An Integrated Model for Predicting the User Continuance Intention towards Utilizing Open Government Data

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Abstract. Most governments around the world have established open government data repositories during the last decade in an effort to make public data more accessible and usable, and to encourage citizen participation. Open government data has beneficial effects on economic growth by stimulating the industry to produce goods and services, which in turn accelerates production, job provision, and government tax earnings. However, in developing countries, the use of open government data is currently at its nascent stage and facing the problem of less participation besides the lack of continuance intention of utilization. To fill in the identified gap, the current study integrated Expectation Confirmation Model and IS success model to propose a model, which may help in predicting users' continuance intention to utilize open government data. The proposed model may provide a baseline to develop innovative services by considering information quality and system quality so that users can get full benefits of open government data.

Keywords: open government data, continuance intention, ECM, IS success model, integrated model.

1. Introduction

E-government is gaining traction in a number of countries due to its efficacy and applicability in a variety of public service contexts. It has provided the users with more access to information, increased openness and enhanced quality of delivery of service. On the other hand, it has boosted engagement in government matters (Alcaide-Muñoz et al., 2017; Lindgren & Jansson, 2013; Zuiderwijk et al., 2015). Open government data (OGD) is undoubtedly among the most significant modern egovernment platforms available, which is one of the significant online services that the government offers to the public (Attard et al., 2015). The improved transparency and accountability that come with open government data are just two of the many advantages that public and other stakeholders can enjoy. (Bertot et al., 2010; Harrison & Sayogo, 2014), empowering the citizens (Concilio et al., 2017), stimulating innovation (Janssen et al., 2012), promote economic development (Poikola et al., 2010) and a rise in both the participation of stakeholders in government operations and their cooperation with those activities (Abu-Shanab, 2015; Harrison & Sayogo, 2014). In the light of these possible effects, governments around the world have recently begun to promote open government data projects by facilitating convenient data access as is largely requested by the public sector (Weerakkody et al., 2017). OGD is relatively a new field of study, therefore the number of empirical studies, which investigated issues related to OGD utilization, is limited. However, a promising and effective way to enhance OGD utilization is to investigate users' intention and motivation to use OGD. It can improve the service efficiency, number of utilization types and relevant positive results (Safarov et al., 2017).

Hossain and Quaddus (2012) asserted that the growth of digitalization in a society is impossible if the people, who use digital services, do not make continuous use of these services and technology in their daily lives. The initial adoption of an information system (IS) is undeniably a necessary and foremost step towards realizing the success that system but it is the continuous use, rather than the initial use, that determines whether or not the system will be successful in the long run (Bhattacherjee, 2001b). IS continuance intention, according to Yonnim Lee and Ohbyung Kwon (2011), refers to the decision that the users make to continue using a specific type of technology after its initial adoption. As the prospective success of a system largely depends on the user's continuance intention of its use therefore, it is necessary to investigate the user's intention. (Hossain & Quaddus, 2012). With regard to open government data, Zuiderwijk and Cligge (2016) contended that the infrastructures of open data will be approved and put to use if there is a willingness to continue their use. They suggested that a range of criteria can serve as gauges of acceptability and use of open data infrastructures because they cannot be directly determined using a single variable (Zuiderwijk & Cligge, 2016). Arguably, the model that was built by Venkatesh (2011) may not be able to provide as accurate of a prediction regarding the level of adoption and use of open government data

infrastructures as another model that could more narrowly focus on the context of such infrastructures. In spite of the fact that the model, which combined UTAUT and ECT, was extremely helpful for understanding open data infrastructure, it was only concerned with information systems as a whole while the variables in the model were relatively generic necessitating further clarification for open data infrastructures (Zuiderwijk & Cligge, 2016).

The current study is a response to the growing calls for more studies like the above and others (Saxena & Janssen, 2017; Srimuang et al., 2017; Talukder et al., 2019; Zuiderwijk & Cligge, 2016; Zuiderwijk et al., 2015)

The call is to include in OGD research the factors such as perceived benefit, satisfaction, confirmation, information quality, system quality and perceived cost. This study aimed to provide significant theoretical addition to the existing body of literature on OGD usage continuance intention. It also extends a contextual contribution to the existing body of research.

The review of OGD continuance literature reveals that there is scarcity of empirical research in this area. To date, no comprehensive structural model has been developed to investigate OGD users' continuance intention (Zuiderwijk & Cligge, 2016). OGD's initial adoption has been the focus of much prior research however only a few studies have focused on its continuous use in the post-adoption context (Zuiderwijk & Cligge, 2016). The current study sought to validate an integrative model of OGD continuation usage intention in order to fill the aforementioned research gap.

