Gov2.0: Public Value Enabler

Mohammed Aladalah

Bachelor of Science (King Fahd Security College)
Master of Business Information Systems Honours (Monash University)

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Abstract

Taking an empowerment perspective, this thesis examines the process of public value (PV) co-creation via governments' use of Web 2.0 applications (hereafter Gov2.0). Gov2.0 and PV have increasingly been an important focus in the fields of information systems (IS) and public administration (PA). These two fields have separately developed a research agenda to promote open government initiatives that seek to promote innovation technologies (e.g. Gov2.0), most notably through the notion of transparency, participation, and collaboration to realise PV. This research takes a trans-disciplinary approach that offers an integrative perspective of PV via Gov2.0. This research also responds to the call for investigation of Gov2.0 using PV frameworks as the underlying approach. Following the mapping of the IS discipline, this theses is situated within the behavioural adoption studies which aims to understand how individuals and organisations perceive new technologies (e.g. Gov2.0) and their attitude and response to them. In the PA discipline, the thesis is located in the new public administration paradigms such as new public management (NPM) and digital-era governance (DEG). Since this thesis focuses mainly on IS and not PA, these paradigms will not be covered in detail; however, as they are closely related to e-government, a trans-disciplinary approach will be used.

Government agencies are increasingly opening up avenues of interaction to allow citizens to reach them on platforms such as Gov2.0. For this purpose, Gov2.0 platforms typically provide a space to facilitate citizen engagement, aiming to create PV. However, the current level of engagement has fallen far below expectations, indicating that government agencies are finding it challenging to attract and retain Gov2.0 users. To engage effectively and enhance PV, there needs to be a synergy between citizens and governments. The proposed Gov2.0 Public Value Model (GPVM) in this research aims to explain the synergy between citizens and governments that is needed to create PV via Gov2.0. The theoretical foundation of the GPVM is built on theories such as empowerment and co-creation.

This research was guided by a pragmatism paradigm and employs a mixed methods approach comprising online questionnaires, and semi-structured interviews with Saudi Arabian citizens and government officials. Using sequential explanatory strategies of enquiry (i.e., quantitative approach followed by qualitative approach), this research achieved significant insights into the process of

co-creation via Gov2.0, and how this relates to realising PV. The use of a mixed methods approach allowed the triangulation of the findings and also provided a complementary and comprehensive understanding of the phenomenon under investigation. The questionnaire findings revealed that dialogue, sense of control, and meaningfulness from the citizen's perspective, and legitimacy and resources from the government official's perspective are important antecedents of PV co-creation. Furthermore, the synergistic interaction with its emergent properties was found to create substantial PV, which is expected to result in many benefits including higher levels of citizen engagement and satisfaction via Gov2.0. Additionally, the interview findings offered emerging themes such as the IKEA effect, sense of community and the 'coolness' factor.

This research is significant to Information Systems (IS) and Public Administration (PA) disciplines as it applies a trans-disciplinary approach that is grounded in empirical evidence, yet parsimonious enough to be useful for both academics and practitioners. This thesis contributes to both theory and practice. In terms of theory, it extends our understanding of citizen empowerment and engagement in the context of Gov2.0 to achieve PV. Furthermore, the GPVM is found to be useful for explaining the gap between Web2.0 and Gov2.0 utilization levels. From the perspective of practice, it provides insights into the opportunities for using Gov2.0 to increase citizen engagement in e-government initiatives and programs.

Keywords: Gov2.0, citizens, engagement, empowerment, co-creation, public value

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

Signature: 

Print Name: Mohammed Aladalah

Date: 22/12/2017

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Dedication

To Mum and Dad.

To Dima and Khalid.

Thank you and I promise not to let you miss me again!

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List of Abbreviations

AEC	Australian Electoral Commission
AGIMO	Australian Government Information Management Office
AI	Artificial Intelligence
AMOS	Analysis of Moment Structures
ASPA	American Society for Public Administration
AVE	Average Variance Extracted
CA	Cronbach's Alpha
CB-SEM	Covariance-based- Structural Equation Modelling
CFA	Confirmatory Factor Analysis
CIA	Central Intelligence Agency, United States of America
CITC	Communications and Information Technology Commission, Saudi Arabia
CLF	Common Latent Factor
CMM	Capability Maturity Model
CR	Composite Reliability
CS	Computer Science
CTG	Center for Technology in Government, University at Albany, New York
DEG	Digital-era Governance
DOI	Diffusion of Innovation
DTI	Department of Trade and Industry, UK
DVA	Department of Veterans' Affairs, Australia
EFA	Exploratory Factor Analysis
ERP	Enterprise Resource Planning
EU	European Union
FDA	Food and Drug Administration, U.S.
GASTAT	The General Authority for Statistics, Saudi Arabia
GCC	Gulf Cooperation Council
GIS	Geographic Information System
GPS	Global Positioning System
GPVM	Gov2.0 Public Value Model
GUI	Graphical User Interface
HDR	Higher Degree by Research students
ICTs	Information and Communication Technologies
IDA	Infocomm Development Authority of Singapore
IoT	Internet of things
IPSV	Institute for Public Service Value
IS	Information Systems
IT	Information Technology
KASP	King Abdullah Scholarship Program
MCIT	Ministry of Communications and Information Technology, Saudi Arabia
MFAFF	Ministry for Food, Agriculture, Forestry and Fisheries, South Korea
MOFA	Ministry of Foreign Affairs, Saudi Arabia
MST	Modern Systems Theory
MUHREC	Monash University Human Research Ethics Committee

NIC	National Information Centre, Saudi Arabia
NPG	New Public Governance
NPM	New Public Management
OECD	Organisation for Economic Co-operation and Development
OGMM	Open Government Maturity Model
OPEC	Organization of the Petroleum Exporting Countries
PA	Public Administration
PC	Personal Computer
PCA	Principal Component Analysis
PLS-SEM	Partial Least Squares- Structural Equation Modelling
PMMM	Project Management Maturity Model
PV	Public Value
PVM	Public Value Management
RQ	Research Question
RSS	Rich Site Summary
SACM	Saudi Arabia Cultural Mission
SCS	Sense of Community Scale
SD	Standard Deviation
SEM	Structural Equation Modelling
SMMM	Supply Chain Management Maturity Model
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model
TEF	Technology Enactment Framework
TTF	Task-Technology-Fit
UK	United Kingdom of Great Britain and Northern Ireland
UN	United Nations
UNPAN	United Nations Public Administration Network
U.S.	United States of America
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER ONE
INTRODUCTION

1.1 Overview

The thesis is an investigation into the process of public value (PV) co-creation via governments' use of Web 2.0 applications (hereafter Gov2.0). This opening chapter provides an introduction to the thesis. It begins with the research background and motivations in section 1.2. Next, section 1.3 presents an overview of the extant literature and the gap that this research sought to close. Following this, section 1.4 describes the research aim, objectives and research questions that are addressed in the thesis. Section 1.5 highlights the significance of the research and its contributions. Section 1.6 briefly outlines the overall design and approach of this research. In section 1.7, the structure of the thesis is outlined and section 1.8 highlights the research scope and unit of analysis. The chapter concludes with an overview of the thesis in section 1.8, and the chapter summary in section 1.9.

1.2 Research Background

Web 2.0 applications have transformed the world socially; we see this, for example, in the Arab Spring, the Occupy Wall Street (McNutt 2012) protest, and more recently, the Umbrella movement in Hong Kong. Web 2.0 applications are often referred to as social media (Bekkers et al. 2013; Bertot et al. 2010); the two concepts are commonly used interchangeably and described in the literature as "umbrella terms" (Coleman 2009, p.1). Bryer and Zavattaro (2011) differentiate them through means-versus-ends analysis by considering Web 2.0 applications as the latest means by which people can achieve social ends. By Web 2.0 applications, this research means social networking services (e.g. Facebook, MySpace), social media or multimedia sharing (e.g. YouTube, Flickr), wikis, blogs, micro blogs (e.g. Twitter), and mash-ups (e.g. Bertot et al. 2010). Web 2.0 applications are different from other information and communication technologies (ICTs) in that they are user-driven capabilities (Bryer and Zavattaro 2011). They enable collaboration, interaction and participation (Criado et al. 2013), and that is what transforms Web 2.0 applications into social media. Originally intended to help people to establish social networks, Web 2.0 applications are leaving their footprints in all walks of life such as business, education and government. Today, businesses are seeking exposure, loyalty, sales and marketing through Web 2.0 applications (Peters et al. 2013).

Even governments are adopting the latest wave of ICTs, namely Gov2.0, to reach out to and engage with the citizenry. Moreover, Web 2.0 applications have changed the way in which government agencies share and communicate information, which has led to the concept of Gov2.0 (Bonsón et al. 2012). The following definition further clarifies 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). Popular examples of Gov2.0 include the government use of third party Web2.0 applications such as Facebook and Twitter. Unlike other ICTs, Gov2.0 supports many collaboration models such as crowdsourcing or citizen-sourcing (Citizen-to-Government) (Lukensmeyer and Torres 2008), government as a platform (Government-to- Citizen), and do-it-yourself government (Citizen-to-Citizen) (Linders 2012). Gov2.0 is participatory and very useful for collaboration, interaction, social networking, and co-creation (Criado et al. 2013). With Gov2.0, the citizen's role changes from passive to active or from being a recipient to being both a client and contributor, giving him/her a sense of empowerment. Gov2.0 also offers a variety of advantages such as better access for the disabled, the creation of virtual communities, prompt information sharing, and enhanced collaboration, thus enabling citizen engagement with the government to create PV (Janssen and Estevez 2013).

Gov2.0 has begun to empower citizens by offering enhanced capabilities for self-organizing and value-creation activities (Benkler and Nissenbaum 2006). The concept of many users adding value to content through their use of Gov2.0 is similar to the concept of interactivity and user-generated content that involves people in the contexts of music, shopping and social networking. The user-centric nature of Gov2.0 activities offers important opportunities to increase the creation of public value (hereafter PV) for citizens (Ferro and Molinari 2010). Gov2.0 allows citizens to move from being passive and to being more active in public sector activities, by supporting the co-creation of PV between citizens and government. Gov2.0 has emerged as a moderator between Web 2.0 principles and those of governments (Ferro and Molinari 2010). Gov2.0 is expected to produce many benefits as it facilitates greater communication, participation, and collaboration with citizens (Nam 2011). This strongly suggests the potential of Gov2.0 as a communication and collaboration tool to boost citizen participation. However, while some government agencies seem to be socially active by using Gov2.0, they are often reluctant to interact, fearing that they could lose power (Brainard et al. 2011).

Research has shown that citizen use of Web 2.0 tools does not necessarily lead to greater citizen utilization of Gov2.0, particularly with the lack of orientation towards PV creation for citizens

(Molinari and Ferro 2009). Expectations that Gov2.0 will improve transparency, collaboration, participation and openness are partially realized in some areas, but are non-existent in others (Nam 2011). On the other hand, Gov2.0, or Gov1.5 as Millard (2010) labels it, has attracted some cynicism. Hence, Gov2.0 needs to be evaluated from the citizen's perspective. Subsequently, citizens satisfaction with and trust in government performance could be boosted by involving them in PV co-creation.

As citizens share more of their private lives on public forums such as Facebook and Twitter, they expect the same from the government. Gov2.0 can create an environment conducive to citizen participation, engagement and collaboration. These platforms can more easily facilitate the interaction compared with traditional methods. However, citizen participation should not be taken for granted. Gov2.0 has the potential to provide engagement processes that have established criteria ensuring that fairness, mutually respectful discussions, social learning and, most importantly, public opinion, are valued and considered. One of the most promising aspects of Gov2.0 is its participatory and interactive nature, which allows for two-way communication (Linders 2012). The digital future is moving forward with the increasing pervasiveness of Web2.0 applications, and governments need to respond and take a stand. Thus, this research investigates Gov2.0 and argues that it should be viewed using different theoretical lenses of empowerment and co-creation to achieve PV. Despite potential links of citizen empowerment and co-creation with PV, these theories have not attracted much academic discussion so far in the Gov2.0 context. Therefore, there is a need to examine the use of Gov2.0 for citizen empowerment and participation and its potential for co-creating PV. The theoretical lens of empowerment and co-creation is by no means an all-encompassing concept that can fully explain the phenomenon of PV via Gov2.0. However, I intend to critically examine Gov2.0 from a different perspective – that of citizens. The contextualisation of research in this area is presented next.

1.3 Research Context

Gov2.0 is defined as the use of Web 2.0 tools and applications within government organisations, and their interactions with citizens either on their websites or via third-party providers such as Facebook and Twitter (Criado et al. 2013; Mergel 2012). The current trend of Gov2.0 use from the government side shows two types of users. The first are reluctant to use and use only a single platform. The second are using multiple platforms without hesitation in order to be everywhere, extending their reach and visibility across the Web (Mergel 2012). The latter group seems to be under pressure to fulfil citizens' expectations (Nam 2012). Recent e-government literature has

highlighted Gov2.0 as a vehicle for greater citizen engagement (Bertot et al. 2010; Mergel 2012; Tursunbayeva et al. 2017). Contrary to expectations, the levels of citizen involvement via Gov2.0 have been relatively low.

A number of studies have examined the practice of the government agency, i.e. the supply side, in terms of Gov2.0 activities. Mergel (2013b) showed that in the U.S., federal agencies use Gov 2.0 mainly as an information "push" strategy with inputs from other government communication channels. Mossberger et al. (2013) examined the use of Gov2.0 in major U.S. cities between 2009 and 2011, and found that the one-way "push" strategy prevailed, although the U.S. federal government agencies are required to become more transparent, and increase participation and collaboration with citizens. Similarly, Meijer and Thaens (2013) investigated Gov2.0 practices in three North- American police departments and showed that their Gov2.0 strategies are also mainly 'push strategy'. Mundy and Umer (2012) analysed a couple of UK councils' interactions with citizens via Gov2.0. They found that there was a predominant use of broadcast channels that were not truly engaging as social platforms. Kuzma (2010) found that a minority (30 percent) of Asian governments are using Gov2.0 for communication mainly for information dissemination, education and tourism.

Hofmann et al. (2013) explored local governments' utilization of Gov2.0 for communication with citizens in Germany. Similar to the findings of other studies, it was used mainly for information dissemination. Cho and Park (2012) in South Korea, analyzed Gov2.0 activities of the Ministry for Food, Agriculture, Forestry and Fisheries (MFAFF), and pointed out its limited use as a one-way communication channel. Abdelsalam et al. (2013) examined the effectiveness of Egyptian Gov2.0 and concluded that it was used primarily to post information, with very limited interaction between citizens and government. Although these studies shed some light on the limited use of Gov2.0 by government agencies, the potential use of this phenomenon has largely remained unexplored. For instance, besides information dissemination, a two-way communication with citizens providing feedback to governments can be beneficial for both parties.

Studies examining citizens' usage of Gov2.0 have confirmed that participation levels are low. According to the United Nations (UN) (2014), less than 20% of the 193 UN Member States have active citizen participation (two–way) via Gov2.0. In the U.S., it was found that citizens are more willing to communicate opinions about a political issue via a Facebook page than they are willing to sign an e-petition about the same issue (Bertot et al. 2012). Li et al. (2007) found that the number of U.S. adults who are ready to participate via Gov2.0 is slightly less than 50% of the whole

population. Furthermore, Lenhart et al. (2010) found that only 23% of the Internet users in the U.S. (representing 61% of all American adults) participate via Gov2.0. Similarly, a low percentage of EU citizens have been willing to participate via Gov2.0 due to the perception that it has little impact on their lives in terms of value (Molinari and Ferro 2009; Osimo 2008). Similar results have been found in Australia and New Zealand (Gauld et al. 2010). According to Sensis report (2016) less than 10% of Australian citizens use Gov2.0 to engage with government agencies.

The above studies illustrate that, unlike the popularity of Web2.0 applications (Peters et al. 2013), Gov2.0 use does not follow the same trend. Citizens' use of Web 2.0 tools does not necessarily lead to greater citizen utilization of Gov2.0, particularly with the lack of orientation towards PV for citizens. Hence, Gov2.0 has failed to attract a satisfying level of citizen participation and has not lived up to expectations (Bertot et al. 2012; Panagiotopoulos et al. 2011; Nam 2011). This shows that governments are missing opportunities to better reach out to their citizens. Thus, there is a need to engage citizens, allowing them to co-create substantial and unique PV. Citizens can become partners and enhance government decision-making by co-creating PV via Gov2.0. As Tim O'Reilly stated, Gov2.0, is about "what we do together that we can't do alone" (2010) and as Linders (2012) puts it, "we-government".

The public sector offers a rewarding ground for studying PV co-creation via Gov2.0, as governments have acknowledged that these tools can be more efficient, more effective and more useful as a means of reaching their citizens, many of whom have complex and diverse needs (e.g. minority groups and welfare recipients). Dayal and Johnson (2000) observed that citizens experienced confusion, uncertainty and vulnerability resulting from the government's determinative processes. These authors claimed that Gov2.0 could provide benefits to the citizens, including increasing their levels of participation. The user-centric nature of Gov2.0 practices can provide important avenues for increasing the creation of PV for the citizenry (Ferro and Molinari 2010). By encouraging the co-creation of PV, Gov 2.0 enables citizens to move beyond a state of passiveness to become active in public sector activities. Schrage (1995) identified the need to design tools for co-creation in the context of e-government, while Lindgren and Jansson (2013) pointed to the need for theoretical approaches that help identify best practices.

A review of the literature clearly shows that empowerment is an emerging concept used by researchers to explain the motives for information systems use (Deng et al. 2016; Psoinos et al. 2000; Ghose 2001). Nevertheless, the empowerment concept in the field of e-government is still in its infancy (Li and Gregor 2011). For example, most e-government scholars have dealt with

empowerment as a set of techniques without focusing on its nature or the underlying process. There have been several streams of research into citizen empowerment in the field of e-government. One stream of research focuses on empowerment as the outcome. Li and Gregor (2011) investigated the effect of the design features of online advisory systems on citizens' empowerment. Their findings indicate that the inclusion of more sophisticated explanatory features in online advisory systems empowers people to perform self-assessments, explore different options, interpret the decision-making process and predict their application outcomes.

Other streams have focused on empowerment as the highest level of citizen participation. Macintosh (2004), among others, proposed a scale of citizen participation via ICTs in policy-making starting from enabling to engaging and then to empowering. Enabling is about using ICTs to provide relevant information in an accessible and understandable format. Engaging with citizens is concerned with consulting a broader audience about a government initiative. Enabling and engaging are usually top-down perspectives in terms of access to information and reaction to government-led initiatives. Empowering, from the bottom-up perspective, is about citizens being producers rather than consumers of policy. This level recognises the need to allow citizens to influence and participate in the policy formulation process. Others associate the top-down approach with control and bottom-up with empowerment (Malone 1997). Although each of these streams makes significant contributions to the literature on the relationship between citizen empowerment and participation, the understanding of the citizen empowerment concept is too narrow and lacks focus.

Unlike the conventional perspectives of empowerment in e-government research, this research propose a different view which is consistent with the way that empowerment is viewed in other fields. In doing so, this research differentiate between citizen empowerment and citizen participation. This argument is consistent with the view of Barki and Hartwick (1994) concerning user involvement and use participation in the process of information system development. They suggested that the term "user participation" be used instead of "user involvement" when referring to the activities that users perform in the system development process. They argued that the term "user involvement" indicates the importance and personal relevance of a system to a user, whilst "user participation" refers to the assignments, activities, and behaviours that users or their representatives perform during the system's development process (Barki and Hartwick 1989). In this research citizen empowerment is viewed as a psychological state and consists of enablers, processes and outcomes. When citizens influence decision-making and experience empowerment within the citizen-government relationship, they are likely to increase their participation via and

satisfaction with Gov2.0 and subsequently realize PV. In other words, citizens are more likely to attain higher levels of engagement when empowered which in turn should enhance PV. Furthermore, little research has been conducted on empowerment from an empirical perspective in the Gov2.0 context (Joseph 2013). Thus, this research investigates empowerment via Gov2.0.

The distinctive nature of co-creation has been mentioned and highlighted by Kohli and Grover (2008) among others, who argued that in many contexts in the private sector, it is unclear who creates the value, and how the value is jointly created (i.e., co-created). Moreover, value co-creation initiatives usually result in failure (Sarker et al. 2012). Thus, given the challenges of PV co-creation via Gov2.0, an investigation of this phenomenon is necessary. It goes without saying that government agencies are far more complex, often involving multiple stakeholders (Rowley 2011), which can make co-creation even more challenging. In spite of the rapid growth in e-government research and practice, co-creation processes via Gov2.0 have not been systematically studied. Thus, there is a need for an integrated approach that involves citizens, allowing them to co-create substantial and unique PV for each other. To engage effectively, there needs to be a synergy between citizens and governments to create PV via Gov2.0. This synergistic interaction has emergent properties to create substantial PV, which is expected to result in many benefits including an increase in citizen participation via Gov2.0. Citizen participation can ensure that PV is created in the most effective and efficient way (Benkler and Nissenbaum 2006; Hand and Ching 2011). Despite much theoretical contribution in terms of the citizen and government relationship, few studies have focused on the synergistic integration in e-government research. Therefore, this provides another motivation for this thesis. The collaboration of citizens and government as a means of achieving a synergistic integration is associated with outcomes that are represented by the concept of PV.

Moore (1995) introduced the concept of PV and proposed a strategic triangle highlighting that in order to realise PV, public services must meet three broad criteria: creating something valuable, legitimate and politically sustainable, and operationally feasible with internal and external capabilities. The PV concept is rooted in citizens' preferences as only they can determine what is truly of value to them (Kelly et al. 2002); this includes improvement of people's quality of life, services that meet citizens' needs, fairness, equity, and confidence in the government's ability to satisfy what citizens want and value (UN 2003). Citizens delegate power and resources to the government and in return they expect the government to be instrumental in creating PV (Hui and Hayllar 2010). PV is a way of capturing all the dimensions of government performance. The ubiquity of Gov2.0 will assist governments to tap into the collective PV by heeding individual

preferences. From this perspective, Gov2.0 is justified if it enhances PV. While the subject of PV has been addressed by a number of researchers such as Bannister and Connolly (2014), there is no consensual definition of PV. One of the limitations of previous research on PV has been a lack of distinction amongst PV contributing drivers, PV itself, and outcomes of PV. Without a clear distinction, differences between these concepts are blurred. This thesis complements the e-government literature by clarifying the roles and relationships between citizen empowerment and co-creation to enhance PV. A main theme in this thesis is that co-creation and PV are one and the same. They are both based on the premise that collective resources should be used to meet collective needs in a mutually beneficial manner.

1.3.1 Research Problem

The problem context is well illustrated by examining the citizens' participations levels via Gov2.0 which has lower levels of participation than predicted due to the lack of PV perspective. Current theories seem to be inadequate as they do not consider both perspectives, i.e. citizen and government. Thus, this thesis argues that Gov2.0 should be viewed using different lenses such as those of empowerment and co-creation theories. The thesis specifically examines Gov2.0 as an enabler of PV in the light of contributing to the growing interest in e-government within the disciplines of Information Systems (IS) and Public Administration (PA). In the field of e-government which is a sub-discipline of IS, open government initiatives have driven the research agenda that seeks to promote innovation technologies (e.g. Gov2.0), most notably through the notion of transparency, participation, and collaboration (Nam 2011; Meijer et al. 2012). Janowski (2015) argues that technology should play a critical role in the public sector to achieve efficiency and effectiveness both upstream (design of public services) and downstream (delivery of public services). Similarly, in PA, a substantial stream of literature has focused on PV, investigating and exploring possibilities for a comprehensive approach to public management practice and continuous improvement in public services (Constable et al. 2008).

Following the mapping of the IS discipline, this thesis can be considered as a behavioural adoption study as it aims to understand how individuals and organisations perceive new technologies and their attitude and action towards them. Specifically, it examines the use Gov2.0 (Mergel 2012). In the PA discipline, the thesis is located in the new public administration paradigms such as new public management (NPM), modern systems theory (MST), new public governance (NPG), digital-era governance (DEG) and Public Value management (PVM), which focuses on PV frameworks. It also responds to the call for investigation of Gov2.0 using the PV framework as the underlying

approach (Bannister and Connolly 2014). Since this thesis focuses mainly on IS and not PA, these paradigms will not be covered in detail; however, as they are closely related to e-government, a trans-disciplinary approach will be used.

Previous IS theories such as the Technology Acceptance Model (TAM) (Davis 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003) or PA theories such as the Technology Enactment Framework (TEF) (Fountain 2001) were found to be useful in the first wave of e-government. However, when applied to Gov2.0, the latest wave of e-government, the outcomes have been less encouraging (Bryer and Zavattaro 2011; Joseph 2013). This shows that it is difficult to develop a uniform, one-size-fits-all theory of e-government systems. Thus, theories and frameworks, both old and new, will need to be tailored to the type and context of e-government system. With respect to PV, the thesis is an empirical investigation that includes the testing of PV central concepts, processes, and arguments. Much of the academic research on PV via Gov2.0 has sought to understand the design, execution and monitoring of these systems (Bovaird 2007; Linders 2012); thus, comprehensive research, debate and application are required (Alford and Hughes 2008; Benington 2011). Furthermore, in their critical review of PV, Williams and Shearer (2011) concluded that most of the studies are theoretical; thus, an empirical evaluation of PV is needed. This thesis applies the theories of empowerment and co-creation to explain the PV co-creation process via Gov2.0 and the implications of citizen engagement with this process.

Given the paucity of empirical investigation on e-government research in developing countries (Joseph 2013), and PV propositions (Williams and Shearer 2011), the empirical phase of this research is conducted in a developing country, Saudi Arabia. It does so through a mixed methods research approach. Saudi Arabia is a large, oil-rich Middle Eastern country, the 13th-largest country in the world, and the second largest in the Arab world (CIA 2017). Saudi Arabia possesses approximately 22% of the world's oil reserves, and was a founding member of the Organization of the Petroleum Exporting Countries (OPEC) in 1960. The country makes a unique setting for this research mainly for three reasons: the paucity of literature on Gov2.0 in the region, the high usage of social media among the population, and the series of gradual liberal reforms initiated by the government, including Gov2.0.

The majority of e-government studies have been conducted in Europe, North America, and Asia (Joseph 2013). Several Middle Eastern countries, including Saudi Arabia, have already been using Gov2.0 (Franke and Eckhardt 2014). However, it has been observed that there is a significant

paucity of literature specifically on Gov2.0 in the Middle East (Alalwan 2013). Of a total population of over 31 million, Internet users in Saudi Arabia were about 24 million at the end of 2016, with a population penetration of 74.9% (MCIT 2017). Saudi Arabia has a very high level of social media use (Mourtada and Salem 2012; PeerReach 2013), particularly in the 24-34 age group (GASTAT 2017). For example, in 2014 Saudi Arabia had over 9 million active Facebook users, the highest in the Gulf Cooperation Council (GCC) countries (TNS 2015), and over 8.2 million active Twitter users, the highest across the globe relative to online population (Abdurabb 2014). High Facebook and Twitter usage rates are part of a broader picture of social media use by the large youth population in Saudi Arabia. A report by the Saudi National Information Centre (2014) stated that 67% of the Saudi population is under 30 years of age and 80% are under 40.

Furthermore, Saudi Arabia is an appropriate country in which to test this research proposed model because it has recently decided to go ahead with a series of gradual liberal reforms, including Gov2.0 (Critchlow 2014). In order to empower and engage citizens, Saudi Arabia has initiated a national program called YESSER[1], which aims to transform Saudi Arabia into an information society and provide better and easy-to-use e-government services. More recently, in April 2016, the Saudi government announced a broad set of socio-economic reforms, known as Vision 2030[2]. One of these ambitious vision initiatives is the public sector transformation program intended to improve and strengthen public services delivery and increase transparency and accountability by increasing the investment in ICTs. The above highlights the potential insights that can be gained from studying Gov2.0 in Saudi Arabia, and its relevance for the Middle East region, other developing countries, and beyond.

1.4 Research Aim, Objectives and Questions

The research aim (i.e. general purpose of this research), objectives (i.e. specific goals to be achieved) and questions (i.e. specifically addressing the research objectives) are presented in this section.

1.4.1 Research aim

The broad aim of this research is to critically investigate PV via Gov2.0 through the lens of citizen empowerment and co-creation theories.

[1] For more information on YESSER program please check the website https://www.yesser.gov.sa/AR/Pages/default.aspx
[2] For more information on Vision 2030 please check the website http://vision2030.gov.sa/en

1.4.2 Research objectives

The objectives of this research, in a non-linear process of enquiry, are:

Objective 1*:* To conduct a comprehensive review of the relevant literature including e-government and its reference discipline IS and PA, and develop an understanding for studying PV co-creation;

Objective 2*:* To develop an operational research model for PV co-creation via Gov2.0 that incorporates the perspectives of citizens and government officials;

Objective 3*:* To empirically validate and test the Gov2.0 Public Value Model (hereafter GPVM) by applying a mixed methods approach to ground the understanding;

Objective 4*:* To evaluate and revise the GPVM for adjustments and iterative modification;

Objective 5*:* To report recommendations for improving PV co-creation via Gov2.0 and suggest future research directions.

1.4.3 Research questions

In constructing the research questions, I challenge the current assumption of using Gov2.0 (Chun et al. 2010). In particular, I doubt the assumption that Gov2.0 per se is useful for realising PV. Even though Gov2.0 makes it easier for government agencies to reach more citizens, simply offering a platform for citizens does not ensure that they will use it (Burris 2016). Based on the above discussion, and in order to fulfil the aim and objectives of this research, the broad research question is formulated as follows:

How does Gov2.0 enable PV co-creation?

The main research question relates to the role of Gov2.0 and its potential and capabilities to provide a space and platform to enable co-creation and enhance PV. The research question above is further operationalised into three interrelated research questions (RQs):

RQ 1: *What are the factors that influence citizens' willingness to co-create PV via Gov2.0?*

The first RQ addresses the first part of the equation– citizen participation in the process of co-creation via Gov2.0. The focus is particularly on the role of Gov2.0 in creating PV from the citizen perspective. It investigates the precedents of citizens' willingness to co-create PV by participating via Gov2.0.

RQ 2: *What are the factors that influence government agencies' willingness to co-create PV via Gov2.0?*

As the saying goes "it takes two to tango"; hence, the second RQ addresses the second part of the equation: government facilitating the process of co-creation via Gov2.0 by providing citizens with the needed resources. The focus is particularly on the role of Gov2.0 in creating PV from the government perspective. It investigates the precedents of government agencies' willingness to co-create PV by encouraging citizen participation via Gov2.0.

RQ 3: *To what extent does the synergistic integration of citizens and governments in the process of co-creation via Gov2.0 enhance PV?*

After identifying the factors that influence citizens and governments willingness to co-create PV through RQ 1 and RQ2, in addressing the final RQ, this research investigates the synergistic integration needed to enhance PV. The synergistic interaction has emergent properties that are expected to create substantial PV. This question leads to an analytical examination of the properties of the synergistic integration and whether or not it increases citizen participation and satisfaction. The final RQ relates to the role of synergy in shaping citizen-government collaboration via Gov2.0 to co-create PV. It is important to note that the research questions are not intended to evaluate the effectiveness of Gov2.0, but rather to analyse the potential of the synergistic integration via Gov2.0, which aims to enhance PV.

1.5 Research Significance

In his seminal book, *The Structure of Scientific Revolutions,* Thomas Kuhn stated that academic disciplines tend to be shaped by world views (1962). Indeed, it is a well-known phenomenon that each academic discipline is built upon taken-for-granted ways to see and engage with the world (Riemer and Johnston 2014). Hence, Agre (1997) argued that each discipline will encounter difficulties around its margins and problems across its boards. Campbell (1969) noted that the division of science into separate disciplines is due to historical development rather than genuine scientific necessity. Disciplinary knowledge is driven mainly by the concept of one reality. Ramadier (2004) observed that the notion of a trans-disciplinary approach is based on the idea that the whole is more than the sum of its parts. A trans-disciplinary approach is aligned with the proposition that disciplinary practices must progress to match the complexity of the issues facing the scientific community. The e-government discipline involves issues of information, technology, and policies that neither of its main reference disciplines are independently capable of dealing with. Thus, in the e-government literature, there is a call to apply the trans-disciplinary approach (Chen et al. 2007), and the need to learn from other disciplines.

This research applies a trans-disciplinary approach that integrates e-government reference disciplines, namely IS and PA. It also borrows theories from psychology, political science, marketing and behavioral science, although it contributes mainly to the fields of IS and e-government. The trans-disciplinary approach is similar to Kuhn's "paradigm shift" where he argued that the most significant breakthrough in science was a result of moving away from tradition, from old ways of thinking, from old paradigms (1962). One way of framing the paradigm shift has been provided by the ancient Greek poet Archilochuss, who suggested that a fox knows many things, but the hedgehog knows only one big thing. Therefore, this research applies a trans-disciplinary approach to investigate PV co-creation via Gov2.0 (See section 2.2.3 for detailed discussion on trans-disciplinary approach). This research is like a river that crosses borders– many reference disciplines – because no single discipline deals with e-government directly. IS, PA and computer science (CS) are some of the direct disciplines relevant to e-government from which to choose; however, trying to summarize the findings of each one of these disciplines is similar to the blind men describing an elephant: different parts of the elephant are felt by the blind men, resulting in complete disagreement about what an elephant is. No doubt we shall continue to learn from important findings about e-government from these disciplines; however, in the meantime, this research is pursuing the task of applying an integrated trans-disciplinary approach that is grounded in empirical results, yet sufficiently parsimonious to be useful for both academics and practitioners.

While the research contributions are outlined in Chapter Eight, the significance of this research can be summarised as follows:

- ***Contextual phase***
    - This thesis investigates a real-life problem that is shared across the globe; that is, the lack of utilisation of Gov2.0.
    - This thesis provides new insights into and theories about the role of Gov2.0 in PV co-creation.
- ***Conceptual phase***
    - This thesis provides an understanding of Gov2.0 from the perspectives of both the citizens and government officials. In empirical e-government research, the focus has mostly been on either the citizen (Moon and Welch 2005; Thomas and Streib, 2005) or the government (Coursey and Norris 2008; Reddick 2011). This research is one of

the few attempts to focus on both perspectives, thus providing a comprehensive view of the phenomenon.

- The GPVM validation measurement ensures that its components (i.e. constructs and items) can be borrowed by other researchers in e-government, IS, PA fields. Also the rigorous validation steps of the GPVM provide an exemplar to be used by other researchers to enhance the utility of their models.
- The thesis produces a research design that can be employed by future researchers. It provides a rigorous mixed methods approach combining both methodological triangulation (use of multiple methods to study a research problem) and data triangulation (use of a variety of data sources in a study).

- ***Empirical phase***
  - This thesis collects empirical data, both quantitative and qualitative, in response to many calls in the e-government literature, as the majority of studies tend to use secondary data (Joseph 2013).
  - This thesis collects data from Saudi Arabia, a Middle Eastern country which falls within the developing-countries classification, as the majority of e-government studies have been undertaken in Europe, North America, and Asia (Heeks and Bailur 2007). Therefore, the thesis enhances our understanding of these countries, although there is no theoretical reason to suggest that the thesis findings would not be applicable to other countries.

- ***Reflection phase***
  - The GPVM serves as a basis for government agencies to consider when planning, designing and implementing Gov2.0.
  - The thesis provides evidence to help governments and policymakers to better tailor Gov2.0 to the choices and requirements of citizens, which should lead to a higher level of participation and reflect the characteristics of users.
  - The thesis also provides a new direction for future research regarding PV co-creation via Gov2.0.

1.6 Research Approach

The thesis takes pragmatism as the meta-theoretical assumption guiding the research (Venkatesh et al. 2013). From an ontological assumption, pragmatists believe that multiple realities exist which can also be intersubjective, thereby contradicting the traditional view (i.e. subjective or objective). From an epistemology perspective, pragmatists view knowledge as being both constructed and based on the reality of the world we experience and live in (Johnson and Onwuegbuzie 2004). This research can be viewed as a practical and applied research; moreover, some mixed methodologists suggest that pragmatism is the best paradigm for justifying the use of mixed methods research (Teddlie and Tashakkori 2009). This research employs a mixed methods approach, which involves combining qualitative and quantitative approaches in a research study (Creswell 2013). Specifically, a sequential explanatory strategy of enquiry (i.e., use quantitative approach followed by qualitative approach to help explain or elaborate results) was used. It is recommended that the explanatory strategy of enquiry be used when applying an existing theoretical foundation to a new or novel context (Venkatesh et al. 2013). Furthermore, this strategy is useful when unpredicted results emerge from the quantitative phase (Creswell 2013). As stated previously, both areas (Gov2.0 and PV) are relatively new, and the sequential strategies can be helpful for handling results emerging from Stage 1 of the data collection process. Based on these suggestions, and considering the overall aim and objectives of this research, a sequential explanatory strategy of enquiry was chosen. The data collection was conducted in two stages: survey and case studies. The research was designed and structured into four major phases as follows and as shown in Figure 1.1:

- The contextual phase includes the rationale for the research, statement of the research problem, research aim, and the gaps identified in the literature, which is presented in Chapters One and Two.
- The conceptual phase addresses the GPVM development together with the hypotheses, the methodological assumptions and research design, which is presented in Chapters Three and Four.
- The empirical phase discusses the findings of the research data collection Stages, which is presented in Chapters Five and Six. Chapter Five describes Stage 1 of the data collection and analysis using quantitative methods. Building on this, Chapter Six describes Stage 2 of the data collection and analysis using qualitative methods.
- Finally, the reflection phase integrate the findings, address the research questions in line with the research findings, and summarises the theoretical and practical contributions of

the thesis, which is presented in Chapters Seven and Eight. The thesis concludes with suggestions for future research directions.

