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Mohammed Aladalah
Monash University, mohammed.aladalah@monash.edu

Yen Cheung
Monash University, yen.cheung@monash.edu

Vincent C.S. Lee
Monash University, Vincent.CS.Lee@monash.edu

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Mohammed Aladalah, Faculty of Information Technology, Clayton, Monash University, mohammed.aladalah@monash.edu

Yen Cheung, Faculty of Information Technology, Clayton, Monash University, yen.cheung@monash.edu

Vincent C.S. Lee, Faculty of Information Technology, Clayton, Monash University, Vincent.CS.Lee@monash.edu

Abstract

Citizens may not always be right, but governments are recognizing their right to exercise more control over their public service experience. As government agencies increasingly explore the use of digital capabilities to empower citizens and increase their engagement, Gov2.0 has emerged as an enabler and an enhancer of citizen engagement. Government agencies that adjust their engagement models to include one or more of these tools stand to gain engaged digital citizens who are more empowered with positive engagement experiences. However, little research has been done on citizen empowerment to realize public value via citizen participation and satisfaction. Our understanding about the drivers that encourage citizen to participate via Gov2.0 is limited due to the lack of rigorous research that covers issues beyond the e-government field. Therefore, this paper discusses a trans-disciplinary model that identifies the relevant empowerment dimensions that affect citizen participation and satisfaction. This paper extends prior literature by evaluating citizen empowerment as a precedent of citizen participation and satisfaction, which in turn is expected to enhance public value. Further, it proposes a validated research instrument that can be employed in citizen's survey. It can also be used as an evaluation tool to identify, measure, and manage citizen participation via Gov2.0. Implications of the study suggest a need to consider citizen empowerment in understanding citizen participation and satisfaction.

Keywords: e-government, Gov2.0, citizens, empowerment, participation, satisfaction.

1   INTRODUCTION

Just like e-Commerce and e-Business, the concept of e-government emerged from the Internet boom. Using the Internet as a vehicle for selling/buying products and services, e-Commerce has become an accepted legal method of business transactions. E-Business, expanded the e-Commerce scope to include business processes and practices. As a consequence of the rapid development of the private sector, the public sector began to adopt new Information and Communication Technologies (ICTs). However, e-government is not restricted to citizens' use of the Internet or government systems. E-government has some unique features that make it more promising when compared to e-Commerce or e-Business. Some of these features are the lack of direct competition, well-defined policies and procedures, long-term projects and processes, and extreme information and power imbalance between stakeholders (Peristeras et al. 2009). On the other hand, governments are operating in an increasingly complex environment of constrained resources and must comply with an extended set of policy objectives. In recent years, the quest to improve government efficiency and effectiveness by incorporating ICTs have thrived in the public sector (Grönlund & Horan 2005).

During the last decade, many government agencies have begun to use Web 2.0 technologies (hereafter Gov 2.0) to extend their reach and visibility in an efficient and effective manner (Dunleavy & Margetts 2010; Osimo 2008). Gov 2.0 supplements the traditional means of communication by creating, disseminating and collecting information outside the traditional communication methods (Mergel 2012). To further define Gov2.0: "The use of social networking platforms, content creation and sharing tools, blogs, and microblogging tools within government organisations and their interactions with citizens" (Mergel 2012, p.34). Moreover, Gov 2.0, as in the case with many new ICTs, have transformed citizen-government relationship by lowering the barriers for citizen participation. Gov2.0 created a platform for citizen-government collaboration and cooperation supported by the new culture of "need to share" (Dawes et al. 2009). Gov2.0 is not just a technology, it is a philosophical shift in the way citizens engage with governments, changing their role from being a customer to being both an owner and contributor. Theoretically, Gov 2.0 was predicted to increase citizen engagement and improve services, however, in a review of both, e-government literature and many government agencies Gov2.0 tools and applications, show that previous expectations have not been met (Millard 2010; Osimo 2010).

Despite the importance of citizen involvement via Gov 2.0 to achieve public value, the understanding of its full potential is rather limited. One of the difficulties that have hindered previous research on public value has been a lack of distinction amongst public value contributing drivers, public value itself, and outcomes of public value. Without a clear distinction, differences between these constructs are blurred. For instance, many researchers have agreed with O'Flynn (2007) that citizen participation is a requisite to public value. Although there is an agreement on the importance of citizen participation to understand public value, no consensus on its relationship with public value exists. It is unclear whether it is an antecedent to public value, is public value, or is an outcome of public value. This paper complements the e-government literature by clarifying the roles and relationships between empowerment, participation and satisfaction to achieve public value.

Theoretical criticisms of e-government research often come from over-emphasizing its reference disciplines theories, i.e. public administration and information systems (IS). Public administration research is accused of only focusing on institutions, which ignores its surrounding environment. This view does not examine citizen practices and overlooks the effect of technology in use. On the other hand, IS research mostly deal with user practices and does not consider the context and government agencies, thus providing a limited perspective to the research field. From the e-government literature, there are many critiques of poor theoretical formulations, which lead to calls to learn from other disciplines (Chen et al. 2007). The field of e-government is still in its infancy and should benefit from diverse disciplines to enhance its knowledge and academic legitimacy (Heeks & Bailur 2007).