2. Literature Review

2.1. Concept of OGD

The term "Open Government Data" means "non-privacy-restricted and nonconfidential data, which is produced with public money, and is made available without any restrictions on its usage or distribution" (Janssen et al., 2012). Furthermore, OGD may well be recognized "as the actual free of charge accessibility to open public field information within open formats so that open public entry as well as exploitation thereof is actually enabled" (Ubaldi, 2013). Open Government Data are regarded as " innovations which derive from new federal government services which can be found by way of information technology (IT) systems" (Wang & Lo, 2016). Governments have globally established OGD repositories during the last decade for making the governmental data much more reachable and useful for public. The increased government transparency, engagement and cooperation of public stimulate innovation, and all of these could possibly drive the OGD movement (Harrison et al., 2012). The essential premise is that as soon as OGD tend to be more accessible, discoverable, obtainable in various desirable formats by several end-users, and permit cost-free use and re-use with licensing strategies, various contributors will build up innovative data programs (Chan, 2013).

The comprehensive analysis of the available literature on OGD that there are four prominent approaches towards the theory of open government data. The first research type is concerned with the ideational understanding and theoretical basis of OGD (Charalabidis et al., 2016; Okamoto, 2017). The second type of the line of inquiry is concerned with the investigating the primary obstacles and components in OGD acceptability, spread, and the administrative implementation in various contexts (Janssen et al., 2012; Susha et al., 2015). The third type of research, academics have conducted case studies on OGD initiatives at the national or municipal level, with a focus on developed countries, in which academics have chosen countries with demonstrated support for OGD activities. (Chatfield & Reddick, 2017; Harrison & Sayogo, 2014; Thorsby et al., 2017). The fourth and last category is related to determining the extent to which a person has used OGD for a variety of reasons. These kinds of studies are conducted more frequently in developed countries as opposed to less frequently in developing countries (Weerakkody et al., 2017; Wirtz et al., 2018).

2.2. Acceptance of OGD

Despite several palpable benefits of open government data (OGD), little use and acceptance of OGD have been noted. To promote OGD use, many countries have waged noticeable efforts through holding seminars, conferences, and datathons, which have proved successful. However, there is still a dire need to uncover the factors that influence public perception, intention, abilities, and willingness to utilize OGD (Zuiderwijk et al., 2015). Besides, the scientific literature on OGD is currently in its infancy. Most of the studies are based on a wide range of methodologies however, they lack focus on investigating the user continuance intention (Zuiderwijk et al., 2012). Moreover, there is a paucity of empirical research in this area, particularly with respect to public-based and use-related components of OGD (Wirtz et al., 2018).

2.3. Benefits of OGD

Open data contains a beneficial effect on increasing economic growth simply by stimulating the industry to produce goods and services, which in turn accelerates production, job provision, and governmental revenue in the shape of tax earnings (Borzacchiello & Craglia, 2012; Janssen et al., 2012). Notwithstanding the economic advantages, open data provide positive aspects in the form of social services that enable the public to exchange ideas and information with government in a participatory and informed manner (Ubaldi, 2013).

The crucial incentives motivating the public organizations to release data, which frame the perception of governments, is the accessibility to openly financed data. The

core offers in this regard are larger amounts of economic revenue as a result of governmental investment (Cranefield et al., 2014), accessibility to the data, as required by policymakers to deal with complex issues (Arzberger et al., 2004; Sivarajah et al., 2016), and provision of assistance for public and distinct stakeholders in using open data to generate income and other benefits. These benefits usually include increased public participation in governmental events and projects (Castellanos et al., 2013; Conradie & Choenni, 2014; McDermott, 2010), improved accountability and transparency, (Bertot et al., 2010; Cranefield et al., 2014; Rose et al., 2015), and induction of innovation (Janssen et al., 2012; Van Veenstra & van den Broek, 2013).

2.4. Adoption and continuance behavior

Adoption and continuation of a service are two distinct ideas that are influenced by various circumstances. The behavior of the users of an information system, varies after the initial-stage adoption based on the user experience of the system. The prospective use may eventually vary and fluctuate in its frequency depending on this experience (Santhanamery & Ramayah, 2018; Venkatesh et al., 2011). On the other hand, a large number of investigations, as mentioned below, has used the constructs from the studies performed on adoption of a service, in order to investigate OGD. Furthermore, these studies empirically investigated OGD while utilizing the Technology-Organization-Environment (TOE) Model (Wang & Lo, 2016). In the same vein, other research used the Unified Theory of Acceptance and Use of Technology (UTAUT) framework in order to determine the extent to which individuals use OGD (Saxena & Janssen, 2017). Similarly, Zuiderwijk and Cligge (2016) tested the OGD acceptance and its use applying UTAUT and ECT. In addition, the user acceptance and use has been investigated using UTAUT and IS success model (Talukder et al., 2019). In the light of these investigations, the current study adopts a more comprehensive perspective by incorporating the relevant studies on OGD and aspiring to utilize two widely accepted theories in order to investigate the user continuance intention of OGD. These theories are the Expectation Confirmation Model (ECM) and the Information System (IS) success model.

2.5. Integrated theoretical model

ECM and the IS Success Model (Delone & McLean, 2003) are combined in the current study to design a theoretical framework for discerning the factors that influence the continuous use of OGD, and finding the factors that interact with one another. The following sections elaborate the rationale for integrating the aforementioned two theories.

