

**FACTORS INFLUENCING THE INTENTION TO USE
OPEN GOVERNMENT DATA (OGD) AMONG
ACADEMICS IN MALAYSIAN PUBLIC UNIVERSITIES**

BY

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ABSTRACT

Open Government Data (OGD) is a very effective approach for governments in many countries to share their data to the citizens. Many governments have taken their initiatives to develop their own platform to share and provide a free-access to their data. Despite the platform is ready to be accessed, with numbers of datasets can be accessed freely, the level of usage of the OGD is still unanswered. It is essential to study the behavioral intention to use OGD to ensure the transparency, accountability and trust towards the government. Therefore, this research aimed to fill the gap in literature of acceptance and the quality factors of OGD that influence the intention to use from the academic staff perspectives. The purposive sampling technique was employed, and 389 data was successfully analyzed using Structural Equation Modelling (SEM) - SmartPLS. The result established that performance expectancy, effort expectancy and trust to OGD website have significant relationship towards the behavioral intention to use the OGD. In addition, information quality plays a big role in indicating the trust to OGD website. For the mediating results, it is proven that trust to OGD website mediates the relationship between trust to government and behavioral intention, and trust to technology and behavioral intention to use OGD. Identifying the factors that influence the intention to use and the use of OGD may contribute to the practicality of open government data implementation especially in Malaysia. The factors such as quality, acceptance and trust can give an extensive clue for the government to indicate the level of OGD usage in the country. The findings of this empirical study then could assist the federal, state and local governments, in preparing their respective organizations in the open data publication. In line with the National Agenda towards a Digital Malaysia, this study could ensure that the open government data Malaysia benefits the citizens in various ways.

ملخص البحث

إن البيانات الحكومية المفتوحة (OGD) تشكل نهجاً فعالاً للغاية بالنسبة للحكومات في العديد من البلدان لتقاسم بياناتها مع المواطنين. واتخذت حكومات عديدة مبادراتها لتطوير منصاتها الخاصة لتبادل بياناتها وتوفير إمكانية الوصول إليها بحرية. على الرغم من أن المنصة جاهزة للوصول مع عدد من مجموعات البيانات يمكن الوصول إليها بحرية ، فإن مستوى استخدام OGD لا يزال دون إجابة. من الضروري دراسة النية السلوكية لاستخدام OGD لضمان الشفافية والمساءلة والثقة تجاه الحكومة. ومن ثم ، كان الهدف من هذا البحث هو سد الفجوة في أدبيات القبول وعوامل الجودة OGD التي تؤثر على نية الاستخدام من منظور أعضاء هيئة التدريس. تم استخدام تقنية أخذ العينات الهادفة ، وتم تحليل 389 بيانات بنجاح باستخدام نمذجة المعادلة الهيكلية (SEM) – SmartPLS. وأثبتت النتيجة أن متوسط الأداء المتوقع ، والجهد المتوقع ، والثقة في الموقع الشبكي OGD لمكتب إدارة الموارد البشرية لها علاقة كبيرة بالنية السلوكية لاستخدام OGD. وبالإضافة إلى ذلك ، تلعب نوعية المعلومات دوراً كبيراً في بيان الثقة إلى موقع OGD على شبكة الإنترنت. بالنسبة لنتائج الوساطة ، فقد ثبت أن الثقة في موقع OGD توسط العلاقة بين الثقة بالحكومة والنية السلوكية ، والثقة بالتكنولوجيا والنية السلوكية لاستخدام OGD. ويمكن أن يساهم تحديد العوامل التي تؤثر على نية استخدام تكنولوجيا المعلومات والاتصالات واستخدامها في الطابع العملي لتنفيذ البيانات الحكومية المفتوحة ، لا سيما في ماليزيا. ويمكن لعوامل مثل الجودة والقبول والثقة أن تعطي دليلاً واسعاً للحكومة تشير فيه إلى مستوى استخدام OGD في الدولة. ويمكن أن تساعد نتائج هذه الدراسة التجريبية الحكومات الاتحادية وحكومات الولايات والحكومات المحلية في إعداد منظماتها في نشر البيانات المفتوحة. وتمشياً مع البرنامج الوطني نحو ماليزيا الرقمية ، يمكن لهذه الدراسة أن تكفل استفادة المواطنين من البيانات الحكومية المفتوحة في ماليزيا بطرق مختلفة.