This leads to the objectives of the paper: to view Gov 2.0 through different theoretical lenses such as citizen empowerment and public value co-creation with e-government stackholders using a trans-disciplinary approach. Based on a comprehensive literature review of relevant disciplines, this paper proposes a model and an instrument to enrich the understanding of citizen empowerment, participation, and satisfaction via Gov 2.0 to realise public value. A parsimonious model (Weber 2012), with a manageable number of constructs should provide a strong foundation for the study of public value vis-à-vis Gov2.0, which is the context of this paper. This paper is organised as follows: section 2 synthesizes and discusses the research themes (citizen empowerment, participation, and satisfaction) to achieve public value in the context of Gov 2.0 from a trans-disciplinary perspective. The proposed model and a set of hypotheses developed to test the model are presented and described in section 3. Next, we present the research methodology and results of validating measures to show the usefulness of the model in section 4 and 5. The paper concludes with a discussion of the findings and implications for IS theory and practice.

2 THEORETICAL BACKGROUND

2.1 Citizen empowerment

The empowerment theory is the foundation of the paper as it motivates citizen participation via Gov 2.0 (Zimmerman & Rappaport 1988). The empowerment concept has been widely used in other domains such as psychology, management, and education (Spreitzer 1995; Ugboro & Obeng 2000; Warschauer et al.1996). Empowerment theory is still an emerging concept in e-government research (Li & Gregor 2011). However, many e-government literature view empowerment as a set of techniques without considering its nature or the underlying processes and the relationship between citizen empowerment and participation (Aladalah et al. 2015a). Macintosh (2004), proposed that empowerment is the highest level of citizen participation via ICTs. Starting with enabling, when providing relevant information, and then engaging when consulting a wider citizens, and finally, empowering, when citizens influence and participate in the process. In contrast to the conventional viewpoints of empowerment in e-government literature, this paper distinguishes between citizen empowerment and citizen participation. Barki and Hartwick (1994) argued that there is a difference between user involvement and user participation in the process of IS development. Involvement indicates the empowerment of a system user, whereas participation is about the activities that users complete during the system's development process (Barki and Hartwick, 1989). In accordance with Barki and Hartwick, 1994, this paper views citizen empowerment as a psychological state leading to citizen participation and citizen satisfaction. Further, citizen participation and satisfaction mediates the relationship between empowerment and public value (See Figure 1).

2.2 Citizen Participation

Early researchers predicted the influence of ICTs technologies on citizen participation, highlighting the global connectivity (Brady et al. 1995). Hauben et al. (1997) introduced the concept of "netizens" (Internet citizens) or "citizens of the world". Moreover, Tolbert et al. (2008) defined citizen participation via online means as digital citizenship. Recent improvements in information gathering, processing, and understanding, along with enhanced bandwidth and network connectivity signal the evolution for citizen participation. In a seminal paper, Arnstein (1969) presented a "ladder" of citizen participation, which describes citizen participation as citizen power. The underlying assumption of power here is as a zero-sum game: citizens gain power, whenever governments give it up. This paper has the opposite view, citizen participation via Gov2.0 creates a win-win scenario: citizen input enhances public value as well as providing the government with justifications for the decision-making process (Aladalah et al. 2015b). Citizen participation is defined by the World Bank as a two-way interaction between citizens and governments, which give citizens a stake in decision-making with the objective to improve and enhance intermediate and final outcomes (OECD 2014, p5). Building on this understanding of citizen participation, this paper proposes a definition of citizen participation as the

use of digital capabilities to create or enhance the communication channels, which facilitate the collaboration between citizens and governments. The digital capabilities of Gov 2.0 tools and application, enabled government agencies to involve citizens (Linders 2011). There is currently a paucity of research into this issue despite its centrality to the public value concept (Bannister & Connolly 2014).

2.3 Citizen Satisfaction

IS research highlighted the relationship between attitudes and perceptions in regards to participation and satisfaction (Venkatesh et al. 2003). Prior research has confirmed that intention influences behaviour (Ajzen 1991; Davis 1989). As the use of IS helps individuals to meet their information needs, this will in turn lead to citizen satisfaction. Moreover, usage and satisfaction are good indicators of the public service success (Anderson et al. 2008). According to Chan et al. (2010) citizen satisfaction can be achieved by acknowledging citizen needs and expectations of public services. In the past, the mere existence of customer service was itself deemed to be sufficient, and citizens were often thankful for its existence regardless of its quality. Verdegem and Verleye (2009) argued if the experience of public services exceeds its expectations, citizen satisfaction will increased and vice versa. Venkatesh, Chan, and Thong (2012) demonstrated the importance of service attributes in citizens' intentions, adoption and satisfaction with e-government services. This paper argues that citizen participation with Gov2.0 may lead to citizen satisfaction. Furthermore, citizen satisfaction with Gov 2.0 has a positive influence on public value. Therefore, these studies support our argument of the participation-satisfaction relations depicted in Figure 1. Gov2.0 users' positive experience is more likely to increase their satisfaction. On the other hand, satisfaction appears to be positively correlated with higher levels of public value, which is discussed next.