2.5.1. Expectation confirmation model in the context of IT (ECM-IT)

ECM has shown to be effective in predicting users' intention to continue using online services in a variety of circumstances (Akter et al., 2012; Chong, 2013; Islam et al.,

2012; Kang et al., 2009; Lee, 2010; Santhanamery & Ramayah, 2014). According to ECM, the user's perception regarding the usefulness and confirmation of a system, determine the user's inclination to continue using that system (Bhattacherjee, 2001b). Furthermore, the constructs of confirmation and satisfaction are capable of determining the influence of pre-adoption variables such as the perceived usefulness (Oghuma et al., 2016). Based on the research potential of ECM, a variety of potential advantages can be gained by including it in the framework of the current study. Additionally, it, so far, is the most contemporary and comprehensive model of IT adoption, which has been universally embraced and authenticated (Rana et al., 2013; Schaupp et al., 2010). It has been empirically tested in the context of IS continuation usage intention and was found to explain a high degree of variance in the relevant latent components. It suggests that it may be a useful model for further relevant investigations in diverse contexts (Oghuma et al., 2016; Santhanamery & Ramayah, 2014).

Wirtz et al. (2018) found that OGD is plausibly used by public if they believe it will help them to improve their performance. Furthermore, the major factors that play a vital role in stimulating users' intention to use OGD, are its perceived usefulness, user-friendliness, and availability of efficient methods by which users can instantly find, access and comprehend OGD on public web platforms. ECM, on the other side, is considered efficient to investigate the above constructs in a variety of contexts. This indicates the suitability of the ECM model for investigating OGD continuance intention. This is the rationale that lied behind the inclusion of ECM in the framework of the current study.

2.5.2. Information system (IS) success models

The most recent design of the Information System (IS) Success Model, which was published during 2003, included seven significant dimensions. Two of these were concerned with the information and system quality respectively (Delone & McLean, 2003). System quality means the level of technical quality of an information system in the context of data processing. It is evaluated based on a number of criteria such as user-friendliness, functionality, dependability, data quality, pliability and consolidation (Delone & McLean, 2003; Gorla et al., 2010). Information quality relates to the precision, firmness, stability, and currency of the provided output (Delone & McLean, 2003; Gorla et al., 2010).

In the context of OGD, the quality of data and open-data technologies, are primary concerns. This is due to the fact that data-providers may be reluctant to open the data, which have low quality and inadequate systems (Conradie & Choenni, 2014). Provision of open data is a technical issue that encompasses a variety of information systems (IS) measurements such as the artefact interfaces, user capability, quality of open data portals and infrastructures, and scope for Application Programming Interfaces (APIs). In this context, despite the fact that Wang and Liao (2008) argued

that the quality of service is merely a part of the quality of the system of the model, Petter et al. (2008) asserted that quantifying the service quality furnished by the various IT applications is the primary focus of service quality. It strengthens the appropriateness of the constructs that make up the IS success model, namely 'system quality' and 'information quality'. The current study uses system quality and information quality to determine the user perceptions about the usefulness of OGD.

2.5.3. Theories combination

The Expectation Confirmation Model (ECM) and the Information System (IS) success model serve as the conceptual underpinnings for the model developed for the current study. ECM is a solid basis that can direct investigations on the user's continuation intention and behaviors towards an information system (IS) (Bhattacherjee, 2001b; Venkatesh, 2011). ECM is based on the premise that the customer pleasure is influenced by confirmation, which in turn forecasts whether or not they will continue to use it. The IS success model is another valuable theoretical framework for analyzing long-term utilization of IS (Delone & McLean, 2003).

ECM and IS Success models have been widely embraced in this context, but it is now important to expand these theories to accurately quantify the use and acceptance of OGD (Veeramootoo et al., 2018; Wang & Liao, 2008). Venkatesh et al. (2011) suggested that appropriate extension, modification and revision are required to use ECM in specialized IT applications, for instance OGD (Zuiderwijk et al., 2015). Similarly, there have been proposals from academics to broaden the scope of the IS success model by incorporating with it other theories and models, which are pertinent to certain IS contexts (Delone & McLean, 2003; Veeramootoo et al., 2018). According to Cimperman et al. (2016), integrating extra-contextual elements enables a more accurate assessment of the user adoption of domain-specific technology within the framework of OGD. Despite the widespread application of IS theories in the study of technology adoption, they are unable to account for the complexities of OGD. To grasp the complexity of technology adoption framework, it is necessary to integrate other relevant theories and models in the theoretical frameworks (Dwivedi et al., 2017; Dwivedi et al., 2012).

The combination approach has a number of benefits, the most important of which are as follow: Firstly, the process of adopting the modern technology of OGD by the users, is complex, and requires the use of more than one model (Shen et al., 2010). The use of combined approach facilitates investigating such complex cases. Secondly, a holistic view furnishes in-depth description of causal instruments that are critical for interactions while providing unique knowledge that cannot be acquired through a single theory-driven model (Jackson et al., 2013). Thirdly, it bolsters the relevance of the outcomes while also making them more predictable (Talukder et al., 2018), and lastly, a variety of epistemological theories can be employed in the area of the

relevant research for developing and supporting the model, in order to examine the philosophical foundations of the research (Bradbury-Jones et al., 2014).