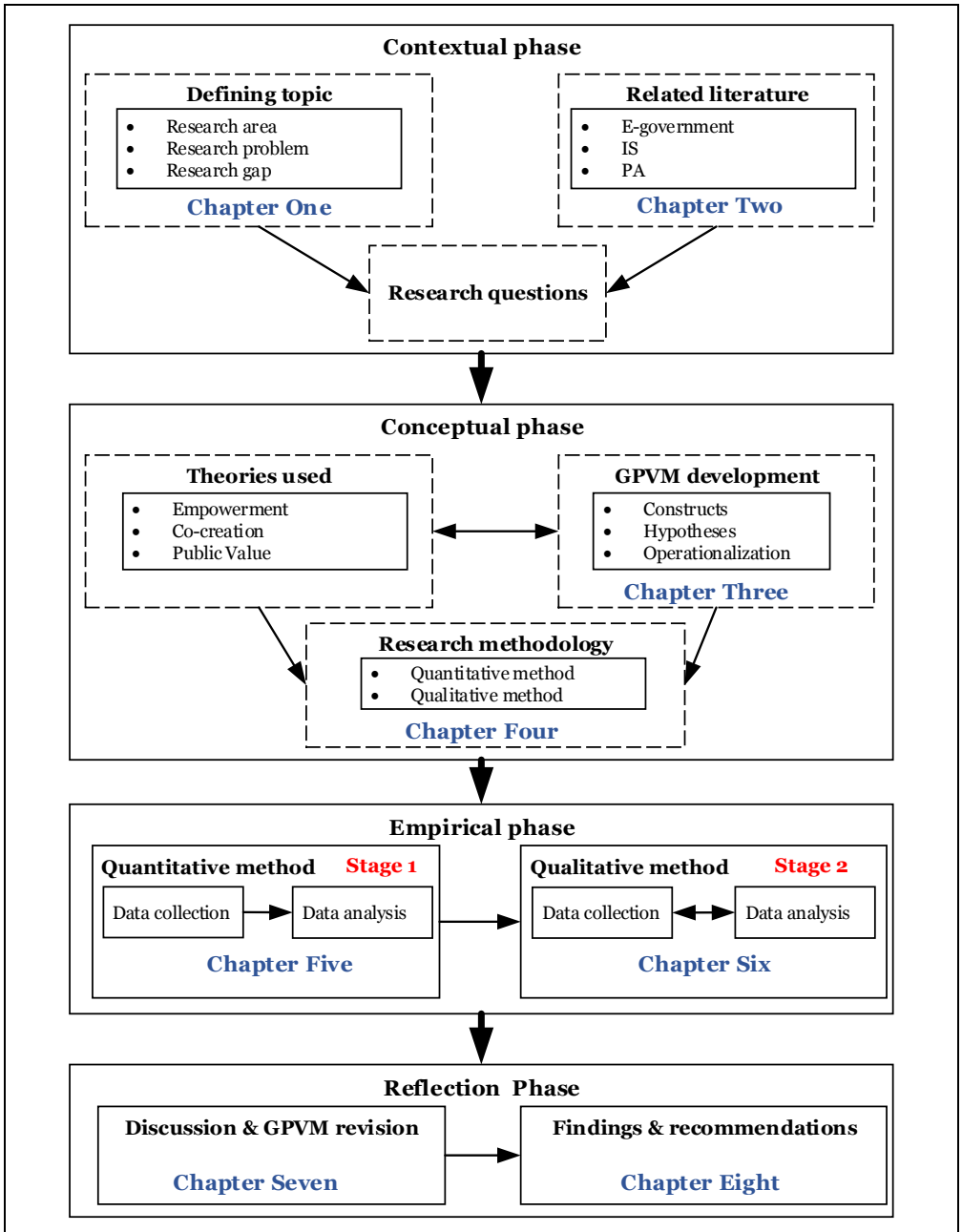

Figure 1. 1. Research approach

1.7 Synopsis of the Thesis

The thesis is organized into eight chapters: introduction to this research, the literature review, the GPVM, the research design, quantitative results, qualitative results, the discussion and the conclusion.

Chapter One introduces the research background, its context, aim and objectives. It presents the research questions and research scope, and describes the research approach.

Chapter Two provides a review of the literature from related fields to serve as a solid foundation and positions the thesis within the extant body of knowledge. The available literature is investigated and critiqued to provide a comprehensive view of the phenomenon under investigation. The chapter is organized around the research's main concepts: Gov2.0, empowerment, co-creation and PV. The use of the PV concept to assess Gov2.0 initiatives is relatively new; however, the main aim of this research is to investigate and assess the latter. Each concept was reviewed and appraised to enable understanding of both the conceptual and empirical works, leading to my interpretation of the concept. This chapter concludes with the identification of the research gaps that lays the foundation for studying PV co-creation thereby achieving the first research objective.

Chapter Three presents the development of the GPVM and its hypotheses. The research hypotheses are developed in this chapter by focusing on the factors influencing the willingness of citizens and governments to co-create PV via Gov2.0. Here, the hypotheses focus on the highest level of co-creation, namely synergy, and how it affects citizen participation and satisfaction to enhance PV. This chapter concludes by achieving the second research objective, proposing an operational model for PV co-creation via Gov2.0.

Chapter Four details the research design including the paradigm, methodology, and methods used. Particularly, it describes the identification of the mixed methods explanatory sequential research design in two Stages as the most suitable method for this research. The chapter also covers the sample, the inclusion and exclusion criteria, recruitment of respondents, data collection strategies, the data collection techniques used, justification of the rigors of the research, and ethical considerations. To achieve the third research objective, the GPVM is operationalized and validated. From a quantitative method perspective, the GPVM informed the development of the research questionnaire. From a qualitative method perspective, the GPVM helped to formulate the interview questions as well as enabled the thematic analysis of the interview data in a constructive way.

Chapter Five describes the quantitative findings from the analysis of Stage 1 of the data collection. The chapter reports descriptive statistics about the questionnaire respondent. It includes checking data quality for analysis followed by testing for SEM analysis.

Chapter Six describes the qualitative analysis and findings and links it to the literature. These findings emerge from Stage 2 of the data collection. The chapter also presents findings in the form of supported themes, emerging themes, and possible explanations for the unsupported themes.

Chapter Seven discusses, interprets, and integrates the research findings from Stages 1 and 2, in relation to the GPVM. This chapter also discusses the relationships between the research findings and the extant literature, and revised the GPVM, thus, achieving the fourth research objective.

Chapter Eight concludes the thesis, provides a summary of the main findings, and discusses the research implications. This chapter also addresses the research objectives and questions and presents a summary of how these were achieved and answered. This chapter achieves the final research objective by providing recommendations, acknowledging the research limitations and suggesting future research directions. The thesis closes with several personal reflections.

1.8 Research Scope

This section identifies the scope of this research by defining the main concepts (with multiple meanings) that are used in this research and identifying the unit of analysis.

Gov2.0

The term Gov2.0 is used in this thesis to refer to government agencies' use of Web 2.0 tools and applications, either on their websites or via third party providers such as Facebook and Twitter. Web2.0 application and social media are used inter changeably in this research. This research acknowledges that previous waves of e-government may still suffer from the low level of usage as well. However, Gov2.0 was chosen because of its participatory nature and earlier predictions that it would increase citizen engagement levels.

Citizen engagement

Citizen engagement is used in this thesis to mean active participation that is a relationship based on partnership with government, in which citizens actively engage in the process (OECD 2001). Other participation approaches, such as one-way interaction (managerial) and two-way interaction directed by government (consultative), are excluded. Active participation was chosen because it is the highest form of participation of the two-way interaction directed from citizens to government and vice versa (participatory). The participatory approach focuses on motivating citizens to engage and influence government actions by making it attractive and relevant for citizens to use Gov2.0. Citizen engagement is broadly defined as opportunities for external stakeholders and the public to

offer input and feedback to government policies, programs, and services. Citizen participation, citizen involvement, and citizen engagement are used inter changeably in this research. This research focuses on citizens who are "able but unwilling" to participate, because they are not very interested, do not have the time, or do not trust government to make good use of their input, and excludes citizens who are willing but unable (i.e. digital divide). This research investigates why some citizens actively use Web 2.0 tools but do not (much) use Gov2.0.

Citizen empowerment

Citizen empowerment is used in this thesis to mean the citizens' feeling that they have some control over their destiny and can participate in the decision-making that is critical to their lives (Li and Gregor 2011). The basis of empowerment is having access to key information of concern and the ability to use that information to influence decision-making. Empowerment facilitates more transparent decision-making and increases citizen satisfaction with government workings.

Co-creation

Co-creation is used in this thesis in its broad sense to mean the points of view of customers, or citizens here, in identifying their needs and wants and improving the ways in which these can be met (Lusch and Vargo 2006). The process includes collaboration and balanced relationships, and having the resources and the competence to co-create. In the process of co-creation, the consumers or prosumers (consumer and producers) take an active role and co-create together with the producers. Sarker et al. (2012) identified three types of co-creation: exchange, additive, and synergy. The three types of co-creation are not mutually exclusive, but present a distinct pattern. Of these three types, synergy is the ultimate goal when co-creating, as suggested by earlier findings (Venkatesh and Bala 2012). This thesis argues that the synergistic integration should enhance PV, and that co-creation via Gov2.0 results from the different motivations of different types of citizens (e.g. millennials for self-expression, matures for sense of community etc.).

Public value

Here, the term PV is used to mean the collectively expressed, politically mediated preferences consumed by citizens, created not only through outcomes but also through a process of achieving trust, commitment, and fairness (O'Flynn 2007). In their critical review of PV, Williams and Shearer (2011) concluded that it is somewhat an umbral, fuzzy, vague concept that means different things to different people. Alford and O'Flynn (2009) distinguished between PV on one hand and other terms such as "public goods" , "public interest" or " public benefit". They concluded that

PV focuses on a wider range of value; it is more than outputs, and implies what has meaning for citizens rather than what public managers presume is best for them.

Units of analysis

This research has two units of analysis: individual (i.e. citizens) and organisational (i.e. government agencies), and for the latter, government officials served as respondents. It is common practice to use respondents (i.e. government officials) to collectively reflect on the organisation to which they belong (Yin 2013).

Participants, respondents, and informants. The word participant(s) is used to denote the people who participate via Web2.0 or Gov2.0. Respondent(s) is reserved to indicate the people how took part in Stage 1 (i.e. the questionnaire respondents), while informant(s) indicates the people I interviewed in Stage 2 of the research (i.e. the interview informants).

1.9 Summary

This research argues that Gov2.0 initiatives have failed to realise the expectations due to lack of citizen engagement and lack of focus on PV from the citizen perspective. The evaluation of PV in terms of e-government has primarily focused on technological and operational perspectives; managerial and organisational perspectives; and institutional and environmental perspectives resulting in a failure to capture the PV. Therefore, this chapter outlined the importance of the citizen perspective of PV as an alternative to previous approaches and highlighted the need for citizen engagement to co-create PV. This chapter discussed the rationale, motivations and broad aim of this research. The aim of this research is to critically investigate PV via Gov2.0 through the lens of citizen empowerment and co-creation theories. The focus on Gov2.0 is due to the increased use, by both citizens and government agencies, of Web2.0 applications. Citizen engagement is the means to PV co-creation via Gov2.0. The co-creation process is divided into different levels, including synergy. PV is seen as the process and the outcome of the co-creation. Furthermore, this chapter identified the research significance, scope and the approach used to conduct the research. Finally, this chapter outlined the thesis structure. The next chapter presents a review of the literature on Gov2.0, empowerment, engagement, satisfaction, co-creation and PV and identifies the gaps in previous works.

CHAPTER TWO
LITERATURE REVIEW

2.1 Overview

This chapter reviews the relevant literature in order to develop a solid foundation and theoretical background to position the contribution of this research. The review was organised around the main research topic: *PV co-creation via Gov2.0*. Figure 2.1 shows the overall structure and linkages between concepts in the chapter.

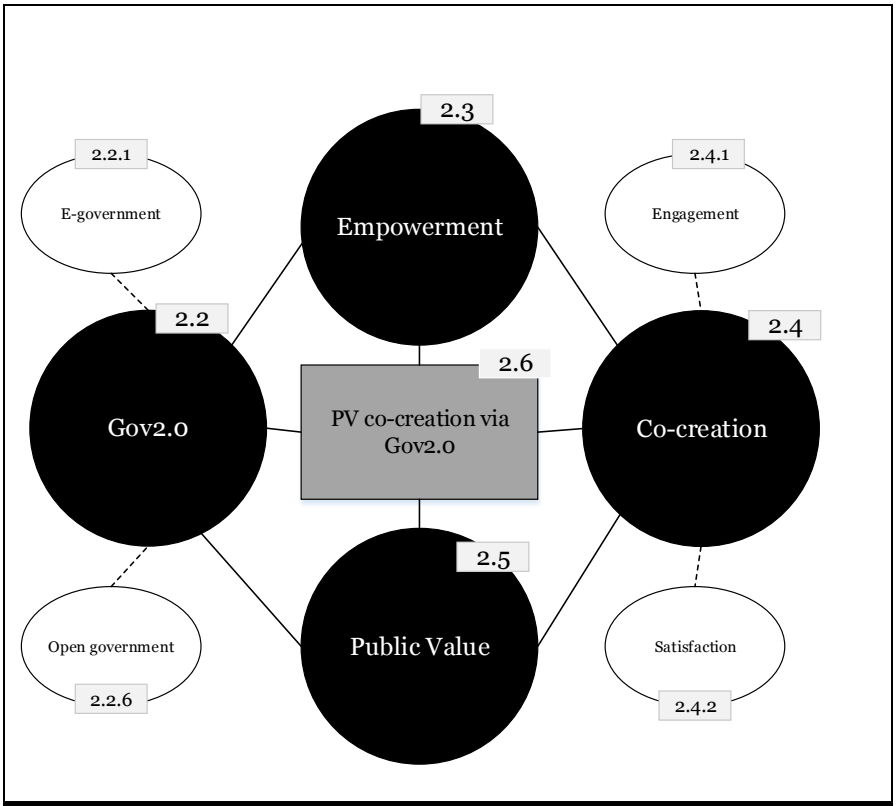

Figure 2. 1. Literature map

To address the second research objective, the literature review focuses on four main concepts: Gov2.0 (section 2.2), empowerment (section 2.3), co-creation (section 2.4), and PV (section 2.5). They comprise the underlying mechanism for this research topic (i.e. *PV co-creation via Gov2.0*) and are depicted in Figure 2.1 by the solid circles. The secondary concepts include: e-government, open government, citizen engagement and satisfaction, among others and are represented by the unshaded oval shapes. Each of these secondary concepts is linked to the main concepts addressed in this research. The chapter discusses the research gap identified from the review and synthesis

of these concepts in order to better examine PV co-creation via Gov2.0 (section 2.6) represented in Figure 2.1 by a rectangle. The numbered boxes in Figure 2.1 represent the section numbers of each concept discussed in this chapter. The chapter concludes with a summary in section 2.7.

2.2 Gov2.0

This section begins by providing a background of e-government practice and research, since it is the domain of interest of this thesis. It introduces e-government, its definitions, systems and its evolutionary process in order to clarify the emergence of Gov2.0. Next, it reviews the open government initiatives and their relevance to Gov2.0. Then, the focus turns to this research context: Gov2.0 and its drivers, challenges, and models.

2.2.1 E-government

The increase in e-government research recently reported by Andersen et al. (2010) and Moynihan (2008) is in contrast to its earlier decline and paucity as noted by Kraemer and Dedrick (1997). This has been attributed to the growth of interest in practice following the diffusion of the Internet and other ICTs throughout the public sector (Grönlund and Horan 2005). As a matter of fact, e-government was initiated as a practitioner field, providing a context within which practitioners share experiences via the Internet. For example, in the U.S., the 1993 National Performance Review led by the (then) Vice president Al Gore, stressed the role of e-government in federal services (Grönlund and Horan 2005).

During the past thirty years or so, many waves of new ICTs have been introduced to support governments. Often, each wave was viewed as revolutionary, suggesting that technology is not simply an enabler but rather a determiner of social and institutional arrangements. Although, few scholars support the technological determinist perspective (Yildiz 2007), many have argued that while the new technology enables new potential mitigated by existing procedures and regulations, it does not necessarily lead to extensive change (Bryer and Zavattaro 2011; Heeks and Bailur 2007). E-government could be thought of as a totally new phenomenon triggered by the introduction of the Internet and related technologies. On the other hand, e-government could also be understood as a new term representing the use of ICTs in government settings or a new label for an old phenomenon (like old wine in new bottles) with a long history. This research takes the latter view and argues that e-government is one of many terms used to represent and describe a complex, socio-technical phenomenon that has been studied for several decades.

Just like e-commerce or e-business, the concept of e-government has emerged from the Internet boom. Using the Internet as a vehicle for selling/buying products and services, e-commerce has become an accepted, legitimate means of conducting business transactions. E-business expanded the scope of e-commerce to include business processes and practices. As consequences of the rapid development of the private sector, the public sector began to adopt these new technologies. Interestingly, e-government has several 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 an extreme imbalance between information and power among stakeholders (Peristeras et al. 2009). On the other hand, governments are operating in an increasingly complex environment of constrained resources and must comply with numerous policy objectives. In recent years, attempts to improve government efficiency and effectiveness by incorporating ICTs have increased in the public sector (Grönlund and Horan 2005).

One of the main tasks of governments is to communicate with citizens in order to inform them about new activities, services or regulation changes. However, citizens' view of their role in government communication has started to change. Seen formerly as 'customers', they now perceive themselves as 'partners' (Linders 2012). This has led to increased expectations from governments where the public is concerned. Government communications reveal a number of constraints such as politics, the public good, and legalities (Liu and Horsley 2007). In contrast to the private sector, budget for external communications in government agencies is comparatively low and decreases during budget cuts and re-structuring (Liu and Horsley 2007). Therefore, government communication is often a one-way communication via traditional mass communication channels. In most cases, communication on government issues takes place via intermediaries such as newspapers or radio without including government agencies (Towner and Dulio 2011). With the growth of websites, government agencies were expected to realize citizens requests directly (Hong 2013), and with the emergence of Web 2.0 applications governments were able to directly reach the citizens "where the people are" (Garvin 2008) and interact with them easily (Mergel 2012). Therefore, it was thought that Gov2.0 would solve all the traditional government problems, however, that was not the case.

There is no explicit e-government theory; however, various definitions have been put forward. These definitions have allowed scholars and practitioners to provide many labels, ranging from technical (e.g., security) to behavioural (e.g., adoption) to organizational (e.g., change management), social (e.g., participation), economic (e.g., outsourcing) and societal (e.g.,

democracy) under the e-government umbrella. None of these labels can be rejected as long as it falls within one or more of the many explicit and implicit definitions. The next section will briefly discuss several e-government definitions.

2.2.2 E-government definition

The term 'e-government' emerged in the late 1990s, "electronic government" came first used in the 1993 U.S. National Performance Review, while "e-government" came later when used in 1997 (Relyea 2002). E-participation came into existence later, after 2000, and refers to the use of ICT-enabled methods and tools enhancing the interactions between citizens, politicians and public sector officials that take place between elections (Andersen et al. 2010; Macintosh 2004). E-democracy, on the other hand, was for a while a synonym for e-participation, but today it refers to the processes and structures that encompass all forms of electronic interaction between the government (elected) and the citizen (electorate) (Netchaeva 2002). However, e-government has frequently been used in the literature as a buzzword or an umbrella concept to cover multiple areas, resulting in fuzzy definitions (Peristeras et al. 2009).

Interestingly, while digital government is the most commonly used term in the U.S., e-government is most common in the EU and elsewhere. Other synonyms include e-governance, one-stop government, and online government. In IS literature, e-government and e-governance are used interchangeably; however, this distinction has long since been made in public administration (Heeks and Bailur 2007). Indeed, IS research, and e-government practice, tends to use confounding definitions and the most current definitions are about governance rather than government. Generally speaking, e-government refers to the processes and structures needed to deliver electronic services to the public (citizens and businesses), and to conduct electronic transactions (Grönlund 2010). E-governance refers to the interaction between government and the public (citizens and businesses) to simplify and improve democratic, and government aspects of governance (Yildiz 2007).

In a nutshell, e-government denotes what is happening inside the government; on the other hand, e-governance denotes the entire system involved in managing the society. It can be concluded that e-governance is more than just a government website or e-service delivery; it includes political, social, economic and technological matters. Therefore, e-governance is a better term to use when considering IS systems and applications in relation to the public sector. The popular use of the term 'e-government' can be interpreted as an indication of high dependence on formal governments rather than on government activities (Grönlund 2010). Riley (2004) made an effort

to distinguish the two by describing the government goal as achieving the public interest, and the e-governance as a way of representing the relations between government and its wider environment, i.e. political, social, economic and technological aspects. This research simply uses e-government to describe the emerging research field: Gov1.0 as the first wave of e-government and Gov2.0 as the recent wave of e-government, which is the focus of this research and will be discussed later in this section.

There is no consensual agreement on the definition of e-government (Halchin 2004), as some scholars in the field define e-government in terms of the broad social domain that encompasses all government operations, from education and health to natural resources management, transportation systems, and urban planning. Definitions of e-government go beyond the provision of online services to citizens to include organisational change and the role of government as a partner or a facilitator. A selection of 18 definitions from key e-government scholars (S), leading countries in e-government (C), and international institutions and global organisations (O) are presented in Table 2.1.

Table 2. 1. E-government definitions

Scholars	Reference	Term used	Definition
S1	Fountain (2001)	Digital government	"Organized increasingly in terms of virtual agencies, cross-agency and public–private networks whose structure and capacity depend on the Internet and Web."p.4
S2	Means and Schneider (2000)	E-government	"The relationships between governments, their customers (businesses, other governments, and citizens), and their suppliers (again, businesses, other governments, and citizens) by the use of electronic means." p.121.
S3	West (2004)	E-government	"The delivery of government information and services online through the Internet or other digital means." p.16
S4	Brown and Brudney (2004)	E-government	"The use of technology, especially web-based applications to enhance access to and efficiently deliver government information and services." p.1
S5	Holden et al. (2003)	E-government	"The delivery of government services and information electronically 24 hours per day, seven days per week." p. 327
S6	Hu et al. (2009)	E-government	"The major initiatives of management and delivery of information and public services; taken by all levels of governments (including agencies, sectors); on behalf of citizens, business; involving using multi-ways of internet, website, system integration, and interoperability; to enhance the services (information, communication, policy making), quality and security; and as a new key (main, important) strategy or approach." p. 979
Countries	**Reference**	**Term used**	**Definition**
C1	Republic of Korea (Kim 2006)	E-government	A form of government to positively respond to citizens' needs for democracy with efficiency and transparency of public administration related to e-transmission and networks of public services based on the IT infrastructure.
C2	Australia (AGIMO 2009)	E-government	Use of ICTs to increase public sector productivity by enabling the delivery of better government services and improving the efficiency of operations and supporting open engagement to better inform decisions.

C3	Singapore (IGOV 2010)	E-government	Integrated government that operates seamlessly behind the scene to serve customers better.
C4	U.S. (DIGITALGOV 2017)	Digital government	Applying ICTs to enhance government functions and services, achieve more efficient performance, increase access to government information, and increase citizen participation in e-government.
C5	U K (GOV.UK 2017)	Electronic Government	The use of ICTs by government agencies in order to better manage relationships with citizens, business and other arms of government.
C6	Saudi Arabia (Yesser 2014)	E-government	Providing better government services to individuals, businesses and government users, thus raising satisfaction with government services and increasing quality of life.
International institutions	**Reference**	**Term used**	**Definition**
O1	European Union (EU) (i2020)	E-government	Using the tools and systems made possible by ICTs to provide better public services to citizens and businesses.'
O2	EU (2014)	E-government	The use of ICTs in public administrations combined with organisational change and new skills in order to improve public services and democratic processes.
O3	UNPAN (2002)	Electronic government	The electronic commerce relates it almost exclusively to actions conducted through the Internet that improve citizen access to public information and government services.
O4	OECD (2003)	E-government	The use of ICTs, and particularly the Internet, as a tool to achieve better government.
O5	UN and ASPA (2002)	E-government	Utilizing the Internet and the World-Wide-Web for delivering government information and services to citizens.
O6	World Bank (2015)	E-government	The use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other government agencies.

From Table 2.1, it is apparent that two comprehensive definitions are commonly referenced: the work of Hu et al. (2009) and OECD (2003). Hu et al. (2009) reviewed e-government literature from 1998 to 2007 and identified the widely shared definitions of e-government to help scholars understand the breadth and depth of the field. They concluded with a conceptualized definition of e-government consisting of six components: (1) encompassing the management and delivery of information and public services, (2) including all levels of governments, (3) developed on behalf of citizens and other stakeholders, (4) utilizing many tools and applications, focusing on systems integration, and interoperability, (5) enhancing the quality and security of services (information, communication, policy making); and (6) becoming a new strategy or approach (Hu et al. 2009, p. 979). On that note, OECD (2003) studied e-government definitions and concluded that they could be categorized into four groups as shown in Table 2.2.

Table 2. 2. OECD (2003) definitions of e-government

Group	Definition
1	Internet (online) service delivery and other Internet-based activity such as e-consultation.
2	E-government is equated to the use of ICTs in government. While the focus is generally on the delivery of services and processing, the broadest definition encompasses all aspects of government activity.
3	E-government is defined as a capacity to transform public administration through the use of ICTs or indeed is used to describe a new form of government built around ICTs. This aspect is usually linked to Internet use.
4	The use of ICTs, and particularly the Internet, as a tool to achieve better government. This is the only perspective taking a fundamentally external view; better government must be measured from outside, in terms of what good it does for society.

From Table 2.2, it can be seen that the Group 4 definition is obviously a broader one, involving more issues and more stakeholders, than "electronic service delivery" in Group 1. However, Group 4 definitions explicitly relate to government values while Group 1 definitions might not be relevant. Government involves different stakeholders from politics, administration and society; however, each group of OECD definitions focuses on different parts of the government domain. For instance, internal efficiency (in Group 2), might not include either policy changing or its direct effect on citizens. Conversely, "Better government" (in Group 4) might not include e-services directly. For example, introducing laws protecting people's privacy in all areas could be seen as making better governments where such legislation did not exist previously. The OECD taxonomy is useful for this research purpose because it relates technology to government.

A closer examination of the definitions in Tables 2.1 and 2.2 uncovers three themes:

- the use of ICTs, especially the Internet; for example, some definitions (S3, C4, O6) specify the Internet or web-based applications as tools, while others (S2, C2 ,O4) mention currently existing or new technology.
- the shared purpose is to improve government information and services through better delivery (S4, C3, and O1) and increased access for citizens (C1, C4, O3).
- the impact of e-government is described to facilitate the participation of citizens in government activities (C4) transform relations with citizens (C5, O6), promote democracy (C1) and transparency (O3).

The first set of definitions was purposely limited, to make it easy to conceptualise. For example, the "self-service" aspect of technology is discussed from a technical view without addressing the organisational issue, and e-participation is discussed as a system and omits the social context behind it. Other definitions (O2, O4, and O6) from Table 2.1, address the broader development towards better government, acknowledging the need for organisational reform to go hand-in-hand with technology implementation, and focus on the role of government in society, that is, governance.

This provides a picture of the e-government field in terms of breadth. As for the depth, many of the themes are far from achieving their objectives at the moment. Much of the research has been focusing on service delivery and being fully online. Other terms such as "the role of government" and "the value of ICTs investments" reach far beyond "full electronic case handling". In terms of the latter, there is no distinction between government and e-government. As ICTs continue to develop, governments will continuously have to develop new and more effective and efficient ways of enacting and operating them (Fountain 2001). The focus will shift from the "e" (i.e. technology) to the underlying values, issues and processes that governments need to sustain.

A similar view was developed by Castro and Mlikota, (2002), who stated that e-government referred to the use of ICTs by the public sector to deliver to all citizens improved services, and reliable information to facilitate access to the governing process and encourage deeper citizen participation. They argued that the e-government concept covers three distinct, yet related applications:

- e-administration: the improvement of the internal functioning "back-office capability" of the public sector with new ICT-based information systems to enhance efficiency and efficacy. Some scholars see this application as a precondition for developing the next two;
- e-government: the provision of information and service delivery to citizens, with new ICTs to enhance the transparency, accountability and quality of public services.
- e-democracy: the engagement of citizens in public decisions and actions, with new ICTs to enhance government responsiveness and to expand civic support.

However, until now, investments made in all areas of e-government seemed not to have paid off and nor have there been clear social returns (Andersen et al. 2010; Macintosh 2004). Yield (2007) stated that e-government literature limited itself to the study of the outcomes and outputs of the e-government projects.

In light of the above discussion, the following observations can be made about the e-government concept:

First, it is a concept defined by the objective of the activity (i.e. transfer of government information and services to citizens), instead of the specific technology used, or the specific activities of the related stakeholders (Yildiz 2007). Hence, many e-government definitions are rather vague and cover multiple meanings depending on the specific context (Torres et al. 2005).

Second, e-government is one of those concepts that mean different things to different people (Grant and Chau 2005) and may refer to e-government, e-governance, e-democracy, or e-services. Technological advancement makes it difficult to fully grasp the meaning, opportunities and limits of the concept (Prins 2001).

Third, e-government contains much hype and promotional efforts (some from IT vendors), similar to the concepts of "knowledge management" (Lev 2000), "management by objectives" (Miller and Hartwick 2002) and "participative management" (Moon 2002). Heeks and Bailur (2007) used content analysis of 84 e-government papers and found a strong theme of hype, and a lack of balance in considering the impact of e-government. Another reason for the over-optimistic tone is that most e-government researchers appear relatively new to the field, and consequently do not fully understand the level of complexity involved. Furthermore, self-interest could partially explain the strong optimism about e-government, as most of the authors had direct roles in the projects, products, or services that their papers described (Heeks and Bailur 2007).

Finally, what are the minimum criteria for a government technology to be considered as an e-government? For instance, are websites or e-mail addresses of a government department enough for it to be labelled as e-government? Or are some levels of interaction required? for this research, studies that fall within any of these definitions could be defined as e-government.

2.2.3 E-government system: A holistic view

Based on the discussion in section 2.2.2 on e-government definitions, the government system can be divided into two main subsystems, the political and administrative:

- the political system interface, which includes interactions through processes of public policy analysis, formulation, and selection; and
- the administrative system interface, which includes interactions through the public-service provision process, covering both internal and external communications with all stakeholders.

Peristeras et al. (2009) identified the use of ICTs in these two interfaces respectively as e-democracy and e-government (see Figure 2.2).

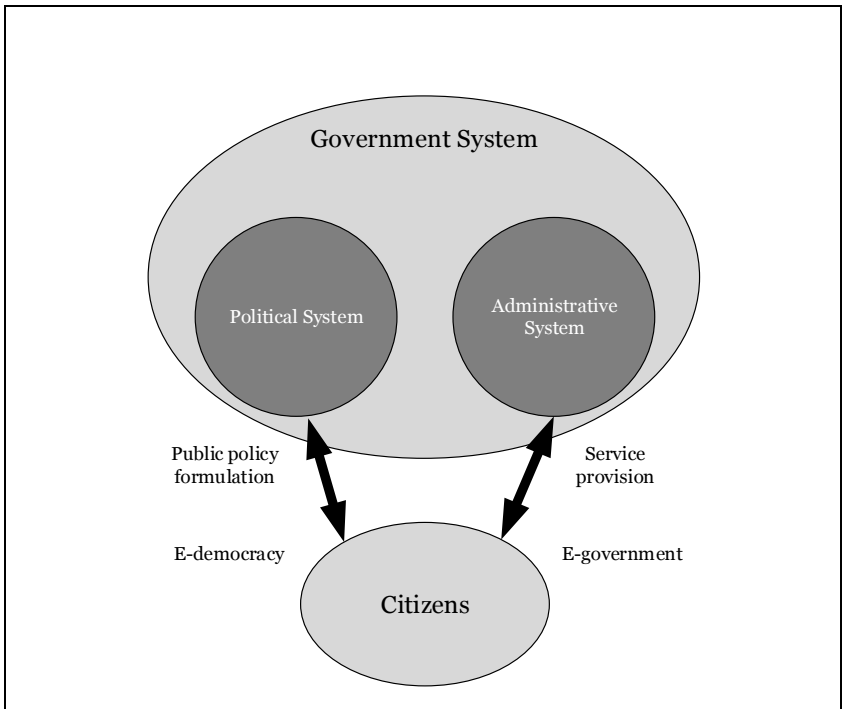

Figure 2. 2. E-government systems (Adapted from Peristeras et al. 2009)

This research agrees with the typology to a certain extent, and acknowledges that there is no fine line between the two. That said, the scope of this research is limited to the administration systems. The e-government field has expanded its coverage with respect to reference fields (e.g. IS, PA).

Therefore, it is reasonable to examine, discuss and reflect on e-government as a discipline. Generally speaking, the e-government field can be considered as the combination of two broader fields. First, Governance, which includes: PA, Political Science, and Government studies. Second, Informatics, which include: IS, Library and Information studies, and CS (Grönlund 2010). A scientific realm is usually described by the common objectives of study, the collection of theories which can be used to explain the study objects of the field, and the general methodology and understandings of what to examine and how (Grönlund 2005). Although there is usually no common agreement between these understandings, they still provide a foundation of the culture of the field (King and Lyytinen 2004). E-government reference disciplines tend to overlap (e.g. library, e-records management, digitization, software engineering), and their researchers have widely varying backgrounds, who bring with them an accumulation of knowledge. Furthermore, as mentioned previously, the e-government discipline started as a practitioner's field and its researchers came from various backgrounds being academics, government personnel, or business executives. Thus, it is of no surprise that the contributing and emerging theories, fields, and concepts are numerous as shown in Figure 2.3.

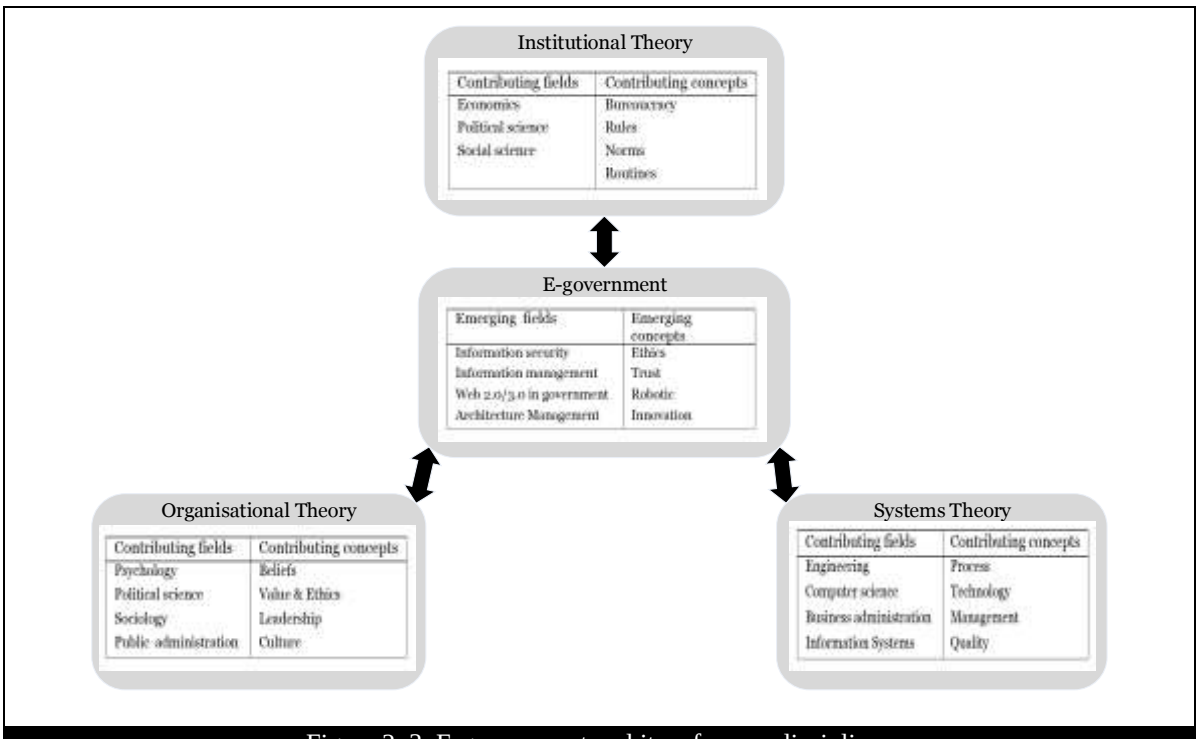

Figure 2. 3. E-government and its reference disciplines

Government, the main object of e-government field, often consists of many departments and diverse processes. It could be a local government in a small village in Uganda or the Australian Commonwealth Government in Canberra. Furthermore, government agencies differ significantly in terms of the services they provide, from education to health to public transportation to social welfare. E-government is a practical field; while PA developed an understanding about government agencies at work, IS scholars and practitioners examine how ICTs in government agencies can improve the government workings and extend contributions to the whole society (Grönlund 2005). The link between the two disciplines (i.e. IS and PA) is usually missing and if it exists, it is only at an aggregated level.