2.4 Public value

Moore's (1995) strategic triangle proposed three broad criteria for public value: creating something substantively valuable, legitimate and politically sustainable, and operationally and administratively feasible with available internal and external capabilities. Other researchers, viewed public value from a different perspective. For instance, public value is not only limited to public services efficiency, but is also associated with creating social and economic enhancements for the public (Accenture, 2008). Stoker (2006) proposed four key propositions for public value: citizen interventions, citizen involvement, openly relational approach, and adaptability. Meynhardt stated that public value starts and ends within the individual (2009, p.215). Citizens can accurately articulate what public value they want and need (Alford & O'Flynn 2009). These arguments suggest that the public value concept is embedded in citizen preferences. In trying to conceptualize public value, Kelly et al. (2002) developed three key dimensions of public value: 1) services; 2) outcomes; and 3) trust, legitimacy and confidence in government. Services provide the means to deliver public value, while outcomes cover higher objectives (e.g. education). For example, schooling services may deliver benefits for individuals, but they also deliver public educational outcomes for the society. This differentiates between individuals' value, and public value, and also dismisses the idea of aggregating individual preferences to reflect public value. Hence, public value is provided by government to its citizens rather than to individuals (Alford & O'Flynn 2009). Stoker (2006) supported this argument by describing public value as more than a sum of individual preferences of the users or producers of public services; it is collectively constructed through involvement. The third dimension proposed by Kelly et al. (2002) is about trust, legitimacy and confidence in government. Failure of trust, even if services and outcomes are sufficient, will neglect public value.

This paper argues that trust can be achieved through citizen participation and satisfaction, which is crucial to public value. Gov2.0 availability and usage will help governments to tap on the collective public value while responding to individual preferences. An example from the private sector is Google's artificial intelligence search that recognises individuals' interests as part of a larger grouping of citizens such as senior citizens (Weinberger 2002). Thus enabling governments to easily target

specific groups of the community. Public preferences are usually formed in public debates dating back to Plato's times. Citizen engagement in public matters is desirable because it challenges and changes underlying preferences (Kelly et al. 2002). Therefore, this paper proposes that citizen participation and satisfaction via Gov2.0 could be an appropriate manifestation of public value as shown in Figure1.

3 THE PROPOSED RESEARCH MODEL

The research model focuses on the impact of citizen empowerment, participation and satisfaction in achieving public value (see Figure 1 for research model and Table 1 for construct definitions). Building on empowerment theory and the other research themes discussed in Section 2: citizen participation, satisfaction and public value, we identify three pathways through which citizen empowerment impacts on public value. The first two are indirect pathways: (1) the indirect impact of citizen empowerment via the mediating role of citizen participation and (2) the indirect impact of citizen empowerment via the mediating role of citizen satisfaction. The third is a direct pathway, where citizen empowerment impact on public value without any mediating role. We theorize that the first two might have a higher impact on public value than the last direct pathway. The research model is a novel contribution to theory in that it acts as a preliminary explanation of focusing on citizen empowerment dimensions that via citizen participation and satisfaction will potentially achieve public value. The model differs from existing research on public value of Gov2.0 (Hui &Hayllar 2010; Rowe & Frewer 2000) by focusing on how public value can be achieved from Gov2.0 capabilities.
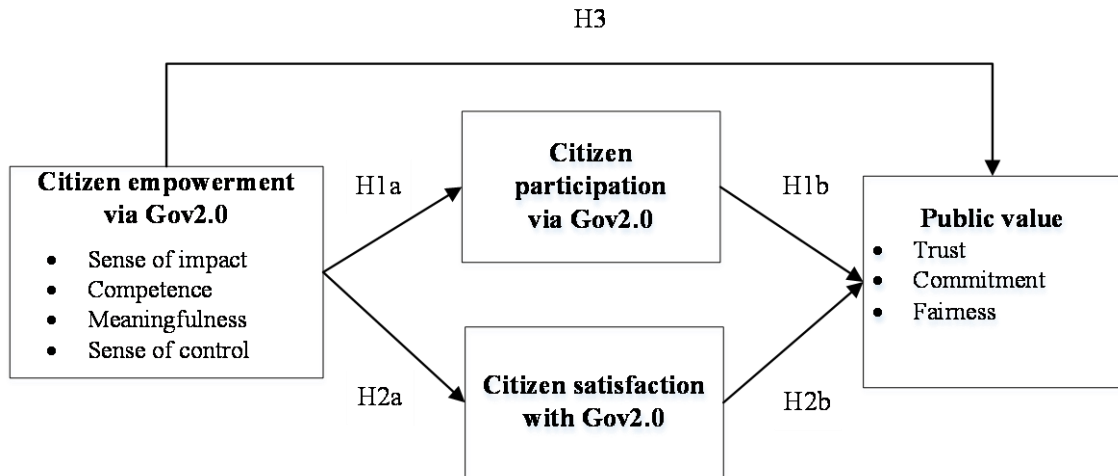