In continuation of the above, the relevant research has shown that combining theories and models can help better comprehend complex technology adoption. For instance, to better understand the adoption of online shopping, Chen and Cheng (2009) combined the TAM with the IS success model. Tam and Oliveira (2016) used the IS success model and the TTF model to describe the impact of mobile banking on the user performance. In another study, Maillet et al. (2015) combined both aforementioned models to explain electronic patient records.

As the targeted OGD portal is new, and only a small number of users have made use of it, continuance intention was chosen as the dependent variable in this study instead of taking it as the construct of actual usage as in Taylor and Todd (1995).We established an integrated research model to predict the continuing intention of OGD based on the theoretical foundation of the ECM and IS success model.

3. Research Proposed Model

Based on the prior literature review, the current study integrated the ECM and IS success model in order to investigate the facets that affect the intention to continue using OGD in which Perceived Usefulness, and Satisfaction are included as mediator variables. Conformation, Information Quality, System Quality, and Perceived Cost are included as independent variables while OGD Continuance Intention is included as the dependent variable. Figure 1 illustrates the proposed model.



Fig. 1: The Proposed model.

3.1. Continuance Intention

Yonnim Lee and Ohbyung Kwon (2011) state that the term "Information System (IS) continuity intention" characterizes a user's desire to continue utilizing the technology that they have been utilizing. Even in the event that Information and Communication Technology (ICT) is successful in its early stages, the consumers usually reconsider their choice to use it, and may decide against doing so in future (Bhattacherjee, 2001b; Hernandez-Ortega et al., 2014). Therefore, there exists an essential necessity to closely investigate the continuance (continued usage) intention of the IS with regard to a specific product or services (Hossain & Quaddus, 2012). In addition, an

ICT's future performance and viability can be better predicted with its help (Hernandez-Ortega et al., 2014). Ineffective or rare use of a technology after its first adoption, creates unnecessary additional costs and efforts in the development of a certain type of online technology (Hong et al., 2008). Therefore, continued use of online technologies helps to increase the relevant profit, and adds to economic growth and extension of survival in the current marketplace (Bhattacherjee, 2001b; Chong, 2013; Hong et al., 2008; Shiau et al., 2012). Hossain and Quaddus (2012) note that the digital society cannot flourish if the users of online services do not utilize them on a consistent basis. Therefore, the users should use technology beyond the initial adoption stage and continue using it regularly.

3.2. Confirmation

Bhattacherjee (2001b), and Thong et al. (2006) postulated that confirmation is positively linked with satisfaction with Information System (IS) use due to the fact that confirmation involves the materialization of the anticipated benefits of utilizing an IS. Several stude (Bhattacherjee, 2001b) (Ayanso et al., 2015) (Hsu et al., 2014) have shown that there is a correlation between confirmation and contentment.

3.3. Perceived usefulness

In light of the preceding studies, perceived usefulness is a crucial factor in behavioural intention of using an information system, including e-government adoption (Abu-Shanab, 2014). It is important because the users tend to evaluate an e-government service with respect to the usefulness of the system (Hussein et al., 2011). According to Carter (2008) findings, perceived usefulness is the most significant and critical determinant of intention to utilize the services of e-government.

3.4. Satisfaction

To use an IS again is more likely if you have had a positive experience with it in the past, according to the ECT (Bhattacherjee, 2001a). There is clear evidence in the body of IS research literature of a direct link between satisfaction and the intention to continue. For instance, Chiu et al. (2008) discovered, in their research on web-based learning continuation intention, that satisfaction was the most important factor in determining the amount of continuance usage. Zheng et al. (2013) showed that a vital connection exists between the user satisfaction level and the intention to continue using virtual communities for the exchange of information. The existence of such a relationship is demonstrated by a plethora of recent studies (Hamzah et al., 2022) (Pham et al., 2019; Weng et al., 2017).

3.5. Information quality

The term "information quality" mean the user assessment of the effectiveness of an information system (IS) in furnishing information based on the user's previous interactions with the system (McKinney et al., 2002). Such evaluations are based on

the content of an IS portal, which is expected to be personalized, authentic, relevant, and user-friendly, and it also needs to assure security in order to stimulate online transactions (Delone & McLean, 2003). Therefore, information quality is an embodiment of both the objective and subjective perspectives of the information that is received. Users are distracted by poor-quality information, which results in higher costs associated with information processing (Zheng et al., 2013). Numerous studies have shown that there is a correlation between the quality of the information, and the number of times it is used (Chiu et al., 2007; Delone & McLean, 2003; Yang et al., 2017; Zheng et al., 2013).