Conversely, most of the e-government theories are concerned with political institutions, which often ignore the dynamics of organizational environments. They usually do not consider citizens in practice, and ignore the influence of ICTs. It is sometimes implied that only political decisions are important. On the other hand, IS theories often deal with users in practice; however, they are usually limited when applied to government as they decontextualize users from the historical and systemic perspective (e.g., Actor Network Theory and Institutional theory) (Yildiz 2007). Of course, theories pertaining to both PA and IS are not particularly weak and have been applied in e-government with some success (e.g., Institutional theory in Luna-Reyes and Gil-García 2011), but the argument here is that the complexity of the phenomenon requires a trans-disciplinary approach.

Regarding the e-government discipline, the issue of "discipline versus field versus domain versus interdisciplinary science" has recently been subjected to debate, recalling the experience of IS with the same issue, although some half century old (Scholl 2007), with well-established faculties, colleges, schools, departments, journals, conferences, societies, and research methods (Baskerville and Myers 2002; Benbasat and Weber 1996; Benbasat and Zmud 2003). In the IS field debate on the core of its nature, some voices were warning against defining its scope too narrowly, precisely because of the increasing use of IT in business and government alike (Myers 2003). This research is in line with Grönlund (2005) argument that defining IS broadly would be beneficial for both the IS and the e-government fields as it provides a foundation for the proposal of solutions when new challenges arise.

Accordingly, Heek and Bailur (2007) when analysing the main literature referred to by e-government researchers, found that one third was drawn from e-government itself; clearly indicating that e-government is becoming a discipline in its own right. Worth mentioning though,

is that the majority of literature originating from IS or e-business concepts was adapted to fit the public sector context (Heek and Bailur 2007). However, the diversity of the different disciplinary perspectives brought to e-government can be beneficial only in terms of the "research ecology" (Scholl 2007). Overall, e-government finds itself at a crossroads involving a number of other research domains such as IS and PA.

However, there are three limitations to defining e-government as a specific research field:

1. *Exclusive* – in a complex connected world, what issues would be better discussed as a separate field? For example, we have seen e-government research benefit from the combinations of disciplines that are required beyond the IS field.

2. *Narrow focused* –with the use of Information Technology (IT)/IS in governance, what issues are the specific concerns of government, and not of any other organization? For example, leadership theories and models could be borrowed from organisational studies and modified to suit the government context. Another example is the use of integrated IS such as Enterprise Resource Planning (ERP) to promote interoperability among different agencies and at the same time ensure citizens' privacy.

3. *Contextualisation*– in a government context, the policies and procedures need to be discussed in light of the "e" (i.e. technology). What are the consequences of the IT artefact design and use? For example, many of the problems in the current e-government discourse arose because of the exclusion of the IT artefacts (Benbasat and Zmud 2003).

With the emergence of any new discipline, theories are often used to standardise its classification (summarize observations), to develop taxonomies (scheme of classifications), to propose conceptual frameworks (explain and predict relationships), and to theorize phenomena (explain and predict formal theories). This research agrees with Scholl's (2007) view that e-government will not develop into a classical discipline, and nor will it be restricted to narrow procedures. E-government should keep drawing from multiple disciplines and is best studied in a trans-disciplinary manner as shown in Figure 2.4.

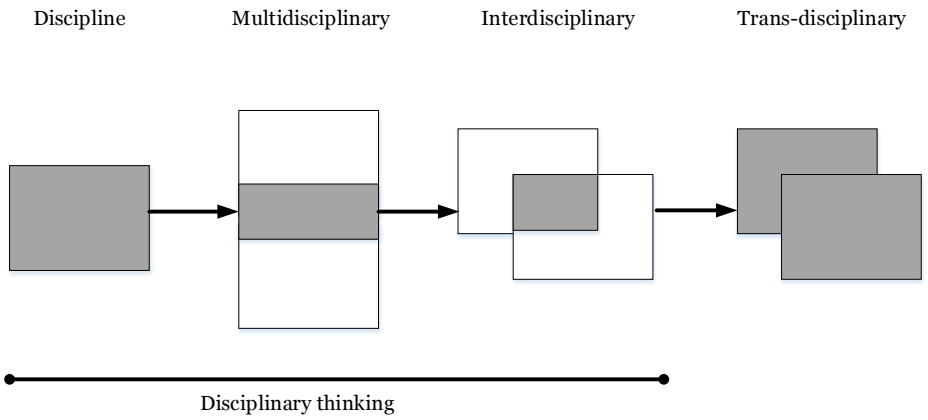

Figure 2. 4. Disciplinary to trans-disciplinarily continuum (Adapted from Ramadier 2004)

A trans-disciplinary approach will integrate these reference disciplines (i.e. IS and PA) and contribute to e-government research by forwarding new ideas for theory and application. Traditionally, science has advanced in a linear manner, due to the notion of progress and development, which in turn lead to knowledge of independent disciplines (Ramadier 2004). As Campbell (1969) noted, the division of research into separate disciplines is due to its historical development rather than to genuine scientific necessity. This deconstruction of scientific activity into more or less separate disciplines has also led to specialisation. Disciplinary knowledge is driven mainly by the concept of one reality. Multi-disciplinary and inter-disciplinary views are the next level of disciplinary thinking and do not challenge this view. In multi-disciplinary thinking (dialectic logic), the aim is to combine theoretical models from different disciplines. The idea is not to take into consideration the models as a whole, but only relevant parts of each. To maintain coherence, disciplines are treated as being complementary in the process of understanding phenomena. Inter-disciplinary thinking (hermeneutical logic) varies from multi-disciplinary thinking in that it builds a common model for the participating disciplines, based on a process of communication between disciplines. Therefore, the inter-disciplinary approach is often implemented within one of the disciplines involved and its purpose is to create synthesis. The important feature of inter-disciplinary thinking is in the transfers of models (such as statistics) from one discipline to others. As Ramadier (2004) argued, both inter-disciplinary and multi-disciplinary research approaches do not overcome the problem of fragmentation and reduction. As a result, these three scientific methods (i.e. disciplinary, multi-disciplinary and inter-disciplinary) have led to the development of the trans-disciplinary approach (Figure 2.4).

Ramadier (2004) observed that the notion of trans-disciplinary research evokes the idea that the whole is more than the sum of its parts, similar to Checkland's (1981) systems thinking. Trans-disciplinary research is based on the proposition that disciplinary practices must progress to match the complexity of the issues facing the scientific community. Complexity can be tackled only through the trans-disciplinary approach. It simultaneously investigates between the disciplines, across the different disciplines, and beyond all disciplines (Nicolescu 2014). Its objective is to understand the present world through the unification of knowledge. Nicolescu (2014) stated that trans-disciplinary thinking is based on two main components: complexity and level of reality. It is grounded in practice and highlights the overlapping nature of knowledge, and its dependence on the context (Balsiger 2004; Bruce et al. 2004; Ramadier 2004).

There is a call in the e-government literature to apply trans-disciplinary research (Chen et al. 2007), and to learn from other disciplines. However, some have argued that reliance on other disciplines for theory should be limited, and see this as a hindrance to knowledge building (Benbasat and Weber 1996). Nonetheless, the field of e-government is still in its early stages and should benefit from this diversity to enhance knowledge and academic legitimacy (Heeks and Bailur 2007). As e-government involves a complexity of issues beyond the scope of a single theory (Heeks and Bailur 2007; Yildiz 2007), researchers allude to the use of theories from disciplines other than IS, such as management, organisational behaviour and marketing theories to boost the knowledge and understanding of the e-government field.

The lack of theoretical progress in the e-government domain can be explained by its infancy. Furthermore, the e-government field is seen as "the offspring of the two intellectual weaklings" (i.e. IS and PA) (Heek and Bailur 2007, p.261), which lacks philosophical, theoretical, methodological, and practical rigor. This makes drawing and borrowing from those fields problematic for e-government researchers. IS (Swanson and Ramiller 1993) and PA (Harmon and Mayer 1986; Hood 1991) have been criticised for being "theory applying" rather than "theory building". E-government research is neither of these; it is far from reaching an adequate level of knowledge about its models (Heek and Bailur 2007). E-government research put forward issues of information, technology, and policies that neither of its main reference fields are independently capable of dealing with. Therefore, this research applies a trans-disciplinary approach by extending theories from other disciplines such as those from psychology, political science, marketing and behavioral science in the Gov2.0 context. Specifically, this research is grounded on the empowerment and co-creation theories. From the above discussions, various classifications of e-

government have been developed to include other government agencies, citizens, and businesses. Thus, the next section will discuss e-government classifications in the literature.

2.2.4 E-government classifications

E-government systems comprise different stakeholders including public sectors, private sectors and citizens. One way to understand e-government is to classify its components according to the type of relationships that exist between government and other stakeholders (Brown and Brudney 2004; Gil-Garcia and Luna-Reyes 2006; Hiller and Bélanger 2001; Moon 2002; Shareef et al. 2009). The e-government literature has mainly classified e-government in terms of the benefits it offers, or how it relates to the development life cycle, or the level of its implementation. Adoption and use of e-government can result in benefits for all three forms of e-government: Government-to-Government (G2G), Government-to-Business (G2B), and Government-to-Citizens (G2C) (Jaeger 2003). E-government is also different from prior generations of ICTs in government because it is mainly outwardly focused, that is G2G, G2B, and G2C, rather than inwardly focused (i.e., the automation of governmental functions such as finance and accounting). This approach relies basically on a business-like model and, therefore, focuses on the use of the ICTs to improve government functions in its relations with other government agencies G2G, business G2B, or citizens G2C. Describing the concept in another way, Holmes (2001) categorized three main associations that he called the ABC of e-government: (1) Administration to Administration, (2) Administration to Business, and (3) Administration to Citizens. This research focuses mainly on G2C and C2G, although the emerging communication layer potentially utilized within Gov2.0 may blur the classification. A more detailed classification is shown in Table 2.3.

Table 2. 3. E-government classifications

	Government (G)	**Citizen (C)**	**Business (B)**
Government (G)	G2G E-administration, establishing and using a common data warehouse	G2C Government organization websites, e-mail Communication between the citizens and government officials	G2B Posting government bids on the Web, e-procurement, e-partnerships
Citizen (C)	C2G e-voting, tax declaration by citizens	C2C Discussion groups on civic issues	C2B Job exchange by job seekers
Business (B)	B2G tax declaration by private organisation	B2C Online ordering	B2B Procurement through EDI

The G2G category is based on the business metaphor, Supply Chain Management (SCM), and categories G2C and G2B are based on Customer relationship management (CRM) systems treating

citizens and businesses as customers (Siau and Long 2006). In this respect, this research proposes a different perspective based on the co-creation approach which will be discussed later in section 2.4. Next, is the common classification of interactions in e-government as proposed by many authors (Coursey and Norris 2008; UN 2008; Siau and Long 2006).

Government to Government (G2G)

G2G enables government agencies at different levels (i.e., local, state, and federal) to work more easily together by integrating the government data and information into a central database (Siau and Long 2006). Vertical integration enables the database to be shared among government agencies with similar functions but at different levels of government. Horizontal integration, on the other hand, enables the database to be shared among government agencies at similar levels of government but across different functions (Siau and Long 2006). Technological advancement in this category has allowed government agencies to have a single access point to reduce costs, improve outcomes, achieve higher efficiency and enable greater consistency (Seifert 2008). The ultimate goal is to share data and to operate all transactions through ICTs at different levels of government at different locations. Often, the activities of government require that information, products, or services be shared across agencies. Intergovernmental collaboration is used to provide services that require a broad selection of clients, such as healthcare or welfare. G2G has the potential to facilitate relations amongst government agencies, and between different levels of government (Gil Graci 2012).

Government to Employee (G2E)

G2E was initially perceived to be a part of G2G; however, Ndou (2004) identified it as a separate category as it focuses on the individuals (i.e. government employees) not the organisations (i.e. government agencies), where the employees become more involved in decision-making at management levels, as well as promoting knowledge-sharing and e-career applications. Similarly, Siau and Long (2006) stated that this sector involves the internal interaction and cooperation between government agencies and their employees at different levels and distributed locations of governments. Fang (2002) argued that this sector should facilitate the creation of e-offices, which are paperless systems. The goal of this category is to make government administration more effective and efficient. Hiller and Bélanger (2001) noted that government agencies' relationship with their employees is different from that with their own citizens. Government can used ICTs to improve its internal management through better use of information technologies in the workplace (Kim et al. 2009). For example, the government could use an intranet to improve communication

with employees (Williams 2008). Governments could also develop or implement information systems for HR management processes.

Government to Business (G2B)

G2B occurs when there are e-transactions between government agencies and the private sectors such as e-procurement, and e-Marketplaces are developed for systematic government purchases (Fang 2002). This interaction includes Government procurement tenders for the exchange of information and products via electronic means (Siau and Long 2006). Government agencies in this section can improve their efficacy and effectiveness to reduce costs by learning from the private sector's experience of e-commerce and e-business. Consequently, e-government has huge potential for improving the relationships between private companies and governments (Gil Garcia 2012; Olbrich 2010). The goal is to encourage the relationship between government agencies and businesses in order to provide better services to businesses in many areas such as customs, tax, and e-procurement. However, some authors limit this association only to the services that government provides to different businesses, in a citizen-like capacity (Hiller and Bélanger 2001). Paying taxes online would be an example of the relationship between government and businesses in this category.

Government to Citizens (G2C)

G2C e-government goes beyond information disseminating and electronic transactions to include citizen participation in the decision-making process (Chun et al. 2012; Macintosh 2008). This category includes a variety of interactions between government agencies and citizens, such as communicating, and facilitating which should result in better citizens' engagement, including e-democracy and e-voting, as well as offering online services such as paying online, booking appointments, and renewing licences and passports (Riley 2000). Seifert (2008) measured the success of e-government by the level of citizens' adoption of and involvement in these new processes. Thus, as more citizens interact, they will become the main users of the system in the future (Seifert 2008). The goal is to deliver online services and facilitate citizens' participation in order to improve the relationship between citizens and government. Possibly the best-known potential of e-government is its ability to improve services to citizens enabled by ICTs, and to promote greater transparency and stronger accountability. E-services and the posting of public information are examples of this type of association (Rahman 2010; Teo et al. 2008). Indeed, G2C provides a wide, direct link between government agencies and citizens, leading to a more citizen-centric government. In this research, the focus will be more on G2C category as an efficient

approach to co-creating PV. The next section briefly explains the chronology of the development of e-government.

2.2.5 E-government evolution waves

Janssen and Estevez (2013) evaluated the waves of e-government evolution from a public administration perceptive. E-government in its early stages was focused mainly on internal processes and the provision of services, as discussed earlier. It was often viewed from the technological perspective and often without any links to the government core values and objectives. A second wave of e-government research concentrated on transformational government (t-government), which was intended to transform bureaucracy and to create customer-driven services. T-government efforts can be viewed as an evolution of e-government in response to the needs of the public sector. This wave is mainly related to the public administration perspective, and is therefore outside the scope of this research. Gov2.0, which is the focus of this research, can be viewed as the third wave of this evolution, which is often centred on Web2.0 applications that enable more inclusion of multiple stakeholders including citizens, businesses, and non-governmental organizations (NGO). Gov2.0 recognized the trend of decentralization aimed at empowering citizens. The three waves of e-government evolution and their reflective primary focus are depicted in Figure 2.5.

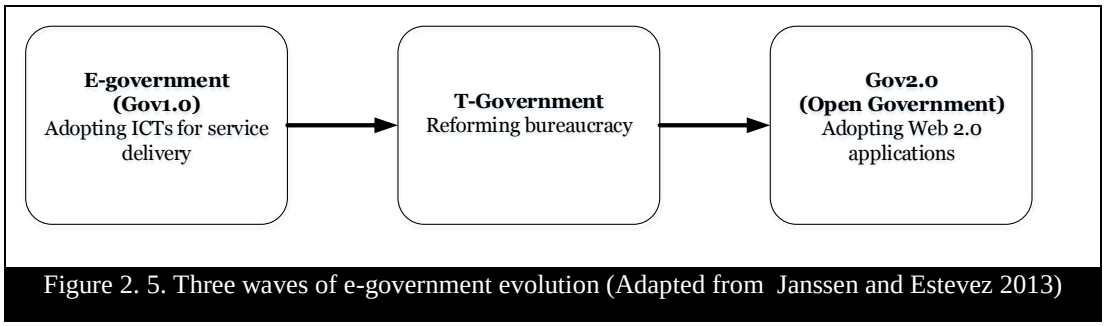

Figure 2. 5. Three waves of e-government evolution (Adapted from Janssen and Estevez 2013)

Certainly, because they overlap, there is no fine delineation for the exact start of each wave. .In actual fact, the e-government and t-government waves are still ongoing in some situations. These three waves highlight the themes "ICTs and Government", although their emphasis has shifted over time. According to Millard (2010), in many European countries, e-government systems are still trapped in a Gov1.0 wave. However, there are increasing moves towards Gov2.0 with more focus on citizens' inclusion, which relates to empowerment and engagement. In Gov2.0, the government is transforming its fundamental values and operations to reflect and serve the evolving needs of the society. Table 2.4 summaries the characteristics and compares the three waves: Gov1.0, t-government and Gov2.0.

Table 2. 4. Overview of the three waves of e-government

Features	Gov1.0	T-Government	Gov2.0
Main drivers	e-commerce, online services (transactional)	Need for structural and long-lasting changes	Web 2.0 applications
Initiated around	1998	2005	2008
Mechanisms	ICT-driven service innovation	Business processes	Reduce uncertainty, complexity
Aims	Improved service delivery	Innovating services and radical organizational changes	Strengthen ties with the public
Scope	Front-end—creating online services	Back-end, organization, structural organizational transformations	Network, managing and orchestrating the network of citizens, businesses, NGOs and government agencies
Change approach	Front-end driven, online services are build based on existing processes	Process-driven, radical change of business processes to enable structural changes	Experimenting-driven, collaboration and new governance forms are explored
Initiatives are driven by	Bottom-up approaches which are aimed at creating ICT-based applications (champions)	Top-down, aimed at changing structures and processes (hierarchical)	Collaboration, aimed at making actors part of the network intelligence (self-initiated)
Dominating focus	Technology, existing processes and services	Technology-driven change of structures, organizations and business processes and business process management	Collaboration on information sharing, participation and management
Status	Content consists of tested, final versions	Business process reengineering and optimizations	Approach is perpetual beta, subject to changes by third – party website providers
Cost	Mostly, requires large financial investment and is long-term	Relatively high to medium investment and long-term	Typically low-cost and short-term
Feedback mechanisms	Survey of focus groups done occasionally and with limited customers	Focus groups and simple feedback	Continuous detailed feedback received from online public
Data authority	Government experts; higher levels of control over content	External experts; higher levels of control over content	Government experts and members of the public hold authority; lower levels of control
Interaction	Push; one-way communication; low interactivity	Push; one-way communication; low interactivity	Pull; two-way communication; possibility of bidirectional interactions.
Targeting of audiences	Aimed at broad masses "the public"	Aimed at internal audiences "employee and other department "	Personalized, channel approach, clear understanding
Measurement	Mostly quantitative, with limited access to detailed user behaviours and identities.	Real-time data; waste, gap between current and required performance	Real-time data; reach, numbers, qualitative data about opinions, attitudes.

Tactics	Information and educational ; reactive	On the spot; active	Strategic campaigns, reactive and proactive approaches
Technology relationship	Technology-driven	Machine-view	Empowerment

As seen from Table 2.4, the three waves of e-government differ and vary in regard to their drives, scope, cost and tactics and so on. Based on the features of Gov1.0, t-Government and Gov2.0, the relationship between the three concepts is complex, as it is possible to find components of each part in each wave. New waves accumulate with older ones, and accrue developments. Therefore, they are not separate streams but are different waves within the field of e-government. Gov2.0 does encompass elements of Gov1.0 and t-government but is predominantly about participation and collaboration, and that is what makes it different from Gov1.0 and t-Government. Gov2.0 can be viewed as government employing Web2.0 applications to connect, involve and engage the citizens in solving problems resulting in roles changing. Citizens and the private sectors are empowered and motivated to play an active role in solving societal problems. In an ideal world, citizens are openly invited into a participative and empowering relationship with the government, leading to the Open government concept, which is discussed next.

2.2.6 Open government

Two buzzwords are currently heavily used in the public sector: Open government and Gov2.0. In the context of e-government development, Nam (2011) discussed Open government and Gov2.0 as a new ends and a new means for e-government. He proposed Open government as an extension of e-government (Gov1.0) being equipped with Gov2.0. Indeed, emerging technologies could support Open government, such as social networking sites and geographic targeting tools. This shift is beginning and initiatives are being taken not only by the government, but also by civil organisations. Such services start from asking citizens what they need in their everyday lives. An example is the fixMystreet service.[3] This service allows citizens to report any problems in their streets or neighbourhood, ranging from broken lights to abandoned vehicles to graffiti. Citizens do not need to know who is responsible; the site automatically passes the complaint to the correct department and then traces and tracks its progress until the problem is resolved. This service has inspired other cities in the world and it is now operating in more than a dozen countries including Australia. The Open government Initiative covers core values of e-government—i.e., transparency, participation, and collaboration. However, without a set of tangible and concrete

[3] fixMystreet was developed by the My society third party organisation in the UK in 2007 (http://www.fixmystreet.org.au/).

goals, the Open Governmental initiative may not be achievable, as reported during the earlier years of e-government (Wijnhoven et al. 2015). Table 2.5 outlines the Open government goals and drivers.

Table 2. 5. The Open government principles (Adapted from Linders and Wilson 2011)

Principles	Goals and Drivers
Transparency	Goal: Promote accountability and provide information for citizens about what the government is doing.
	Driver: Information maintained by the government is a national asset.
Participation	Goal: Enhance the government's effectiveness and improve the quality of decision-making.
	Driver: Knowledge is widely dispersed in society"; government should tap this wider pool of knowledge.
Collaboration	Goal: Engage citizens in the work of their government, by collaborating across all levels of government, and with nonprofit organizations, businesses, and individuals.
	Driver: Partnerships and cooperation "improve the effectiveness of government

Therefore, Open Government is about how government can co-create PV with individuals and society (OECD 2010). Shortly after his election as American president in 2008, President Obama signed the "Transparency and Open Government" memorandum which stated: "*Government should be collaborative. … Executive departments and agencies should use innovative tools, methods, and systems to cooperate among themselves, across all levels of Government, and with non-profit organizations, businesses, and individuals in the private sector. Executive departments and agencies should solicit public feedback to assess and improve their level of collaboration and to identify new opportunities for cooperation*" (Obama 2009). Although Web 2.0 was not mentioned explicitly, many interpreted the innovative tools, methods, and systems that would enhance governmental transparency, public participation, and collaboration as pointing towards Gov2.0. Furthermore, Obama's election campaign made extensive use of Web2.0 applications. Obama's statement summarises the elements of collaborative and cooperative work to engage with private and non-profit organisations, citizens, and other governments. Thus, it is reasonable to say that Gov2.0 benefits includes improving government workings (Dunleavy and Margetts 2010; Osimo 2008).

2.2.7 Existing Studies on Gov2.0

Social media and Web 2.0 have been used interchangeably in the literature (Coleman 2009). Bryer and Zavattaro (2011) differentiate them through means-versus-ends analysis by considering Web 2.0 applications as the latest means through which people can achieve social ends. A unique characteristic of Web 2.0 that differentiates them from other ICTs is that they are user-driven (social), with a dynamic content generated by the users themselves (Bryer and Zavattaro 2011). They are participatory and very useful for collaboration, interaction, social networking, and value

co-creation (Criado et al. 2013), and that is what transforms Web 2.0 into social media. In their highly cited paper "*Social Network Sites: Definition, History, and Scholarship*" Boyd and Ellison (2007) used the term *social network site* instead of *social networking sites* to describe this phenomenon for two reasons: emphasis and scope. While networking is possible with these applications, it is not the primary emphasis, nor is this what differentiates them from other forms of ICTs. What makes social network applications distinctive is that they enable users' visibility and persistence over time. On many Web2.0 applications, users are not necessarily networking; instead, many are primarily communicating with their extended social network. Three key features make Web2.0 different from other ICTs: "presence" the extent to which a user knows that other users are available for online interaction; "relationship" which is the network of connections that users can tap into; and "sharing" which is the extent to which users exchange, distribute and receive information through the network (Kietzmann et al. 2011). For the purpose of this research, Web2.0 applications are broadly used to encompass all of these terms.

Web 2.0 is a set of technologies (e.g. RSS, XML), applications (e.g. blogs, wikis, social networks) and concepts/values (e.g. collective intelligence, produsage (a merging of "production" and "usage"), perpetual beta (continue to release new features that might not be fully tested)). Web 2.0 includes social networking services (e.g. Facebook, MySpace), social media or multimedia sharing (e.g. YouTube, Flickr), wikis, blogs, micro blogs (e.g. Twitter), and mash-ups (Bertot et al. 2010). Web 2.0 applications have changed the Internet from a place for publishing information into a place where knowledge and resources come together to form an enormous collective force (Tapscott et al. 2007). These developments, paired with tight government budgets, have led to more interest in improving Gov2.0 participation methods. Citizens can become partners and enhance government decision-making by co-creation processes via Gov2.0. Governments need to adjust their Gov2.0 to enable citizen participation in public affairs (Sandoval-Almazan and Gil-Garcia 2012). Web2.0 users and topics are dynamic and in continuous flux; thus, government agencies need to respond promptly to important ideas and to users (Heath et al. 2013). Government agencies should also make sense of the overwhelming data generated every day via Web2.0 applications in order to be more effective and efficient (Kavanaugh et al. 2012).

The use of Gov2.0 by government agencies is already a part of most governments' current and future plans (Larsson and Gronlund 2014). Some researchers define Gov2.0 as a set of procedures and policies, principles, functions and technological enablers that will lead to a transformative, participatory model of e-government that promotes the Open Government concept (Chun et al. 2010). Others simply define Gov2.0 as the government use of Web 2.0 tools and applications

(Criado et al. 2013); this definition will be adopted for this research. It has been predicted that Gov2.0 will be able to resolve several issues of the first generation of e-government such as the focus on automation rather than on innovation, lack of value creation for the citizens, and low levels of participation (Molinari and Ferro 2009). More than just using new tools or adding technology to existing processes, it is a philosophical shift in the way services are delivered, built on a foundation of collaboration, accessibility and decentralization. It is characterised by engagement, where the citizen's role changes from passive to active or from being a recipient to being both a client and contributor. Gov2.0 offers a variety of advantages such as greater effectiveness in service delivery, enhanced access for the disabled, creation of virtual communities, prompt information sharing, enhanced collaboration, and information dissemination and exchange (Janssen and Estevez 2013). On the other hand, related challenges of privacy and unpredictable responses to public posts are deterring government agencies from embracing Gov2.0.

Vigoda (2002) argued that citizens have largely preferred the easy chair of user to the seat of participatory involvement. Furthermore, some scholars asserted that greater citizen participation would expose the government to unconstructive pressures (Zavattaro and Sementelli 2014). For example, in the U.S., a group posted a petition on the White House's website to ask the government to build a Death Star, which is a fictional space station from the "Star Wars" movie. Under normal circumstances, 25,000 signatures would signal the need for an official response from the government. In this case, the petition gathered more than 34,400 signatures which required an official response. Subsequently, the official number of signatures required before an official response is given, was changed from 25,000 to 100,000 (Farrington 2013). Another example of unconstructive participation is when the government attempts to shift the burden of decision-making to its citizens, as occurred recently with the referendum in Greece. Others have argued that citizen participation would place negative pressure on governments (Kamlage and Nanz 2017). However, if we look closely, we will see several examples that undermine such arguments. For example, Noveck (2008) concluded that having a greater number of participants in the process will reduce the effect of unconstructive participants. After all, low participation does not only limit the quantity of citizen contribution, but also undermines its quality (Nyiri et al. 2007).

Ideally, Gov.2.0 should make use of Web 2.0 applications to increase citizen participation and improve services. However, a review of the current e-government literature shows that the level of participation has not met previous expectations. As citizens share more of their private lives on public forums such as Facebook and Twitter, they expect the same from the government. Web 2.0

applications can create the perfect ground where citizens can participate, engage and collaborate. These platforms can more easily facilitate the interaction compared with traditional methods. However, citizen participation should not be taken for granted. Web 2.0 applications have the potential to provide engagement processes that have established criteria, thus ensuring that fairness, mutually respectful discussions, social learning and, most importantly, public opinion are valued and considered. One of the most promising aspects of Gov2.0 is its participatory and interactive nature, which allows for two-way communication (Linders 2012). The digital future is moving forward with the increasing pervasiveness of Web 2.0 applications, and governments need to respond and take a stand.

Isasis et al. (2012) argued that Web 2.0 applications have transformed the way in which people perceive their power and express their opinions. It provides the tools enabling participants to make a significant social contribution. Access to Web 2.0 applications is unrestricted; therefore, Gov2.0 is both citizen- and government-driven. An investigation into citizen-driven engagement would focus on the citizens' use of Web 2.0 applications to express individual opinions and sentiments on a specific topic. On the other hand, government-driven engagement would focus on the government agencies' use of Web 2.0 applications to encourage citizens' interactive participation of selected topics of interest. It can be argued that citizen participation via Gov2.0 is not so much an end in itself, but rather a means to essentially advance the government's and citizens' relationship towards a collaborative and cooperative partnership. This in turn, leads to efficacy, effectiveness from the government side and satisfaction and commitment from the citizens' side.

Government is a system usually defined by its goals and objectives and the types of tools used to achieve them. There is disagreement about the degree and impact of Gov2.0 on government-citizen relationship and the level of citizen participation. Many governments, including those of the U.S., U.K. and Australia are beginning to use Gov2.0, not just for services delivery and information dissemination, but also to increase citizen participation in government affairs (Bertot et al. 2012). The degree of citizen participation varies, from asking questions and providing feedback to government officials, to being a potential eyewitness to a police database (Meijer and Thaens 2013) and to designing military equipment (Challenge.gov), to name just a few.

In many cases, Gov2.0 is intended to reach citizens on platforms that are already being utilized in society, such as Facebook, Twitter, YouTube, blogs, Flickr, and LinkedIn. Research from the U.S. (Kavanaugh et al. 2012), the EU (Bonsón et al. 2012); Mexico (Sandoval-Almazan et al. 2011) and Australia (Omar et al. 2012) has confirmed this conclusion. Mergel (2013b), when investigating the

reasons of Gov2.0 adoption in the U.S., found that it was mainly market-driven: agencies were trying to be where the citizens were, in order to reach most of the growing population and to cover the potential communication channels with the public to obtain feedback and disseminate information. Moreover, another reason for the diffusion of these technologies is their high popularity with government officials (Ngafeeson and Merhi 2013). However, the e-government use of Web2.0 applications is not limited to these third-party applications.

Beside third party applications, Gov2.0 includes government agencies' applications on their websites, such as government agency blogs that provide mostly text-based content-sharing services. These blogs are updated relatively infrequently, perhaps once or twice a week, and could be integrated into an agency's website. It allows citizens to subscribe to the updates through an RSS feed, and provides more informal rather than official press releases. It also allows citizens to leave comments and discuss the content. Another example of Gov2.0 is wikis; for instance, the FBI's Bureaupedia operates as a knowledge transfer tool to learn from staff who are leaving or retiring (Nam and Sayogo 2011). Many government agencies have also developed apps to promote citizen participation via mobile devices, providing real-time location and specific information (Bertot et al. 2010).

Furthermore, Gov2.0 does not operate in isolation from other networks and communities. Currently, Web 2.0 applications are increasingly influencing citizens' lives and giving them capabilities related to their everyday activities. Online networks are being used to build and sustain communities (e.g., mumsnet.com) and manage resources including money (e.g., mint.com), and people (e.g., upwork.com). Research has found that Web 2.0 applications are being used to connect geographically-dispersed communities and are changing communal activities (Haythornthwaite and Kendall 2010). It has de-centralised and displaced the relationships between citizens themselves and between citizens and government. Today, the increased use of ICTs has led to a complex society (Friedman 1999). ICTs are strongly changing society's paradigms; this is branded as an information revolution. The foundation for this revolution is the Internet and its development in Web 2.0 (Parycek and Sachs 2009).

Tapscott et al. (2007) predicted Gov2.0 as the next generation of e-government after the Millennium. Indeed, Gov2.0 is a new way to describe the current use of these technologies to socialize government services, processes, and data (DiMaio 2009; O'Reilly 2011). Gov2.0 is the next generation of e-government: while the first generation of e-government mainly focused on internal and supply-driven technological changes, Gov2.0 strongly re-shifts the focus to citizens

as not only users but active contributors. According to Lukensmeyer and Torres (2008), some government agencies are already using Gov2.0 as a new source of policy advice, enabling policymakers to bring together opposite ideas that would not come from traditional sources. The term 'Gov2.0' was first coined by Goldsmith and Eggers (2004) in their book "*Governing by Network: the New Shape of the Public Sector*". These authors focused on the use of technology to increase participation and transparency. Tim O'Reilly, then, took this term and extended it to promote the view of government as a platform: government agencies provide data for public to reuse, design and then provided it for free to the public and government (O'Reilly 2011).

Mergel (2012) defined Gov2.0 as: "The use of social technologies to increase participation, transparency, and inter-agency collaboration in the public sector. Prominent tools are social networking platforms, content creation and sharing tools, web logs, and microblogging tools that allow for bidirectional information exchange within government organisations and their interactions with citizens" p. 34. This definition is most suitable for this research and will therefore be adapted. Furthermore, governments can benefit from the collaborative technologies at the heart of Web 2.0, to permit a two-way interaction with their citizens. Millard (2010) agreed and added that Gov2.0 promotes open and user-driven governance. Expectations that Gov2.0 will improve transparency, collaboration, participation and openness are partially realized in some areas, but are non-existent in others (Nam 2011). Table 2.6 presents such hopes.

Table 2. 6. Gov2.0 Expectations

Expectations of Gov2.0	Reference
Facilitates efficiency, effectiveness and democracy	Eggers (2005)
Increases citizen's awareness of their ability to provide feedback on policymaking	Cho and Hwang (2010)
Increases citizens' participation	Anttiroiko (2010); Cho and Hwang (2010)
Transforms government services from rigid bureaucratic structures to more efficient and dynamic entities	Eggers (2007); Nam (2011)
Achieves greater transparency and productivity	Eggers (2007); Nam (2011)
Offers opportunities and challenges for public sector innovation	Molinari and Ferro (2009)
Better solves collective problems at various levels and scopes of government	Anttiroiko (2010); Cho and Hwang (2010)
Provides an inexpensive way to gather the expertise and feedback of individuals (Crowdsourcing)	Bertot et al. (2008); DiMaio (2009)
Plays as openness and anti-corruption tools for societies	Carter and Belanger (2005)
Offers a new way to manage public policies, based on openness, trust and meritocracy	Bertot et al. (2012); Osimo (2008).

The Singapore model is an example of a successful Gov2.0 that enables problem-solving through co-creation. Singapore has been an outstanding world leader in the e-government movement

(Accenture 2007; 2009; Chan and Pan 2008). Furthermore, Accenture (2009) also ranked Singapore first on several indicators of citizen engagement such as the availability of personalized services, and the presence of cross-agency service co-creation. Singapore e-government has started a transformative movement that emphasizes networked government, empowerment of government officials, and opening up the government to co-creation with the citizens. Singapore has been described as a "start-up nation" that has become a successful world economy (Lee et al. 2012). Its success is viewed through its constant reinvention. The Singapore e-government Masterplan 2011-2015[4] (eGov2015) promotes the shift from a "government-to-you" approach to a "government-with-you" approach. The aim is to achieve a collaborative government which facilitates greater co-creation and interaction between the government, the citizens and the private sector to bring greater PV creation for Singapore. To achieve this goal, three strategic principles have been implemented, namely: co-creating for greater value, connecting for active participation, and catalysing whole-of-government transformation (IDA 2015).