Figure 1: Conceptual representation of the proposed model

3.1 Construct Definition

According to Mackenzie's et al. (2011) scale development procedure; the first step is to develop a clear conceptual definition of constructs. While there are a number of definitions for the proposed model constructs, none were appropriate for the purposes of our research, because they focused on the government perceptive (Reddcik 2011) or they had an underlying assumption about the technology platform (Kraemer& King 2006). Lewis et al. (2005) argued that a good definition should be first, derived from pre-existing literature, practice, or logic. Second, it should specify the level of analysis to avoid confusion in the resulting question pool. Third, the purpose should be included to inform researchers as to what the construct generally leads to. Finally, it is important to provide a limit to the scope by addressing the constraints of the definition (i.e. what it is not). Following these guidelines, this paper specifies the domain of constructs by stating that they are designed to assess public value within the e-government field. We investigate the model constructs at the individual level (i.e., citizens), as they are the targeted participants. The definitions of constructs in the research model are

provided in Table 1.

Construct	Conceptual Definition	Reference
Citizen empowerment	Where people create or are given opportunities to control their own destiny and influence the decisions that affect their lives.	Zimmerman (1995)
Citizen participation	The level of citizens' activities and behaviours in Gov2.0.	Barki and Hartwick (1994); Hand and Ching (2011).
Citizen satisfaction	Positive feeling and pleasurable experience about using Gov2.0	Li and Gregor (2011)
Public value	Citizens want and need and assure its relevance to stakeholders; what the public values; what impacts on values about the 'public'.	Moore (1995); Cordella and Willcocks (2010); Meynhardt (2009).

Table 1. Definition of constructs in the research model

To conceptualize citizen empowerment, we reviewed the relevant literature to arrive at a set of four constituent dimensions for citizen empowerment: sense of impact, competence, meaningfulness and sense of control (Thomas &Velthouse 1990). A conceptual definition of the four dimensions of citizen empowerment is presented in Table 2.

Citizen empowerment dimension	Conceptual Definition	Reference
Sense of impact	The degree to which individual can influences the outcome of an activity; belief that one's behaviour could have an impact; performance-outcome expectancy.	Bandura (1986); Thomas and Velthouse, (1990)
Competence	The belief that one is able to do the relevant behaviour competently; self-efficacy; effort-performance expectancy.	Bandura (1986); Thomas and Velthouse (1990)
Meaningfulness	The value and importance of the task or its purpose, compared to one's standards.	Nehari and Bender (1978); Thomas and Velthouse (1990)
Sense of control	The degree to which individual is having a choice and autonomy in an activity	Deci and Ryan (2000);Thomas and Velthouse (1990)

Table 2. Definition of citizen empowerment dimensions

We conceptualize empowerment into four dimensions and argued that they are highly important and relevant to the research context, i.e. Gov 2.0. When citizens influence the decision-making and experience empowerment over the citizen-government relationship, they are likely to increase their participation and subsequently be satisfied with Gov 2.0 (See Figure 1). We reviewed the public administration and political science literature to identify public value dimensions and found that it is generally divided into two main perspectives: public administration and citizens. As citizens are the main focus of this paper, we conceptualize public value as a multi-dimensional construct composing of trust, commitment and fairness. Trust refers to the belief that a government agency will use Gov 2.0 in the best interest of its citizens (Mayer et al.1995). Commitment refers to citizen support and acceptance of the outcomes of Gov2.0, which provides legitimacy and politically sustainable to a government agency (Meyer &Allen 1991). Fairness refers to citizen judgment and assessment for the appropriateness and rationality of the equity and compliance processes with the use of Gov2.0 (Bannister & Connolly 2014). A conceptual definition of the three dimensions of citizen public value is presented in Table 3. Trust is at the heart of the relationship between citizens and government. Citizen participation encourages a feeling of belonging, boosts government legitimacy, and increases confidence that government is likely to make good decisions. Citizens often value equity and due processes in public services, whether the service is received by themselves or others (Kelly et al. 2002). In other words, fairness itself creates public value. Kelly et al. (2002) assessed the key dimensions of public value and concluded that there are many significant components including:

citizen involvement, satisfaction, trust, and procedural fairness. However, we agree with trust and fairness and considered citizen participation and satisfaction as antecedents to public value.

Citizen public value dimension	Conceptual Definition	Reference
Trust	The degree of citizen trust in the government agency providing Gov2.0 and citizen trust in the technology (i.e.Gov2.0) through which interaction are executed.	Lee and Turban (2001)
Commitment	The degree of citizen attachment to and acceptance of the desired outcomes.	Meyer and Allen (1991)
Fairness	The degree of citizen assessment of the appropriateness and rationality of the equity and compliance processes.	Bannister and Connolly (2014); Talbot (2011)

Table 3. Definition of public value dimensions

3.2 Hypotheses Development

The underlying mechanisms for the research model relationships are explained below. To validate the causal relationships in the model, we developed the following testable hypotheses.

