on multimedia and communications products, solutions, services and research and development. The objectives of the MSC appear to align with the National Economic Plan of Vision 2020 [33]. This is reflected in the establishment of Seven (7) Flagship Applications as shown in Figure 3 whereby one of the flagship is e-Government (now known as Digital Government) [34]. The Digital Government projects are monitored closely by the Director-General of the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU) of the Prime Minister's Department and the goal is to transform government services online and increase productivity specifically towards a paperless government. The responsibility encompasses the planning, designing, executing and implement e-Government initiatives [35].

Figure 3. 7 Flagship MSC Applications

The implementation of an official portal for the Malaysian Government in 2003, also known as MyGovernment Online Service Portal (MOSP) acted as a single gateway that allows the public to access information and online services offered by government agencies. During the initial stage of implementation, MOSP focused on producing static information where links to more than 1,200 government portals and websites were provided and navigation methods were used to simplify and facilitate the search for relevant information and services. Through the years, MOSP has evolved towards a "single window government no wrong door" portal which was implemented in three (3) phases as shown in Figure 4.
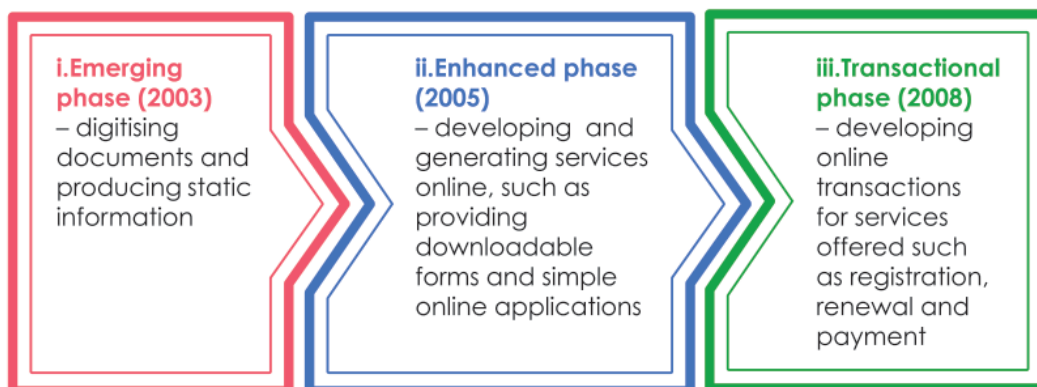

Figure 4. Phases of MOSP's Implementation [36]

The demand for government services to be available online requires the Malaysian Government to provide extensive, effective and efficient services in order to meet and satisfy public expectations. Hence, MAMPU began the task to reinvent the MOSP towards providing a seamless approach and "Whole-of-Government" (WoG) concept. By using this concept, government agencies across organizational portfolio boundaries work together in order to allow the development

of integrated and impactful value-added services. The improved version of MOSP is being implemented under a new project named, Government Online Services Gateway (GOSG) as shown in Figure 5.
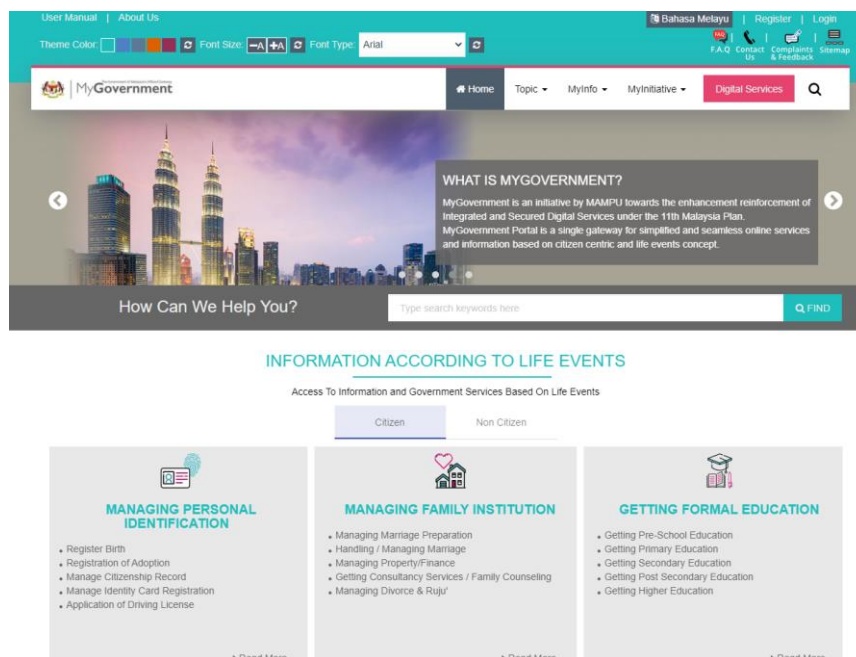