3.6. System quality

An online system's quality can be measured by its usability, availability, dependability, flexibility, and response time (Delone & McLean, 2003). It is a representation of the technical capacity of the website to provide the user with an access to information that is both straightforward and quick, all while maintaining dependability and safety (Teo et al., 2008). According to the findings of a number of researches, system quality has an effect on usage intention. For instance, (Yang et al., 2017), in their investigation on continuation intention of the learners toward participating in an open line course empirically proved that there was a positive relationship between the two aforementioned dimensions, and that this relationship positively correlated with each other. As an example, Lin and Lu (2000) looked at the internet as an example of how system quality influences learners' intention to use. Studies in the area of e-government have also confirmed the existence of such a relationship (Teo et al., 2008; Wangpipatwong et al., 2009; Zhou, 2013).

3.7. Perceived cost

Perceived cost is a key determinant in deciding to use a service, (Bloch et al., 1989; Shin & Kang, 2004; Zeithaml, 1988). Cost significantly influences people's life and intention (Gardner & Levy, 1963). It is an important criterion in people's choice of certain actions over others (Vinson et al., 1977). Additionally, the perceived cost of a service has a major influence on a customer's choice or acceptance behavior (Negash et al., 2003). Furthermore, the data must be available without associated cost (Janssen et al., 2012). In this regard, Sayogo et al. (2014) asserted that there should be no cost for accessing the data, and usage should be free to increase accessibility of the data. However, the added cost imposed on the user to download the open government data may negatively affect the continuance intention of utilizing OGD (Al-Kubaisi, 2014, 2018).

4. Instrument Development

An instrument is a predefined set of measures, and is extensively utilized in research (Oates et al., 2022). According to Bhattacherjee (2012), an instrument comprises the items designed to obtain responses of the participants in a standardized way.

In the current study, an instrument was adapted from the previous studies to obtain the data for testing the proposed model of and thereby, identifying the continuance intention to use the OGD. While adapting the instrument, the variables constructing the proposed model were operationalized on the basis of the context of the study (See Table 1). Later, the items were taken from original measurements that had been employed in a variety of research topics throughout the scientific literature. It helped to establish the instrument's validity (Agarwal, 2011). However, in order to increase the instrument's validity, content validity was established by the experts in the relevant field.

4.1. Content validity

To facilitate content validity assessment, a form was developed to allow the experts to assess the relevance and clarity of the measurements. The form was designed so that the expert could evaluate the relevance of each item by assigning a number (1, 2, 3, or 4); 1 indicated that the item was not representative; 2 indicated the item was somehow representative; 3 indicated that the item was representative; and 4 indicated that the item was strongly representative. Similarly, the expert could assess the clarity of the items (1 indicated that the item was not clear; 2 indicated that the item needed revision; 3 indicated that the item was clear, and 4 indicated that the item was totally clear). Additionally, space was given for the comments of the experts, for each item and the scale in each construct. Appendix I presents the experts' responses and comments.

Constructs	Operational Definition
OGD Continuance	The extent to which users' intention to continue using open
Intention	government data.
Democian d Licefulness	Users' belief in the potential impact OGD will have on their
Perceived Userumess	work performance.
Conformation	A measure of how closely OGD users believe their
Conformation	expectations and the system's actual performance.
Satisfaction	A state of mind that is pleasant or upbeat, brought on by a
Satisfaction	favourable evaluation of one's experience with OGD.
	The characteristics of OGD output such as data
Information Quality	discoverability, data formats, openness, data updates,
Information Quality	timeliness, completeness, accuracy, relevance, and fitness
	for use.
System Quality	The OGD portal's reliability, convenience, ease of use,
System Quanty	usefulness, learnability, and efficiency.
Paraoived Cost	The charged fee based on the total number imposed on the
r eicelved Cost	user for downloading the OGD.

Table 1: The constructs operational definitions.

4.2. Validity analysis

The experts' evaluation of the items' relevance and clarity for each construct was analyzed. We employed the content validity index (CVI), which is an extensively

published measure of content validity (Polit & Beck, 2006). There are two types of CVI: Item-level CVI (I-CVI), which involves the content validity of individual items; and the Scale-level CVI (S-CVI), which measures the content validity of the overall scale (Lynn, 1986). The I-CVI is computed as 'the number of experts giving a rating of item relevance' divided by the experts total number. The S-CVI can be computed using two ways. One requires universal agreement among experts and is called S-CVI/UA. A tool's relevance rating is based on the percentage of items that all experts think are relevant. The other way is calculating the average of I-CVI across items that is called S-CVI/Ave. For the current instrument, the CVI for items' relevance and clarity was calculated. For the items' relevance, results showed that I-CVI for three items did not fit the criteria for item acceptability suggested by Lynn (1986), and Polit and Beck (2006), which must be 1 for 3-5 experts. However, the S-CVI results showed that SCVI/UA and S-CVI/Ave were 0.90 and 0.97, respectively (See Table 2). These values were quite above the lower limit of acceptability for S-CVI identified by Davis (1992), which is 0.79.