Mediation Effect of citizen participation and citizen satisfaction between citizen empowerment and public value

The relationship between citizen empowerment and citizen participation are based on the theoretical and empirical work reported by Zimmerman and Rappaport (1988). By empowering citizens to undertake the action of participation via Gov2.0 (e.g., reporting issue, providing feedback), they will feel the ownership of the activity, which is an intrinsic motivation to continue the activity (Hackman & Oldham, 1980). Higher levels of empowerment are expected to result in commitment and involvement (Sjoberg et al., 1983). Several prior studies in the field of public adminstration also suggested that citizen participation is an antecedent of public value (Kelly et al. 2002; Meynhardt, 2009; Stoker, 2006). Public value may emerge through dialogue and conversation between citizen and public officials, who should be facilitating the process of co-creation and defining public value with citizen (Rhodes &Wanna 2007). Based on the above argument, we propose the following hypotheses:

H1a: Citizen empowerment has a positive impact on citizen participation via Gov 2.0.

H1b: Citizen participation via Gov 2.0 mediates the impact of citizen empowerment on public value such that enhances the positive effect of higher citizen empowerment on public value.

Prior studies explicitly present empowerment as a direct antecedent of satisfaction.The service management literature suggested that customer satisfaction is the result of customer feeling of having control during the service interaction (Parasuraman et al.1985). Empowerment taps a wider range of needs, wants and benefits of citizen satisfaction. Citizens are more likely to attain higher levels of satisfaction during the empowerment process and citizen satisfaction in turn increases public value. Thus, we propose the following hypotheses:

H2a: Citizen empowerment has a positive impact on citizen satisfaction with Gov2.0.

H2b: Citizen satisfaction with Gov2.0 mediates the impact of citizen empowerment on public value such that enhances the positive effect of higher citizen empowerment on public value.

Direct Impact of citizen empowerment on Public value

Empowerment leads to higher sense of control, flexibility, and the perception of individual's impact on outcomes. Research on marketing has found that online customers who perceived empowerment during their shopping experience are more likely to have loyalty and commitment (Koufaris, 2002). Thus, we propose the following hypotheses:

H3: Citizen empowerment has a direct positive impact on public value

However, we argue that the indirect path through citizen participation *(H1)* and citizen satisfaction *(H2)* will lead to higher public value than the direct path in isolation *(H3)* because of the emergent properties of the mediation interaction effects. At the same time, citizen participation and citizen satisfaction are direct antecedents of public value and singularly or jointly, they will affect the creation of pubic value.

4   RESEARCH METHODOLOGY

To empirically test the proposed model, we developed a survey instrument. In order to ensure the accuracy and validity of the instrument and to reduce the measurement error, we validated the instrument by following the development guidelines in the literature (MacKenzie et al. 2011; Moore & Benbasat 1991; Lewis et al. 2005), which is summarized in Table 4.

Phase	Description
Construct definition	Constructs definition were derived from a variety of sources including pre-existing definitions, focus groups, and mostly prior relevant literature reviews (section 3.1).
Item generation	Scales were adopted from relevant literature when possible. Items were developed for other constructs (section 4.1).
Focus groups	Focus groups were conducted with academic and experts in the field. Four interviews were conducted with senior IS academics. Minor modifications were made to the items. Five interviews were conducted with e-government managers from ministerial departments and local government. Several items were refined based on empirical evidence.
Q-sorting	A two-stage Q-sorting exercise was conducted to improve construct validity. This exercise was conducted using the Qualtrics Q-sorting feature, in which participants were asked to drag and drop the randomized items into the piles based on construct definitions. Four IS academics, and practitioners participated, two in each stage, which led to modifications of the wording of several items (section 4.2).
Pre-testing	To further improve the content validity, three academics completed the initial questionnaire. Minor changes were made to the wording, length and structure of the questionnaire.
Pilot test	30 academics, professionals and students in the e-government filed completed the questionnaire. Minor changes were made based on their feedback (section 4.3).

Table 4. Instrument development process

4.1   Conceptualization and Operationalization

After conceptually defining all the constructs, they were operationalized using validated items from prior related researches. We surveyed the literature for validated measures wherever possible, and modified these items to fit the Gov2.0 context. For some constructs, scales were developed using the development guidelines in the literature (Lewis et al. 2005). Prior empirical work on e-government and IS supplied the foundation for wording the items. Items for measuring public value were adapted from public administration studies and political science (e.g., Bannister & Connolly 2014); Talbot (2011). The four dimensions of citizen empowerment: sense of impact, competence, meaningfulness and sense of control were considered be formative variables for citizen empowerment. Similarly, trust, commitment and fairness were considered be formative variables for public value. The rest of the constructs in the model were evaluated through reflective indicators. In order to ensure the reliability and validity of the instrument (Neuman 2011), and to confirm that respondents fully understand the questions, we used multiple indicators to measure each construct. Keeping a measure short is effective to minimise response bias caused by boredom or fatigue. Harvey et al. (1985) suggested that at least four items per scale are needed to test the homogeneity of items within each latent construct. The final validated questionnaire consists of four items for each construct, which gives a total of thirty-six statements. The final measures of constructs (items) are presented in Table 5.