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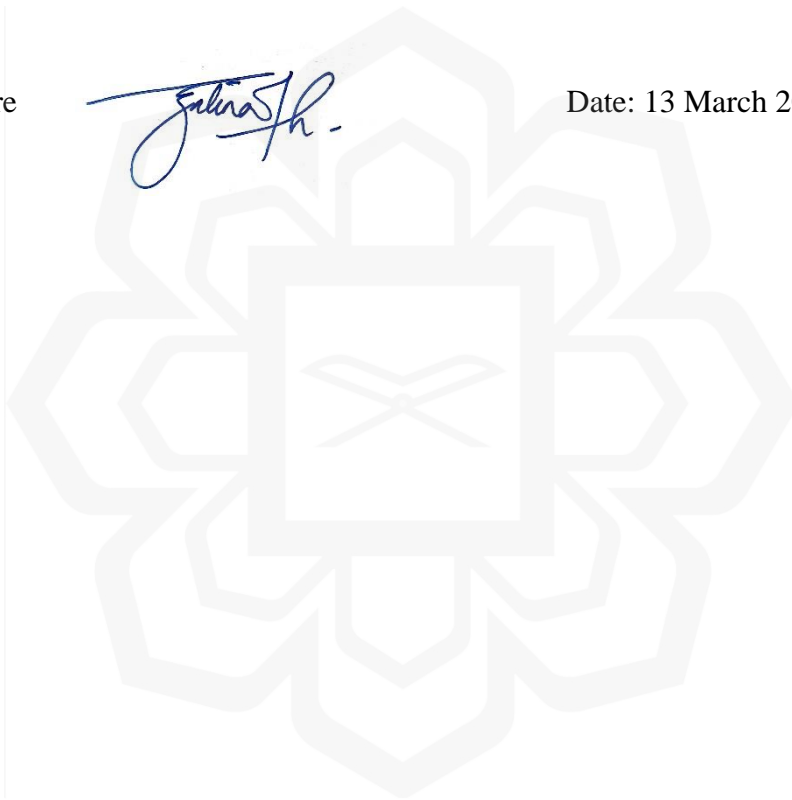
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CHAPTER ONE

INTRODUCTION

1.1 OVERVIEW

Indeed, information and communication technologies (ICT) have played a crucial role in the overall development of the country through various economic sectors including communications, transportation, education, businesses, trades, manufacturing industries as well as improving the government's administrative and delivery system for the people.

Initially, ICT has created pressure on business establishments where they had to employ ICT in their business processes and daily transactions. However, as time goes by, most of them managed to adopt, adapt and take advantage of the benefits of ICT and even managed to implement ICT in their organisations effectively. Moreover, the government has also taken the benefits from ICT facilities for its administrative purposes, where related initiatives were planned and implemented in tandem with fiscal economic investments capitalising from the development of ICT infrastructure and advancement.

When mentioning the government and ICT, the entity that provides the most significant impact to the government administration and the public or nation is the Big Data Analytics (BDA). The decision of initiating the BDA in the government is to improve the relationship of business between the government and its citizen. Big data generally has huge potential in transforming digital government services and the interaction between the government and the citizens as well as business organisations (J. Bertot & Choi, 2013). In Malaysia, one of the BDA initiatives is the implementation of open government data (OGD) (MAMPU, 2014). This is directly related to the Digital

Economy Transformation Programme launched to align with the National Agenda of the Malaysian Government where it was purposed to transform the nation into a digital economy. To achieve this, the big data initiative was identified as a priority area in the 11th Malaysian Plan (Asia, 2014).