Boston's "Citizens Connect" app, which offers a platform for citizens to report problems, is another good example for transforming the citizen-government relationship. Citizens Connect was initially a 311-telephone system in 1999 (non-emergency telephone-based government reporting systems) to improve government service delivers. The system's aim was to provide a one-stop-shop for citizens to make contacting the right government department much less challenging. In 2009, it was launched as an app designed to facilitate citizens reporting problems such as graffiti or broken sidewalks/potholes they see in the city via their smartphones (cityofboston.gov 2015). Once the problem has been fixed, a photo is sent via the app to the citizen(s) who made the report in recognition of their efforts. According to Bill Oates, the CIO of the city of Boston, there was a great response from the citizens who, when asked for their reasons, reported that when they call to report issues, they feel it is complaining, but when using the app, they feel they are helping. (Towns 2013). I argue that this feeling and the feedback loop can foster ties between citizens and government agencies, and thus, Gov2.0 becomes more citizen-oriented.

The City of Honolulu uses an app to get citizens to check tsunami sirens (honolulu.gov 2015). A citizen adopts a siren and makes regular checks on the batteries, which often get stolen. It is crucial that these tsunami sirens works for emergencies, so getting citizens to check their functionality can save lives while being cost-efficient. These kinds of apps have spread virally and naturally,

[4] For more information on Singapore eGov2015 please check the link https://tinyurl.com/Singapore-eGov2015

indicating the trend of tackling problems as a collective action. Gov2.0 provides an efficient and effective platform for such collective actions. That means more open, generative, and collaborative government. The current trend toward participatory government will only thrive by involving and empowering citizens to co-create PV. In so doing, governments will better meet citizens' needs and at the same time shift some of the accountability to the citizens' side. Open government pushed by Gov2.0 needs to be evaluated from the citizens' perspective, along with continuous advancement in e-government functions. The user-centric nature of Gov2.0 technologies can provide important opportunities to increase PV co-creation (Coleman and Blumler 2009). A co-creation approach is useful for exploring the citizen-government relationship because its principle elements include trust and commitment and (Sarker et al. 2012). In doing so, citizens' satisfaction with government performance could be boosted by involving them in PV co-creation.

2.2.8 Gov2.0 levels of engagement

Chang and Kannan (2008) developed a framework for Gov2.0 which categories the levels of engagement with citizens into three types: communication-focused, interaction-focused, and service focused, as shown in Figure 2.6.

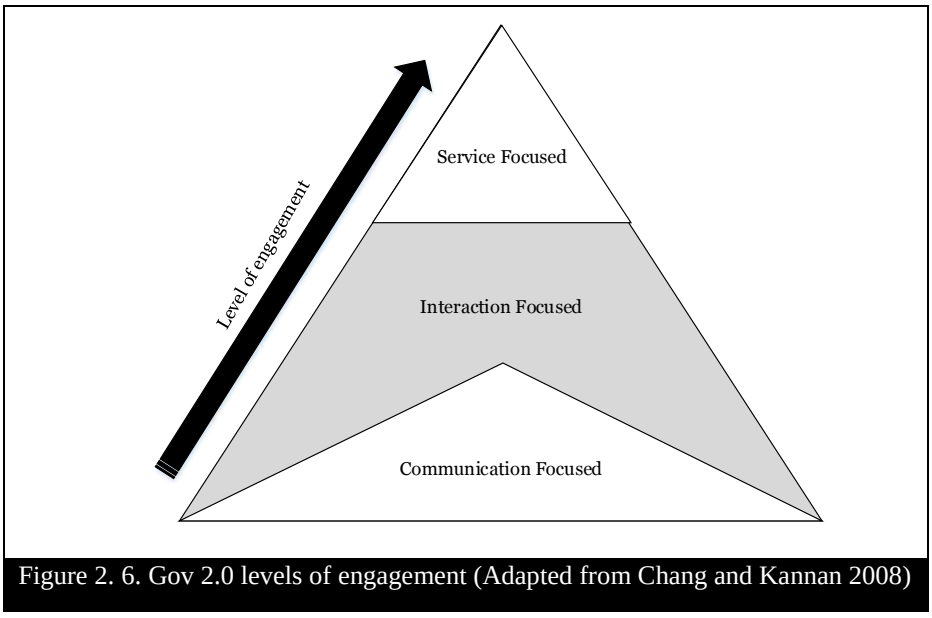

Figure 2. 6. Gov 2.0 levels of engagement (Adapted from Chang and Kannan 2008)

As depicted in Figure 2.6, the level of engagement with citizens increases as the focus shifts from pure communication to service delivery. At the communication-focused level of engagement, the main goal is to disseminate information to citizens as much as possible so as to increase the reach of government by using Web 2.0 applications such as blogs, podcasts and RSS. They can also be used internally with government employees and other government agencies. The popularity of

these applications makes the distribution of information easier and quicker. In the private sector, these applications have been used for many purposes including marketing and supply chain management (Van den Bulte and Wuyts 2007). The same can be said about Gov2.0, which can also be used for many purposes. Although communication-focused uses can be considered the easiest to implement among the three levels of engagement, the challenge is to establish an authoritative quality and build a relationship with citizens (Chang and Kannan 2008).

The primary goal of the next level of engagement-interaction-focused level- is to interact with citizens (and employees) in order to obtain their feedback on policies, issues, and services, and to benefit from the "wisdom of the crowd". For example, Cisco Systems use an online community of academics around the world for e-learning (Chang and Kannan 2008). In the government space, some efforts have been made to do the same. For example, in the U.K., the department for work and pensions has initiated a social network site for U.K. seniors enabling them to interact on issues related to all areas of life (Xie et al. 2012). The top level of engagement is the service-focused and the most difficult to implement successfully, but have the most impact (Chang and Kannan 2008). This level of engagement requires government organizations to give away power and control over the content and applications to intermediaries using mashup applications to provide value to users. The use of social computing to experiment with service delivery to citizens has been considered only in theory, although many reports have highlighted potential uses. For example, online travel business could integrate its services with government immigration and health systems to provide "mashable" services to its customers (Di Maio 2007). However, for the purpose of this research, the focus is on the second level of engagement, i.e. the interaction-focused.

2.2.9 Gov2.0 drivers

Use of Gov2.0 is growing and evolving; the drivers include the ease of Web 2.0 use, existing adoption decisions made at the individual level (by citizens and government officials) and emergent social behaviour that is creating new social structures related to the use of innovative technologies (Mergel 2012). From the government agencies' side, the current use can be described as two trends. Some are hesitant to use and only provide a single online access. Others are jumping in head-first without thinking about using different channels across multiple social networking sites to extend their reach and visibility across the Web. The latter group argued that the use of Gov.0 is supplementary to the traditional means of communication, rather than being an alternative (Mergel 2012). However, government agencies are acknowledging the popularity of Web 2.0 applications and are slowly beginning to use it to create, disseminate and collect information outside the

traditional communication mission. Gov2.0 drivers can be categorised into three themes: behavioural, technological, and economic. Each of these sets of drivers is discussed next.

2.2.9.1 Behavioural drivers

The digital natives' generation has created a culture of sharing without hesitations (Gasser and Palfrey 2008). Citizens often have online presences on multiple social networking sites such as Facebook and Twitter. These sites allow citizens, with or without technical skills, to set up a public presence or image and stay connected with others. Putnam (2000) when analysing off-line relationships, defined "bridging" as connectedness that is created across diverse social groups, whereas "bonding" creates only homogenous groups. Social network sites are used to reinforce already existing (off-line) relationships or bonding (Fretwell 2010). In addition, social network sites reactivate ties that have become weak over time. These ties bind people based on common interests, and Web 2.0 applications have allowed them to connect more frequently and can be helpful for current and future interactions. This communication gives people a sense of belonging, providing emotional support for each other even if they do not meet in person (Mergel 2013). Social network sites are less used for meeting strangers and connecting to new communities (e.g., online dating), so "bridging" plays a minor role in encouraging the use of Web 2.0 applications. Scheepers et al. (2014) are in agreement with this, arguing that the use of Web 2.0 applications could be reflected in four types of actions: information-seeking, hedonic, sustaining strong ties, and strengthening weak ties.

Following the citizens' trend of using Web 2.0, government agencies have also begun to establish their own online representation. Government makes use of Web 2.0 either through its own more secure website over which it has more control, or through an external third party such as Facebook and Twitter, which are readily accessible and have established followers. For example, the Arab Spring in 2011 has increased the awareness of the implications of social media and how it could successfully manage and organize citizens (Lazer et al. 2011). Besides the increased use of Web 2.0 applications among teens, there was an increase in their usage by older groups who represent the majority of tax payers (Mergel 2013). Therefore, the government had to increase its acceptance and adoption of Gov2.0 in an effort to catch up and meet the citizens where they are. However, as noted earlier, most of these efforts focused more on broadcasting and information-sharing, and less on interaction and engagement.

Another driver for Gov2.0 is the recent change in consumption behaviour or the ways in which users search and access news and information online. Government agencies recognized that a large

proportion of their audiences is no longer accessing or relying on government websites; instead they want to receive this information instantly via their Web 2.0 applications. Besides the popularity of Web 2.0 applications among users, its up-to-date information has supported the reliance on Web 2.0 as a major source of information. This has changed the public sector information paradigm from the traditional need-to-know to a new paradigm of need-to-share (Dawes et al. 2009).

2.2.9.2 Technological drivers

The direct and quick feedback loop enabled by the new technology has replicated a social need for people who prefer the off-line world typically through face-to-face interactions (Boyd and Ellison 2007). The high degree of technology literacy and use for private purposes has contributed to the success of these tools and applications in the government space. As the previous generation (baby boomers) of government executives and employees pushed for e-mail and web access, the younger generation (digital natives) currently is increasing the pressure on government to implement Gov2.0 tools and applications. When the younger generation move higher up in the management levels with increased levels of familiarity with these technologies, this is expected to increase the levels of comfort to use Gov2.0 even more (Gasser and Palfrey 2008). In addition to pressure from government employees, the so-called civic hackers have created a parallel pressure from the citizens' side. This citizens' movement includes journalists and scientists who are interested in government and knowledgeable in the new technologies, and are using these applications to create mashups using free and open source tools (Mergal 2013).

Another technological driver is the rapid diffusion of wired, wireless and mobile broadband, which can cater for the increasing number of users. This trend will become even more widespread when the newer technologies of high speed broadband become more available (Lenhart et al. (2010). These interactive technologies allow users to create their own content based on their needs and interests in a decentralized way, which Benkler and Nissenbaum (2006) calls 'peer production'. In the case of eBay, users are following their interests in searching, reviewing, and purchasing. At the same time, behind the scenes, eBay is collecting the users' history and providing recommendations for people with similar interests. eBay is employing the work of users to create a system of accreditation and applicability to other users (Benkler and Nissenbaum 2006). Relevant to this research, for example, is the use of the review function by users to post feedback or reviews, which creates PV for society in general. Therefore, this research suggests that co-creation in the context of Gov2.0 is important.

Open-source and open-content development were enabled by the collaborative users and occasionally by volunteers from around the globe. Their motivations differ from solving a specific problem they have encountered, the enjoyment of solving a specific problem, learning and building skills though collaboration with others, to demonstrating skills for ego gratification or future jobs opportunities (Lakhani and Wolf 2005). Furthermore, the concept of crowdsourcing, touched on earlier, is similar to the peer production and the user-centric content, but differs from open source in that the request comes from the organization and the innovation becomes its own, whereas with open source, the innovation remains publicly open (Brabham 2008). Participation in crowdsourcing is motivated by the desire to make money, apart from having fun and enjoyment.

2.2.9.3 Economic drivers

The economic advantage of using Gov2.0 is that most of the services are freely available and usually provided by a third party. This business model, which involves third-party providers, is becoming more acceptable for e-government and other areas (e.g., cloud computing) and is considered as a means by which government can reduce costs. The third party can provide wider reach at lower costs; however, several issues concerning the privacy of citizens can be problematic, which will be discussed in the next section. Technological advancement has led to changes in data capturing and sharing. Citizens now act as a data input source about themselves or others. These trends increase the citizens' ability to report events such as fires and crimes as they occur (Bertot et al. 2012).

2.2.10 Gov2.0 challenges

A common source of excessive cost is the large number of government websites. For example, in the U.S., it has been reported that the number of government websites exceeds twenty thousand (Mergel 2012). A related issue is the lack of confidence and trust in government operations which lead to movements such as Occupy Wall Street[5]. Citizens are more likely to trust government when it shares more information about its operations and engages citizens in the decision-making process. A motivation to reduce the cost of the decentralized administration and high numbers of government online presences, and to increase the trust in government, has led to an increased use of Gov2.0. However, many challenges can impede the trend of Gov2.0 adoption. These challenges

[5] Occupy Wall Street Occupy Wall Street was a protest movement against economic inequality worldwide that began on September 17, 2011, in Liberty Square in Manhattan's Financial District, and has spread to over 1,500 cities globally (http://occupywallst.org/about/).

can be categorised into five themes: systemic, organizational and cultural, informational, technological and legal challenges, which are discussed next.

2.2.10.1 Systemic challenges

These challenges include the distribution of power among different levels of government, which sometimes causes the overlapping of responsibility and authority. In many situations, the decision to use Gov2.0 depends on each individual agency. For example, in Saudi Arabia, there is no government act or policy regarding the use of Social Media, and each agency has a considerable amount of freedom to decide whether or not to experiment with it (Westall and McDowall 2016). This situation might result in the implementation of different tools and practices; as a consequence, no formal guidelines will be available for government agencies to follow. Another challenge is the dramatic changes made to the ways by which citizens communicate and collaborate on the Internet, especially Web 2.0 applications. Citizens expect instant feedback from Gov2.0; however, many government operations are not designed to provide instant and informal feedback.

2.2.10.2 Organizational and cultural challenges

Gov2.0 needs to be embedded in the organisational structure and cultural norms (Agostino et al. 2013). This might result in a new organisational role responsible for maintaining Gov2.0 presence (e.g., responding to citizens). However, this change might not always come with financial and personnel resources, which might pose a major obstacle (Hofmann 2014). The organisational complexity of Gov2.0 increases as the boundaries between government and other stakeholders become blurred (Bughin et al. 2011). Furthermore, the interagency collaboration has overlapping interests and Gov2.0 can serve as an effective infrastructure to facilitate and improve the collaboration (Mergel 2013a). Gov2.0 can be used to find the issues discussed by citizens online and match it with the government agencies' priorities. Government culture needs to go beyond the traditional incentive systems to motivate government officials to go the extra mile in Gov2.0.

2.2.10.3 Informational challenges

Gov2.0's interactive nature has changed the government agencies information paradigm (Dawes et al. 2009; Mergel 2012). The issue of privacy is one of the main challenges facing Gov2.0. Many governments avoid using some Web 2.0 applications due to citizens' privacy and security concerns, as the government agencies do not have full control of third-party providers. Citizens trust government more than the private sector with regard to their personal data and privacy. Governments are likely to protect their citizens' data and hence are seen to be more accountable

regarding personal data. On the other hand, citizens tend to trust the private sector to do a better job with regards to service efficiency (Chang and Kannan 2008). Therefore, governments should leverage reputed third-party providers in order to provide "mashable" services to citizens.

2.2.10.4 Technological challenges

Government agencies are facing technological challenges on several levels including security concerns over viruses and firewalls. With the advent of Web2.0 applications, it is not clear which might survive and still be available one year from now. Therefore, many government agencies are discouraged and reluctant to adopt these new technologies until they are proven to be reliable. Another technological challenge is the gap between the adopters and the non-adopters, the digital divide or digital illiteracy among Web2.0 application. The low levels of digital literacy with Web2.0 applications can be explained by the fact that it is a relatively recent development. The reluctance to use Gov2.0 may be due to its ineffective use by government officials themselves (Sutter 2009). Users on both sides might not be familiar with the way to connect to Web2.0 applications and how to reuse the content.

2.2.10.5 Legal challenges

The ambiguous legal environment surrounding Gov2.0 has deterred many government agencies from adoption and usage. Most of the existing regulations cover Internet presences and do not address the Gov2.0 on third-party websites. Yi et al. (2013) identified a number of concerns with regards to Gov2.0, which include the unclear privacy protection policies. Furthermore, Bertot et al. (2012) called for new laws to ensure privacy and data security in order to face the challenges of Gov2.0. This discrepancy between practice and outdated rules and regulations has prevented many government agencies from adopting Gov2.0, thus, the need for guidelines is necessary and urgent.

The next section will discuss the different classifications of Gov2.0 in the literature to reveal a new classification for Gov2.0 (i.e. Gov2.0 complexity cube).

2.2.11 Gov2.0 classification

Besides the e-government classification discussed in section 2.2.4, Linders (2012) proposed a classification for government-citizens relationship in the context of Gov2.0. Linders's classification is based on the potential capabilities of Gov2.0, which include the citizens' involvement as co-creators. The author adds a citizen-to-citizen dimension, which is in line with the U.K. government's "Big Society" initiative for e-government. The author removes the

government-to-government dimension because there is no citizen co-production in this dimension. The proposed categories are as follows:

- Citizen Sourcing (Citizens-to-Government): In this dimension, citizens influence government decisions and outcomes, and improve the government's responsiveness. In this dimension, citizens may execute some services that were previously undertaken by the government; however, the government holds full responsibility. An example of this dimension is the previously noted example of the fixMystreet service, which allows citizens to report any problems in their streets or neighbourhood to the correct department and then trace and track its progress until the problem is solved.
- Government as a Platform (Government-to-Citizen): The low cost of digital data dissemination and computer-based services enables government to push its knowledge and IT infrastructure to citizens. O'Reilly (2010) was the first to promote the view of government as a platform: government agencies provide open data for the public to access, use, reuse, and republish freely to the public and government (O'Reilly 2010). In this dimension, government can promote its platform to offer greater PV, but it is not responsible for the resulting activity.
- Do-it-Yourself Government (Citizen-to-Citizen): The digitally engaged citizens on Web 2.0 applications have a broad range of opportunities for a citizen-to-citizen co-creation process, potentially delegating some of traditional government responsibilities. In this dimension, governments provide a facilitating framework, but may not play an active role.

This research agrees to a certain extent with this classification and focuses specifically on the citizen's perspective. In an attempt to capture all the possible relationships of Gov2.0, the Gov2.0 complexity cube is presented next.

2.2.11.1 Gov2.0 complexity cube

According to Rapoport (1966), a system comprises several interrelated entities connected by behaviour and includes a set of identifiable elements and their relations. As these relations become interconnected at a given time, this implies a certain complexity at a later time. While government agencies are looking for solutions to their problems and interests, citizens and other stakeholders are looking for better services and accountability tools. This produces continuous pressures for e-government requirements (Gil-Garcia and Martinez-Moyano 2007). Consequently, e-government systems are evolving to become more sophisticated and complex. Initially, e-government systems

are shaped by governments concerns. Ultimately, citizens, businesses, and other stakeholders gain more control over what an e-government should be, and what services they want. However, it is important to clarify that on the demand side (citizens and other stakeholders), expectations may or may not have a direct effect on e-government functionality but definitely will have a more complex indirect influence (Reddick 2004).

According to Scholl (2007), one reason for e-government complexity is the related problems and the scope of the phenomena itself, which goes beyond the scope of a single academic discipline. As seen from the e-government classification (section 2.2.4), the complexity of Gov2.0 and the added communication layer have been overlooked. For example, previous classifications have ignored the social complexity of the citizens and dealt with this aspect as a whole. There is no reference to several actors and their conduct, but only to the overall practice of e-government. Furthermore, not many classifications considered the different levels of government (local, state, and federal) and how their different powers and obligations might affect the e-government system. Based on this, this research proposed a cube that consists of three dimensions: (1) citizen (2) government and (3) community. This research takes a novel approach to conceptualizing the relationships, and proposes a new classification that takes into account the range of possibilities for interactions and incorporates them into the Gov2.0 complexity cube as shown in Figure 2.7.

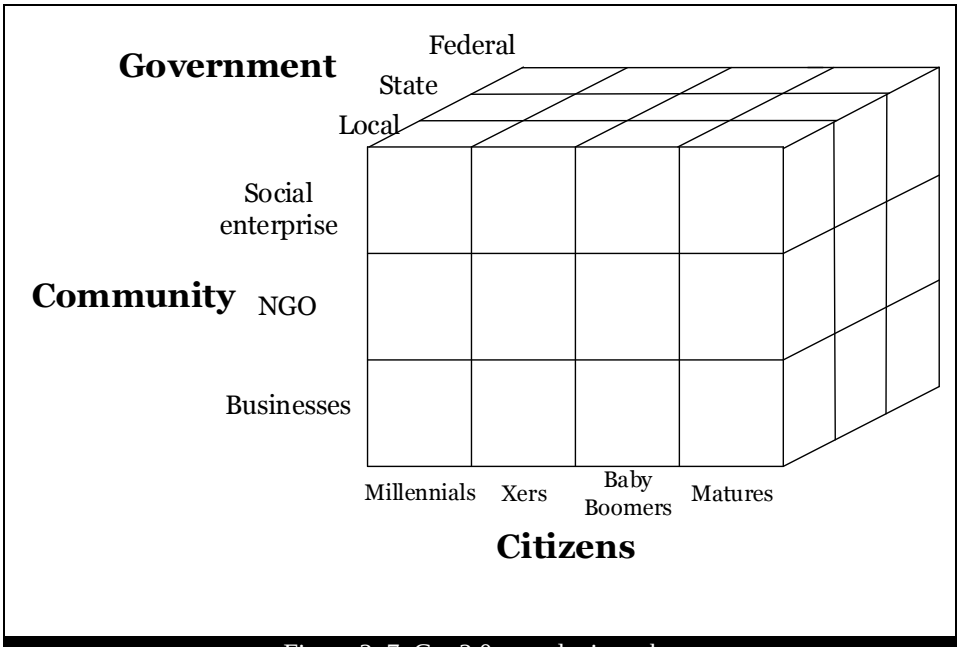

Figure 2. 7. Gov2.0 complexity cube

As seen from Figure 2.7, the multilayered challenges of the current Gov2.0 demand a complex way to manage these interactions and require the stakeholders' participation. This research

proposes the Gov2.0 complexity cube for understanding citizens' interactions and ultimately PV co-creation. The cube consists of three important dimensions: the participants (type of citizens), the government (level of government), and the wider community. These three dimensions constitute a space in which any particular interaction is possible. For example, a two-dimensional view of this space is when only two parties are involved. However, in the case of Gov2.0 initiatives, at least two parties will be involved: government agencies as suppliers, and citizens, businesses, or other stakeholders as demanders. The three-dimensional interaction is the holy grail of Gov2.0 complexity cube, probably the most challenging to implement but most impactful if successful (Chang and Kannan 2008). They involve government agencies giving up power and control over the content and applications in order to deliver and co-create PV. However, the potential for superior, efficient, customized PV is enhanced.

The use of Gov2.0 to experiment with co-creation and to obtain citizen input also falls into this category of multi-dimensional interaction. To date, there have not been many government exemplars in this field, although several reports have suggested potential scenarios. For example:

- Banks file taxes for their customers by combining the government data with their customers' data internally to make the process more efficient and effective (Di Maio 2007).
- The beverage industry links the inspection data with foodies' online reviews and recommendations to co-create and enhance value for the public (eC3 2007).
- Health care information could be linked to patient feedback and cost comparisons (eC3 2007).

The possibilities are numerous; however, government agencies need to provide information in a readable and accessible format and to trust and give authority to other stakeholders to create and provide PV. This reduces the overall cost of government operations. Although the use of third parties could offer wider reach and more tailored services at lower costs, discrepancies in service quality for all stakeholders can be problematic. At the same time, the privacy and security concerns of citizen data in government control, whether it is transferred or shared amongst stakeholders, is also another area of concern. These issues need special attention from governments, in order to safely guarantee privacy, security, and legality of citizens' data. All these challenges show that there are many concerns that need to be addressed before the full utilization of the Gov2.0 complexity cube on a large scale. Kaplan and Haenlein (2010) stressed that any classification scheme for Gov2.0 must consider applications that may be forthcoming. Thus, the Gov2.0 complexity cube provides a novel but parsimonious framework for classifying existing interactions and for

identifying further possible combinations of the three dimensions (i.e. citizen, government and community) in order to co-create PV.

Dimension 1 'Citizens'

The first dimension covers the social complexity of the participants. The recent proliferation of Gov2.0 applications and tools has been a game changer, enabling the active role of users, who proactively participate in the service design and delivery, in both the public and private sectors (Ferro and Molinari 2010). August et al. (2007) has suggested that individuals use Web2.0 applications for different ways, purposes and motivations. Majority only read or view but do not contribute, some contribute from time to time, and few actively contribute. Users are driven by different motivations: information and entertainment, interaction, and self-actualization (Shao 2009). This research argues that PV co-creation via Gov2.0 offer different motivations for different citizens (e.g. millennials use for self-expression, matures for interaction etc.) This suggests that practitioners and scholars could use the Gov2.0 complexity cube as a guide when investigating Gov2.0. Table 2.7 presents types of Gov2.0 users.

Table 2. 7. Types of Gov2.0 users

Dimension	Millennials	Xers	Baby Boomers	Matures
Technology orientation	Digital natives	Assimilated	Acquired	Digital divide
Age	13-24	25-41	42-60	61-75
Interactive style	Participative	Entrepreneur	Team Player	Individual
Involvement in decision making	Collaborative	Efficient	Equal Opportunity	Conservative
Typical activity	Create communities and social network of peers	Create, critique, and propose own views	Join, read, and use social networking sites	Lack of access and motivation
Perceived benefits	Relaxed	Unimpressed	Impressed	Respectful
Average percentage	Medium number of the population	Small number of the population	The remaining part of the Internet population	The rest of the unconnected population
Response to participation	Low interest in participation	Respond to government calls for participation	Do not respond to government calls for participation	Cannot respond to government calls for participation

The Xers can be exploited through the crowdsourcing of ideas and concepts, which leads to social innovation. Millennials can be listened to and their opinions known, by using a systematic collection of feedback from the "crowd". This leads to improving the design of content and services and, consequently, enhances citizens' trust in their government. Baby boomers who are connected (to the Internet, but not Gov2.0) can be offered incentives to use Gov2.0. Finally, the digital divide can be reached by mobile Internet, which is more widely diffused. Furthermore, mobile government (m-government) can also help governments to locate citizens using GPS

features, keep them continuously updated, encourage them to socialise and interact more, involve them more in the public decision-making process, and exploit new ways of providing public services (e.g. through co-production with users). Mergel (2012) has stressed the importance of classifying citizens based on their demographics as a success metric when measuring Gov2.0 performance.

Dimension 2 'Government'

The second crucial dimension of the Gov2.0 complexity cube specifies the different levels of government that will serve the stakeholders. The vast majority of government levels can be classified into: local (municipality), state (regional), and federal (national). Table 2.8 presents the three levels and examples of their responsibilities.

Table 2. 8. Government levels and responsibilities (Adapted from AEC 2014)

Government level	Responsibilities
Federal government	Foreign affairs, social security, industrial relations, trade, immigration, currency, defence
State government	Justice, consumer affairs, health, education, forestry, public transport, main roads
Local government	Local road maintenance, garbage collection, building regulations and land subdivisions, public health and recreation facilities such as swimming pools

The municipality is the first point of contact between the government, citizens and private sector and often the most used because it deals mostly with everyday concerns. Many scholars share the view that government is closer to citizens at the local level, and as a consequence, the degree of responsiveness and accountability needs to be greater in local governments (Hand and Ching 2011; Holden et al. 2003). Indeed, research on decentralization has identified that the state and local governments are more responsive to citizens' needs and theoretically more accountable to them (Thompson and Riccucci 1998; West 2004). Once government agencies began offering Gov2.0 at different levels (i.e., federal, state, and local), stakeholders (citizens, businesses, and other governments) will realized its usefulness (e.g., for transparency and accountability purposes), and began demanding more (Bertot et al. 2012; Gil-Garcia and Martinez-Moyano 2007). The fact that more agencies are providing Gov2.0 creates pressure on other governmental agencies to follow suit and become part of the e-government characterization. Although the third dimension does not fall within this research scope, it is briefly discusses below for the sake of continuity and because the third dimension is - after all- solidly based on the other two.

Dimension 3 'Community'

The third important dimension of the Gov2.0 complexity cube identifies the community-based groups as supporters of the supply or as participants of the demand. This dimension includes

businesses and NGO in previous classifications, but the cube proposes the social enterprise concept as an addition to this classification. Social enterprise has emerged as a business-like contrast to the classic non-profit organization and has been around for a while, first appearing around 1990 in the U.S. and Western Europe. Defourny (2001) defined it as "*a business with primarily social objectives whose surpluses are principally reinvested for that purpose in the business or in the community, rather than being driven by the need to maximise profit for shareholders and owners*" p.18. The social enterprise concept can be identified according to the economic and social criteria depicted in Table 2.9.

Table 2. 9. Social enterprise criteria (Adapted from Borzaga and Defourny 2001)

Economic criteria	Social criteria
High degree of autonomy	Explicit aim is to benefit the community
Continuous activity producing goods and/or services	Initiative launched by a group of citizens
Significant level of economic risk	Decision-making power not based on capital ownership, and participatory nature, which involves the persons affected by the activity
Minimum amount of paid work	Limited distribution of profits

Borzaga and Defourny (2001) considered it as a bridge between the businesses (corporate) and NGO objectives. Social enterprise was originally developed as a way of encouraging collaborative public and private enterprise. This allowed a variety of social issues to be addressed using social enterprise as a tool (Dart 2004). According to the UK Department of Trade and Industry (DTI), *"social enterprises have the potential to play a far greater role in the delivery and reform of public services. Entrepreneurial behaviour combined with a continuing commitment to delivering public value, can lead to local innovation, greater choice, and higher quality of service for users."* (DTI, 2002, p. 24). Therefore, it is included as a part of the community dimension of the cube.

Previous research has largely focused on well-known models of IS research to explain individuals' attitudes and behaviours when it comes to Gov2.0. The community dimension has received limited attention in research and its practical implications. The concept of community needs to be addressed differently compared to the aforementioned. The concept is not used in a political sense; rather, it is a bundle of entities which can share a degree of activeness and interest as a social entity to enhance PV via Gov2.0. Kavanaugh et al. (2012) demonstrated that the role of community via Gov2.0 has changed with the unique opportunities now available to inform, and be informed by, citizens, elected officials, and government service providers. In addition, Bonsón et al. (2012) called for more empirical research and the need to develop a set of methods and tools for evaluating the usage and impact of communities on Gov2.0.

As mentioned previously, the three-dimensional interaction (citizen-community-government) via Gov2.0 is the most challenging to implement but most impactful if successful. However, this

research focuses on the co-creation process, which can be implemented using two dimensions. Thus, taking these considerations into account and given the constraints of time and resources, this research focuses only on the first two interactions (citizen and government), although future research might explore the three-dimensional interaction. After investigating the complex nature of Gov2.0, it is necessary to briefly examine the literature on Gov2.0 stages of development or what some call "maturity models".

2.2.12 Gov2.0 stage models

As part of the hype about e-government, several maturity or stage models have being proposed and applied to check the progress of e-government initiatives (Andersen and Henriksen 2006; Lee 2010; Siau and Long 2006; Wescott 2001). The terms *maturity* and *immaturity* are usually used to describe a given state in a continuous process (Andersen and Henriksen 2006). A number of disciplines have developed maturity models as classification schemes. For example, the Capability Maturity Model (CMM) is a software process improvement model which determines how the software development process is structured (Paulk et al. 1993). Other examples are the project management maturity model (PMMM) (Kwak and Ibbs 2000), and the supply chain management maturity model (SMMM) (Lockamy and McCormack 2004). Within the field of IS, the term 'maturity' is also well-known, for instance, in the context of ERP systems stage maturity model (Holland and Light 2001). The terms are used relative to their objects (e.g., e-government in Australia is in a mature state). Often, the use of the term 'mature' in relation to e-government creates an *"ontological vacuum"* because both the term and its object are somewhat vague (Andersen and Henriksen 2006, p. 239). The stage models of e-government were proposed around the year 2000 by individual researchers (e.g. Hiller and Bélanger 2001; Layne and Lee 2001; Moon 2002), international organizations (e.g. UN and ASPA 2002; World bank 2015), and consulting firms (Accenture 2003; Di Maio 2007 as part of a report by Gartner Group; Deloitte 2000). Table 2.10 presents a summary and comparison of 18 e-government models listed in order of their appearance.

Table 2. 10. Comprehensive comparison of stage models for e-government

Model	Number of stages	Stages	Strengths	Weaknesses
Di Maio (2007)	4	Web presence; interaction; transaction; and transformation	Concise and easy to follow	Ignores the potential benefits of political changes
Deloitte Research (2000)	6	Information publishing/dissemination; "Official" two-way transaction; multi-purpose portals; portal personalization; clustering of common services; and full integration and enterprise transaction	Essentially a customer-centric model	Ignores the re-engineering of government internal operations; ignores the potential benefits of political changes; some of the stages can be combined
Layne and Lee (2001)	4	Catalogue; transaction; vertical integration; and horizontal integration	Simple and has clear boundaries; the most highly cited e-government stage model	Ignores the potential benefits of political changes
Hiller and Bélanger (2001)	5	Simple information dissemination; two-way communication; service and financial transaction; vertical and horizontal integration; and political participation	Good but not concise enough	Political participation used in the model does not seem to adequately capture the "true" meaning of that stage
Wescott (2001)	6	E-mail system and internal network; inter-organisational and public access to information; two-way communication; allowing exchange of value; joined-up government; and digital democracy	Offers unique successive e-government steps such as exchange of value and joined-up government	Combines two-way communication instead of separating them, and does not specify the side that takes the initiative to trigger the communication
UN and ASPA. 2002	5	Emerging presence; enhanced presence; interactive presence; transactional presence; and seamless presence	Seamlessness, involves horizontal and vertical integration of governmental information and services	Interactivity and transactional government, are quite similar to the stages found in other models
UN (2003; 2008; 2014)	6	Emerging presence; enhanced presence; interactive presence; transactional presence; seamless, networked, and connected presence; and e-participation	Focuses on web-based public service (front-office)	Does not consider the building of back office; ignores the potential benefits of political changes
Netchaeva (2002)	5	Dispersed information, little interaction, some services online, e-government portals, public participation and possible democracy	Includes participation as a means of achieving democracy as an end	Separates e-services from e-government portals without providing justification
Moon (2002)	5	Simple information dissemination (one-way communication); two-way communication (request and response); service and financial transactions; integration (horizontal and vertical integration); and political participation	Integrates horizontal and vertical integration in one stage and adds the political participation as a separate stage	Despite some minor differences in phrasing, Moon (2002) adapted Hiller and Bélanger (2001)

World Bank (2015)	4	Publishing ; interactivity; complete transactions; and delivery	Similar to the e-commerce stage models	Focuses more on technological aspects than on managerial and organisational aspects.
Accenture (2003)	5	Online presence; basic capability; service availability; mature delivery; service transformation	Focus on services as a flagship	Ignores the potential benefits of political changes
West (2004)	4	Billboard stage; partial service delivery stage; Portal stage; interactive democracy stage	Provides a benchmark for others to follow	Assumes a hierarchical progression
Reddick (2004)	2	Cataloguing and transaction	Tries to group the stages into two main categories	Ignores the potential benefits of political changes
Siau and Long (2006)	5	Web presence; interaction; transaction; transformation; and e-democracy	Introduced political participation in their fifth stage, which encourages democracy	First four stages in their model are similar to the model presented by Gartner Group (Di Maio 2007).
Anderson and Henriksen (2006)	4	Cultivation; extension; maturity; and revolution	Comparatively different from the other models. Their stage model takes a 'progressive growth model' from cultivation, through extension and maturity towards revolution.	The model takes a 'customer centric' approach and ignores the technological capability.
Gil-Garcia and Martinez-Moyano (2007)	7	Initial presence; extended presence; interactive presence; transactional presence; vertical integration; horizontal integration; and total integration	Provides characteristics of each stage in detail so government can use it to identify their current stage	Ignores the potential benefits of political changes
Mousavi et al. (2010)	5	Cataloguing; interaction; communication; transaction; and integration	Empirically tested in a developing country context	Ignores the potential benefits of political changes
Lee (2010)	5	Presenting; assimilation; reforming; morphing; and e-governance	Compares 12 models, and is considered one of the most comprehensive reviews of e-government stage models	Assumes a linear sequence of stages

As seen from Table 2.10, the number of stages varies and many of the stage models focus on the technical aspects. However, they generally comprise three stages: information, transactions, and participation. In the context of Gov2.0, two explicit stage-based models have been proposed. Budinoski and Trajkovik (2012) highlighted that the Gov2.0 priority should be the users' inclusion and empowerment, and proposed that it can be used by governments to involve and empower citizens. For instance, governments can share ideas as a way of testing the waters and determining the public opinion on different issues. Lee and Kwak (2012) proposed the Open Government Maturity Model (OGMM), and suggested that asGov2.0 matures, citizens' engagement and public value will increase too. Nevertheless, the complexity, challenges and risks will also increase at each stage as shown in Figure 2.8.