Figure 5. Landing Page of MyGovernment Portal

GOSG is a new MyGovernment Portal and a single gateway for simplified and seamless online services. It is also citizen-centric and based on the life events concept. Besides providing centralised and comprehensive information as well as end-to-end online services, the main objective of MyGovenment Portal is to improve efficiency, effectiveness, transparency, accountability as well as people's participation.

4. The Concept of Maturity Models

Prior to reviewing the Digital Government Maturity Models in the following section, it is important to introduce the concept of a maturity model in this section. The term maturity signals the state of growth as a continuous increase from lower to higher phases. Many scholars have defined the maturity model but according to Wendler (2012), a clear definition of the term 'maturity model' is often avoided, but for the purpose of this paper, a definition of maturity models by previous scholars will be discussed and referred to.

Maturity is understood as the degree of Digital Government implementation produced in each model [20] or the extent to which an organization consistently implements processes within a defined scope that contributes to the achievement of its project goals [38]. Similarly, the technological and organisational complexities increase as Digital Government grows from lower to higher phases [3]. Meanwhile, according to Khanra & Joseph (2019), the maturity model is a set of systematically documented stages, structured to guide the development of capabilities in order to

achieve the specified objectives of an organization or as an enumeration of attributes for a sequence of maturity levels (Othman, Bidin, Othman, & Rashid, 2012). In short, maturity model describes how a process can evolve (mature) over time. Each phase of evolution, referred to as a maturity level, indicates a progression on the improvement path, increasing the desired outcome of the process [41].

Since the introduction of the concept of maturity models in the 1970s, it has been applied to a variety of fields. For example, the maturity of project management is concerned with the development of systems and processes which can be repeated in nature and offer a high probability of success for each project. The importance of the maturity of project management is to assess the current capabilities of an organization and to help improve the organization to achieve better performance (Rasid, Wan Ismail, Mohammad, & Long 2014). While in Information System (IS) research, the purpose of maturity models is to outline the path to organizational maturation with regard to business technology and/or process, including defining the stages and relationship between them [42].

What is the importance of maturity models? As many countries around the world are deploying a significant amount of resources to roll out e-Government (or Digital Government) services, it is important to follow an informed approach to assess the status of those services to drive their continuous improvement. The maturity model supports mapping projects on a wider development agenda, hence helping to avoid dead ends such as investing in unused technology or supporting dysfunctional processes with ICT (information and communication technology) instead of first redesigning them and then putting in ICT that support the new and better processes. In particular, the tools show the close relation between eGovernment and other development agendas [9].

It also helps organizations by revealing their position in comparison with the capabilities and other resources needed to achieve the organization's goals. These models provide a sense of focus and direction to the organization's improvement strategies and help as the basis for assessing the current positioning towards desired advanced stages of technology adoption and use [43].

5. Digital Government Maturity Models (DGMM)

A central question for researchers as well as practitioners working in the field of Digital Government is how to measure the level of implementation of the Digital Government and what are the components of measurement? DGMM are helpful tools for agencies to diagnose their ability to use information technologies to improve performance and prepare strategies as well as action plan to move toward the desired stage of technology appropriation [43] and also a way of increasing and generating public value [44]. This study is a work-in-progress for proposing and validating a DGMM. In order to achieve that, three (3) DGMM that are possible for future works have been reviewed and analysed in this paper. The frameworks that the public sector currently uses are the product of a particular consulting firm's joint experience which suffers from a lack of scientific reasoning and testing.