In Table 3, Computing I-CVI for items' clarity shows that Item 4 for Satisfaction, items 3,6,9 for Information Quality, item 9 for system quality, and item 2 for continuance intention are not clear enough (0.66). The experts provided comments to improve the items' clarity. In addition, S-CVI/UA and S-CVI/Ave for items' clarity, show satisfactory values with 0.79 and 0.94 respectively as shown in Table 2.

	Relevance	Clarity
S-CVI/Ave	0.92	0.94
Total Agreement	26	27
S-CVI/UA	0.76	0.79

Table 2: Content validity index Scale-level (S-CVI).

The instrument was modified in accordance with the comments of the experts. Table 4 demonstrates the revised scale measurements.

5. Discussion

This study aimed at providing a theoretically grounded conceptualization for predicting the users' continuance intention towards utilizing OGD. Testing of the suggested theoretical model will take place in the context of OGD as a way for testing the assumption derived from earlier literature reviews. Research on the post-adoption stage of OGD's continuance intention contributes to theoretical implications by constructing and evaluating research models. The OGD, which have been built with a large amount of money, can greatly benefit from this research.

It is also becoming increasingly crucial to understand why people continue to use online government services as a replacement for traditional forms of service delivery, and why more and more government functions are being moved online. E- government initiatives may only achieve their full potential if users adopt and use them on a regular basis (Hu et al., 2009). E-government services cannot, in any way, be successful if certain internet services are not continuously used. That is why, a primary focus of this study was on the elements that influence the users' long-term use of e-government services in general, and OGD in particular.

The findings of the current study add to the existing stock of knowledge about the influence of technology on factors affecting the users' continuance intention towards utilizing the OGD. This research integrated perceived usefulness, confirmation, and satisfaction based on EMC theory while information quality, and system quality based on IS Success Model and perceived cost were additional variables on OGD continuance intention. In e-government, the use of ICT information, communications technology, and e-services does not automatically result in increased utilization unless a fundamental understanding of the users' needs and aspirations is developed (Fakhoury & Aubert, 2015). Thus, of e-government services researchers and stakeholders should examine the criticism and conceptions of users in order to better understand their current and future needs.

	Itam	Rele	vance R	ating	Cla	arity Rati	ng	N agree	O. ement	I-C	VI
Construct	No.	Exper t 1	Expert 2	Expert 3	Expert 1	Expert 2	Expert 3	Relev -ance	Clar- ity	Relev- ance	Clar- ity
	1	4	4	4	4	4	4	3	3	1	1
	2	4	4	4	4	4	4	3	3	1	1
Perceived	3	4	4	4	4	4	4	3	3	1	1
Osciulless	4	4	4	4	4	4	4	3	3	1	1
	5	4	4	4	4	4	4	3	3	1	1
	1	4	4	4	4	4	4	3	3	1	1
Confirmatio	2	4	4	4	4	4	4	3	3	1	1
	3	3	4	4	3	4	4	3	3	1	1
	1	3	4	4	3	4	4	3	3	1	1
	2	4	4	4	4	4	4	3	3	1	1
Satisfaction	3	4	4	4	4	4	4	3	3	1	1
	4	4	4	1	4	4	1	2	2	0.66	0.66
	5	4	4	4	4	4	4	3	3	1	1
	1	4	4	4	4	4	4	3	3	1	1
	2	4	4	4	3	4	4	3	3	1	1
	3	2	4	3	2	4	3	2	2	0.66	0.66
TC C	4	4	4	4	4	4	4	3	3	1	1
Ouality	5	4	4	3	4	4	3	3	3	1	1
Q	6	4	4	4	4	4	4	3	3	1	1
	7	2	4	4	2	4	4	2	2	0.66	0.66
	8	4	4	4	4	4	4	3	3	1	1
	9	1	4	4	1	4	4	2	2	0.66	0.66
	1	1	4	4	4	4	4	2	3	0.66	1
	2	1	4	4	1	4	4	2	2	0.66	0.66
	3	4	4	4	4	4	4	3	3	1	1
Contour	4	4	4	4	4	4	4	3	3	1	1
Ouality	5	4	4	4	4	4	4	3	3	1	1
C	6	4	4	4	4	4	4	3	3	1	1
	7	4	4	4	4	4	4	3	4	1	1.33
	8	4	4	4	4	4	4	3	3	1	1
	9	1	4	4	1	4	4	2	2	0.66	0.66
Perceived Cost	1	4	4	4	4	4	4	3	3	1	1
Continuance	1	4	4	3	4	4	3	3	3	1	1
Intention	2	1	4	3	1	4	3	2	2	0.66	0.66

Table 3: Content validity index - Item-level (I-CVI)