Construct	Items	Reference
Citizen empowerment		
Sense of impact	**SI1.** I believe that Gov2.0 allows me to influence the outcome of an activity when interacting with a government agency. **SI2.** When using Gov2.0 to report problems I feel that I am helping. **SI5.** Using Gov2.0 makes me feel that my voice is been heard. **SI6.** Overall, using Gov 2.0 helps me to achieve the desire outcome.	Bandura (1986); Thomas and Velthouse (1990)
Competence	**CC2.** I would feel comfortable using Gov2.0 on my own. **CC4.** I believe that I am able to use Gov2.0 competently. **CC5.** For me, feeling comfortable using a Gov2.0 on my own is important. **CC8.** Overall, I believe that I am confident to use Gov2.0.	Bandura (1986); Thomas and Velthouse (1990)
Meaningfulness	**MF1.** Using Gov2.0 was a relevant experience for me. **MF3.** Using Gov2.0 was a rewarding experience for me. **MF4.** Using Gov2.0, encourage me to participate more than I usually do using other means. **MF7.** Overall, using Gov2.0 made me more open to sharing.	Nehari and Bender (1978); Thomas and Velthous (1990)
Sense of control	**SC2.** I feel that Gov2.0 offers me more choices to interact with a government agency. **SC3.** Using Gov2.0 gives me greater flexibility to interact with a government agency. **SC4.** When using Gov2.0, I fell that I could have influence over the government policy and legislation. **SC6.** Overall, I feel Gov2.0 offers positive perception of power over the relationship with a government agency.	Deci and Ryan (2000); Thomas and Velthouse, (1990)
Citizen participation	**PT2.** I would spend a lot of time sharing information about my needs and opinions with a government agency using Gov2.0. **PT3.** I would put a lot of effort into expressing my personal needs to a government agency using Gov2.0. **PT4.** I would always provide suggestions to a government agency using Gov2.0 to improve the overall experience. **PT5.** Overall, I would be very much involved in Gov2.0.	Barki and Hartwick (1994); Hand and Ching (2011).
Citizen satisfaction	**SF1.** I am pleased with my use of Gov2.0. **SF3.** I am contented with my use of Gov2.0. **SF4.** Using Gov2.0 to interact with a government agency meets my expectations. **SF5.** Overall, my experience of Gov2.0 is satisfactory.	Li and Gregor (2011)
Public value		
Trust	**TS1.** I believe that the use of Gov2.0 would maintain trust and legitimacy of the government agency. **TS2.** I trust the government agency to keep my best interests in mind. **TS4.** The government agency can be trusted to carry out Gov2.0 interactions faithfully. **TS6.** Overall, Gov2.0 is now a robust and safe environment in which to interact with a government agency.	Moore, (1995); Lee and Turban (2001)
Commitment	**CM2.** I support the use of Gov2.0 to deliver public services. **CM3.** Gov2.0 provides me with attachment to government outcomes. **CM5.** Gov2.0 enables me to accept the government outcomes. **CM6.** Overall, Gov2.0 make me committed to interact with a government agency.	Cordella and Willcocks (2010);Meyer and Allen (1991)
Fairness	**FA1.** Gov2.0 provides equity in public services. **FA2.** Gov2.0 enables due processes in public services. **FA3.** Fairness is very important to me whether the service is for myself or others **FA4.** Overall, I think Gov2.0 offer fairness	Bannister and Connolly (2014); Talbot (2009);Meynardt (2009)

Table 5: List of measurement items

4.2   Q-sorting

Q-Sorting is usually used to assess the reliability and validity of a questionnaire's measurements that are developed for a survey research (Nahm et al. 2002). The process of Q-sorting is intended to empirically screen the items to determine whether each item on the questionnaire fairly represents the corresponding construct (Lewis et al. 2005). The method involves two stages, each stage consisted of different pairs of judges. Two participants were IS academics, one participant was a consultant in an e-Government program, and one participant was an IT manager in a government ministry. Participants

were grouped in pairs, an academic and a practitioner in each round. Judges were allowed to ask any questions related to the sorting procedures but no collaboration between the judges was allowed (Brown 1980). To evaluate and assess the measurement validity and reliability, two evaluation criteria were used: the inter-judge agreement level calculated by Cohen's Kappa Index (Cohen 1960) and the hit ratio (Moore & Benbasat 1991). For Kappa, no general agreement exists, however, many scholars suggested the following: values from (.76 -1.00) are deemed to be excellent agreement, values from (.40 - .75) are considered to be fair to moderate agreement, and values from (.39 or less) are deemed poor agreement (Landis & Koch 1977). As for the hit ratio, the higher the percentage of items placed in the correct construct, the higher the degree of inter-judge agreement occurred.