5.1   Layne & Lee's Model

One of the first DGMM is proposed by Layne & Lee (2001) which was developed based on observations on Digital Government initiatives in the United States. Figure 6 shows the four-stage model namely, (1) Catalogue Stage, (2) Transaction Stage (3) Vertical Integration and (4) Horizontal Integration. The model looks at Digital Government maturity from two dimensions, that is (1) Technological and Organizational Complexity and (2) Integration. The X-axis (Integration) has the dimensions of sparse, integration and complete while the Y-axis (Technological and Organizational Complexity) has the dimensions of simple and complex. The final stage of Digital Government development is the vertical and horizontal integration of databases and information systems.
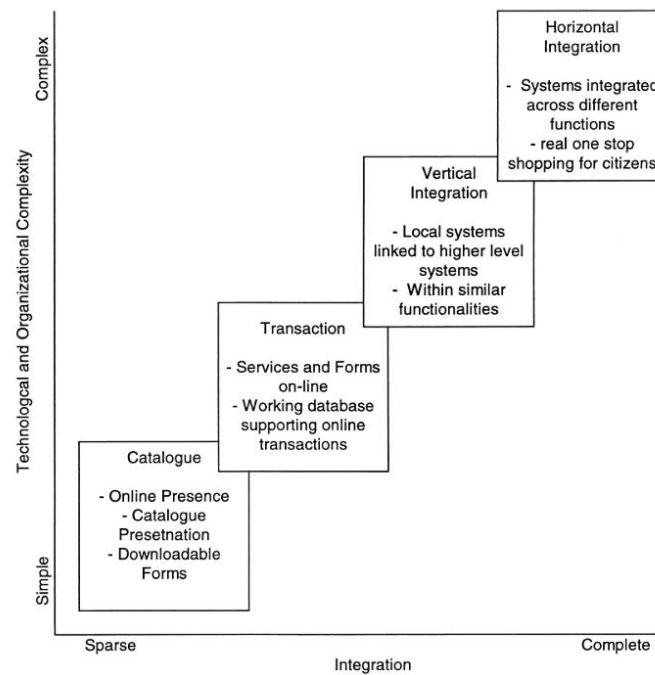

Figure 6. Dimensions and Stages of Layne & Lee's Model

However, the main criticism of this model is that the focus is on technology and shifting the inefficient bureaucracy to an online mode. This is due to the fact that at the early phases of this stage the information is very limited. Governments' concern at that time is to have an online presence by building the websites and presenting information to citizens through these websites.

5.2   Andersen and Henriksen Maturity Model

Andersen & Henriksen (2006) proposed the extension of the Four Stages Model known as the Public Sector Process Rebuilding (PPR) maturity model. The model consists of four-stage as shown in Figure 7 below and was used in Denmark in an assessment of 110 state agencies. PPR use an activity and customer-centric approach rather than the technological capability approach. In this model, the development phases are viewed from two dimensions, that is (1) customer-centric and (2) activity-centric applications. In this model, Digital Government developed

in four phases: (1) Cultivation, (2) Extension, (3) Maturity, and (4) Revolution. The values of the two dimensions range from rare to widespread and are continuous rather than discrete.
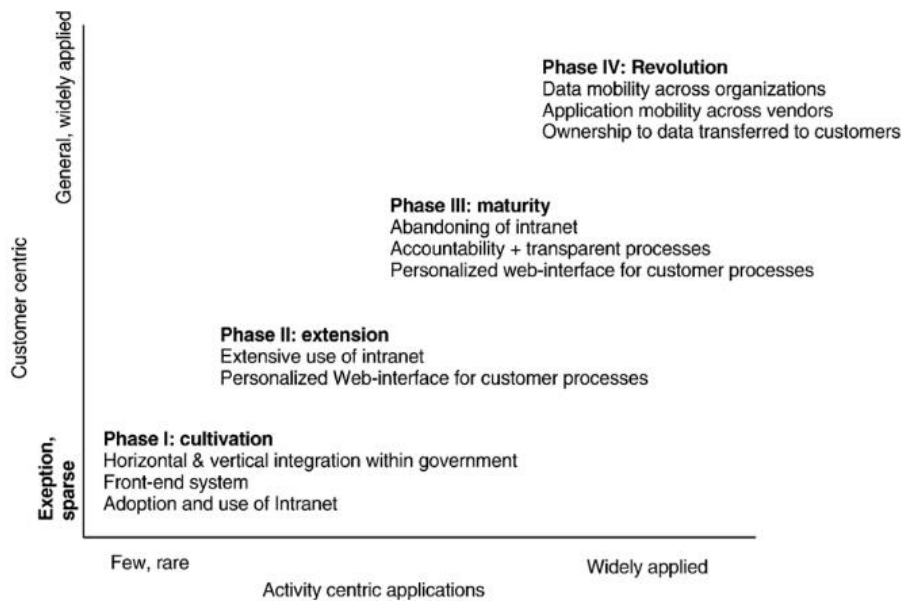

Figure 7. Andersen and Henriksen Maturity Model

From both Figure 6 and Figure 7, it shows that the major difference between the Layne and Lee model and the Andersen and Henriksen Maturity Model is the activity and customer-centric approach rather than the technological capability.