According to Open Data Barometer Report (The World Wide Web Foundation, 2017), the three aspects of open data assessment are readiness, implementation and impact. In the report, Malaysia was ranked 53rd out of 115 countries that implemented open data in their government. From the report, it was highlighted that Malaysia scored 53 points for readiness, 20 points for implementation and only 19 points for impact. This indicated that Malaysia was still far behind and a lot of initiatives needed to be taken in order to compete with other countries such as the United Kingdom that was ranked 1st place in open data implementation.

OGD increased the interest of stakeholders such as practitioners and researchers from numerous areas such as information systems, management sciences, political, social sciences and law (Charalabidis et al., 2015). In the aspect of OGD adoption, Wang & Lo (2015) identified the factors namely; perceived benefits, perceived barriers, organisational readiness and external pressures influencing the adoption among government agencies. Nevertheless, a study related to OGD usage was conducted by Zuiderwijk, Janssen & Dwivedi (2015) by utilising the Unified Theory of Acceptance and Use of Technology (UTAUT). These studies were conducted in developed countries. However, the study on the acceptance of OGD and the level of use of OGD in developing countries are still low in numbers.

This study will unravel the factors that influenced the behavioural intention to use OGD, to effectuate this ICT tool to benefit the public sector and other interested parties at large. Since the benefits far outweigh the investments in ICT infrastructure,

hence, the government realised that it is worth the effort of optimising the sharing and the usage of OGD in its administrative system in the long run.

1.2 BACKGROUND OF THE STUDY

One of the government's initiatives to accelerate big data analytics in Malaysia is through the development of the Open Government Data (OGD) portal. The Public Sector Open Data Portal (data.gov.my) was developed in-house by the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU) launched by YB. Datuk Joseph Entulu, Minister in the Prime Minister Department at the Conference of the ASEAN CIO 2014. The portal serves as an online one-stop-centre to access and download open government data.

In the early period of this research, there were only 2215 datasets that were uploaded in the portal, with 110 publishers of datasets among government agencies. Interestingly, in comparison to the total number of government agencies in Malaysia that comprised of 23 ministries, the number of datasets was still relatively small and not inclusive enough.

In other countries such as the United Kingdom, the creation of the public website for public access was initially more than 1,000 datasets from seven government departments, which then increased to 8,633 datasets. Even a small country like Singapore started its open data initiatives with more than 5,000 datasets made available to the public. With only 2215 datasets, this exemplified that the Malaysian government agencies were still in the early stage of information sharing with the public.

Putting aside the quantity of the datasets been published in the portal. There were many barriers and risks related to the OGD research on these issues and have been highlighted continuously (Brugger et al., 2016; Conradie & Choenni, 2014; Janssen et

al., 2012). Nevertheless, the adoption of research on OGD has also increased tremendously (Susha et al., 2015; H. Wang & Lo, 2015). Conversely, empirical studies focusing on the behavioural intention to use OGD especially in developing countries are still lacking.

The main purpose of this research was to identify the determinant factors that influenced the behavioural intention to use the OGD, with the mediating effect of trust. It pertained to the success of the OGD from the perspective of the stakeholders. Additionally, this study aimed to develop a framework to measure the level of usage of the OGD from the perspective of researchers as one type of stakeholder by identifying the factors influencing the behavioural intention to use. This study attempted to adapt the IS Success Model (ISSM) proposed by (W. DeLone & McLean, 2003), whilst integrating with the UTAUT Model by Venkatesh et al., (2003).

The findings of this research is of two-prongs: firstly, it provided insights into the current state of OGD usage among citizens and secondly, it gauged the level of data usage for the benefit of the nation. Consequently, this information could assist relevant policymakers in developing effective policies to ensure the successful implementation of the OGD among government agencies. In the long run, this could also ensure that they can be more productive and efficient in contributing to the digital economy in particular, and the overall economic development of the country in general.

1.3 PROBLEM STATEMENT

Despite the success of the OGD being the main objective of any country that implemented it, the usage of the open data itself was still unreciprocated. Malaysia became the country that fell under the “one-sided country” category or the supply-side driven approach which refers to the “government had initiatives to publish data but lack

of citizens engagement” (The World Wide Web Foundation, 2015). According to Priyankar Bhunia (2017), citizens might not utilise the open data even if it was available in the portal. This is due to the lack of awareness or maybe due to the absence of a culture of openness. To answer the effectiveness of OGD use, it was essential to study the behavioural intention to use the technology. This is because behavioural intention may lead to the actual use of the technology (Davis, 1989).