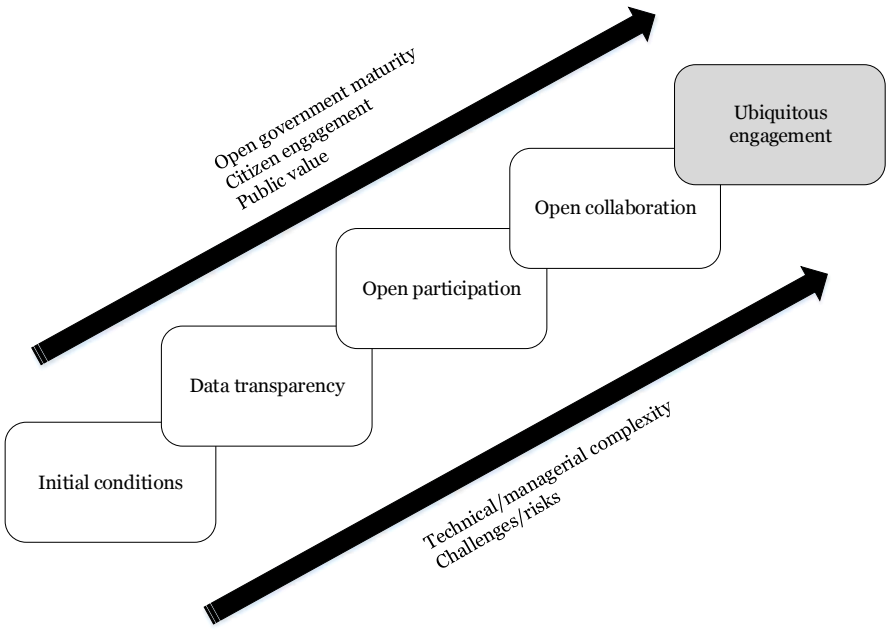

Figure 2. 8. Open Government Maturity Model (OGMM) (Adapted from Lee and Kwak 2012)

Some other models comprise eight, or even ten, stages (Debri and Bannister 2015; Nielsen 2016). The number of stages is irrelevant; what counts is that most of them recognize the importance of citizen engagement.

2.2.13 Gov2.0 adoption studies-IS perspective

IS studies on the use of IT artefacts can be grouped into three main perspectives: (1) process perspective, (2) variance perspective, and (3) fit perspective. The *process perspective* studies explores how actions, or sequences of actions, transform an input into an output (Markus and Robey 1988).

These studies focus on dependencies between events and change over time, such as those in IS development projects (e.g. Montealegre and Keil 2000). The *variance perspective* studies, the most popular, investigate how one variable (i.e. dependent) co-varies by correlation or causality in relation to another variable (i.e. independent) (Weber 2012). Often, one of these variables (i.e. independent or dependent) is a mental state, such as an intention or feeling, characterised by certain attributes. These studies focus on human behaviour as a causal relationship between material entities, such as the IT artefact, and mental entities, such as beliefs, norms, and intentions. These studies are usually referred to as IS adoption or behavioural intention studies. Predominant studies that fall into this group include the Technology Acceptance Model (TAM) (Davis 1989) and the Unified Theory of Adoption and Use of Technology, UTAUT (Venkatesh et al. 2003). The *fit perceptive* studies explain that there should be a match between the properties of one or more mental entity such as a task and the properties of a material entity such as the IT artefact. If there is a fit, then the transformation can occur. Seminal studies from this perspective include the task-technology-fit (TTF) (Goodhue and Thompson 1995) and strategic IT alignment (Henderson and Venkatraman 1993).

In relation to Gov2.0, many scholars have applied the so-called IS adoption models such as TAM, TAM2, UTAUT, TAM3 and UTAUT2. Although these models are well established and have been successful in facilitating an understanding of the use and adoption of IT artefacts, the outcomes have been less encouraging in the Gov2.0 context (Bryer and Zavattaro 2011; Curran and Lennon 2011; Joseph 2013; Tao et al. 2011; Zhang et al.2012). This may suggest that Gov2.0 user are not so much concerned about the functionality of the IT artefact itself but are more focused on the outcomes of its use (Curran and Lennon 2011). In particular, they are inadequate in terms of co-creation via Gov2.0 for four reasons. First, IS adoption models focus mainly on the benefits of participation and do not account for possible barriers. For example, citizens or government officials might not engage via Gov2.0 due to their perception of certain risks or costs (e.g. time and effort). Second, they focus on the intention to use rather than on actual use. In many cases, the intentions might not be translated into some type of behaviour (Kim et al. 2009). Studies that examine actual use as opposed to intention may offer deeper insights regarding the use of IT artefacts (Venkatesh et al. 2008). Third, they focus on the initial acceptance of IT artefacts and do not account for ongoing use (Bhattacherjee 2001). The long-term viability of an IT artefact and its success depend on continued use rather than initial use or acceptance. Many online businesses, Web 2.0 applications, and the like depend on continuance rather than first-time use. Fourth, IS

adoption models are generic and cover a wide range of IT artefacts; nevertheless, a model that focuses on a specific IT artefact will offer more explanatory power (Venkatesh and Bala 2008).

Compared to other IT artefacts commonly used in government (e.g. e-services, portals, telecentres), Gov2.0 is different in terms of characteristics, uses, practices, and objectives (Nam 2011). It is ubiquitous and users are already using many Web2.0 applications, which are built on a foundation of collaboration and accessibility. More importantly, Gov2.0 is by definition, participatory and interactive, which allows for two-way communication (Linders 2012). After reviewing the relevant theories that may influence PV via Gov2.0, particularly those that have been used to understand citizen perspective, this research identified empowerment theory (Zimmerman and Rappaport 1988) as the appropriate theoretical lens for this research. Further, in order to account for citizen engagement and satisfaction to enhance PV, this research also relied on co-creation literature. By applying a trans-disciplinary approach and bridging these different streams of literature, an understanding of why and how *PV co-creation via Gov2.0* can be achieved. This is aligned with the second research objective. Following the detailed discussion of Gov2.0 provided above, the other three main concepts (i.e. empowerment, co-creation and PV) are discussed next.

2.3 Citizen Empowerment

The theoretical background of the research is based on empowerment theory as it motivates citizen engagement via Gov2.0 (Zimmerman and Rappaport 1988). Empowerment refers to the process of gaining superiority and some control over issues of concern, whether by individuals, organisations or communities (Zimmerman and Warschausky 1998) and outcomes relating to control, knowledge, and participation (Zimmerman and Rappaport 1988). Control and participation are essential elements of empowerment theory and can be applied at any level of analysis, whether individual, organizational, or communal. Conger and Kanungo (1988) defined empowerment as a process by which an individual's belief in one's self-efficacy is enhanced. The empowerment theory has its roots in self-efficacy (Bandura 1986) and expectancy theories (Lawler and Suttle 1973). Self-efficacy theory is derived from internal needs such as self-determination (Ryan and Deci 1975), competence motive (White 1959), power (McClelland et al. 1989), and self-actualization (Maslow 1954). Bandura (1977) mentioned four sources from which individuals directly receive information about their self-efficacy: performance accomplishments, vicarious experience, verbal persuasion, and physiological states. These sources influence the cognitive process of empowerment. Building on these four sources of self-efficacy, Conger and Kanungo (1988) suggested that the empowerment process had five stages in (Figure2.9).

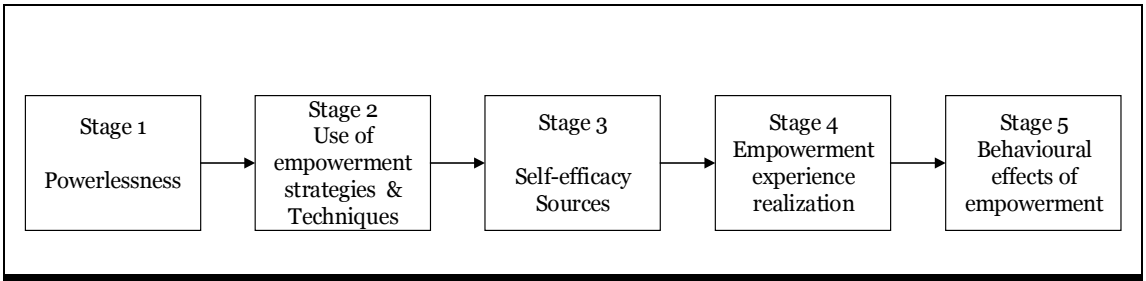

Figure 2. 9. Five stages in the process of empowerment (Adapted from Conger and Kanungo 1988)

As shown in Figure 2.9, the first stage concerns the conditions that create a psychological state of powerlessness. This leads to the use of empowerment strategies in the second stage. These strategies are intended to remove the conditions responsible for powerlessness. The third stage provides the self-efficacy sources (Bandura 1993). As a result of receiving such information, empowerment is realized in the fourth stage, subsequently leading to the behavioural effects of empowerment in the final stage of the empowerment process.

The expectancy theory suggests two types of expectations that will increase the amount of effort put into a task: (1) the expectation that the effort will result in the desired level of performance; and (2) the expectation that the performance will produce the desired outcomes (Lawler and Suttle 1973). Bandura (1986) interpreted the former as the self-efficacy expectation and the latter as the outcome expectation. The distinction between these two is critical because, when individuals are empowered, their self-efficacy expectations are increased; however, their outcome expectations may not be affected. Citizen empowerment develops a sense of personal mastery or a "can do" attitude regardless of performance outcomes (Conger and Kanungo 1988). Empowering implies raising citizens' beliefs in their own effectiveness rather than raising citizens' hopes for favourable outcomes. This means that, even if citizens' desired outcomes are not achieved, they may still feel empowered so that their efficacy is reinforced.

Often, scholars have presumed that empowerment is a synonym for the sharing of power; therefore, empowerment as a construct has not been analysed beyond the power concept. Before critically analysing the empowerment construct, it is important to examine the underlying concepts of empowerment: power and control. Control and power can be viewed in two different ways and, hence, empowerment can be viewed in the same manner: firstly, as a *relational concept* used to describe the perceived power or control that an individual or organisation has over others (Farrell and Petersen 1982; Pfeffer 1993). According to this stream of literature, power is established because of the dependence and/or interdependence of actors. The relative power of one actor over another is a product of the net dependence of the one on the other (Pfeffer 1993). Therefore,

if Actor X depends more on Actor Y than Y depends on X, then Y has power over X. When considering empowerment in terms of this relational dynamic, it becomes the process by which power is shared, highlighting the idea of sharing authority. The Oxford English Dictionary defines the verb "to empower" as "to give (someone) the authority or power to do something". In the management literature, most of the notions of empowerment deal with participative management approaches such as management driven by objectives and goal setting by employees as a way of delegating authority or sharing power.

The second view of empowerment sees it as a *motivational concept*. Power and control, in the psychology literature, are used as motivational forces that are core to individuals. For instance, McClelland et al. (1989) argued that individuals have a need to influence and control other people. Other psychologists proposed the urge to control and handle life events (Rothbaum et al. 1982). Therefore, individuals' needs for power are met when they perceive or believe that they have the power to cope with situations, or people. In this sense, power refers to an inherent need for self-determination (Ryan and Deci 2000) or self-efficacy (Bandura 1993). Any managerial approach strengthens this self-determination need, or the self-efficacy belief of employees will make them feel more powerful. In fact, the Merriam Webster's Dictionary defined the verb empower as "to enable", which implies encouraging through enhancing personal efficacy.

Zimmerman and Warschausky (1998) proposed three dimensions of empowerment theory: values, processes, and outcomes. The values refer to a belief system that determines how professionals and clients work together, with attention focused on competence. The process refers to the procedures that provide individuals with opportunities to develop the skills necessary to gain control and learn to analyze their socio-political environment. Empowerment outcomes refer to the consequences of the empowering processes or the interventions and the measurement issues. Empowerment outcomes are the main concern because they provide the foundation for analysing the consequences of citizen empowerment. Generally speaking, the literature tends to see citizen empowerment in terms of the outcomes. However, empowerment outcomes vary depending on the levels of analysis.

In the organisational literature, Thomas and Velthouse (1990) suggested four elements of empowerment: sense of impact, competence, meaningfulness and choice. Impact refers to "performance-outcome expectancy", and competence refers to "effort-performance expectancy". The distinction between the first two elements is the belief that one's behaviour could have an impact (sense of impact) and the belief that one is able of executing the relevant behaviour

competently (competence). Others have used the concept self-efficacy or personal mastery for competence (Berry and West 1993). Meaningfulness refers to the value of the task or its purpose in relation to one's standards. Higher levels of meaningfulness are expected to result in commitment and involvement (Sjoberg et al. 1983). Choice refers to whether the behaviour is perceived as self-determined and the responsibility for one's actions. Rotter (1966) included the notion of sense of control along with self-determination, as an essential element of empowerment. The experience of having choice and autonomy reflects a sense of control of one's destiny (Thomas and Velthouse 1990).

In the PA literature, power and empowerment have been used interchangeably (Cameron and Whetten 1983; Neilsen 1986). However, Burke (1986) differentiated the two notions, viewing empowerment in the context of delegation rather than enablement. This research argues that the process approach to empowerment as a motivational concept is most relevant to the research context. When citizens influence the decision-making and experience empowerment over citizen-government matters, they are likely to be satisfied with Gov2.0 and subsequently increase their participation.

The empowerment concept has been commonly used in the domains of psychology (e.g. psychological empowerment) (Spreitzer 1995), management (e.g. employee empowerment) (Ugboro and Obeng 2000), education (e.g. student empowerment) (Warschauer et al. 1996), and medical science (e.g. patient empowerment) (van Uden-Kraan et al. 2008). Recently, there has been increased interest in the concept of empowerment among both IS researchers and practitioners. For example, Psoinos et al. (2000) examined the role of IS artefacts on employee empowerment in the British manufacturing industry. Their findings confirmed that research participants viewed IS as an important enabling tool as it offered many opportunities for empowerment. However, the role of IS was seen as supportive rather than initiative; hence, IS artefacts did not lead to employees becoming empowered. Ghose (2001) studied the use of Geographic Information Systems (GIS) in terms of community empowerment and showed that other factors besides GIS are needed, including the openness of government and resource-sharing.

A review of the literature cited above clearly shows that empowerment is an emerging concept used by researchers to explain the motivation for using IS artefacts. Nevertheless, the empowerment concept in the field of e-government is still in its infancy (Li and Gregor 2011). For example, most e-government scholars have dealt with empowerment as a set of techniques without focusing on its nature or the processes underlying the concept. There have been different views

on empowerment in the field of e-government. One stream of research focuses on empowerment as the outcome of participation. Li and Gregor (2011) investigated the effect of the design features of online advisory systems on citizens' empowerment. Their findings indicate that the inclusion of more sophisticated explanatory features in online advisory systems empowers people to perform self-assessments, explore different options, interpret the decision-making process, and predict their application outcomes. Other streams have focused on empowerment as the highest level of citizen participation. For example Macintosh (2004), among others, proposed that citizen participation via ICTs in policy-making starting from enabling to engaging and then to empowering.

In contrast to the conventional viewpoints of empowerment in e-government literature, this research distinguishes between citizen empowerment and citizen engagement. Barki and Hartwick (1994) argued that there is a difference between user engagement and user participation in the process of IS development. Engagement indicates the empowerment of a system user, whereas participation is about the activities that users perform during the system's development process (Barki and Hartwick 1989). In accordance with Barki and Hartwick, 1994, this research views citizen empowerment as a psychological state leading to citizen engagement and citizen satisfaction.

2.4 Co-creation

A popular co-creation model is the DART model developed by Prahalad and Ramaswamy (2004). They proposed a process for value co-creation through the building blocks of: dialogue, information access, perceived risk, and transparency (DART). The authors highlighted that the opportunities for co-creation are enhanced significantly when all these interactions are incorporated in the model. Similarly, Payne et al. (2008) proposed a process framework for the design and structure of successful co-creation process. The framework includes: customer value-creating processes; supplier value-creating processes; and encounter processes. The customer process includes the learning based on the experience of the relationship, which in turn, has an impact on the customer's willingness to be involved in future value co-creation activities. The supplier process involves learning more about the customer, which contributes to further improving the experience and creating opportunities to enhance the relationship. The encounter process involves two-way interactions between the customer and the supplier. The encounter process can be initiated by the supplier (e.g. invoicing), or the customer (e.g. inquiries), or both (e.g., meeting at an event) (Payne et al. 2008). This process-based framework indicates how to

support the designing and structuring of relationships and helps to identify opportunities for communication, service and usage encounters, which need to be maintained for successful co-creation. Ng et al. (2010) focused more on the construct itself by presenting seven generic attributes of co-creation and demonstrated how co-creation by players (such as customers and suppliers) can achieve desirable outcomes. The seven co-creation attributes were: complementary competencies; process alignment; behavioural alignment; empowerment and perceived control; behavioural transformation; and congruence of expectations. However, despite being empirically tested, this work has been applied only to the B2B context, and has not been adopted elsewhere.

Two important themes can be found in the co-creation literature. Firstly, most of the early work in co-creation was largely focused on the creation process as a sequence of activities completed by the customer to achieve a specific objective. What determines the customer's ability to create value is the extent of available resources (e.g. information, knowledge, and skills) that they can utilize more efficiently and effectively (Normann and Ramirez 1993). Secondly, there is a need for more conceptual and empirical research to measure and manage co-creation (Nambisan and Baron 2009). In the process of co-creation, both the customer and supplier are equally important. Furthermore, co-creation needs active involvement; the integration of resources; the ability and willingness to interact; and a range of possible collaborative practices (Payne et al. 2008).

Prahalad and Ramaswamy (2004) defined co-creation as the process in which consumers take an active role and co-create value together with the producers. They emphasized that value should be jointly created by the organization and the customer, rather than being pre-defined and transferred to the customer. Vargo and Lusch (2004; 2008) argued that the customer is always a co-creator. Moreover, Grönroos (2008) claimed that the customers are value creators, and service organizations are value facilitators. Grönroos and Ravald (2011) are in agreement, concluding that it is the customer who creates value since it is he/she who decides what value he/she wants to create. For instance, a smartphone (e.g. iPhone) is not used just for connectivity, but also to make the user feel fashionable and confident among friends. The co-creation concept has been emerging and evolving in marketing (Vargo and Lusch 2004), branding (Merz et al. 2009), and e-marketplaces (Aladalah et al. 2014). The distinctive nature of co-creation has been mentioned and highlighted by Kohli and Grover (2008) among others who argued that, in many contexts, it is unclear who creates the value, and how the value is jointly created (i.e., co-created). This thesis argues that co–creation is also applicable to the Gov2.0 context, which emphasizes the interaction between citizens and governments.

Co-creation has been explored in recent research on inter-organisational relationships (Venkatesh and Bala 2012), open innovation alliances (Han et al. 2012), ecosystem platforms (Ceccagnoli et al. 2012), and IT-based platforms (Grover and Kohli 2012). Co-creation is particularly suitable for studying PV, which offers the potential for both legitimacy and feasibility (Moore 1995). The rapidly evolving technology has changed the way in which citizens' needs and wants are met such as faster response, timeliness and accuracy (Nabatchi 2012). Creating ideas only internally is inefficient and inflexible in a fast-changing environment (Han et al. 2012). Gov2.0 has provided a platform for a two-way equal dialogue; thus, citizens are better motivated to participate in the co-creation of PV (Kassen 2013). Furthermore, Gov2.0 can facilitate citizens' access to information and the collective intelligence to co-create PV, and as Gov2.0 facilitates these activities, it is highly likely to attract more citizens to participate when given access. Moreover, Gov2.0 promotes transparency and accountability regarding government operations, which can help to build citizens' trust and foster responsibility (Bertot et al. 2012).

Sarker et al. (2012) outline three ways in which co-creation occurs: exchange, addition, and synergistic integration. They argued that these modes of co-creation are not completely independent of each other, but at the same time they represent distinct patterns. Exchange is a form of co-creation, where two parties create value by providing resources that the other party needs. Additive is about building on the contributions of the other party to develop value for both. In the synergistic integration mode, both parties have to work together in a mutually collaborative manner and use resources harmoniously, which can create substantially more potential value than what each party can create separately. Of these three modes, synergistic integration is the most relevant to this research context, as indicated by the earlier findings of e-government research (Weerakkody et al. 2006). Table 2.11 presents a typology of co-creation via Gov2.0.

Table 2. 11. A Typology of co-creation via Gov2.0

Co-creation type	How it works	Examples
Exchange	Offering resources that the other party needs	Government post regular information about policy and regulation
Additive	Building on the contributions of the other party to develop value for both	Government post open data that citizens can use to build Apps
Synergy	Working collaboratively and using resources harmoniously	Government and citizen mutually resolve common issues (i.e. crowdsourcing)

The concept of synergistic integration emerged from organisational theories (Venkatesh and Bala 2012) and has been commonly used in many fields such as IS (Grover and Kohli 2012), CS (Nandhakumar and Aggarwal 1987) Management (Bobrek and Sokovic 2006) and Marketing (Naik and Raman 2003). Researchers and practitioners interested in the synergistic integration used a

variety of different terms to define it, including strategic relationship (Grover and Kohli 2012), positive emergent capabilities (Nevo and Wade 2010), augmentation effects (Brown and Eisenhardt 1995), compatibility (Gharajedaghi 2006), and synergistic relationship (Mukhopadhyay et al. 1992).

In this research, synergistic integration means citizens and governments working together collaboratively, in a mutually reinforcing manner, having trust in the other to act in the interests of both sides of the relationship, and investing in the relationship rather than just looking to gain from it. There is often an emergent element in the synergistic integration process, which can result in significantly higher levels of PV being synergistically co-created in comparison to the other two modes discussed earlier (i.e. exchange and addition). While trust, commitment (Sarker et al. 2012) and adaptability (Åkesson and Skålén 2011) enable co-creation, a further positive outcome is citizen satisfaction (Verdegem and Verleye 2009). Despite many theoretical contributions regarding the collaboration of citizens and governments, few studies have focused on synergistic integration in e-government research. Moreover, co-creation initiatives usually result in failure (Sarkar et al. 2012). Thus, given the challenges of PV co-creation via Gov2.0, an investigation of this phenomenon is necessary. It goes without saying that government agencies operations are far more complex, often involving multiple stakeholders (Rowley 2011), which can make co-creation even more challenging.

Gov2.0 connectivity may be the next stage in the evolution of co-creation. Gov2.0 technologies are seen as enabling platforms for co-creation for two main reasons. First, combining the latest technological and behavioural/social advances into the co-creation process enhances existing methods by enabling simultaneous, media-rich, and extremely interactive collaboration between governments and citizens. Second, Gov2.0 technologies herald open innovation initiatives (e.g. crowdsourcing) that build on a new mode of co-creation where governments can facilitate citizen empowerment and satisfaction. To give an example, a platform called Challenge.gov was built to encourage new ideas to support major breakthroughs and help address social, science, and technology challenges (White House 2010). Challenge.gov supported the U.S. federal government agencies in implementing the Open government initiative that was based on the private sector's open innovation approach that had proven to be successful (Mergel and Desouza 2013).

Because crowdsourcing draws input from collective communities, it has the potential to be a useful digital tool to supplement traditional citizen participation (Brabham 2009). And as mentioned previously, involving citizens in the process can lead to widely-accepted outcomes by users (Burby

2003). The unlimited possibilities of Gov2.0 have become more visible, and as the boundaries between governments and citizens dissolve, citizens could use their creativity to co-create PV (Bryer and Zavattaro 2011). These platforms provide the freedom to experiment, and encourage citizens to iteratively create and share the act of creation with others. When citizens are familiar with and clear about their contributions to the process, and see their mark on the outcomes, they are likely to be further engaged. Thus, citizen engagement and satisfaction are considered as by-products of co-creation; they are the positive emergent capabilities of the synergistic integration, which is discussed next.

2.4.1 Citizen engagement

To understand if and how government agencies are using Gov2.0 tools to empower and involve citizens, it is worthwhile to begin with a general overview of citizen engagement. Citizenship can be defined as belonging to a society through the entitlements associated with rights and obligations (Isin and Turner 2007). Others add active participation in governing and government (Leydet 2015). Researchers have predicted the influence of ICTs on citizenship, highlighting global connectivity (Brady et al. 1995). Hauben and Hauben (1998) described it as future "netizens" (Internet citizens) or "citizens of the world". Recent improvements in capacity, processing, bandwidth and network connectivity signal an evolution for digital citizenship. Therefore, digital citizenship can be defined as online participation in society (Tolbert et al. 2008).

Participation is usually considered to mean "taking part" (Barki and Hartwick 1994). According to Vroom and Jago (1988), participation occurs when an individual contributes to something. It could take many forms: direct (through one's action) or indirect (through others' representation); formal (formal mechanisms) or informal (informal discussions); performed alone (done by oneself) or shared (done with team).

The World Bank group defined citizens as: the ultimate client of government and/or public–private partnership (PPP) in a country (World Bank 2014, p.4) and citizen engagement as: the two-way interaction between citizens and governments or PPP which give citizens a voice in the decision-making process to improve the immediate output and final outcomes (World Bank 2014 p5). Reddick (2011) considered different forms of participation in government ranging from the one-way interaction (managerial), two-way interaction directed from government (consultative), and finally the highest form of e-participation of the two-way interaction directed from citizens to government and vice versa (participatory). Similarly, OECD (2001) proposed three types of citizen engagement starting from the one-way interaction (information dissemination), moving to the two-

way interaction initiated from the government side (consultation), and finally, to the highest form of engagement, the two-way interaction from citizens to governments and vice versa (active participation), which enables an equal citizens-government relationship. Hence, this will be adopted in this research. Building on this understanding of citizen participation, governments could use the digital capabilities of Gov2.0 to involve citizens (Linders 2012). In a seminal paper, published in 1969, Arnstein introduced a "ladder" of citizen participation consisting of eight rungs, and describes citizen participation as citizens' power, as shown in Figure 2.10.

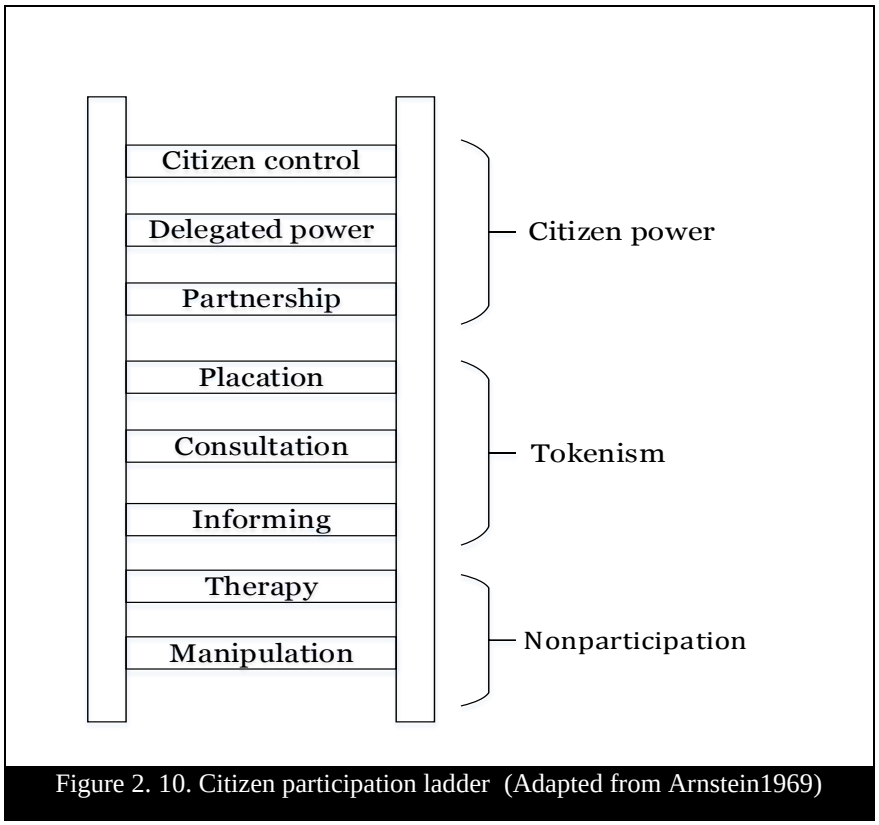

Figure 2. 10. Citizen participation ladder (Adapted from Arnstein1969)

As seen in Figure 2.10, on the lowest rung of the ladder are "manipulation" and "therapy", which amount to nonparticipation, where the main objective is to give citizens the feeling of being participants without real participation. Conversely, at the top of the ladder are "citizen control" and "delegated power", considered to be the highest level of citizen power. As the ladder symbolizes, to ensure effective participation, upper levels cannot be reached without crossing over the previous. It shows that appropriate preparation is crucial in order to achieve a high level of participation that might otherwise result in failure. The assumption underlying Arnstein's view is that power is a zero-sum game: citizens gain power, whenever government relinquishes it. This research argues the opposite: that citizen participation via Gov2.0 creates a win-win scenario;

citizen input enhances PV and provides the government with justifications for the decision-making process.

Glass (1970) proposed a framework that matches the different objectives of citizen participation programs to specific participatory techniques. The general objectives of citizen participation are: information exchange, education and support building, decision-making supplement, and input probing. Generally-used offline participatory techniques include drop-in centres, public hearings, citizen advisory committees, citizen panels, nominal group processes, and citizen surveys. Each of these techniques offers different advantages and limitations and can help achieve specific participation objectives. Several scholars (Islam 2008; Phang and Kankanhalli 2008) adapted Glass' work in the e-government context. They identified different ICTs that can be used to support the techniques, and help to achieve the e-participation objectives. Furthermore, they highlighted which participation objectives and ICTs that are important in different stages of government policy-deveoplment. However, previous work has focused more on the political aspect of the government systems.

Fung (2006) introduced three dimensions of citizen engagement: scope of participation; mode of communication and decision among participants, and extent of the participant's authority. In the first dimension, participants may be inclusively or exclusively chosen to participate. The least restrictive and more inclusive method of participation is the self-selected subset of the general public where participation is open to all who wish to take part. On the other side of the spectrum is the selection of expert administrators only, who are professional politicians, which is at odds with the terms "public" or "citizen" (Habermas 1996). In the second dimension, six types of communication pertaining to citizen participation were identified: listening as a spectator, expressing preferences, developing preferences, aggregating and bargaining, deliberating and negotiating, and deploying expertise. The vast majority of citizens participate as spectators who receive information about some policy. In this mode of communication, citizens' views or preferences are not incorporated into a collective view or decision. The deliberation and negotiation mode of communication allows participants to discover what they want individually and collectively. The third dimension measures the impact of public participation and ranges from New England town meetings (where participant decisions become town policy) to the other end of the spectrum, where participants have little or no expectation of influence, but benefit personally from receiving information or fulfilling a civic obligation. Fung (2006) showed that citizen participation is complementary to political representation or expertise. This view supports the argument that citizen engagement should be thought of as a win-win situation rather than a

zero-sum game. As Dewey and Rogers (2012) suggested, "the man who wears the shoe, not the shoemaker, knows best where it pinches". Hence, participants need to voice their concerns and complaints to policy makers.

Feeney and Welch (2012) defined participation simply as opportunities for external stakeholders and the public to offer input and feedback to government policies, programs, and services. However, the literature on citizen engagement (both traditional and online) describes a broad range of depth and type of interaction between citizens and governments. According to Carpini et al. (2004), civic engagement can be defined as the integration of civic awareness (i.e., knowledge and involvement in society) and civic participation (i.e., attention and actions, in both forms individual and collective). Others have argued that civic engagement has been used as a catchphrase to cover everything from voting to donating money to charity, to participating in political marches (Berger 2009). Putnam (2000), when highlighting the importance of social capital for a democratic society, identified civic engagement as a critical concept. However, his focus was more on the civic or the political aspects of participation rather than on the participation "process" and outcomes. According to Putnam view, investigating citizens' levels of engagement, should cover everything from reading newspapers, political participation, social networks and interpersonal trust to associational involvement. He concluded that such civic participation was inclined to correlate with democracy and the economy (Putnam 2000).

Civic practices can be explained as the active demonstration of being a citizen, and include formal activities such as voting, and less formal activities such as participating in a demonstration (Dahlgren 2012). Civic participation may be an attempt to solve problems of the community (Zukin et al. 2006), while political participation aim*s* to influence government policymaking and actions (Verba et al. 1995). According to Dahlgren (2012), civic participation can be instrumental in influencing public opinion or conveying a collective sense of identity. Both actions seek to enable individual voices to participate in administrative or/and political discourses (Dalhgren 2012). Today, civic practices, such as voting, are generally declining, for instance, in the United States (U.S.). Presidential election votes dropped from around 80% in the mid-1800s, to just fewer than 60% in 2008 (Raizen-Miller 2014). Putnam (2000) suggested that a decline in activities such as attending public meetings and political marches is related to a decline in religious organizations, unions, and community organizations such as the Red Cross. He suggested that the increase of mass-membership organisations (such as the Big Sisters) is a new form of social ties and civic participation. However, that was not the case for Gov2.0.

In an attempt to apply the ladder metaphor to Web 2.0 participants, Li et al. (2007) presented six different participant levels in the U.S based on their activities. These were: creators, critics, collectors, joiners, spectators, and inactives, known as "Social Technographics". Interestingly, more than half were in the inactive category, and similar results were found in the EU as reported by Osimo (2008). The two ladders (i.e. Arnstein 1969 and Li et al. 2007) show the importance and interdependence of the institutional and social structures of citizens' participation. It is evident from these characteristics that it is inadequate to express citizen participation as either an objective or a public good. Instead, it covers a broad spectrum of types of engagement. In the context of Gov2.0, it is necessary to consider if and how citizen participation fits into these frameworks. Currently, Gov2.0 seems to be on the lower rungs of Arnstein's ladder of participation (1969) where government informs and consults, rather than on the upper rungs where citizens and government are partners, sharing responsibility for planning and decision-making. Thus, the notion of engaging citizens via Gov2.0 activities may exist only in theory.

Citizen engagement via ICTs has become a concept that is widely used, but also has extensively different instantiations. Some of these terms are e-democracy, e-participation, e-voting, and e-inclusion. The UK Cabinet Office (2002), on the other hand, published a consultation paper arguing that e-democracy could be divided into two areas: e-voting and e-participation. E-voting refers to the use of ICTs to facilitate participation in elections or other ballots under legislative control. However, e-voting is certainly not the only mechanism whereby citizens can influence democratic decision-making. E-participation refers to the use of ICT-enabled methods and tools enhancing the interactions between citizens, politicians and public sector officials that take place between elections (Andersen et al. 2010). Islam (2008) extended e-participation as a self-managed concept to indicate that it does not have to be offered and managed by the government. Rather, it is an informal activity undertaken by an organization or group of people. Macintosh (2004) developed three levels of e-participation that can be used to distinguish initiatives. E-enabling refers to supporting citizens who would not usually access the internet and take advantage of the available information. E-engaging refers to consulting a wider audience to increase contributions on policy issues. E-empowering refers to supporting active participation and facilitating bottom-up ideas to influence the administration agenda. Another, but similar, concept is E-inclusion, which refers to the active participation of individuals and communities in all dimensions of the society through their access to ICTs. Further, e-inclusion in the e-government context promotes participation at all levels of government (Sahraoui 2007). The digital divide evaluates the gap between those who are empowered to participate, and those who are not (Kaplan 2005). E-

inclusion is considered as a transcendental objective of e-government that is used to narrow the digital divide.

In this thesis, citizen engagement is broadly defined as citizen involvement in any organized activity to achieve a common objective (Zimmerman and Rappaport 1988). Citizen engagement is seen as a continuum, spanning from individual action such as simply discussing policies with one's online followers, to collective action, such as activity within a Facebook group. However, citizen engagement should not be taken for granted. Gov2.0 faces many challenges such as citizens' lack of interest in public affairs and the perception of "pseudoparticipation", where governments are going through the motions of listening, with little intention of following up (Detert and Burris 2016). Even though Gov2.0 makes it easier to reach more citizens, simply offering a platform for people to voice their ideas, issues, and concerns does not ensure that they will use it (Burris 2016). In fact, several e-government researchers suggest that citizens are unlikely to use it unless the government explicitly states the kind of citizen participation they are seeking and then spell out the actions that should be taken in response to it (Sandoval-Almazan and Gil-Garcia 2012). Building on this understanding of citizen engagement, this research views citizen engagement as complementary, not an alternative, to representatives or expertise.