Construct	Original Items	Revised Items
ess	Using open data in my job would enable me to accomplish task more quickly.	Using open data in my job would enable me to accomplish the task more quickly. (S)
sefuln	Using open data in my job would increase my productivity.	Using open data in my job would increase my productivity. (S)
ved U	Using open data would enhance my effectiveness.	Using open data would enhance my effectiveness. (S)
Percei	Using open data would make it easier to do my job.	Using open data would make it easier to do my job. (S)
	I would find open data useful in my job.	I would find open data useful in my job. (S)
uc	My experience with using open data was better than what I expected.	My experience with using open data was better than what I expected. (S)
innati	The service level provided by open data was better than what I expected.	The service level provided by open data was better than what I expected. (S)
Confi	Overall, most of my expectations from using open data were confirmed.	Overall, most of my expectations from using open data were confirmed. (S)
	I am satisfied with the technical quality of the e-Government portal (e.g. download capacity and speed).	The open data portal provides a user friendly and easy to use environment. (R)
u	I am satisfied with the information I receive from the e-Government portal.	The open data portal provides sufficiently dataset. (R)
atisfactio	I am satisfied with the quality of the service offered by the e-Government portal.	The open data portal provides strong dataset search capabilities using different criteria. (R)
Š	I am satisfied with the way in which e-government service providers adjust to my needs.	The open data portal provides a large number of datasets. (R)
	Overall, I am satisfied with the services offered by the e- Government portal.	Overall, I am satisfied with the services offered by the open data portal. (R)
ality	This Portal provides sufficient data.	The open data portal provides several different categorizations of the available datasets. (R)
on Qua	Through this Portal, I get the data I need in time.	The datasets are in appropriate file/data formats that I can easily use. (R)
nformatic	I am satisfied with the accuracy of this Portal.	The open data portal enabled me to download datasets easily and efficiently. (R)
П	Data provided by this Portal meets my needs.	The open data portal provides up to date dataset. (R)
	Data provided by this Portal is in a useful format.	Through this open data portal, I get the data I need in time. (R)

Table 4: Revised scale measurements.

a		
	Data provided by this Portal is clear.	The open data portal provides me complete data with all required fields and detail. (R)
	Data provided by this Portal is accurate.	The open data portal provides accurate and reliable data on which I can rely on my studies. (R)
	Data provided by this Portal is up-to- date.	The datasets have also appropriate and sufficient metadata. (R)
	Data provided by this Portal is reliable.	The open data portal provides datasets useful to me. (R)
	The open data portal is easy to use.	The open data portal is always up and available without any interruptions. (R)
	The open data portal is user friendly.	It is easy to perform the tasks I want in a small number of steps. (R)
	Data provided by this Portal is Machine Readable.	The open data portal provides high quality documentation and online help. (R)
lity	Data provided by this Portal and the entire portal are secured.	I did not realize any bugs while using the open data portal. (R)
tem Qua	The open data portal provides helpful instruction for performing my task	It was easy to learn how to use the open data portal. (R)
Sys	The open data portal provides fast information access.	Services and pages are loaded quickly. (R)
	It only takes a few clicks to locate the data.	Item deleted
1	It is easy to navigate within the open data portal.	Item deleted
	I believe that this open data portal is cumbersome to use.	Item deleted
ost	My required datasets provided by this portal is free of charge.	The open data portal enables downloading and publishing datasets at a low cost. (R)
ceived C	No original question existed	The open data portal enables downloading and publishing datasets at a reasonable cost.
Per	No original question existed	I am satisfied with the cost that I must pay for downloading and publishing datasets.
63	I will frequently use using open data	I will use open data provided by the open
ance	provided by the portal in the future.	data portal regularly in the future. (R)
inus intic	I will strongly recommend that	I will frequently use open data provided by
Inte	otners use it.	the open data portal in the ruture. (R)
Ŭ	No original question existed	open data provided by the open data portal.

Note: S= *Same item remained; R*= *Item revised*

In addition, this study adapted an instrument to measure the model constructs. By operationalizing the constructs, the items for each construct were derived and revised from the related theories and literature to fit in with the context of the current study. Adapting the original items to the context of a study may affect the validity of the measurements. Therefore, content validity analysis was conducted to ensure that the items sufficiently represented the content domain. Content validity provides initial evidence on construct validity. It also provides representativeness and clarity of the items, and helps to improve the instrument by considering the experts' recommendations (Yusoff, 2019). In the current study, three experts were engaged in the process of establishing content validity. The experts judged the relevance and the clarity of the items. The results showed that seven items were not clear (in terms of wordings), thus they were rated as 'not relevant' to the corresponding construct. These items were revised in accordance with the experts' comments. One item was rated significantly relevant but not clear (Item no 1 in System Quality), therefore it was removed. The comments on all items and constructs were considered in the revised version of the instrument. Three items were deleted from the construct of System Quality, and two items were added to the construct of Perceived Cost, while one item was recommended thrice by the experts. These items were derived from the related literature by taking into account the context of the e-government and online technologies.

6. Conclusion

The current study proposed an integrated model identifying the factors to be considered when studying the users' continuance intention towards utilizing OGD. The model was constructed by integrating two theories namely ECM and ISS Success Model. Based on the proposed model, continuance intention is affected by the satisfaction of users. In order for the OGD to be a complete success, investigating the users' perceptions is crucial. It is because their degree of satisfaction with the technology is likely to have a considerable impact on future advancement while users' input must also be acquired and evaluated.