5.3   Digital Government Maturity Model

In any organization, the transition to the digital government will be a multi-year journey involving uncertain negotiations among multiple independent parties, thus requiring planning for agility rather than stable, detailed goals. In 2017, Andrea Di Maio and Neville Cannon presented a vision Digital Government Maturity Model as in Figure 8.

Maturity Level	E-Gov. 1 Initial	Open 2 Developing	Data-Centric 3 Defined	Fully Digital 4 Managed	Smart 5 Optimizing
Value Focus	Compliance, efficiency	Transparency and openness	Constituent value	Transformation	Sustainability
Channel Strategy	Portal	Government as a platform	Nongovernment channels	Truly multichannel	Automation replaces portals
Leadership	CIO/CTO	CDO	Departments	CIO and departments	(New) CIO
Technology Focus	SOA	Open data, open service	Open any data	Things as data	Smart machines
Sourcing Strategy	Mixed	Re-insourced, cloud first	Multisourced	Partner-sourced	Outsourced
Key Metrics	% services on line	% open data	Number of data-driven services	% data from things	% decrease of services

Figure 8. Digital Government Maturity Model (Source – Gartner (2017))

According to this model, the stage of development of the digital government is divided into five (5) levels:

1. Initial (e-Government). Level one is where many departments and jurisdictions are today and corresponds to a more traditional e-government model. The main focus here is digitizing existing services for user convenience and cost savings, but data and its uses are siloed and extremely limited. Success is measured in terms of increasing the number of services online to drive efficiency and cost-savings.

2. Developing (Open Government). This level does not necessarily follow the first as it can be implemented in parallel. Open Government provides more opportunities and preferences for users of Digital Government to work with information services. In addition, an Open Government contributes to an increase in the transparency of public administration, attracting the attention and trust of citizens.

3. Defined (Data-centric). At this level, the focus is on the needs of citizens. Data becomes the key focus. Treating all data as open unveils countless opportunities for innovation. New ways of aggregating and analyzing data within and across agency boundaries will lead to new services and new service delivery models that likely involve non-government entities as intermediaries.

4. Managed (Fully Digital). The main goal of this level is to improve public administration by making the most effective use of huge information resources for making high- quality and timely management decisions. Using the principles of open data provides an opportunity for easy integration to improve services not only to the government but also to other organizations. At the same time, there are risks of dissatisfaction of users regarding the use

of their information, but the issue of protection and confidentiality of personal data must be addressed. At this stage, new big data analysis technologies should be used.

5. Optimized (Smart). At this level, digital innovations are used huge databases and open data to build deeper analytical systems. The government should not only monitor but form forecasts, proposals for the development of individual areas, build a sound system of strategic planning and forecasting ("[Gartner, Introducing the Gartner Digital Government Maturity Model 2.0.]"). In other words, digital transformation is now the norm and the innovation process are predictable and repeatable.

5.4   Discussion of the Models

The result of this comparison and discussion is useful in future works, that is to identify the strengths and weaknesses of the existing maturity models and to figure out what is missing in these maturity models in order to take them into account in the new DGMM dedicated for Malaysian Public Sector. From the three (3) models mentioned in the section above, two (2) main issues related to the DGMM will be highlighted:

Issue 1: Maturity models' stage names. The models can be grouped based on the stage's name as the following in Table 3.

Table 3. Maturity Models Stage's Name

Model/Stage	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Layne and Lee	Catalogue	Transaction	Vertical Integration	Horizontal Integration	NA	NA
Andersen and Henriksen	Cultivation	Extension	Maturity	Revolution	NA	NA
Gartner	Initial	Developing	Data-Centric	Fully Digital	Smart	NA

NA = Not Available

It is obvious that although the maturity models' stage names are different from one maturity model to another; their content may have some similarities and differences. For instance, the first stage for Layne and Lee is named "Catalogue" where the public authority is presented on the web, while for Andersen and Henriksen this stage is named "Cultivation" where government websites provide static information. In summary, the models contain the following focus:

a) A stage related to the availability of the portal in the Web (presence).
b) A stage where the citizens can interact with governments (interaction).
c) A stage where the citizens can transact with governments (transaction).
d) An advanced stage that covers advanced features such as information sharing between agencies (integration).
e) An advanced stage where the citizens can communicate with governments (e-participation). However, only the Gartner model has this stage.