Citizens are sharing more of their personal lives on Facebook and Twitter and are more digitally connected than ever before; thus, they expect government agencies to do the same. Gov2.0, if properly managed, can encourage citizen engagement. These platforms can facilitate interaction far better than do the traditional methods. Nevertheless, Gov2.0, as any other network, needs to attract a sufficient number of users in order to be more valuable to them. The so-called network effects refer to the positive impact that the number of users of a platform has on the value created for each user of the platform (Choudary et al. 2016). Positive network effects are the main source of value in a platform. If there are few or no users, the platform will eventually fail as there will be no value. Citizens attract government agencies, and vice versa; thus, the primary venue for interaction in which PV is created shifts from being only internal on the government side to being a collection of external resources.

An investigation of the theoretical background of citizen participation could provide a means of improving Gov2.0 initiatives and programs. As Web 2.0 applications have changed static information to a more user-driven interaction, Gov2.0 should move beyond citizens' right to access government information (Lathrop and Ruma 2010) and focus more on both informational and interactive openness (Meijer and Thaens 2013), which should encourage citizen engagement.

There is currently a paucity of research into this issue despite its centrality to the PV concept (Bannister and Connolly 2014). Gov2.0 could provide benefits to citizens including transparency, a greater sense of control and power, and increased engagement. At the same time, this can lead to trust in government, which in turn is likely to enhance PV. When citizens influence decision-making and experience empowerment during the citizen-government interactions, they are likely to increase their participation via Gov2.0 and subsequently realize PV. In other words, citizens are more likely to attain higher levels of engagement when empowered, which in turn enhances PV. Moreover, Gov2.0 can leverage and generate participatory actions from the citizens' side. Collaborative dialogue between governments and citizens is essential to citizen satisfaction (Verdegem and Verleye 2009), which is discussed next.

2.4.2 Citizen satisfaction

Early research on satisfaction defined it as a positive emotion or pleasurable experience (Locke 1976). Oliver (1981) added that satisfaction is a result of experiences matching expectations. Both views highlight the psychological state related to satisfaction that could change with time. Generally, there are two schools of thought regarding user satisfaction. On the one hand, there are those who consider satisfaction as the outcome of expectations (Parasuraman et al. 1985, i.e SERFQUAL); on the other hand, the service quality advocates view satisfaction as the outcome of service quality (Cronin and Taylor 1992, i.e. SERPERF). Oliver (1980) distinguished between service quality and user satisfaction by suggesting that service quality has a higher cognitive content and user satisfaction is heavily loaded with affect. Furthermore, Oliver (1993) proposed that satisfaction mediates the effect of pre-perceptions of service quality and causes post-perceptions of service quality. Hence, user satisfaction involves both the means and ends, thereby reflecting both emotional and cognitive elements. In an attempt to address the different views regarding satisfaction, this research argues that citizen satisfaction mediates the relationship between citizen empowerment and PV.

Hunt (1991) suggested that attitude may be thought of as an emotion (e.g., joy), whilst satisfaction is considered to be an assessment of that emotion (i.e., whether the experience was as enjoyable as expected). Therefore, one could conceive the experience of service as enjoyable (i.e. positive attitude), but if it fall, below expectations, one may feel dissatisfied. IS research stressed the relationship between attitudes and perceptions in terms of participation and satisfaction (Venkatesh et al. 2003). Prior research has shown that intention is a good predictor of behaviour (Ajzen 1991; Davis 1989; Venkatesh et al. 2003), with intention influencing use, which in turn leads

to citizen satisfaction. According to the IS success model (DeLone and McLean 1992), user participation either positively or negatively affects the degree of their satisfaction. As the use of IS helps individuals to meet their information needs, this will lead to increased satisfaction.

According to the expectation confirmation theory, consumers' satisfaction usually influences their loyalty to a product or service, and consequently their intention to repeat purchasing the same product or service (Oliver 1980). Bhattacherjee (2001) found in his study that confirmation of expectation when using an IS artefact is a strong predictor of user satisfaction, which in turn influences the intention to continue using the system. Satisfaction is considered as the key to building and retaining a loyal base of long-term consumers. Furthermore, use and satisfaction are indicators of the success of services (Anderson et al. 2008; Chan et al. 2010). Venkatesh and Goyal (2010) also emphasised the relationship between expectation and satisfaction.

In the e-government context, Li and Gregor (2011) defined citizen satisfaction as a positive feeling about one's relationship with the government. This research defines satisfaction as a positive emotional experience resulting from the interaction with Gov2.0. The public sector has increasingly focused on performance measurement of factors such as efficiency and effectiveness (Bertot and Jaeger 2008). In the past, the mere existence of a public service was itself deemed to be sufficient, and citizens were often thankful for its existence regardless of its quality. Recently, the level of user satisfaction has been increasingly employed by the public sector as a measure of the quality of service (Verdegem and Verleye 2009). According to Chan et al. (2010), citizen satisfaction can be achieved by acknowledging citizen's needs and their expectations of public services. In the public sector, the key to understanding the quality of services and fulfilment of PV lies in recognising the discrepancies between citizen expectations and their experiences with public services. According to Verdegem and Verleye (2009), in the e-government context, both concepts are related; if the experience of the service exceeds the expectations, then satisfaction will be high, and vice versa.

A number of studies have investigated citizen satisfaction with e-government systems and several models have been developed (van Dijk et al. 2008). For example, Chan et al. (2010) found that performance and effort expectancy when using an e-government system influence the level of citizen satisfaction. Similarly, Horan and Abhichandani (2006) showed that citizen satisfaction with e-services is influenced by the factors of accessibility, utility, and customisation. Welch et al. (2005) argued that citizen satisfaction with e-government is related positively to trust in government. Tolbert et al. (2008) are in agreement with this view, and concluded that a positive correlation

exists between e-government system usage, and satisfaction with e-government. Verdegem and Verleye (2009) proposed a comprehensive model for assessing user satisfaction of e-government. They concluded that satisfaction can also influence citizens' decision regarding whether or not to use e-government services. Venkatesh et al. (2012) confirmed the importance of service attributes in influencing citizens' intentions, usage and satisfaction with e-government services. Furthermore, Alalwan's (2013) findings confirmed that citizens 'satisfaction has a positive effect on the continued use of Gov2.0. As the use of Gov2.0 helps citizens to meet their needs, this will lead to increased satisfaction (Chan et al. 2010). Hence, it could be argued that these studies provide support for the empowerment-satisfaction associations.

Gov2.0 users experiencing the empowerment process are more likely to increase their self-efficacy, which has been shown to be a key to citizen satisfaction. On the other hand, satisfaction appears to be positively correlated with higher participation via Gov2.0. Citizen satisfaction is critical to PV, particularly with a more demanding public whose expectations are influenced by experiences with private services. Based on the previous discussion, co-creation via Gov2.0 should affect citizen satisfaction, which in turn is expected to enhance PV, which is discussed next.

2.5 Public Value

The notion of value has been investigated since Plato's 'Republic' over 2000 years ago (Cross and Woozley 1964). Plato proposed that value has two forms: extrinsic and intrinsic. Extrinsic value is instrumental for something else. On the contrary, intrinsic value is good in itself. Plato also pointed out that they are not mutually exclusive; some things can have both extrinsic and intrinsic value. For instance, a computer can have value as a tool for research (extrinsic), or it may have sentimental value for itself as being a gift from someone dear (intrinsic). More recently, others have proposed different perspectives by dividing value into: value in exchange and value in use (Lepak et al. 2007). Porter's (1985) definition of value: *"what buyers are willing to pay"* (p. 3), is the value in exchange. Value in use asserts that value is embedded in the use of the object itself. Value as a general definition is the ability to meet a need or deliver a benefit (Haksever et al. 2004). There is no 'value' that is transcendental, so it is always value *for whom* and *about what.*

In the public sector, the UN report (2003) suggests that PV concept is rooted in the citizens' preferences. For something to be of value, it is not enough to say that is desirable; it is valuable only if something is willingly given in return (e.g., granting of coercive power). The things that citizens want and value are: the development and improvement of people's quality of life, laws that are necessary, services that meet citizens' needs, fairness, equity and confidence in the

government's overall performance. Citizens pay for PV with the resources and power they give to the government and in return they expect the government to be instrumental in providing adequate services that meet community needs (Hui and Hayllar 2010). PV is a way of capturing all the dimensions of government performance.

PV and ethical value are related. Through the lens of PV, the ethos and value of a government agency must be evaluated against how well they are creating PV. Inappropriate values might result in the destruction of PV as they may capture the value for a narrow group of citizens and ignore the rest. The public ethos requires that the overarching objective of government is to serve the public in ways that ensures public interest and value. Government should thus exemplify a sense of responsibility for both *economic* and *democratic* values (Lindgren and Jansson 2013). *Economic* values are mainly established on balancing the use of resources and revenues, whereas *democratic* values are founded on the public rights and rules in constitutions. Both values are needed to ensure government legitimacy. Democratic values are specific to the public sector, whereas economic values exist in both public and private sectors. According to a UN report (2008), there is no correlation between government spending and the creation of PV; thus, the key issue is how public resources are being spent.

PV is more complex than the private sectors' perception of value creation, based on the fact that government agencies, at least indirectly, serve all citizens. Other reasons include, but are not limited to, transparency and accountability, and the long-term vision (Ndou 2004). The public sector is part of a direct chain of command comprising a set of formal rules to guarantee compliance with political decisions (Peristeras et al. 2009). Furthermore, government agencies often operate in a compulsory situation (e.g., social benefit services), where the relationship with citizens is asymmetrical (Lindgren and Jansson 2013). Governments have the upper hand over citizens, who sometimes do not have a choice (e.g., taxation). Even if the public services are provided by private companies, they are usually selected by public government; thus, the power of the consumer is limited (Bartlett and Le Grand 1993). Citizens cannot 'shop around' for certain public services but are dependent on the government (e.g., social welfare services). In these situations, it is not a 'choice' and there is no exit (Lindgren and Jansson 2013). Moreover, government agencies have a legal duty to ensure PV for all citizens; they cannot be held back because of a lack of personnel or money (Aberbach and Christensen 2005; Brewer 2007). PV reflects the government's ability to provide what citizens want and need, and ensures its relevance to the stakeholders (Cordella and Willcocks 2010). In Gov2.0 as noted earlier, the stakeholders include citizens, community, and other government agencies.

A recent survey, conducted globally, showed that two-thirds of the people do not have confidence in their governments (UN 2014). The notion of governance can be broadly defined as a social arrangement where collective resources are to be used to meet collective needs (Molinari and Ferro 2009). Hence, it can be said that, as a result of the social interaction of citizens, the public sector was established. Apparently, governments focus more on their own value rather than the citizens' value preferences. Governments have become closed systems and lost track of the collective needs to which they were supposed to respond. Instead, the public service provision was centred on the government's needs and as consequences they lost citizens' trust and interest in engagement. The government should focus on the citizen's needs rather than those of the government: what do people need in their everyday lives? One way to do this is to involve citizens via Gov2.0, the government's biggest asset. Citizens' value preferences might not be clearly articulated; therefore, increasing citizens' participation is desirable because it could lead to changes, and challenges the underlying value preferences.

From this point of view, Gov2.0 is justified if it enhances PV. The process of co-creation if applied to PV is simple and straightforward. Citizens participate via Gov2.0 to express themselves and government uses it in ways to enhance PV. It can be measured by identifying causative factors such as satisfaction and commitment. Gov2.0 provides an infrastructure to support a demand for greater citizen contribution to PV co-creation. At the same time, it can have an impact on public service as both an enabler and an enhancer (Bannister and Connolly 2014). Therefore, this research proposes that Gov2.0 could be appropriate enabler of PV co-creation. In addition, citizens' participation, if positively harnessed instead of becoming pressure groups, will lead to positive PV co-creation with government administration. PV co-creation can be viewed from different perspectives; this research explores the citizen perspective in addition to the government perspective. Moore (1995) proposed the concept of PV in relation to public services. The Institute for Public Service Value (IPSV) added that the value of public services is not limited to the efficiency of those services, but also relates to the social and economic improvements they create for the public (Accenture 2008). Moore's (1995) strategic triangle highlighted that PV must meet three broad criteria: creating something valuable, legitimate and politically sustainable, and operationally feasible with internal and external capabilities as shown in Figure 2.11.

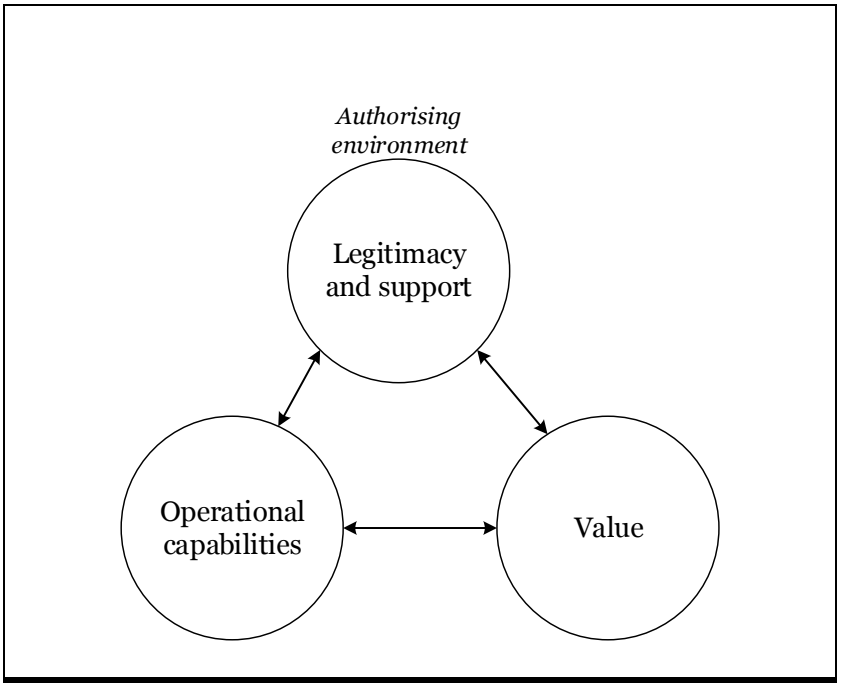

Figure 2. 11. PV strategic triangle (Adapted from Moore 1995)

Figure 2.11 shows the strategic triangle and its three components. First, value refers to creating something that constitutes PV. Second, legitimacy and support refer to attracting sustainable support from the authorizing environment from political and other stakeholders. *Third*, operational capabilities refer to what is feasible given the available organisational and external capabilities needed to produce PV (Moore 1995). The successful implementation of this strategy is more likely when the alignment of these three components is maximised. Of course, they are rarely in alignment and in order to achieve this, constant trade-offs are required. Despite its importance, the strategic triangle is rarely included in discussions between supporters and critics of Moore's work (Alford and O'Flynn 2009). Yet the triangle helps make sense of the PV concept and the way it is used in the literature.

Stoker (2006) developed four key propositions for PV: public interventions; stakeholder involvement, open-minded relational approach and adaptability. Public interventions refer to the search for PV. The focus on generating PV brings citizens together. PV relies on the involvement of a wide range of stakeholders to give it more recognition and legitimacy. The basic idea is that in order for a decision to be legitimate, it is necessary to have all the stakeholders involved (Stoker 2006). Therefore, engagement in the process should continue to achieve PV. Meynhardt (2009) stated that PV starts and ends with the individual (p. 215). Only the citizens can determine what is truly of value to them (Alford and O'Flynn 2009). This suggests that the PV concept is rooted in citizens' preferences. According to Kelly et al. (2002), if citizens are not willing to give something

up in return, then it is questionable whether the activity will create PV. The UK Cabinet Office extended the concept of PV by applying it to the UK context (Kelly et al. 2002). They developed three key dimensions of PV: trust in government; services; and outcomes, as shown in Figure 2.12.

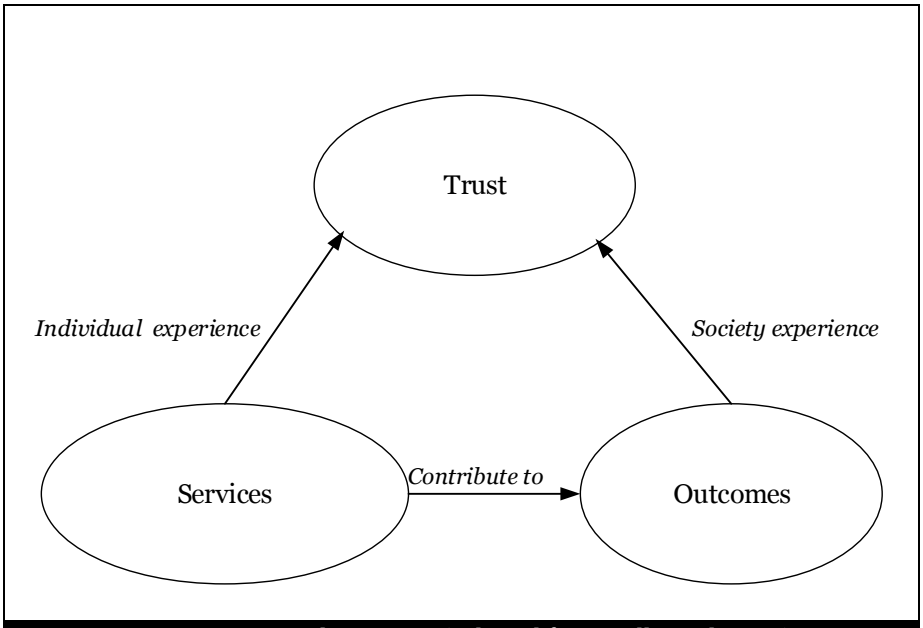

Figure 2. 12. PV dimensions (Adapted from Kelly et al. 2002)

Trust refers to the legitimacy and confidence levels in government. Services refer to the methods used to deliver PV, whilst outcomes refer to higher objectives. For example, rubbish collection services may deliver convenience and benefits for individuals, but also deliver wider public health outcomes for the society. This shows the difference between individuals' values (e.g. rubbish collection) and PV (e.g. preserving public health), and also dismisses the idea of aggregating individual preferences to reflect PV. Thus, PV is delivered from governments to its citizens as opposed to individuals (Alford and O'Flynn 2009). Stoker (2006) echoed the view of Kelly et al. (2002) and proposed that PV is more than the sum of individuals' preferences: it is collectively created through citizen engagement where they can precisely express their desire PV. Kelly et al. (2002) argued that the failure of any of these three dimensions (i.e. trust, services and outcomes) would destroy PV. This research agrees with this and further argues that mutual trust can be achieved through citizen participation and satisfaction, which is crucial to PV. Grimsley and Meehan (2007) proposed a framework for designing and evaluating e-government systems based on Kelly et al.'s (2002) work. The framework differentiates between the individual as a client and the society as citizens. The client's perception reflects the service and the citizen's perception reflects the service outcomes, and both contribute to public trust. The framework focuses on the positive relationship between PV, user satisfaction, and trust as shown in Figure 2.13.

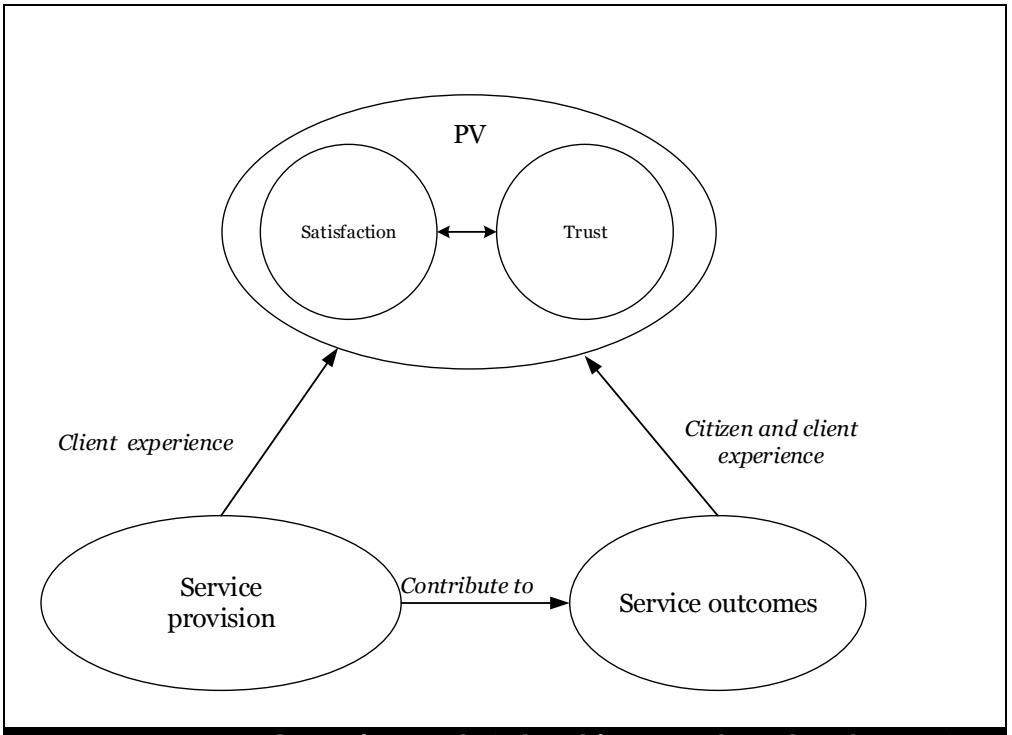

Figure 2. 13. PV production framework (Adapted from Grimsley and Meehan 2007)

The components of the proposed framework suggest that the relationship between service provision, outcomes, and PV can be classified in terms of three experiences: being well-informed, personal control in one's life, and a sense of influence, which in turn drive trust and satisfaction. This is similar to how empowerment is experienced (e.g. sense of impact, control, etc.). The PV production framework based on two case studies in the UK demonstrated that these dimensions could be used to analyse and investigate the relational pathways for PV. Jørgensen and Bozeman (2007) developed the PV inventory with seven main categories and seventy-two sets. The seven main categories are: public sector's contribution to society; transformation of interests to decisions; relationship between public administration and politicians; relationship between public administration and its environment; intra-organisational aspects of public administration; behaviour of public-sector employees; and the relationship between public administration and citizens. The main drawback of Jørgensen and Bozeman's (2007) PV inventory approach is that it lacks contextualisation. This loss of context removes the historical background and the specific national and political culture, which are important when interpreting PV categories. However, their work has been very helpful in showing proximity, hierarchy, and causality between PV dimensions. Proximity refers to the closeness of one dimension to another, hierarchy refers to the dimensions relative primacy, and causality refers to means to an end relationship. Thus, the PV inventory can

be used to investigate PV dimensions. Their work is revisited in Chapter Three when the GPVM is operationalized.

The ubiquity of Gov2.0 will assist governments to tap into the collective PV 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, thereby enabling governments to easily target specific community groups. Public preferences usually emerge during public debates, which date back to Plato's time. While the subject of PV has been addressed by a number of researchers such as Bannister and Connolly (2014), there is no consensual definition of PV. This research defined PV as citizens' collectively expressed preferences, created through the processes and outcomes of achieving trust, commitment, and trust (O'Flynn 2007). Despite the relevance of Gov2.0 to PV co-creation, our understanding is quite limited. One of the challenges of PV research has been the lack of clarity between its drivers and outcomes, which produces an overlap of these concepts. Even though there are strong indications of the importance of co-creation to PV, there is no agreement about the nature of this relationship. Does co-creation lead to PV? Or is co-creation PV itself? For example, O'Flynn (2007) among others argued that citizen engagement is a driver of PV. Benington (2009), on the other hand, claimed that citizen engagement is a dimension of PV. This research complements the e-government literature by investigating the relationships between citizen Gov2.0, co-creation and PV. A growing body of literature called for a shift from government-led to citizen-led models of PV (Benington 2009). Therefore, this research argues that engaging citizens via Gov2.0 could lead to changes, because it challenges the status quo.

2.6 PV Co-creation via Gov2.0: A Research Gap

The potential of PV has resulted in a growing body of theoretical development (Williams and Shearer 2011; Pang et al. 2014) accompanied by calls for the application of PV to specific contexts through empirical research (Benington and Moore 2010). This research responds to the call for investigation of Gov2.0 using PV frameworks as the underlying approach (Bannister and Connolly 2014). The public sector usually adopts ICT innovation in order to improve the quality of its services (Kelly et al. 2002). However, the quality of government services is only one facet of many. PV is not simply about the final delivery of services and policies; rather, it includes the process of interaction amongst stakeholders that infuences the design of these services and policies (Savoldelli et al. 2014). The literature on the use of Gov2.0 in the public sector to enhance PV has usually

viewed the concept from the government's side and can be examined from several dominant perspectives discussed below.

2.6.1 Technological and operational perspective of PV

The introduction of ICTs to the public sector is a key strategy for achieving efficiency and effectiveness both upstream (design of public services) and downstream (delivery of public services) (Janowski 2015). For a long time, e-government initiatives focused mainly on internal processes, service provisioning and automation rather than on innovation (Molinari and Ferro 2009). Gov2.0, the focus of this research, can be viewed as the latest wave of innovation, mainly centred on Web 2.0 applications that enable more inclusion of multiple stakeholders including citizens, businesses, and non-government organizations (NGO). However, an automated version of existing (offline) processes does not necessarily ensure public engagement (Verdegem and Verleye 2009). Certainly, the earlier deployment of e-government systems to realize PV concentrated on more operational matters and only recently has attention switched to broadly-defined managerial and institutional issues. Hence, predictably, Ferro and Molinari (2010) reported that Gov2.0 does not generally create PV for citizens.

2.6.2 Managerial and organisational perspective of PV

The evolution of e-government towards a more transactional and integrated presence has increased the focus on managerial and organisational sophistication (Gil-Garcia and Martinez-Moyano 2007). Alongside this progress, the governance, cultural and leadership challenges have also intensified (Katsonis and Botros 2015). Transformational government efforts are seen as an evolution of e-government in response to the needs of public administration. Luna-Reyes and Gil-Garcia (2014) explained the process of government transformation, including internal transformation and the transformation of the relationships between government and other social and political actors that evolved to become more complex. These models seek to explain PV based on the internal context of a government agency. Hence, they tend to focus on the attributes of managers, and their commitment to ICTs and innovation (Kearns 2004).

2.6.3 Institutional and environmental perspective of PV

Fountain (2001) introduced the technology enactment framework suggesting an institutional view when implementing ICTs in government agencies. This perspective emphasises the institutional constraints of government structures that influence the use of ICTs. Policy interventions, internal politics and external demands from the surrounding environment are also likely to affect the use

of ICTs, especially those targeting PV (Jun and Weare 2010). Savoldelli et al. (2014) argued that despite huge investments in e-government, low utilisation was due to the technological and operational, and managerial and organisational focus. The attention to institutional and environmental issues as the main barriers to adoption, neglected the citizen's perspective. Hence, this research examines the public (i.e. citizens) perspective next.

2.6.4 The public perspective of PV

Much of the academic research on PV via Gov2.0 has explored the design and execution of these platforms (Bovaird 2007; Linders 2012). Despite the rapid growth of e-government research and practice, the enhancement of PV via Gov2.0 has not been systematically studied. Moreover, current studies on PV seem to focus more on the government factors such as government policies, and managerial and institutional concerns (Rutgers 2015). PV is rooted in the public's interests and, to achieve the common good, Gov2.0 should go beyond the conventional concepts of technological and operational, managerial and organisational, or institutional and environmental imperatives. Instead, a new approach to understanding the interaction amongst stakeholders, with citizens (the public) as sources of both legitimacy and evidence, is needed (Savoldelli et al. 2014). According to Gladwell (2011), legitimacy is based on three principles. First, people need to feel that they have a voice in the process and that they will be heard. Second, government policies and regulations must be transparent. There has to be a reasonable expectation that the rules are going to be explicit. And finally, the government has to be fair. It cannot give one group access to information differently from another. Gov2.0 can be a token of legitimacy to achieve PV. This is with the key understanding that such capabilities can be fulfilled only by collaboration amongst multiple stakeholders including citizens (Janssen and Estevez 2013). This research proposes that, from the citizen perspective, the enhancement of PV is based on citizen empowerment and co-creation theories. Drawing on the literature review in the previous sections, the following research gaps have been identified. Table 2.12 shows a summary of the identified gaps according to the main concepts of the research.

Table 2. 12. Summary of the research gaps from the literature review

Area of research	Description of the gap
Gov2.0	The lack of understanding the reasons for the low levels of citizen engagement via Gov2.0
Empowerment	The lack of understanding of citizen empowerment enablers, processes, and outcomes.
Co-creation	The lack of a robust explanation of the co-creation process via Gov2.0, especially the impact of synergetic integration
PV	The lack of empirical evidence to theorize PV co-creation via Gov2.0.

2.7 Summary

This chapter has presented a review of the literature regarding the main concepts of this research: Gov2.0, empowerment, co-creation, and PV. The chapter also highlighted how these concepts are used to inform the conceptual foundation of the main research topic: *PV co-creation via Gov2.0*. This chapter fulfilled two purposes: (1) it provides the theoretical background to address the objectives of this research; and (2) it identifies the gaps found in the extant literature. Although Gov2.0 and PV co-creation are becoming increasingly important concepts, little is known about their potential capabilities. This chapter has indicated that no detailed and empirical investigation has yet been done regarding their association. Based on the literature review, together with the theoretical background, I argue that this research is novel and is of importance to the e-government discipline. Finally, this chapter provides a base for reflection and discussion of the research findings presented in Chapter 7. The next chapter discusses the GPVM development and hypotheses.

CHAPTER THREE
THE GPVM

3.1 Overview

Theories and studies on citizen empowerment, engagement and satisfaction, as well as co-creation were reviewed and discussed in relation to PV and Gov2.0 concepts in Chapter Two. Overall, these provided a firm foundation for advancing knowledge through an investigation of PV co-creation via Gov2.0. Reviewing the extant literature, in Chapter Two, helped uncover areas where research is needed and was an essential step to developing the GPVM in section 3.2. As a guide for the research and in order to answer the research questions, it was essential to first conceptualise the GPVM. The GPVM provided basis for applying both quantitative and qualitative methods. It informed the development of the questionnaire, guided the construction of the interview questions, and facilitated the thematic analysis of the qualitative data. As mentioned previously (section 1.7), this research has two units of analysis: individual (i.e. citizens) and organisation (government agencies); thus, the GPVM will be split into two separate but parallel models (i.e. citizen model and government model) and will be analysed accordingly. Section 3.3 puts forward plausible hypotheses that were developed using statements to reflect the relationships between the constructs (independent, mediator, dependent variables). Section 3.4 examines and defines the GPVM constructs that have been borrowed from relevant disciplines using a trans-disciplinary approach, and modified to suits the research context, Gov2.0. This chapter concludes with a summary in section 3.5.

3.2 The GPVM

According to Webster and Watson (2002), one of the ways to demonstrate contributions is by bringing together previously-disparate streams of work to help shed light on a phenomenon. Not much e-government research has applied the trans-disciplinary approach due to the immaturity of the field (Heeks and Blaire 2007), and the complexity of reviewing literature from different disciplines (Yildiz 2007). A comprehensive review covers relevant literature on the topic and is not limited to one research field, one method, one set of journals, or one geographic region (Webster and Watson 2002). Bem (1995) noted that the goal of a literature review is not to produce a *"mind-numbing lists of citations and findings that resemble a phone book- impressive case, lots of numbers, but not much*

plot." (p. 172). Rather, it provides a coherent structure for the phenomenon under discussion. This could be a guiding theory, a set of models, or viewpoints about the topic.

The literature review identified critical knowledge gaps that needed to be addressed, and motivated this research. Usually, this is accomplished by developing a conceptual framework, or a model with supporting propositions or hypotheses. This traditional approach was adopted for this thesis. Models and hypotheses capture relationships between constructs or variables; however, they do not, alone, represent theory (Sutton and Staw 1995). Instead, the reasoning for these relationships is the most important part of the theory-development process. The justification for hypotheses can come from three main sources: theoretical or logical reasoning, past empirical findings, and practice or experience (Webster and Watson 2002). The GPVM is derived from theoretical and logical reasoning as it is *"the glue that welds the model together"* (Whetten 1989, p. 491). Past empirical research in e-government was included as well as related areas (Gay and Diehl 1992).

A conceptual model can be defined as a set of principles that helps with analysis and determines subsequent actions on the research process (Weber 2012). It helps to establish relationships between constructs, offering a systematic way to test propositions or hypotheses, and make inferences from a sample to a population (Creswell 2009). Conceptual models are generally divided into two types: variance or process models (Markus and Robey 1988; Mohr 1982). Variance models include independent variables that cause variations in dependent variables. Process models, on the other hand, use states and events to explain a dynamic phenomenon. Therefore, models may have different representations in these two approaches. The GPVM is presented as a variance model because it investigates the impact of a set of constructs on predicting the levels of outcome (i.e. PV). To address the aim and objectives of this research, and in order to answer the research questions, the GPVM is proposed as depicted in Figure 3.1.

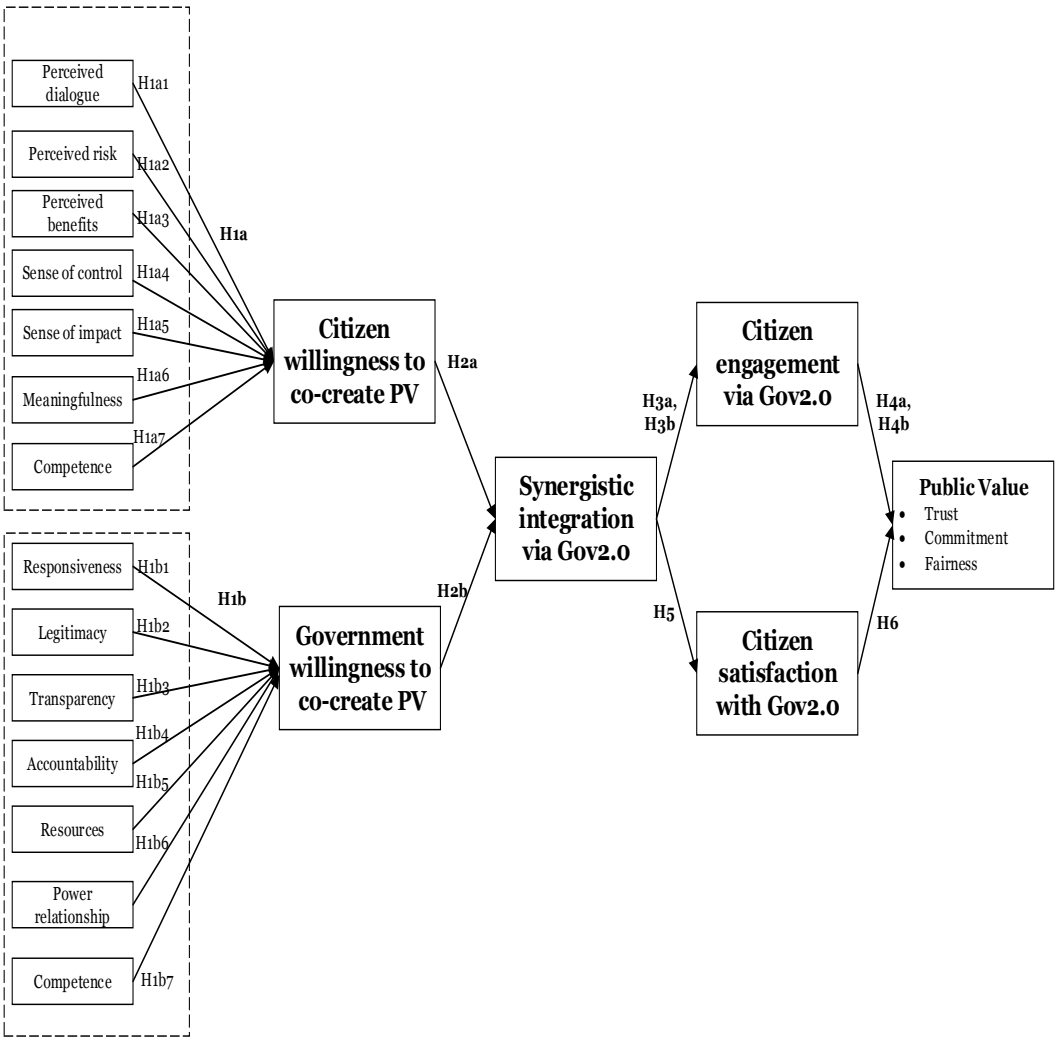

Figure 3. 1. The GPVM

This research applies a trans-disciplinary approach that integrates e-government reference disciplines namely IS and PA theories and models. The proposed GPVM was based on a comprehensive review of the relevant literature, and focuses on these themes: Gov2.0, citizen empowerment, co-creation, citizen engagement, citizen satisfaction, and PV. Figure 3.1 shows the GPVM for PV co-creation vis-à-vis Gov2.0, which is the focus of this research. An overview of the GPVM will clarify its elements. The GPVM incorporates both the platform (Gov2.0), experience (co-creation), and outcome (PV). The enabler of co-creation is Gov2.0, which provides a space and platform for the interaction that facilitates the co-creation process. The co-creation process or experience (i.e. synergistic integration) involves citizens and government interacting collaboratively, which may generate mutual trust and commitment. Citizen efforts include sharing

information and input that are necessary in the process of PV co-creation via Gov2.0. On the other hand, government efforts include providing citizens with access to information, tools, value propositions, and allowing them to co-create their desired PV via Gov2.0. This results in new emergent properties based on the synergistic integration via Gov2.0 that will enhance PV, the outcome.