The maximum benefit and success of e-government services cannot be obtained unless a large percentage of the users goes beyond the initial stage of adoption, and use the e-service in a consistent way., In this connection, the results of this study may be helpful for the relevant organizations in selecting and deploying the best strategy and form of support to encourage researchers to comply voluntarily and to continue using the OGD. An instrument was developed to measure the variables constructing the model. Three experts were involved to assess the instrument's content validity to ensure that measurements cover all the aspects of each variable. The diction of the measurements was also checked and assessed by the experts to ensure that the item was comprehensible by the respondents. The instrument can be used to collect the data to empirically examine the proposed model.

2 2				Expe	ert 1							Exp	oert	2	-					Exp	ert 3				Comments/
Items		Rele	vanc	e		Cla	rity		F	Rele	evan	ce		Cl	arity		F	Rele	vano	ce		Cla	rity		Suggestions
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Using open data in my job would enable me to accomplish task more quickly.				~				~				~			~					~				~	
Using open data in my job would increase my productivity.				~				~				~			~					~				~	
Using open data would enhance my effectiveness.				~				~				~			~					~				~	
Using open data would make it easier to do my job.				~				~				~			~					~				~	
I would find open data useful in my job.				~				~				~			~					~				1	
My experience with using open data was better than what I expected.								~				~			~					~				~	Expert1: You may change
The service level provided by open data was better than what I expected.				~				~				~			~			ζ.		~				~	the word "confirmed" with another
Overall, most of my expectations from using open data were confirmed.			~				~					~			~					~				~	word (e.g., achieved).
I am satisfied with the technical quality of the e-Government portal (e.g. download capacity and speed).			~				~					~			~					~				~	Expert1: Technical quality?? Expert3: Item
I am satisfied with the information I receive from the e-Government portal.				~				~				~			~					~				~	4, can you list some examples of

repending is relievance and clain, beering with experts comments	Appendix 1	1: Re	elevance and	l clarity	scoring wi	th experts	' comments
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I am satisfied with the quality of the service offered by the e- Government portal.			√				~		~	~			~			1	'needs'? Or define briefly what needs
I am satisfied with the way in which e-government service			1				1		~	~	~			~			mean and in what context?
Overall, I am satisfied with the services offered by the e- Government portal			 ~				√		~	√			✓			•	-
This Portal provides sufficient data.			1				~		~	~			~			~	Expert1:
Through this Portal, I get the data I need in time.			~			~			~	~			~			~	Items 3 & 7 are very
I am satisfied with the accuracy of this Portal.		~			~				~	1		 ~			~		similar. Expert3: Item
Data provided by this Portal meets my needs.			~				~		~	1			~			~	the portal or
Data provided by this Portal is in a useful format.			~				✓		~	1		~			~		the
Data provided by this Portal is clear.			~				~		~	~			✓			~	Expert1: Item
Data provided by this Portal is accurate.		~			~				~	~			~			~	to information
Data provided by this Portal is up- to-date.			~				~		~	~			~			~	used for Trust. Better to edit
Data provided by this Portal is reliable.	~			~					~	~			~			~	or delete.
The open data portal is easy to use. The open data portal is user friendly.	✓ ✓			~			✓		✓ ✓	 ✓ ✓ 			✓ ✓			✓ ✓	Expert1: Items 1&2 are not related to

Data provided by this Portal is			1		1		1		~		V		1	system
Machine Readable.														quality. Better
Data provided by this Portal and			1		1		1		~		 ✓ 		V	to delete.
the entire portal are secured.														Expert2: The
The open data portal provides			1		~		1		~		 ✓ 		V	use of letter p
helpful instruction for performing														for portal is
mytask														not consistent.
The open data portal provides fast			~		1		-		~		1		~	Expert1: Is
information access.														item no 9 is
It only takes a few clicks to locate		ľ	1		~		 ✓ 		~		1	-	V	reverse item?
the data.														If not, then the
It is easy to navigate within the	1	1	~		1	\square	-		~		- 1		√	word
open data portal.														cumbersome
I believe that this open data portal							-		~		1		~	is suitable for
is cumbersome to use.														this item.
														Better to
	1			~										change with a
														simple and
														more relevant
														word
											1		 ✓ 	EX2: Please
														add more
														items. It
														would be
														difficult to
My required datasets provided by			1		1				1					analyse with
this portal is free of charge.			•		v		•		v					one item.
														Furthermore,
														this latent
														variable will
														be
														insignificant

															when you test the model.
I will frequently use using open data provided by the portal in the future.			~			~		~		~		~		~	Expert3: Item 1, delete the word 'using'.
I will strongly recommend that others use it.	~			~				×		V		✓		V	Item 2, sentence suggestion: I will strongly recommend others to use open data. Expert1 : Item no. 2 dose not represent the construct, better to delete and add another representative item.

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