In terms of academic literature on behavioural intentions to use open government data, there were quite a number of research that have been conducted by adopting a few acceptance models. For instance, several researchers adapted the UTAUT model to measure the intention to use OGD (Saxena & Janssen, 2017; Zuiderwijk et al., 2015). However, other researchers adapted the ISSM to also measure the intention to use open government data (Cartofeanu & Macrinici, 2017; Fitriani et al., 2017; Purwanto et al., 2017). Nevertheless, the combination of UTAUT and TAM were adapted to study the intention to use OGD and this was prevalent in the study conducted by Jurisch, Kautz, Wolf & Krcmar (2015). Even though many research have adapted the UTAUT and ISSM to measure intention to use information technologies such as e-government context, mobile banking, e-learning and online banking, yet the combination of UTAUT and ISSM to measure the behavioural intention to use OGD is still lacking. According to Talukder et al. (2019), the synthetisation of the two strong models is important to identify the factors that influence the intention to use open government data. Therefore, there is a need to study the factors that originated from both theories that influenced the intention to use the open government data.

Trust in government and trust in technology have been proven to be key success factors in an e-government (Teo et al., 2008). However, the roles of trust in open data context were still unanswered extensively as an initial trust was needed in a relationship

where people do not have reliable and meaningful information related to the service provider (Fitriani et al., 2017). Some studies considered trust as an important factor to determine behavioural intention (Al-Hujran et al., 2015). As mentioned previously, not much research that identified the intention to use OGD by inflating the theory of UTAUT and ISSM. Therefore, this research attempted to fill the gap in the literature in the open data context.

As highlighted in the Malaysian OGD portal (MAMPU Malaysia, n.d.), the datasets of users may come from these groups of people: higher education students and also researchers who required data for their research projects. It is aimed by the government that open data can benefit the academic community to achieve their research objectives. However, the level of usage of the data in the OGD is still questionable. Yet, since the data was available, this research tried to encourage the intention to use OGD from the perspectives of academics in Malaysia.

This research attempted to identify the factors influencing the use of OGD and the mediating effect of trust towards the behavioural intention to use OGD from the perspective of academics. This study also tried to extend the body of knowledge on the topic of information system (IS) to develop an inclusive model to identify the factors influencing the intention to use the technology. Perchance, this study could make a noble contribution as it proposed a suitable model to identify the usage of open data from the perspective of academics.

The study was confident that eventually with widespread open government data implementation the Malaysian government will achieve its policy of an effective and transparent administrative system.

1.4 RESEARCH OBJECTIVES

RO1: To identify the status of OGD implementation in Malaysia.

RO2: To identify the factors influencing the intention to use OGD among academics in Malaysia.

RO3: To propose and validate a model on the factors influencing the intention to use OGD.

1.5 RESEARCH QUESTIONS

The study seeks to answer the following main research question:

RQ1: What are the initiatives taken by the Malaysian Government to implement open government data?

RQ2: What are the factors that influence the intention to use OGD among academics in Malaysia?

RQ3: What is the suitable model to identify the factors influencing the intention to OGD?

1.6 SIGNIFICANCE OF THE STUDY

1.6.1 Theoretical Contribution of the study

From the theoretical perspective, this study contributed to the body of knowledge by several means. Firstly, it could extend the previous literature on the theoretical model of the information system (IS) success model which was proposed by DeLone & McLean (1992). This model was then updated by the same author ten years later due to the limitations to measure e-commerce success (W. DeLone & McLean, 2003).

In this research, the quality factors were identified to be the influence factors towards the behavioural intention to use open data, with mediating effect of trust to the

open data website. This study in the future perhaps could contribute to the theoretical model of information system usage as an antecedent to measure the success of open data.