As a baseline, the GPVM hypothesises the effects of citizen empowerment, co-creation, citizen engagement and satisfaction on the dependent variable, PV. The GPVM also hypothesises the differential effects of the antecedents for both citizen and government use of Gov2.0; thus, it was split into two separate models: citizen model and government model. As seen in Figure 3.1, the hypothesis that includes [*a*] indicates the citizen model and the hypothesis that includes [*b*] belongs to the government model. Citizens and government agencies might have different motives and goals when collaborating with each other; thus, the willingness of citizens and governments to co-create PV is separated into two constructs. As such, a total of 14 constructs have been identified as antecedents for the citizen and government willingness to co-create PV, seven constructs from each perspective. When the citizens' and governments' willingness to co-create PV is strong, they will jointly increase the synergistic integration via Gov2.0.

Synergistic integration is simplified into a single construct because it requires the two groups to join forces, which leads to potentially more PV than if working separately. Further, it shows the extent to which the collaboration between citizens and government achieves a synergistic integration. Despite much theoretical contribution regarding the citizen and government relationship, few studies have focused on this synergistic integration in e-government research. Citizen engagement and citizen satisfaction are seen here as the effects of a synergistic integration and the by-products of co-creation. Finally, the direct impact of the two constructs, citizen engagement and citizen satisfaction, and the indirect effect of the synergistic integration are associated with outcomes that are represented by the PV construct. PV includes many dimensions (e.g. Jorgensen and Bozeman (2007) proposed the PV inventory with 72 dimensions) and for operational logic and to make the GPVM traceable, it is instructive to include only PV dimensions that are relevant to the Gov2.0 context (i.e. trust, commitment, and fairness).

The primary aim of the model is to determine whether empowerment and synergistic integration have a positive influence on PV. The goal here is to understand PV co-creation via Gov2.0. The GPVM is unique in that, by incorporating the perspectives of both citizens and government, this research departs from the traditional approach of looking only at one side. Further, it differs from

existing research on PV via Gov2.0 (Hui and Hayllar 2010; Rowe and Frewer 2000) by focusing on the emergent properties of synergistic integration. The GPVM constructs and associated hypotheses are discussed in more detail in the following section (3.3). The definitions of the GPVM constructs are presented in section 3.4.

3.3 Hypothesis Development

The GPVM constructs are discussed and their inclusion is justified in this section along with accompanying hypotheses. The following hypotheses are proposed in order to answer the research questions. As this research has two different units of analysis (citizen and government) and some of the constructs differ for each group, the GPVM is split into two separate models. The citizen model is discussed first, followed by the government model.

3.3.1 Citizen model

This section presents seven constructs that influence citizen willingness to co-create PV. It includes justifications for their inclusion in the GPVM and the hypothesising of their relationships.

3.3.1.1 Dialogue

An essential building block in the co-creation process, dialogue, is one of the main components of the DART model (Prahalad and Ramaswamy 2004) as mentioned in section 2.4. Dialogue implies extensive interactivity and responsiveness, intensive engagement, and the desire to act on both sides. For a dialogue to take place, common interests must be centred and clear rules of engagement must be defined (Prahalad and Ramaswamy 2004). Having dialogue is the opposite of one-way information dissemination from the government to citizens; co-creation implies collaborative sharing and interaction. Successful value co-creation is achieved by active communication and shared learning on both sides. Dialogue creates and maintains a reliable relationship. Drawing on the competence of citizens, Gov2.0 can provide a platform to allow citizens to engage each other in dialogue, helping to solve each other's problems and enhancing the experience for everyone. Dialogue is more than listening to citizens; it can play a central role in motivating and supporting citizens' participation. When citizens feel that governments are trying to start a two-way equal dialogue, they are better motivated to participate in the co-creation of value (Kassen 2013). For example, the OccupytheSEC movement is a group of concerned citizens who have written a very detailed 325-page report in response to the U.S. Securities and Exchange Commission (SEC) request for comments on the financial reform bill. Thus, the following hypothesis is formulated:

Hypothesis (H1a1+): Perceived dialogue has a positive influence on citizens' willingness to co-create PV via Gov2.0

3.3.1.2 Perceived Risk

Risk is another component of the DART model (Prahalad and Ramaswamy 2004) and refers to the likelihood of harm, and risk assessment means that both sides are aware of cases where co-creation might be harmful. When consumers are co-creators, they should be informed and give consent regarding their responsibilities. They should be fully informed about risks, and be provided not just with information, but also with appropriate methods for assessing the associated risks. Therefore, co-creation with customers means shared risk management between the two parties. In the U.S., for example, after less than a year, the Food and Drug Administration (FDA) withdrew from the market a drug used for treating irritable bowel syndrome due to its side effects. The FDA re-approved the drug after demands and protests from thousands of irritable bowel sufferers, who accepted the associated risk (Prahalad and Ramaswamy 2004). This illustrates how active consumers can take part in risk assessments.

As citizens become involved in the co-creation process, they might have to deal with risks that arise during their participation (Prahalad and Ramaswamy 2004). These risks include security and privacy issues as manifested in the Gov2.0 context. For example, in Canada there was an incident where protesters forced the government to prevent the release of citizens' information due to privacy issues (McNutt 2012). Therefore, co-creation with citizens means shared risk management between the two parties. Hence, citizens' perceived risk associated with the co-creation process might influence their decision on whether to be involved. Thus, this leads to the following hypothesis:

Hypothesis (H1a2-): Perceived risk of co-creation has a negative influence on citizens' willingness to co-create PV via Gov2.0.

3.3.1.3 Perceived benefits

In Rogers' (1995) popular theory of diffusion of innovation (DOI), one of the main reasons for the adoption of a new technology is its relative advantage. Relative advantage refers to the degree to which an innovation is perceived as being better than its precursor. The notion of Relative Advantage has been used to investigate the adoption of e-government systems (Carter and Bélanger 2005). A similar construct is perceived usefulness from TAM (Davis 1985), which refers to the degree to which an individual believes that using a particular system would enhance his or her job performance. Performance expectancy was proposed by Venkatesh et al. (2003) in their

UTAUT as a suggested replacement for perceived usefulness. Performance expectancy refers to the positive effect of the new system on job performance. According to Moore and Benbasat (1991), innovations are usually developed to fulfil their purposes better than their precursors did. Thus, the use of a very generalizable concept has a significant appeal because it includes a variety of other benefits. However, for this research, the perceived benefits construct was chosen because it relates to users in any given context, while the other two constructs -relative advantage and perceived usefulness- are more appropriate for organisational settings.

Governments may initiate interaction with citizens through Gov2.0, but it will not be effective until citizens actually start using it. Lately, there has been a decrease in the effectiveness of citizen-government communication. Bimber (2003) argued that societies have undergone a number of information revolutions whereby changes in information costs, flows, and distributions have impacted on the relationship between governments and citizens. Shao (2009) identified four factors that motivate the use of Web 2.0 applications: information seeking, entertainment, social interaction and self-expression. Applied to the Gov2.0 context, it could be argued that, apart from entertainment, these motivations also pertain to Gov2.0. The perceived benefits and satisfaction gained from these activities might influence the way they are used. Thus, the following hypothesis is formulated:

Hypothesis (H1a3+): Perceived benefits of co-creation have a positive influence on citizens' willingness to co-create PV via Gov2.0.

3.3.1.4 Sense of control

Control is a basic human need and a driving force for behaviour (White 1959). Sense of control is one of the main elements of empowerment theory (Thomas and Velthouse 1990). Sense of control or choice has been defined as the degree to which an individual has a choice and autonomy in an activity. It refers to whether a person's behaviour is perceived as self-determined (Ryan and Deci 2000), and enables the choice experience (Hackman and Oldham 1980). In this research, sense of control has been used rather than the more abstract, self-determination or choice, as it is formed over time by the individual's assessments of his or her impact on specific tasks (Rotter 1966). Ryan and Deci (2000) showed that a higher sense of control leads to flexibility, initiative, resiliency, making possible the perception of one's impact. Conversely, a lower sense of control leads to tension, negative emotional tone, and lack of impact. Research on online marketing behaviour has found that online customers who perceived their sense of control are more likely to have loyalty and commitment (Koufaris 2002). Sense of control is an important element in interactions (Smith

1998), and specifically in Gov2.0, perceived control is an important element of the process and experience. Therefore, designing a process that permits the participant to have a sense of control is fundamental (Thomas and Velthouse 1990) to the success of Gov2.0.

Dayal and Johnson (2000) argued that citizens perceived themselves as powerless if the government did not involve them in the process of identifying obligations and rights. Furthermore, these authors reported that some citizens experienced a loss of control, and uncertainty in these circumstances. ELMNet is an example of online advisory systems, developed by the Australian Department of Veterans' Affairs (DVA) that helps veterans to determine their pension eligibility. Customer satisfaction increased in this case as result of customers' sense of control of the systems and was evidenced in the success of ELMNet, which improved DVA's productivity by 80% (Dayal and Johnson 2000). In this research, sense of control is defined as the degree to which a citizen believes that the self-assessment activities enable the feeling of control over the assessment outcome by the government (Li et al. 2007). Following this line of thought, this research argues that Gov2.0 could provide benefits to citizens, including increased transparency of the decision-making process, a greater sense of control and more positive perceptions of their power situation. At the same time, this increase in sense of control can lead to trust in government, which in turn is likely to influence citizen participation (Roese 2002).

Thus, the following hypothesis is formulated:

Hypothesis (H1a4+): Perceived sense of control has a positive influence on citizens' willingness to co-create PV via Gov2.0.

3.3.1.5 Sense of impact

Sense of impact is the second element of empowerment theory (Thomas and Velthouse 1990). According to the management literature, sense of impact has been defined as the degree to which an individual can influence the outcome of an activity (Thomas and Velthouse 1990). It refers to one's beliefs that his/her behaviour could have an impact on the outcome, or performance-outcome expectancy as proposed by Bandura (1986). Hackman and Oldham (1980) interpreted impact as knowledge of results; however, this research agrees with Thomas and Velthouse (1990), who make a distinction between the notions of impact (i.e. influence) and competence. When citizens see their behaviour as "making a difference" in terms of achieving the purpose of the activity, that is, producing the intended results, their sense of impact is likely to increase accordingly. According to Özcan and Reichstein (2009), many citizens place more value on their sense of impact, such as helping others and the society in general, when using e-government than

they do in the private sector. Kirkman et al. (2004) investigated the impact of empowerment on virtual teams and found that a sense of impact allowed team members to better serve their customers as it enabled them to determine the exact changes needed. Hemric et al. (2010) confirmed the importance of promoting sense of impact in the public sector. Ciborra and Navarra (2005) stressed its importance to the success of e-government projects. Hence, in the context of Gov2.0, enabling and empowering citizens by increasing their sense of impact on the outcomes is expected to increase their levels of participation. Thus, it is hypothesised:

Hypothesis (H1a5+): Perceived sense of impact has a positive influence on citizens' willingness to co-create PV via Gov2.0.

3.3.1.6 Meaningfulness

Meaningfulness is the third element of empowerment theory (Thomas and Velthouse 1990), and is defined as the value and importance of the task or its purpose, in relation to one's standards (Nehari and Bender 1978). It refers to the significance of the activity's purpose, judged according to an individual's own ideals. In other words, it involves the individual caring about a given task. This use of meaningfulness is similar to Hackman and Oldham's (1980) term of intrinsic motivation. Shamir et al. (1989) concluded that the most important motivational aspect of leadership is the increase of meaningfulness. In the psychotherapy literature, meaningfulness represents a kind of psychic energy with respect to an activity (Nehari and Bender 1978). Low levels of meaningfulness are supposed to result in feeling disconnected and unrelated to events (May 1969). Higher levels of meaningfulness, on the contrary, are assumed to result in commitment and involvement (Sjoberg et al. 1983). This construct also reflects the collective extent to which individuals invest in some tasks such as caring for other people or their society. Meijer and Bekkers (2015) developed a theoretical model of e-government innovations to determine the barriers that prevent citizens from using these innovations. The model was tested in a case study of a technological system for collaboration between government agencies and citizens in the Netherlands. The findings highlighted the importance of convincing citizens of the meaningfulness of new socio-techno practices. This shows the value of designing a Gov2.0 that meets citizen needs and enables them to engage in meaningful tasks. Therefore, the following hypothesis is formulated:

Hypothesis (H1a6+): Perceived meaningfulness has a positive influence on citizens' willingness to co-create PV via Gov2.0.

3.3.1.7 Competence

Competence is the fourth element of empowerment theory (Thomas and Velthouse 1990). According to the psychology literature, competence refers to the degree to which an individual can perform an activity skilfully when he or she attempts it (Thomas and Velthouse 1990). It refers to one's belief that one is able to perform the relevant behaviour competently or to effort-performance expectations as proposed by Bandura (1986). Bandura (1977) interpreted competence as self-efficacy or personal mastery; however, this research agrees with White's (1959) notion of competence. Bandura (1977) observed that individuals with low competence tend to avoid situations that require the relevant skills. This avoidance, in turn, prevents an individual from building and improving perceived competence. In contrast, high levels of competence lead to greater effort and tenacity when facing difficulties (Abramson et al. 1978). As a result, participation in Gov2.0 may challenge citizen competence as they deal with the uncertainty.

In the co-creation process, competence refers to the skill set, roles and ability to access the resources necessary to get the work done (Ng et al. 2010). The customer needs to have the right competence to participate in the co-creation process. Effectively harnessing the competence of the customer requires cooperation and collaboration. Therefore, leveraging the knowledge, skills and judgment of the customer is not an easy job. Managing customer competence is intangible and should be considered as an asset (Prahalad and Ramaswamy 2000). Some examples of positive results include the enhancement of citizen knowledge, skills and competency.

Citizens need to have adequate competence in order to participate via Gov2.0. Effectively harnessing the competence of citizens requires cooperation and collaboration. Citizens can bring diverse knowledge and experience to the attention of a government agency. Citizen participation in online forums has shown positive results in improving citizen competence and achieving self-actualization (Mathews 1999). For example, in a Gov2.0 platform discussion on immigration issues, researchers found that citizens who participated were more reasonable in their positions and opinions than those who did not participate (Chun et al. 2010). Moreover, participants in Gov2.0 tend to be more competent and open-minded with regards to policy issue than people who do not participate (Bertot et al. 2012). Thus, this leads to the following hypothesis:

Hypothesis (H1a7+): Perceived competence has a positive influence on citizens' willingness to co-create PV via Gov2.0.

3.3.2 Government model

This section presents seven constructs identified in the literature to influence the government willingness to co-create PV. It includes justifications for their inclusion in the GPVM and the hypothesising of their relationships.

3.3.2.1 Responsiveness

Previous research has established that government responsiveness to a large extent explains the stakeholders' decision to participate (Nalbandian 1981; Stone 1993). Yang and Callahan (2007) confirmed the impact of responsiveness on citizen involvement efforts empirically. Some view responsiveness as a consequence of external political forces (Rourke 1992). Others view it as a dimension of efficient government performance in public service delivery (Stone 1989). It is also viewed as a critical factor affecting citizens' trust in government (Yang 2005). Public sector managers should respond to external pressures by actively seeking to work in the best interests of the public. In Gov2.0, due to greater exposure to negative pressure the government needs to respond in an efficient and responsible manner (Zavattaro and Sementelli 2014). For example, as mentioned in section 2.2.7, in the U.S., a group created a petition with more than 34,400 signatures on the White House's website to ask the government to build a Death Star - a popular "Star Wars" movie. The government had to change the number of signatures that would require a response to 100,000 after the Death Star case (Farrington 2013). However, government agencies may face challenges and decide to involve citizens in the resolution of community problems by "crowdsourcing". Therefore, it is reasonable to develop the following hypothesis:

Hypothesis (H1b1+): Government responsiveness has a positive influence on government agencies' willingness to co-create PV via Gov2.0.

3.3.2.2 Legitimacy

A government action has legitimacy when the public have a good reason to support or follow it. If a government focuses on the interests of a few citizens and ignores the rest, then it will not gain majority support. The legitimacy of governments depends on many factors such as efficiency, effectiveness, and social equity (Nalbandian 1999). Legitimate and responsible governments are mutually reinforcing. Public opinion measures could be indicators of the legitimacy of a government agency. Weatherford (1992) concluded that the more effectively a government agency connects with citizens, the more likely that they will support it efforts. This suggests that public opinions and support also contribute directly to PV (Bohman 2000).

According to Moore's (1995) strategic triangle, one of the main objectives for government agencies is to achieve legitimacy. When public managers cannot justify their efforts and demonstrate accomplishments, then the legitimacy of their government agency is challenged. Legitimacy helps to attract necessary ongoing support from all stakeholders (political and social), recognizing their differential power. Citizen participation is often used by government agencies to increase their support and enhance its legitimacy (Yang and Callahan 2007). Popular participation techniques such as public meetings and drop-in centres offer more exposure to citizens and create the opportunity to exchange information on a face-to-face basis (Glass 1979). However, these techniques might incur significant cost. Gov2.0, on the other hand, can offer legitimacy by reaching out to citizens without a great deal of cost to the government. From this point of view, if the use of Gov2.0 is not justified, then the legitimacy is undermined. Thus, this leads to the following hypothesis:

Hypothesis (H1b2+): Government legitimacy has a positive influence on government agencies' willingness to co-create PV via Gov2.0.

3.3.2.3 Transparency

Providing information access is essential to a substantial dialogue. Transparency eliminates information asymmetry between citizens and government agencies and leads to better citizen engagement and collaboration (Prahalad and Ramaswamy 2004). Gov2.0 is being used by government agencies to promote transparency. Furthermore, transparency of public data has been proposed as the new flagship for e-government initiatives (Osimo 2008). Several reports supported this call and tried to outline a new vision such as "digital era governance" (Dunleavy et al. 2006), "connected governance" (UN 2008), "connected republic" (Osimo 2008), or "e-governance" (Millard 2010). As a matter of fact, raising the issue of the wider need for a new e-government perspective, which focuses on the values of information sharing, communication and participation, confirms the need for Gov 2.0. Moreover, the technological requirements of transparency are much more limited: cleaning up public data, some investment in content management and perhaps work-flow management systems (Osimo 2008). Promoting transparency and accountability regarding government operations can help to build citizens' trust and foster responsibility (Bertot et al. 2012). In the public sector, Gov2.0 not only offers general information transparency, but also access to the policy and decision-making process. For instance, if the government takes steps towards transparency regarding how the citizens' feedback is integrated into the government

decision-making process, citizens will feel that their voices are being heard and that their vision is being considered. Thus, the following hypothesis is formulated:

Hypothesis (H1b3+): Transparency has a positive influence on government agencies' willingness to co-create PV via Gov2.0.

3.3.2.4 Accountability

Accountability refers to the degree to which a government agency is behaving in an accountable manner and taking responsibility to its actions (Bannister and Connolly 2014; Bertot et al., 2010). Recent advances in technologies have seen trends toward greater access to information, which in turn create more demands for transparency and accountability (Anderson 2009; Cullier and Piotrowski 2009). However, all efforts to promote openness are greatly shaped by the societal attitudes toward the value of information by citizens (Brown and Cloke 2004). Gov2.0 can be used to promote government accountability and transparency (Shim and Eom 2008). It can be designed to include features such as accountability measures that citizen desire. For example, since 2009, the U.S. government has created a number of Mashups -a service that combines the functionality of two or more other sources to create a new application- to promote accountability (Bertot et al. 2010). The most notable of these is "data.gov", intended to provide citizens with access to government data to keep track of government activities. Another example of the use of Wikis to promote openness and accountability is the popular website, Wikileaks[6]. Although not yet a Gov2.0, it is a potentially powerful in promoting accountability of all governments. Thus, the following hypothesis is formulated:

Hypothesis (H1b4+): Government accountability has a positive influence on government agencies' willingness to co-create PV via Gov2.0.

3.3.2.5 Resources

Governments are operating in an increasingly complex environment of constrained resources and must comply with an extensive set of policy objectives. In recent years, the quest to improve government efficiency and effectiveness by incorporating ICTs has gained momentum in the public sector (Grönlund and Horan 2005). Hence, many governments worldwide are actively promoting online access to government services through their e-government initiatives (Grimsley

[6] For more information on please check the website (https://www.wikileaks.org)

and Meehan 2007). On the one hand, the goal is to achieve efficiency with the available resources (Cabinet Office 2010). On the other hand, this trend relates to releasing resources to meet citizens' expectations such as quality and standards of government services (Kelly et al. 2002). Resources determine the degree to which a government agency is operationally and administratively feasible (Moore 1995). Due to lack of financial and personnel resources, many government agencies are currently using Gov2.0 as a one-way-communication channel, rather than as a means of securing citizen engagement (Hofmann 2014). The availability of necessary resources (e.g. information, knowledge, and skills) will impact on the government agency's way of using Gov2.0. Government agencies need to search for a balance between benefits and sacrifices (Spano 2009). Their goal is to maximise their returns in monetary terms including the opportunity costs of the resources involved (Kelly et al. 2002) while achieving the desired social outcomes. Thus, the following hypothesis is formulated:

Hypothesis (H1b5+): Government resources have a positive influence on government agencies' willingness to co-create PV via Gov2.0.

3.3.2.6 Perceived power relationship

Perceived power relationship in a citizen-government relationship refers to the perception of the power situation relative to the authority to make a decision. Perceived power relationship depends on an assessment of the power of the government agency and citizens. In the Gov2.0 context, the power refers to having access to key information (e.g. policies), having the capacity to evaluate different alternatives and their impact, and the ability to use information resources to influence policy and decision-making (Li and Gregor 2011). Gov2.0 can equip government with the capacity to access expert domain knowledge (e.g. crowdsourcing), and explore different decision scenarios. Meynhardt et al. (2014) stressed that government agencies need to consider the moral consequences and the political implications of their citizen-government power relationship. By the same token, Gov2.0 can have an impact on citizen-perceived power in the decision-making process compared to that of the government agency. Dayal and Johnson (2000) argued that online portals can fundamentally influence the citizen-government power relationship by providing a transparent decision-making process. Taking into account other aspects such as the potential positive experience beyond decision making, government could increase its responsiveness and legitimacy accordingly by using Gov2.0 (Fung and Wright 2003). Thus, the following hypothesis is formulated:

Hypothesis (H1b6+): Political-power balance has a positive influence on government agencies' willingness to co-create PV via Gov2.0.

3.3.2.7 Competence

In addition to citizens requiring competence in the co-creation process, the government needs to have the right knowledge, skills and judgment. Ng et al.'s (2010) analysis of the co-creation attributes identified complementary competencies as an essential factor. Alesina et al. (1993) defined government competence as the administration's ability to avoid inefficiency and to create an environment that encourages economic growth. However, other aspects such as socio-technological know-how can be as a proxy for government competence (Palmer and Whitten 2000). Competence is more than knowledge; even governments who are capable might fail to deliver PV (Scott et al. 2016). Thus, government officials need to increase internal efficacy (the belief that someone can understand) and external efficacy (the belief that someone can make a difference in the system) (Bernstein 2008). The competence of the government is explicit in the willingness to co-create and ability to actively engage in a dialogue (Prahalad and Ramaswamy 2004). To effectively harness the competence of its citizens, government should: involve citizens in a clear and continuing dialogue; balance citizen's diversity; and co-create experiences with citizens. In the Gov 2.0 context, the concept of competence is essential for PV co-creation. Thus, the following hypothesis is formulated:

Hypothesis (H1b7+): Government competence has a positive influence on government agencies' willingness to co-create PV via Gov2.0.

3.3.3 Common constructs

This section presents the common constructs that, in the literature, have been found to influence PV co-creation via Gov2.0 from both perspectives: citizens and governments. It includes justifications for their inclusion in the GPVM and the hypothesising of their relationships.

3.3.3.1 Willingness to co-create

Apart from the well-documented components of socioeconomic status -education, income, and occupation- (Almond and Verba 1963), many other factors influence citizen participation in public affairs. Among them are the necessary resources of time, money to make contributions, and communication and organizational skills, which facilitate effective participation (Brady et at. 1995). According to Alford (2009), two factors affect whether citizens will contribute time and effort to co-create: first, their willingness to do so, which is prompted by a mix of motivations such as

sanctions, material rewards and non-material rewards; and second, the ability to co-create, which is a function of both the relative complexity of the task and one's capabilities. Here, a distinction is made between ability and willingness. Ability refers to the possession of the means or skills to do something, and willingness refers to the state of being prepared or ready to do something. However, only willingness was included, as ability was considered to be exogenous to synergistic integration itself in the Gov2.0 context since many citizens are already using Web2.0 but not so much Gov2.0. Thus, citizen and government willingness are conceptualized as two constructs comprising resources, competencies and practices.

Hypothesis (H2a+): Citizens' willingness to co-create PV has a positive influence on the synergistic integration via Gov2.0

Hypothesis (H2b+): Government agencies' willingness to co-create PV has a positive influence on the synergistic integration via Gov2.0

3.3.3.2 Synergistic integration

Of the three identified modes of co-creation-exchange, addition, and synergistic integration- the focus of this research is on investigating the synergistic integration via Gov2.0. In this research, synergistic integration is used to mean citizens and governments working together collaboratively, in a mutually reinforcing manner, having trust in the other and to act in the interests of both sides of the relationship, and investing in the relationship rather than just looking to gain from it. A similar concept from the marketing and service literature is resource integration, which concerns the customers' way of realizing value co-creation. According to Moeller (2008), resource integration denotes the incorporation and application of a customer's resources within an organization's resources. Åkesson and Skålén (2011) adopted the concept of resource integration in e-government research and claimed that it consists of relatively stable combinations of citizens and public servant roles. The synergistic integration is expected to result in understanding each other's situations and viewpoints on matters of mutual interest, which subsequently will influence its outcomes (e.g., citizen engagement via Gov2.0 to achieve PV). There are often emergent elements in the synergistic integration process, which can result in significantly higher levels of PV being synergistically co-created in comparison to the other two modes discussed earlier (i.e. exchange and addition). This synergistic integration between citizens and government is shown to be an important construct in providing an in-depth explanation. Further, synergistic integration is expected to feature trust and commitment (Sarker et al. 2012), adaptability (Åkesson and Skålén 2011), and citizen satisfaction (Verdegem and Verleye 2009).

Despite many theoretical contributions regarding the collaboration of citizens and governments, few studies have focused on synergistic integration in e-government research. Moreover, co-creation initiatives usually result in failure (Sarkar et al. 2012). Thus, given the challenges facing PV co-creation via Gov2.0, an investigation of the synergistic integration is necessary. Even though there are strong indications that citizens and government collaboration lead to PV (Sandoval-Almazan and Gil-Garcia 2012), the emphasis on the synergistic interaction is important in providing an in-depth explanation. In order to enhance PV, it is critical to have an understanding of the role of the synergistic integration via Gov2.0 that needs to take place within the nexus of citizen-government collaboration. Gov2.0 is a rich context in which to study the synergistic integration between the citizen and the government to co-create PV. Gov2.0 has redefined the relationship between citizen and the government by creating a platform for PV co-creation. This research investigated the synergistic integration via Gov2.0 and conceptualises the synergistic integration via Gov2.0 with the emergent properties. For example, in the citizen-government relationship, their interactions and awareness of each other's views tend to lead to a shared understanding of different matters that are of interest to both. This understanding is expected to increase the synergistic integration and consequently citizen engagement and satisfaction via Gov2.0 to realise PV. Thus, the following hypotheses are formulated:

Hypothesis (H3a+): Citizens' synergistic integration via Gov2.0 has a positive influence on citizen engagement via Gov2.0

Hypothesis (H3b+) Government agencies' synergistic integration via Gov2.0 has a positive influence on citizen engagement via Gov2.0

At the same time, the citizen synergistic integration is expected to increase citizen satisfaction because citizens share a common understanding of the available resources and constrains. Thus, the following hypothesis is formulated:

Hypothesis (H5a+): Citizens' synergistic integration via Gov2.0 has a positive influence on citizen satisfaction with Gov2.0

3.3.3.3 Citizen engagement

Citizen engagement via ICTs has become a widely-used concept, but it also has extensively different instantiations such as e-involvement and e-participation. Here, citizen engagement is viewed as a wider concept to include any activity via Gov2.0, and it is argued that it creates a win-win situation; citizen input provides the government with justifications for their decision-making.

When people know and see how their input makes a difference, they feel energized and motivated to contribute more. Citizens today are sharing more of their personal lives on Web2.0 applications; thus, they expect government agencies to do the same (Bertot et al. 2010). Gov2.0, if properly managed, can encourage citizen engagement. These platforms can facilitate interaction far better than do the traditional methods. Nevertheless, in order to be useful, Gov2.0, like any other platform, needs to attract a sufficient number of users based on the so-called network effects (Choudary et al. 2016). If there were few or no users, the platform would eventually fail, as there would be no value. Citizens attract government agencies, and vice versa. Thus, the primary venue for interaction in which PV is created shifts from being only internal on the government side to being a collection of external resources. Hence, there is a need for an integrated approach that involves citizens, allowing them to create PV. In other words, citizens are more likely to attain higher levels of engagement when empowered, which in turn should enhance PV. Thus, the following hypotheses are formulated:

Hypothesis (H4a+): From citizen's perspective, engagement via Gov2.0 has a positive influence on PV.

Hypothesis (H4b+): From government agency's perspective, engagement via Gov2.0 has a positive influence on PV.

3.3.3.4 Citizen satisfaction

IS research has stressed the relationship between attitudes and perceptions in terms of engagement and satisfaction (Venkatesh et al. 2003). As the use of IT artefact helps individuals to meet their information needs, this will lead to increased satisfaction. However, governments need to find the right balance of information dissemination via Gov2.0, as information overload leads to dissatisfaction (Maier et al. 2013). It has been acknowledged that citizen satisfaction can be increased by recognising citizens' needs and expectations of public services (Chan et al. 2010). This is consistent with Bhattacherjee's (2001) expectation-confirmation model, where the results suggest that users' continuance intention is determined by their satisfaction. Hence, it could be argued that when Gov2.0 provides positive experiences to citizens, it is more likely to increase their satisfaction.

Collaborative dialogue between government and citizens is necessary to increase citizen satisfaction (Edelmann et al. 2012). On the other hand, satisfaction appears to be positively correlated with enhancing PV. Gov2.0 users who experience the empowerment process are more likely to increase their self-efficacy, which has been shown to be a key to citizen satisfaction. Furthermore, citizen satisfaction with Gov2.0 is expected to enhance PV. Citizen satisfaction is critical to PV, particularly with a more demanding public whose expectations are influenced by

experiences with private services. Based on the previous discussion, co-creation via Gov2.0 should affect citizen satisfaction, which in turn is expected to enhance PV. Thus, the following and last hypothesis is formulated:

Hypothesis (H6a+) Citizen satisfaction with Gov2.0 has a positive influence on PV.

3.3.3.5 PV

Jorgensen and Bozeman (2007) proposed the PV inventory with 72 dimensions. Trust, for example, is an important kind of PV which refers to the belief that a government agency will use Gov2.0 in the best interests of its citizens (Mayer et al. 1995). Commitment is another kind of PV concerning citizen support and acceptance of the outcomes of Gov2.0, which provides legitimacy and political sustainability to a government agency (Meyer and Allen 1991). Fairness, on the other hand, refers to citizens' judgment and assessment of the appropriateness and rationality of the equity and compliance processes of Gov2.0 (Bannister and Connolly 2014). Due to the practical limitations of incorporating all PV dimensions in the GPVM, this research considered only the dimensions of trust, commitment, and fairness to present the PV construct, because of their relevance to the Gov2.0 context.

In summary, the citizen model has six main hypotheses (*H1a, H2a, H3a, H4a, H5a, H6a*), with H1a comprising seven minor hypotheses (*H1a1, H1a2, H1a3, H1a4, H1a5, H1a6, H1a7*) as shown in Figure 3.2 and Table 3.1.

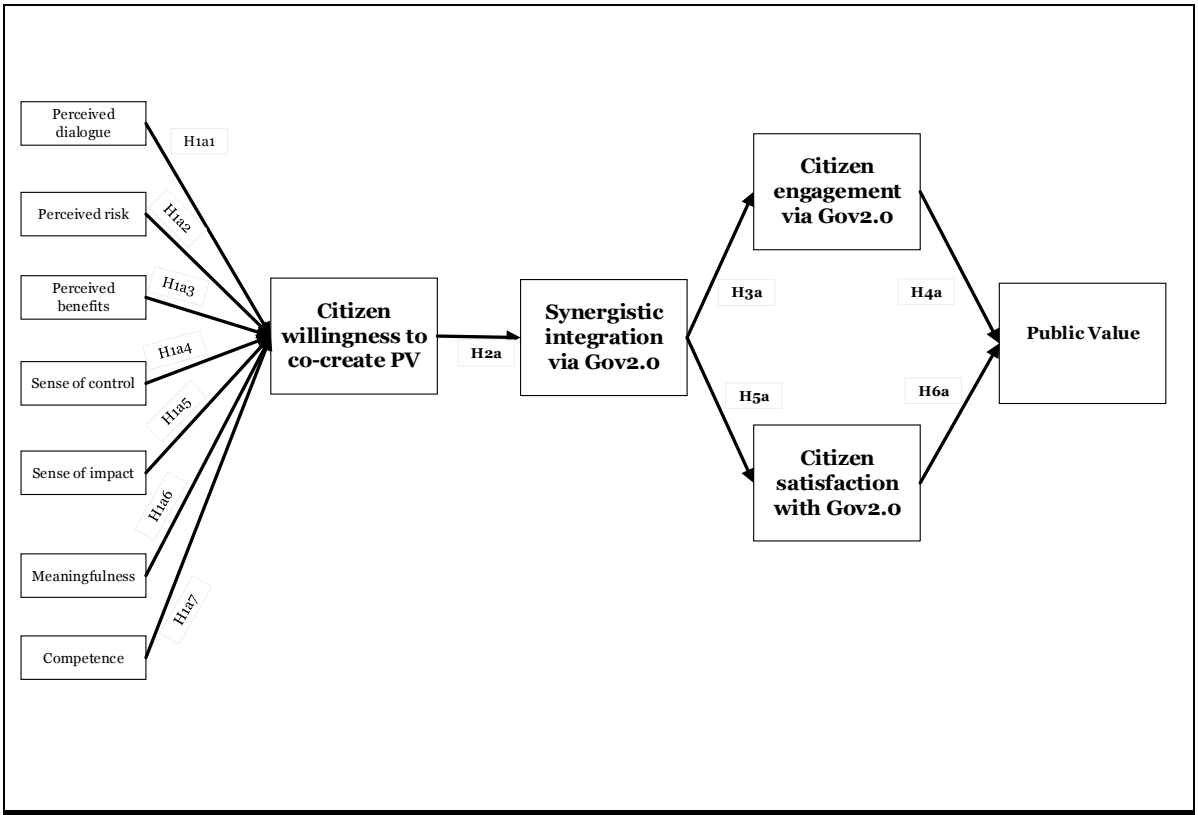

Figure 3. 2. Citizen model

Table 3. 1. Citizen Model hypotheses

Hypothesis		Description
H1a	*(H1a1+)*	*Perceived dialogue has a positive influence on citizens' willingness to co-create PV via Gov2.0*
	(H1a2-)	*Perceived risk has a negative influence on citizens' willingness to co-create PV via Gov2.0.*
	(H1a3+)	*Perceived benefits has a positive influence on citizens' willingness to co-create value via Gov2.0.*
	(H1a4+)	*Perceived sense of control has a positive influence on citizens' willingness to co-create PV via Gov2.0.*
	(H1a5+)	*Perceived sense of impact has a positive influence on citizens' willingness to co-create PV via Gov2.0.*
	(H1a6+)	*Perceived meaningfulness has a positive influence on citizens' willingness to co-create PV via Gov2.0.*
	(H1a7+)	*Perceived competence has a positive influence on citizens' willingness to co-create PV via Gov2.0.*
H2a+		*Citizens' willingness to co-create PV has a positive influence on the synergistic integration via Gov2.0*
H3a+		*Citizens' synergistic integration via Gov2.0 has a positive influence on citizen participation via Gov2.0*
H4a+		*Citizen engagement via Gov2.0 has a positive influence on PV*
H5a+		*Citizens' synergistic integration via Gov2.0 has a positive influence on citizen satisfaction with Gov2.0*
H6a+		*Citizen satisfaction via Gov2.0 has a positive influence on PV*

The Government model has four main hypotheses (*H1b, H2b, H3b, H4b*), with *H1b* comprising seven minor hypotheses (*H1b1, H1b2, H1b3, H1b4, H1b5, H1b6, H1b7)* as shown in Figure 3.3 and Table 3.2.