	Actual											
Construct	1	2	3	4	5	6	7	8	9	N/A	Total	Hits
1	8	1	1	1						1	12	67%
2	2	12	1	1							16	75%
3		1	11	2							14	79%
4	1		1	12							14	86%
5			1		13	1				1	16	81%
6				1	1	8					10	80%
7							14				14	100%
8						1	2	8		1	12	67%
9							2	1	7		10	70%
Total items placement: 118			Number of hits: 93			Overall hit ratio: 79%					

(left margin vertical label: Theoretical)

Table 6. First sorting stage

In the first stage, a pool of 59 items was presented randomly, and each judge was present with a 9 construct along with their definition and the 59 items, and was asked to drag and drop them into the constructs piles. In addition, to the constructs, a "Not Applicable" category was included to ensure the judges' freedom to choose, thereby not forcing them into a particular category. In this round, the two judges agreed on 42 out of the 59 items; an average "hit ratio" of 79 percent was attained as 93 of 118 items were correctly classified as shown in Table 6. Computed Kappas also averaged above 0.80 (Cohen 1960). The first sorting round resulted in a rewording of the ambiguous items and also the deletion of undetermined items. Specifically, 21 items were deleted, and 8 items were reworded. Two additional items were added to the second round, following the judge's suggestions.

	Actual											
Construct	1	2	3	4	5	6	7	8	9	N/A	Total	Hits
1	8										8	100%
2	1	9									10	90%
3			7	1							8	88%
4			2	6							8	75%
5					11	1					12	92%
6						8					8	100%
7							7		1		8	88%
8							1	8		1	10	80%
9								1	7		8	88%
Total items placement: 80			Number of hits: 71			Overall hit ratio: 88%					

(left margin vertical label: Theoretical)

Table 7. Second sorting stage

The second sorting stage consisted of 40 items for the constructs. The two judges agreed on 36 out of the 40 items, a hit ratio of 88 percent was registered, almost 10% improvement on round one, as 71 of 80 items were correctly categorised as shown in Table 7. Whereas calculated Kappas yielded values of above 0.90. Following Landis and Koch (1977) guidelines for acceptable levels for Cohen's Kappa Index, which deemed above 0.76 as an excellent agreement level, we decided to stop the Q-Sorting, with Cohen's Kappa of 0.90, and the average placement ratio of 88%, indicating a high level of

reliability and construct validity. Overall, the procedures adopted are deemed as adequate in satisfying the content validity. The instrument was then ready for piloting.

4.3 Pilot test

The purpose of this stage was to evaluate the generated items and the overall format. Similar to the pre-testing stage, the pilot test respondents should be chosen based on the unit of analysis of the model. As the final sample for this research are citizens, this phase involved 30 academics, practitioners and students in the e-government realm who completed the questionnaire to review the overall structure, clarity of the instructions, and the items' classifications and accuracy. Pilot test respondents were asked to complete the questionnaire, and then comment on the degree of difficulty in completing the questionnaire. The questionnaire investigated the proposed model constructs on a five-point Likert-type scale (Likert 1932) ranging from 'strongly agree' to 'strongly disagree'. Furthermore, the pilot test participants were interviewed by the researcher for possible additional suggestions for improvement. The final output of this stage enhanced the questionnaire quality and contributed to the final design of the questionnaire. After this, four items (CC7, PT1, PT6, CM1) were dropped from the instrument leaving a total of 36 items.

5 ANALYSIS AND RESULTS

5.1 Initial reliability

To test the initial reliability of the instrument, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Barlett's Test of Sphericity were calculated. The correlation matrix revealed presence of many coefficients of 0.3 and above. This was considered high enough to ensure that the items retained were adequate measures of the constructs. The score of Bartlett's test of sphericity is statistically significant (p-value <.000) confirming the statistical correlation among the variables. The result of the KMO was excellent at 0.870. These measures indicate the suitability of data for the purpose of conducting factor analysis and provided evidence of initial reliability.

5.2 Construct validity

Construct validity is explored by examining its indicators relationship with other constructs, both related (convergent validity) and unrelated (discriminant validity) (Pallant 2011). Evidence of convergent validity is demonstrated if the indicators load strongly on their associated constructs (p>.50) as suggested by Hair et al. (2006). Besides convergent validity, the constructs should also be tested for discriminant validity. Discriminant validity is achieved if the indicators are sufficiently different from other unrelated indicators and load stronger on their associated constructs than on any other constructs. Items that have loadings below the threshold should be dropped from the final instrument. Additionally, items loading on multiple constructs should be dropped as well. However, Lewis et al. (2005) suggested that subjective judgement should be applied, so that items with strongly justified theoretical relevance are not lost in the process. Principal component analysis with Varimax rotation was used to test the validity of the instrument. The final instrument of 36 items representing 9 distinct constructs was tested for the purpose of checking the robustness of the measurement. The factor analysis indicated a consistent grouping with the identified constructs, ensuring the accuracy of the proposed constructs. All the 36 items have loadings on their related constructs over the cut-off of 0.50, thereby demonstrating convergent validity. Also, all items load stronger on their associated construct than on other constructs, suggesting good discriminant validity. Thus, the results indicate that the constructs can be used to test the proposed research model. Table 8 presents the final factor loadings.