Issue 2: Maturity models' stage focus. Regarding the focus of the maturity models, we have grouped the stages of those maturity models according to their focus: presence, interaction, transaction, integration, e-participation. Table 4 presents the grouping of the maturity stages according to their focus.

Table 4. The focus of the DGMM

Maturity Stage	Focus	Maturity Model
1	Presence	Layne & Lee, Gartner (2000), Gartner (2017)
2	Interaction	Gartner (2000), Gartner (2017)
	Enhanced Information	Gartner (2017)
	Transaction	Layne & Lee
3	Transaction	Gartner (2000)
	Interaction	Gartner (2017)
	Integration	Layne & Lee
4	Integration	Layne & Lee, Gartner (2000), Gartner (2017)
	Transaction	Gartner (2017)
5	e-Participation	Gartner (2017)
	Integration	Gartner (2017)

To summarize, we can see from Table 4 that almost all the maturity models focus on presence in the first stage. Furthermore, interaction is present in stage 2 and 3. Besides that, the transaction is present at stage 2, 3 and 4. Finally, integration is all present in the final stages 3, 4 and 5. What can be concluded is that the most important stages of maturity can be summarized in the following sequence in Figure 9:
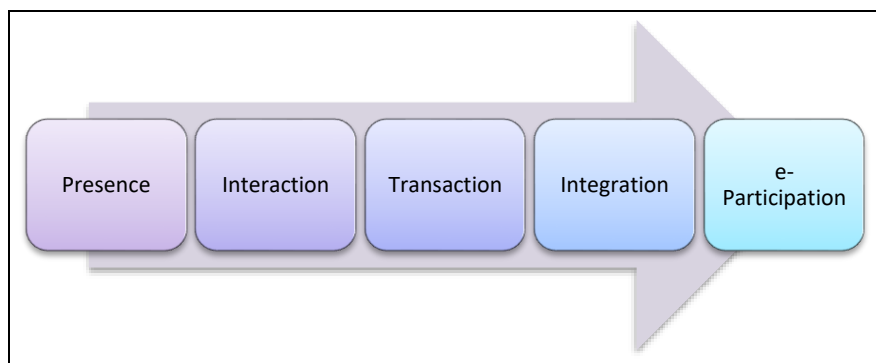

Figure 9. Stages of Maturity Model

6. Conclusion

This paper describes the importance of Digital Government and the previous models used for measuring the level of Digital Government implementation, or Digital Government Maturity Model. Our future works will be on proposing and evaluating the DGMM with the case study in the Malaysian public sector.

Digital Government initiatives are complex mixtures of technological, managerial and policy-related challenges. The risk of not understanding and addressing these complexities is a costly failure. In other words, Digital Government is not just about technologies rather it is about transforming

government service delivery through the use of the technology. How well governments grasp the integration of all the components will largely determine how much value Digital Government can bring to citizens and governments themselves.

Based on the discussion in previous sections, Digital Government has undeniably passed into its second phase, in which digital transformation of major proportions has begun to occur and will predictably continue to occur in society at large and inescapably in government as well. The second phase of Digital Government, promises to be more transformative than the first phase, as mentioned in the Introduction. The government will be both a driver and a facilitator of this transformation depending on the model of governance. Digital Government Research needs to play important roles to chart out the path ahead and clarify the choices, which societies and communities have. Digital Government Research also needs to engage with other disciplines, including traditional disciplines such as Public Administration and Political Science, which provide a rich tradition of understanding in their respective areas, which overlap with Digital Government as a practice area, but which might lack the forward-looking capabilities that Digital Government Research at least can provide in part.

In conclusion, we would like to note that with the development of technologies, the Digital Government Maturity Models require research and updating. The introduction of new concepts like Digital, Smart, Intelligent and Agile government causes different interpretations and requires scientific substantiation and research. The use of the Digital Government Maturity Model in practice does not always unambiguously determine the stage of development of digitalization of public administration, since these parameters and indicators are not always accurate. This opens up new directions of scientific and analytical research, revision of criteria, characteristics, principles, and approaches in the implementation and Digital Government maturity.

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