Secondly, this study could also extend the Unified Theory of Acceptance and Use of Technology (UTAUT), as this model was proven as the perfect model to empirically determine predictors influencing the acceptance and use of open data technologies (Saxena & Janssen, 2017; Zuiderwijk et al., 2015). Other acceptance models such as the Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB) and Theory of Reasoned Actions (TRA) even though focus on the intention to use the technologies, possessed flaws in measuring the intention to use which then lead to the actual use and the satisfaction.

This study attempted to deliver a noble contribution to the body of knowledge, especially in the extent of IS success and technology acceptance. This contribution is significant as it provides guidelines to the government agencies to identify the benefits of taking part in the open data initiatives without reluctant reactions.

Finally, studies and articles on open government data have also been reviewed. Most of the studies indicated the benefits and barriers to implementing open government data in different countries. Although the articles were referred to and cited, the method cannot be concluded as a phenomenon of data reuse in open data as the results may differ based on countries. In other words, developing countries and developed countries might exhibit different intention factors.

1.6.2 Practical Contributions of the study

Identifying the factors that influence the intention to use and the use of OGD may contribute to the practicality of open government data implementation, especially in

Malaysia. The factors such as quality, acceptance and trust can give an extensive clue for the government to indicate the level of OGD usage in the country. The findings of this empirical study could then assist the federal, state and local governments in preparing their respective organisations for the open data publication. This is to ensure that open government data in Malaysia, which was launched in 2014, could achieve the desired objectives and fulfil the National Agenda towards a Digital Malaysia status.

1.7 SCOPE OF THE STUDY

The study was conducted to determine the factors that influence the behavioural intention to use OGD that from the academics' perspective. Generally, the government has put the initiatives to implement the open data in their administration system to get along with the expanding technology in information systems. However, the level of use of the open government data was yet to be identified and measured. This study, therefore, concentrated on one of the OGD stakeholders. The academics from the public universities in Malaysia provided their perspectives on the level of use of OGD in Malaysia.

1.8 ORGANIZATION OF THE THESIS

This thesis was organised into seven chapters. Chapter 1 is the introduction that explained the overview of the research topic, research background, problem statement, research objectives, research questions and significance of the study. Chapter 2 expanded more on the literature review that highlighted the definition of big data, the definition of open data, reviews on OGD portals and past research on OGD, respectively. Chapter 3 highlighted the adaptation of theories and models, variables

identification and hypotheses formulation and also presented the conceptual research framework.

Furthermore, in Chapter 4, the methodology sections included are research methods in Information Systems, quantitative research design, data collection method and data analysis method. Chapter 5 focused on data collection and analysis procedures whilst Chapter 6 highlighted the research findings or results. Lastly, Chapter 7 elaborated more on the discussion and conclusion of this research.

1.9 SUMMARY

This chapter first described the background and motivations of the study. Based on the research problems, several research questions and research objectives were designed. The chapter also provided a brief overview of open government data potentials specifically for the Malaysian government machinery. This study focused on the determinant factors that influence the use of OGD which then led to the measure of success of OGD from the stakeholders' perspective. The significance of the study, its scope and its limitations were also discussed in this chapter. The research objectives and the scope of the study will then become the groundwork for the discussion of the next chapter i.e., the literature review.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

A methodological review of past literature is crucial for academic research as the review uncovers what is already known in the body of knowledge before initiating the study (Levy & Ellis, 2006). With regards to this significance, this chapter first will explore the definition of big data, the definition of open government data, the evolution of big data from database to big data and describing the relation of big data with other key technologies. It then will continue with the explanation of the different perspectives of big data analytics which also indicates the open data context.

Next, the chapter will highlight the government initiatives toward open government data in several countries. Finally, as the study will focus on the Malaysian government, a detailed explanation of the open government data and issues related to its implementation will also be highlighted. The most important issue in information sharing in government agencies or known as interagency or interoperability will also be discussed comprehensively. These reviews are significant to craft the research framework and justify how the proposed research will contribute to the body of knowledge.

2.2 DEFINITION OF BIG DATA

Nowadays, organisations do not want to only collect data but they want to understand the meaning and significance of the data as well as to analyse the data and aid them in making strategic decisions. Recently, the word “big data” has been tremendously