Items ID	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
SI1	0.784								
SI2	0.707								
SI5	0.723								
SI6	0.699								
CC2		0.819							
CC4		0.774							
CC5		0.658							
CC8		0.603							
MF1			0.795						
MF3			0.737						
MF4			0.703						
MF7			0.630						
SC2				0.745					
SC3				0.686					
SC4				0.627					
SC6				0.616					
PT2					0.788				
PT3					0.741				
PT4					0.664				
PT5					0.627				
SF1						0.827			
SF3						0.862			
SF4						0.623			
SF5						0.597			
TS1							0.917		
TS2							0.864		
TS4							0.738		
TS6							0.667		
CM2								0.755	
CM3								0.738	
CM5								0.638	
CM6								0.588	
FA1									0.764
FA2									0.709
FA3									0.701
FA4									0.686

Table 8. Summary of factor analysis

5.3 Final reliability

Cronbach's alpha is an indicator of internal consistency, assessed by examining the average correlation of each construct's item with all other items (Pallant 2011). Cronbach's alpha is computed for each of the construct components determined from the factor analysis, using the same data (Cronbach 1971). According to Hair et al. (2006), Cronbach's alpha is the most used measure of reliability with a range from 0 (completely unreliable) to 1 (perfectly reliable). An alpha statistic of 0.60 to 0.70 is deemed to be the lower limit of acceptability and sufficient for exploratory research, but 0.8 or higher is inevitably more desirable, and beyond .90 could pose a problem of multicollinearity (Nunnally 1978). The reliability test was conducted on the pilot study data to estimate the internal consistency of each group of items for every construct. The reliability function of the Statistical Package for the Social Sciences (SPSS) was used to calculate Cronbach's alpha. The results show that the reliability results of the constructs range from .79 to .93, which indicates statistically significant results because they fall within the recommend values. Therefore, construct reliabilities for all factors are deemed to be adequate. Table 9 shows the reliability of the final instrument and the alpha coefficients of the individual variables.

Construct	Number of items before Q-sorting	Number of items before pilot study	Number of items after factor analysis	Cronbach alpha
Sense of impact	6	4	4	0.88
Competence	8	5	4	0.87
Meaningfulness	7	4	4	0.82
Sense of control	7	4	4	0.85
Citizen empowerment	28	17	16	0.93
Citizen participation	8	6	4	0.74
Citizen satisfaction	5	4	4	0.79
Trust	7	4	4	0.84
Commitment	6	5	4	0.74
Fairness	5	4	4	0.77
Public value	18	13	12	0.79
Total	59	40	36	

Table 9. Instrument reliability

6   DISCUSSION AND IMPLICATION

This paper extends our understanding of citizen empowerment in the context of Gov 2.0 to achieve public value. It also contributes to the understanding of public value by formalising its drivers (i.e. citizen empowerment, participation and satisfaction) and outcomes such as trust and commitment. This paper will provide insights into the opportunities for using Gov2.0 to increase citizen participation in e-government initiatives and programs. We constructed and empirically examined a trans-disciplinary model that encompasses a comprehensive set of constructs and dimensions to win digital citizens. Thus, government agencies could use our validated instrument to understand and detect important factors influencing citizen participation via Gov2.0. This paper offers several directions for future research. First, we have identified citizen participation and satisfaction as mediator constructs for public value via Gov2.0. Identifying the dimensions of these two constructs is an important research direction to follow. Second, we have proposed a research model, which describes how citizen empowerment might enhance public value via Gov 2.0. However, it is essential to test the model with a specific Gov2.0 platform (e.g., Facebook and Twitter). This will provide a better understanding of citizen-government relationship in practice.

Third, we have proposed three pathways through which citizen empowerment impacts on public value and three hypotheses which need to be empirically tested. Specifically, Structural Equation modelling (SEM) is suggested to test the proposed mdoel, with partial leastsquares (PLS) technique, which allows concurrent assessments of the measurement scores and analyses the strength and direction of hypotheses relationships (Chin et al. 2003). An important aspect of this empirical research will be testing whether the first two indirect pathways: (1) the indirect impact of citizen empowerment via the mediating role of citizen participation and (2) the indirect impact of citizen empowerment via the mediating role of citizen satisfaction, might have a higher impact on public value than the third pathway, where citizen empowerment impact directly on public value. Finally, despite the steps carried out to validate the model and ensure its reliability, it could be further enhanced. Item measures were subjective using participant perception and were based on a Likert-scale. Objective measures such as actual citizen participation and interactions (e.g. number of followers or friends, reposting or retweeting) of a specific government agencies Gov2.0 platform may provide more insights and complement our findings. While we have used exploratory factor analysis, a confirmatory analysis using other large samples are essential. This would also increase the proposed model and instrument validity and generalizability. Last but not least, for complex problems like citizen engagement with government agencies via an ICT platform, a trans-disciplinary research approach provides far richer insights into our understanding of these issues than the single lens perspective of traditional disciplines.

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