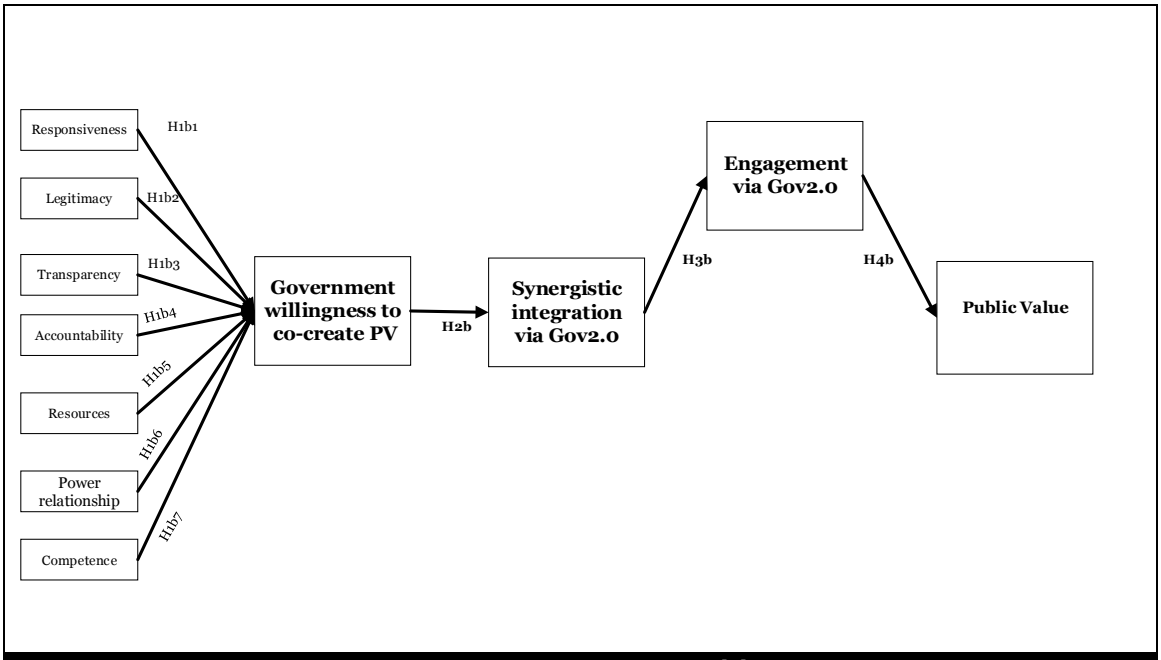

Figure 3. 3. Government model

Table 3. 2. Government Model hypotheses

Hypothesis		Description
H1b	*(H1b1+)*	*Responsiveness has a positive influence on government agencies' willingness to co-create PV via Gov2.0.*
	(H1b2+)	*Legitimacy has a positive influence on government agencies' willingness to co-create PV via Gov2.0.*
	(H1b3+)	*Transparency has a positive influence on government agencies' willingness to co-create PV via Gov2.0.*
	(H1b4+)	*Accountability has a positive influence on government agencies' willingness to co-create PV via Gov2.0.*
	(H1b5+)	*Resources has a positive influence on government agencies' willingness to co-create PV via Gov2.0.*
	(H1b6+)	*Power relationship has a positive influence on government agencies' willingness to co-create PV via Gov2.0.*
	(H1b7+)	*Competence has a positive influence on government agencies' willingness to co-create PV via Gov2.0.*
H2b +		*Government agencies' willingness to co-create PV has a positive influence on the synergistic integration via Gov2.0*
H3b +		*Government agencies' synergistic integration via Gov2.0 has a positive influence on citizen engagement via Gov2.0*
H4b +		*Engagement via Gov2.0 has a positive influence on PV*

3.4 Constructs Definitions

The GPVM constructs are derived from citizen empowerment and co-creation theories and studies on Gov2.0, citizen engagement, citizen satisfaction, and PV as discussed in Chapter Two. According to Webster and Watson (2002), the literature review should help to clearly define the constructs and establish the boundaries of the review. Definitions of the GPVM constructs are presented in Tables 3.3 and 3.4.

Table 3. 3. Definitions of the Citizen Model constructs

Construct	Definition	Reference
Perceived dialogue (PD)	The degree to which an individual believes that the level of discussion and conversation with government agency will increase his/her use of Gov2.0.	Prahalad and Ramaswamy (2004)
Perceived risk (PR)	The degree to which a person believes that using Gov2.0 to contact a government agency would cause damage greater than the advantage.	Colesca (2009); Gefen et al. (2003)
Perceived benefits (PB)	The degree to which a person believes that using Gov2.0 to contact a government agency is better than previous method.	Moore and Benbasat (1991)
Sense of control (SC)	The degree to which individual has a choice and autonomy in an activity.	Ryan and Deci (2000); Thomas and Velthouse (1990)
Sense of impact (SI)	The degree to which an individual can influence the outcome of an activity; belief that one's behaviour could have an impact; performance-outcome expectancy.	Bandura (1986); Thomas and Velthouse (1990)
Meaningfulness (MF)	The value of the task or its purpose in relation to one's standards.	Nehari and Bender (1978); Thomas and Velthous (1990)
Competence (CC)	Judgment of one's ability to use Gov2.0 to accomplish a particular activity; The belief that one is able to do the relevant behaviour competently; self-efficacy or personal mastery; effort performance expectancy.	Bandura (1986); Thomas and Velthouse (1990)
Citizens willingness to co-create PV (WC)	The degree of citizens' readiness to perform an activity to co-create PV.	Alford and O'Flynn (2009)
Synergistic integration via Gov2.0 (SNC)	The degree of co-creation between citizens and government.	Sarker et al. (2012); Madhok and Tallman (1998)
Citizen engagement via Gov2.0 (PTC)	The level of citizens' activities and behaviours via Gov2.0.	Barki and Hartwick (1994); Hand and Ching (2011)
Citizen satisfaction in Gov2.0(SFC)	Positive feeling and pleasurable experience when using Gov2.0	Li and Gregor (2011)
Public value (PVC)	Citizens want and need and assure its relevance to stakeholders	Cordella and Willcocks (2010); Moore (1995); Talbot (2011)

Table 3. 4. Definition of the Government Model constructs

Construct	Definition	Reference
Responsiveness (RV)	The degree to which acgovernment agency responds to citizen demands.	Jørgensen and Bozeman (2007); Yang and Callahan (2007)
Legitimacy (LG)	The degree to which a government agency acts in accordance with established laws in order to be politically and legally sustained.	Yang and Callahan (2007)
Transparency (TP)	The degree of a government agency's openness in the decision-making process and regular, timely information dissemination.	Jørgensen and Bozeman (2007); Wong and Welch (2004)

Accountability (AC)	The degree to which a government agency is behaving with accountability and taking responsibility.	Bannister and Connolly (2014); Bertot et al. (2010)
Resources (RS)	The degree to which a government agency is operationally and administratively feasible.	Moore (1995)
Perceived power relationship (PPR)	The degree of power situation perception relative to the authority to make a decision.	Li and Gregor (2011); Meynhardt et al. (2014)
Competence (CG)	The degree of government agencies' ability to actively and successfully engage citizens.	Prahalad and Ramaswamy (2004)
Government willingness to co-create PV (WG)	The degree of government readiness to reach citizens and engage them to co-create PV.	Alford and O'Flynn (2009)
Synergistic integration via Gov2.0 (SNG)	The degree of co-creation between citizens and government.	Madhok and Tallman (1998); Sarker et al. (2012)
Engagement via Gov2.0 (PTG)	The level of citizens' activities and behaviours in Gov2.0.	Barki and Hartwick (1994)
Public value (PVG)	What it is that the public values; what impacts on values about the 'public'.	Meynhardt (2009); Talbot (2009)

As seen from Tables 3.3 and 3.4, the definitions of GPVM constructs were developed by reviewing and consulting the e-government, IS and PA literature, among others. The process of constructs conceptualization and operationalisation will be further discussed in detail in Chapter Four (section 4.5.1).

3.5 Summary

This chapter has described the different elements of the GPVM and examined its components. To test the GPVM, plausible hypotheses were developed. Due to having two units of analysis, the GPVM was split into two models. The relevant literature was reviewed to develop the constructs definitions. The GPVM will be tested via a survey (online questionnaire) and three case studies (interviews). A discussion of the components of the model is expected to provide further insights on citizen empowerment, and co-creation, which may affect PV via Gov2.0. The following chapter discusses the research design adopted for this research, and includes an explanation of the quantitative and qualitative data collection and analysis processes.

CHAPTER FOUR
RESEARCH DESIGN

4.1 Overview

This research has been conducted in four phases: contextual phase, conceptual phase, empirical phase, and reflection phase (see Figure 1.1). This chapter presents the overall research design including the philosophical research assumptions in terms of ontology and epistemology, theoretical reasoning, methodology, and research methods. It also explains the data collection and analysis techniques for both stages, quantitative and qualitative. Further, the procedures for research instruments development and validation, sampling and selection of participants are described. The chapter begins with an overview of the philosophical foundations of this research, including the theoretical reasoning employed in section 4.2. Next, the research paradigm is discussed in section 4.3. Following this, the research methodology is described, and the choice of a mixed methods research approach is justified (section 4.4). The research methods are described in section 4.5, and the ethical considerations pertaining to this research are discussed in section 4.6. Section 4.7 concludes the chapter with a summary of the overall research design.

4.2 Philosophical Foundations

Philosophical ideas influence the practice of research and need to be explicated in order to demonstrate the viability and rigour of the research and support the integrity of its finding (Creswell 2009). Denzin and Lincoln (2005) explained that "the researcher's epistemological, ontological, and methodological premises may be termed a *paradigm*" (p.22). A paradigm, an idea made popular by Thomas Kuhn (1970), is "a set of interrelated assumptions about the social world which provides a philosophical ... for the systematic study of that world" (p.10). In other words, it is a basic orientation of thinking about theory and research. Guba (1990) defined it as a set of beliefs that provide guidance to research. Others have called them *worldview* (Creswell 2009), *epistemologies* and *ontologies* (Crotty 1998) or broadly-conceived research methodologies (Neuman 2011). In general, the philosophical foundations are concerned with the way ontologies and epistemologies influence the structure and process of research. Ontology is about the nature of reality or "what" exists, while epistemology is about the nature of knowledge or what counts as a fact and where knowledge is to be sought (Lincoln et al. 2011; Sarantakos 2005; Neuman 2011). The combination of ontology and epistemology constitutes a research paradigm that represents

the researcher's basic beliefs (Myers 2013). Sarantakos (2005) describes it as a hierarchy where ontology and epistemology informs the logical reasoning and methodology underlying the choice of an appropriate research design. Logical reasoning refers to the way of building and testing theory (Babbie 2013). Methodology refers to the overall research strategy that translates ontological and epistemological philosophies into guidelines that show how the research is to be conducted (Bryman 2012). Methodology in turn informs the research methods, which are the detailed procedures of applying the research (Crotty 1998). In the IS field, Orlikowski and Baroudi (1991) classified the assumptions that constitute the philosophical foundation towards research into three set of beliefs: beliefs about the phenomenon (i.e. ontology), beliefs about the notion of knowledge (i.e. epistemology), and beliefs about the relationship between the two (i.e. reasoning logic). Ontological beliefs relate to whether the world is objective and independent of humans, or subjective and exists only through the action of humans. Epistemological beliefs concern the criteria applied to create and assess knowledge about a phenomenon. These are beliefs about the role of theory in the world of practice, and the values and intentions of researchers that influence their work. Crotty (1998) divided the research design into four layers: epistemology, ontology, methodology and methods, and suggested that compatibility be established between them. Based on the above discussion, Figure 4.1 shows the foundation of this research design and the links between the four layers.

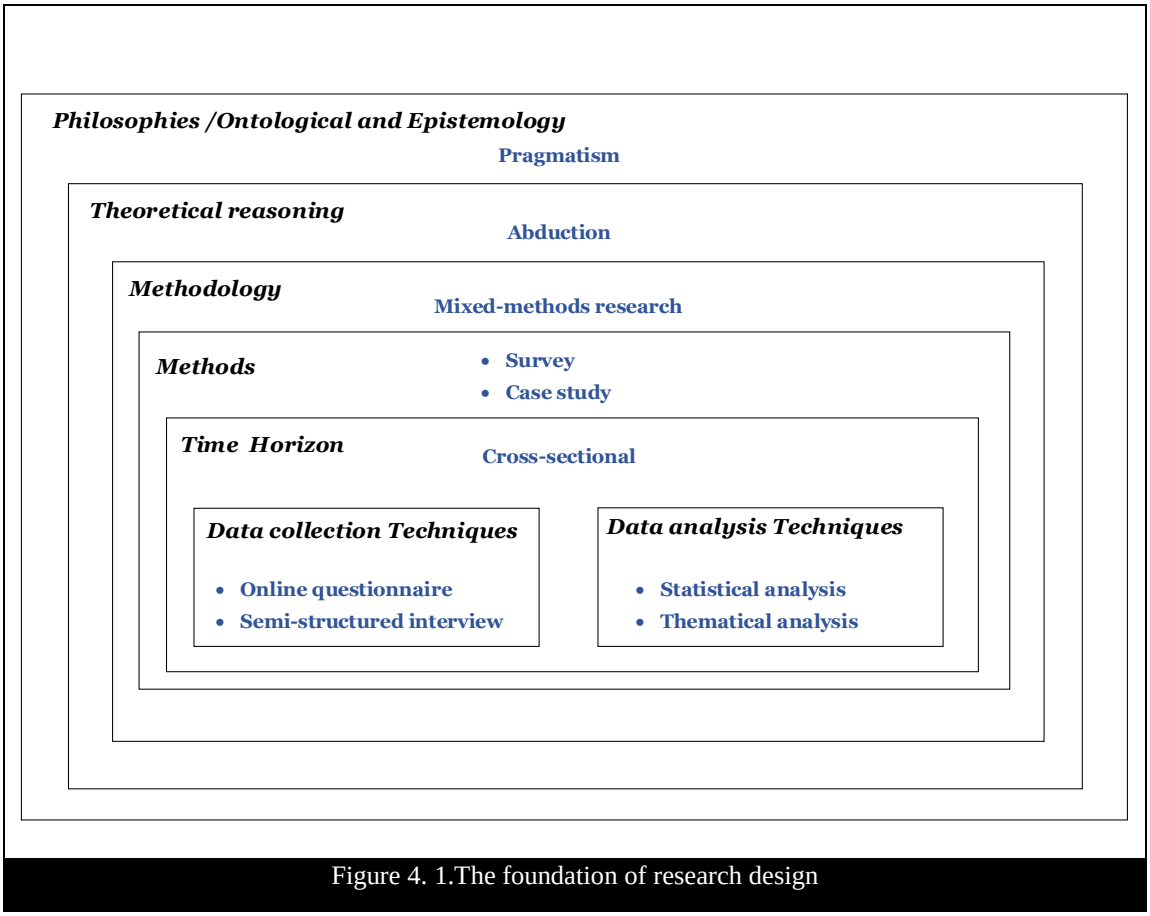

Figure 4. 1.The foundation of research design

4.3 Research Paradigm

At an abstract level, a research paradigm includes the basic assumptions, the questions to be answered, the data collection and analysis techniques to be used (Neuman 2011). Ritzer (1975) defined paradigm as *"the broadest unit of consensus within a science and serves to differentiate one scientific community from another."* (p.7). The main research paradigms in social science are positivism, interpretivisim, and critical realism (Guba and Lincoln 1994; Saunders et al. 2016). Positivism aims to discover natural laws in order to predict and control events. Interpretivisim aims to understand and describes the phenomenon within its social setting. Critical realism aims to challenge the social system by revealing myths and contradictions in order to facilitate change. Although this classification is just one of many, the three-fold distinctions have been widely embraced within the IS filed (Klein and Myers 1999; McGrath 2005; Myers and Klein 2011; Orlikowski and Baroudi 1991; Richardson and Robinson 2007). Positivism has been the dominant research paradigm in IS. Orlikowski and Baroudi (1991) examined 155 research articles published from 1983 to 1988 in four major IS outlets and found that positivism accounts for 96.8% of the studies. Chen and Hirschheim (2004) analysed 1893 research articles published from 1991 to 2001 in eight leading IS

journals and found that positivism still dominates 81% of published empirical research, with a slight increase in interpretivisim research. Pragmatism has recently emerged as a paradigm in IS (Venkatesh et al. 2013). The four research paradigms are summarized in Table4.1.

Table 4. 1. Research paradigms

Paradigm	Ontology	Epistemology	Methodology
Positivism	Objectivism	Reductionism/Realism	Quantitative research
Interpretivism	Constructivism	Holism/ Idealism	Qualitative research
Critical realism	Relativism	Biasism	Ideological research
Pragmatism	Realitism	Praticalism	Mixed methods research

At the meta-theoretical level, this research adopts pragmatism as the research paradigm (Venkatesh et al. 2013). Pragmatism presents a practical and applied research philosophy. The pragmatism paradigm is largely concerned with practical consequences and real effects that are important elements of meaning and truth. Pragmatism rejects the existing paradigms regarding ontology and epistemology (Maxcy 2003). From an ontological assumption, pragmatists believe that multiple realities exist which can also be intersubjective, thereby contradicting the traditional view (i.e. subjective or objective). From an epistemology perspective, pragmatists view knowledge as being both constructed and based on the reality of the world we experience and live in (Johnson and Onwuegbuzie 2004). The research problem does not exist independently of the researcher's views of reality and how he/she conceptualises a problem. For example, positivism sees the world as holding a set of definite truths, while interpretivism sees multiple perspectives of the world based on the meanings that people perceive (through the eyes of the beholder)(Crotty 1998). Thus, selecting the appropriate paradigm not only helps the researcher to choose the most suitable research methodology, methods, and techniques, but clarifies his/her views of the world so as to analyse the situation (Neuman 2011).

The logical reasoning underlying the research process could be either deductive or inductive (Trochim 2006). Deductive reasoning applies a top-down approach, starting broadly from the theory, to the more specific hypotheses that can be tested, to collecting data to test the hypotheses and finally confirmation (or otherwise) of the applied theory. On the other hand, inductive reasoning is the opposite, applying a bottom–up approach, moving from specific observations to detecting patterns to formulating tentative hypotheses or propositions to generalisation and theories (Babbie 2013; Creswell 2009). Figure 4.2 shows the processes of the two types of reasoning.

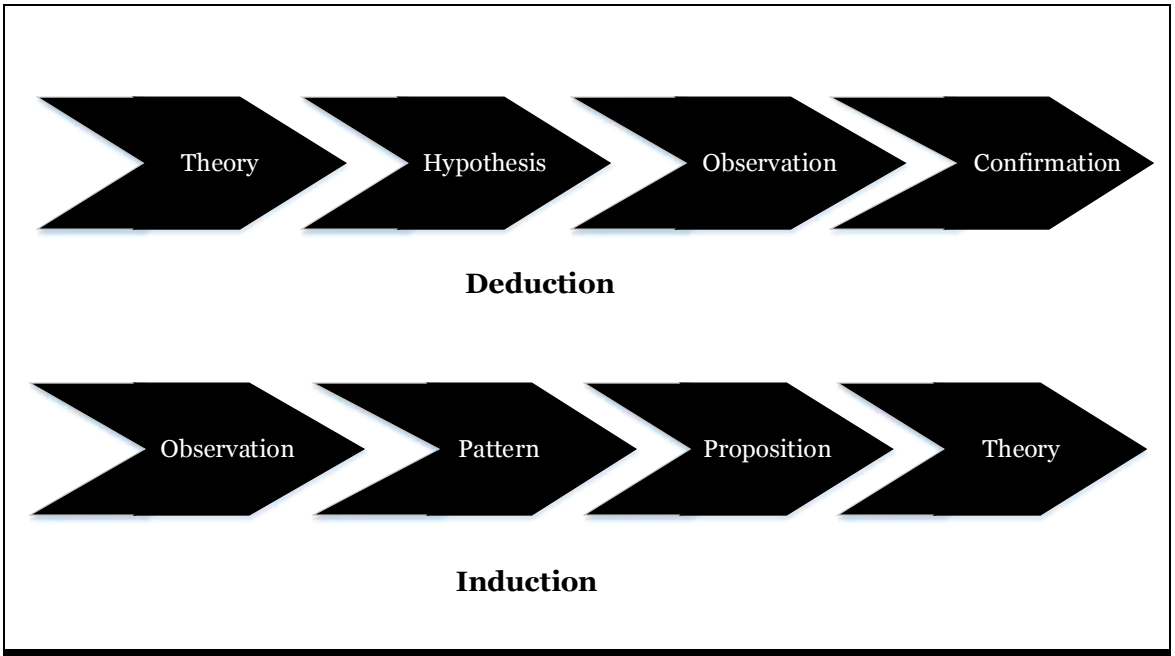

Figure 4. 2. Theoretical reasoning (Adapted from Trochim 2006)

Although positivism applies deductive reasoning and interpretivism applies inductive reasoning, pragmatism is based on abductive reasoning that moves back and forth between induction and deduction. This iterative approach supports the use of mixed methods in the same research study (Maxcy 2003; Howe 1988), and helps to shed light on how to apply the mixed methods approach effectively (Hoshmand 2003). This research can be viewed as a practical and applied research and some mixed methodologists suggest that pragmatism is the best paradigm for justifying the use of mixed methods research (Teddlie and Tashakkori 2009). Abduction is analogous to diagnosis: given a rule and an effect, one can abduce a cause. Abductive reasoning takes a logical assumption, explanation, or best guess from an observation. Due to the prejudices of the researcher – facts are already there- a strict application of inductive reasoning is difficult; thus, abductive reasoning is a more realistic approach (Alvesson and Sköldberg 2005). The purpose of theorizing is to clarify a complex issue by making it clear and understandable (Hedström 2005). However, theory not only influences the analysis of problems; rather, it determines the research questions, thus affecting the research process from the beginning (Allison and Zelikow 1999). Following this train of logic, and as this research is concerned with investigating a practical problem with regards to PV co-creation via Gov2.0, abductive reasoning, which is a combination of both deductive and inductive reasoning, is considered as the most appropriate.

4.4 Mixed Methods Research Methodology

As a rule of thumb, choosing an appropriate research methodology should be based on the research aims and objectives (Williamson 2013). Neuman (2004) grouped the purposes of research into three types: exploratory, descriptive and explanatory. Exploratory research, by definition, aims to explore a new topic and provide a better understanding of the phenomenon of interest for future research (Babbie 2013). It addresses the "what" questions and mostly uses qualitative methods such as case studies and ethnography (Yin 2009). Descriptive research provides specific details about an existing situation or issue, to present an in-depth analysis where general information about a phenomenon is available (Zikmund et al. 2010). It focuses on "how" and "who" questions and generally uses data gathering techniques such as questionnaires and content analysis. Explanatory research aims to describe and explain a well-recognised phenomenon (Neuman 2012). It addresses the "why", builds on the exploratory and descriptive research, and extends it by identifying the reason that something occurs (Neuman 2012). Explanatory research often employs experiments and case studies (Yin 2009). Neuman (2011) argued that, often, research purposes are blurred in practice. Indeed, this research adopts an exploratory and explanatory approach given the overall aim and objectives. It aims to fill a research gap in which theoretical work in the phenomenon of interest is lacking. This research will explore the issue of lack of use of Gov2.0 and provides a better understanding of this issue by addressing the "what" (e.g., what are the factors that influence citizen and government willingness to co-create PV via Gov2.0). Furthermore, this research will apply existing theoretical foundations, that is, citizen empowerment and co-creation theories in the context of Gov2.0, in order to explain the process of realising PV by addressing the "why" aspect of the problem. Finally, the GPVM is an attempt to tackle the "how" aspect of the problem.

Although the positivism paradigm is usually linked with quantitative methods, and the interpretivism paradigm is usually linked with qualitative methods, there is limited justification for this association. In fact, some have argued that it is completely possible to conduct a positivist case study (Dubé and Paré 2003; Weber 2004; Yin 2009). Crotty (2003) concluded that the quantitative–qualitative dichotomy discussion does not occur at the paradigm or the theoretical levels, but at the methodological level. Therefore, a third group of researchers emerged who employ both quantitative and qualitative methods (Teddlie and Tashakkori 2009). Creswell (2009) highlighted three types of research methodology: qualitative, quantitative and mixed methods. Others have

called them *strategies of inquiry* (Balnaves and Caputi 2001), *approaches of inquiry* (Creswell and Clark 2007), or *research design* (Babbie 2013).

In the recent IS debate on different paradigms (e.g., positivist versus interpretivist) and research methodology (e.g., qualitative versus quantitative), many have called for going beyond the semantics of the differences between them to develop a methodological pluralism (Landry and Banville 1992; Weber 2004). Furthermore, the diversity of IS research methods is considered a major strength of the discipline (Lee 1999; Sidorova et al. 2008). Despite the debate about whether or not it is appropriate to mix different paradigms (Guba 1987) because of possible incompatibility (Teddlie and Tashakkori 2009), several researchers have reviewed the underlying methodological assumptions and suggested that a "peaceful coexistence" of multiple methodologies is acceptable (Mingers 2001; Teddlie and Tashakkori 2009).

IS researchers have employed different research methods that can generally be classified into two: quantitative and qualitative (Lee and Hubona 2009; Myers and Avison 2002). Mixed methods research involves combining qualitative and quantitative approaches in a research study (Creswell 2013). It includes the analysis of both forms of data (i.e., quantitative and qualitative). Employing multiple methods can be classified into two types: mixed methods research, and multi-method research (Mingers 2001). Even though the two types (i.e., mixed methods and multi-method) have been used interchangeably in the literature, there are significant differences between the two. In multi-methods research, two research methods are used from the same world view (Teddlie and Tashakkori 2009). For example, using ethnography and case study to understand the same phenomenon, from a single worldview (e.g., positivism) is considered as multi-method research. Mixed methods research, on the other hand, uses research methods from different world views (e.g., positivism and interpretivism) to understand a phenomenon of interest. For instance, researchers can use a quantitative survey (positivism) and follow it up with qualitative interviews (interpretivism) to understand and explain the same phenomenon. Therefore, not all multi-method research is mixed methods research, but all mixed methods research, by definition, is multi-methods.

Despite the encouraging atmosphere of methodological diversity in IS research, there is a paucity of research in IS that employs a mixed methods approach (Mingers 2003). Mixed methods research provides rich insights into phenomena that cannot be fully explained using only a quantitative or a qualitative method. Moreover, mixed methods research provides more understanding and better explanations of complex organizational and social phenomena (Cao et al. 2006). Venkatesh et al.

(2013) in their highly cited work titled *"Bridging the Qualitative–Quantitative Divide"* in IS research, encourage IS researchers to engage in mixed methods research to provide rich insights into different phenomena and develop novel theoretical perspectives. However, they emphasized that the decision to conduct mixed methods research depends on the research question, purpose, and context. If the aim of the research is to test a well-established theoretical model in a context similar to where it was developed, there is no need to conduct mixed methods research. However, using the mixed methods approach in other situations is more beneficial than a single-method approach if the research is to make significant contributions.

In fact, the mixed methods approach is suitable for this research because it enables exploratory and explanatory research questions to be addressed concurrently (Teddlie and Tashakkori 2009), and this research has both as noted earlier. The mixed methods approach will help to develop a deeper understanding of PV co-creation via Gov2.0 from both perspectives: citizens and governments. Further, it will help to find theoretically plausible answers to the research questions. In addition, the diffusion of Web2.0 applications as an integral part of both individuals' (citizens) lives and government agencies has produced a situation where existing theories and findings do not sufficiently explain the PV co-creation phenomenon, and provides insights into how to enhance it.

A mixed methods design provides a powerful tool to deal with such situations and subsequently make contributions to theory and practice (Venkatesh et al. 2013). Therefore, mixed methods research is considered to be the most appropriate methodology for this research. Furthermore, mixed methods research can provide stronger inferences than a single method (Teddlie and Tashakkori 2009). By combining both qualitative and quantitative approaches in a single study, this can overcome the shortcomings of each method and offer the best of both. The following subsections discuss the mixed methods research design strategies, such as the purpose (section 4.4.1), stages (section 4.4.2), the priority of methodological approach (section 4.4.3), mixing strategies (section 4.4.4), and time orientation (section 4.4.5).

4.4.1 Purposes

Mixed methods research can serve many purposes, unlike a single method approach. Table 4.2 offers some of the purposes of mixed methods research.

Table 4. 2. Purposes of mixed methods research (Adapted from Venkatesh et al. 2013)

Purpose	Description
Complementarity	Obtain complementary views about the same phenomenon or relationships
Completeness	Provide a complete picture of a phenomenon
Developmental	Questions for one stage emerge from the inferences of a previous one (sequential mixed methods), or one stage provides hypotheses to be tested in the next one
Expansion	Explain or expand upon the understanding obtained in a previous stage of a study
Corroboration/Confirmation	Assess the credibility of inferences obtained from one stage
Compensation	Enable compensating for the weaknesses of one approach by using the other
Diversity	Obtain divergent views of the same phenomenon

As shown in Table 4.2, mixed methods research provides a greater variety of views (Teddlie and Tashakkori 2009). This research utilizes the mixed methods approach to obtain a complementary and complete view of the phenomenon of interest. Arguably, e-government is an ideal context for the application of mixed methods approach due to its trans-disciplinary nature (i.e. IS and PA). Furthermore, the diversity of issues in e-government provides another reason for the use of mixed methods approach (Joseph 2013). The combination of different methods, in order to understand the various interrelated issues in e-government, can offer deeper insights into the discipline as a whole. Moreover, e-government consists of both technical and behavioural elements and can be considered as a complex socio-technical system. For example, Gov2.0 comprises many underlying political, institutional, and economic aspects that can directly influence it.

Mixed methods research can be used in the same study to better understand this complex and dynamic phenomenon. Many recent studies on e-government have used the mixed methods approach (Gil-Garcia and Pardo 2006; Ke and Wei 2006; Luna-Reyes and Gil-Garcia 2011; Unsworth and Townes 2012). Gil-Garcia and Pardo (2006), for example, collected quantitative data from e-government websites and then used the findings as input for two qualitative case studies. Therefore, the previous discussion highlighted the applicability of a mixed methods approach to e-government studies and positive potential contributions to the field. Even though the use of a mixed methods approach in e-government research has clear benefits, challenges such as the length of time and resource availability can thwart the use of this approach.

4.4.2 Stages

Based on the stages of research, mixed methods research can be classified into two types: mixed methods monostage and mixed methods multistage designs (Tashakkori and Teddlie 2006). Teddlie and Tashakkori (2009) suggested that stage or strand has three elements: theoretical foundations and research methods, data collection and analysis, and data interpretation and application. A monostage study involves only a single stage in the theoretical-collection and analysis-interpretation process, yet it contains both qualitative and quantitative research (Teddlie

and Tashakkori 2006). In contrast, a multistage design contains at least two research stages (Bryman 2006). As illustrated in Figure 4.3, this research uses a mixed methods multistage design. In Stage 1, the quantitative research is conducted that includes quantitative data collection and analysis (Chapter Five). Stage 2 is where the qualitative research is completed, consisting of qualitative data collection and analysis (Chapter Six).

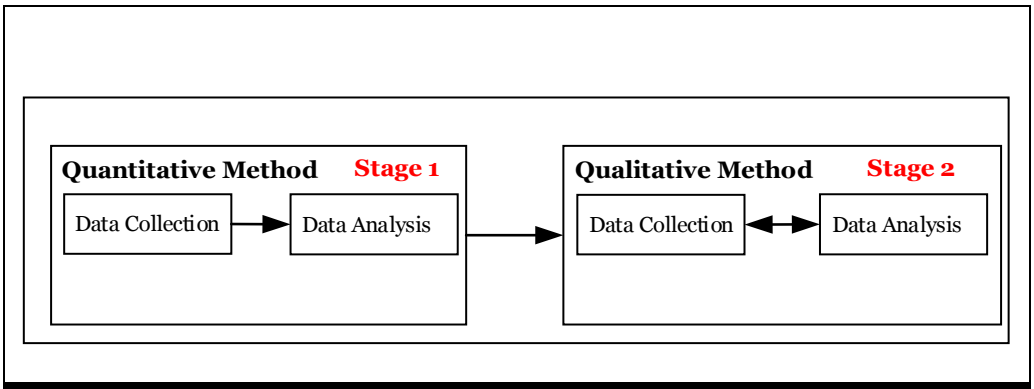

Figure 4. 3. Mixed methods stages

4.4.3 Priority

Based on the priority of the methodological approach, mixed methods research can be designed as pure-mixed design and dominant-less dominant design. In pure-mixed design, both qualitative and quantitative methods are implemented equally to understand the phenomenon of interest (Johnson et al. 2007). The dominant-less dominant design can be further divided into qualitative-dominant mixed methods research and quantitative-dominant mixed methods research (Venkatesh et al. 2016). Figure 4.4 illustrates the three basic mixed methods research priorities.

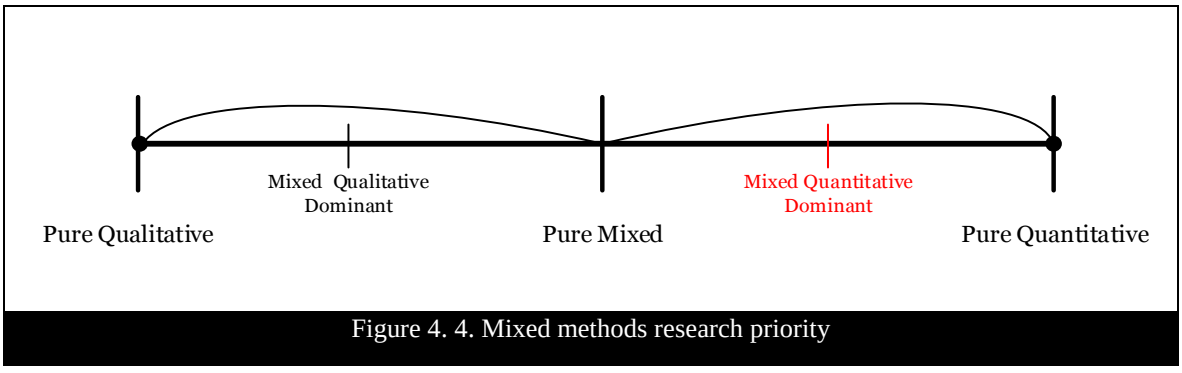

Figure 4. 4. Mixed methods research priority

As shown in Figure 4.4, a pure-mixed methods research is in the middle of the continuum. A qualitative-dominant mixed methods design relies more on qualitative research with a small component being quantitative research (Jonson et al. 2007; Creswell et al. 2003). In a quantitative-dominant mixed methods research, the emphasis is on the quantitative research while the

qualitative approach plays a minor role (Jonson et al. 2007; Creswell et al. 2003). This research relies more on the quantitative research as it applies existing theoretical foundation to a new or novel context, Gov2.0. Thus, a quantitative-dominant mixed methods approach is applied.

4.4.4 Mixing strategies

By combining different strategies, a mixed methods research can be designed to have a fully mixed methods design or a partially mixed methods design (Teddlie and Tashakkori 2009). A fully mixed methods design involves using both qualitative and quantitative research across all research design phases including mixing paradigms (Leech and Onwuegbuzie 2009). A partially-mixed methods design involves combining the qualitative and quantitative research for specific phases without the need for mixing paradigms (Teddlie and Tashakkori 2009). In this research, a partially mixed methods design is used as this study employs a single research paradigm (i.e. pragmatism).

4.4.5 Time orientation

Based on the time orientation, a mixed methods research design can be categorized into two types: sequential and concurrent or parallel. A sequential mixed methods design involves collecting qualitative and quantitative data in different stages, quantitative first then qualitative (or vice versa). Concurrent or parallel mixed methods design involves collecting qualitative and quantitative data simultaneously at the same stage (Creswell 2013). The sequence depends on the research objectives and questions. Creswell et al. (2003) proposed four types of mixed methods designs based on the research objectives: (1) triangulation (i.e., merges qualitative and quantitative data to understand a research problem); (2) embedded (i.e., uses either qualitative or quantitative data to answer a research question within a largely quantitative or qualitative study); (3) explanatory (i.e., uses qualitative data to help explain or elaborate quantitative results); and (4) exploratory (i.e., collects quantitative data to test and explain a relationship found in qualitative data). Figure 4.5 shows the sequential explanatory mixed-methods design.

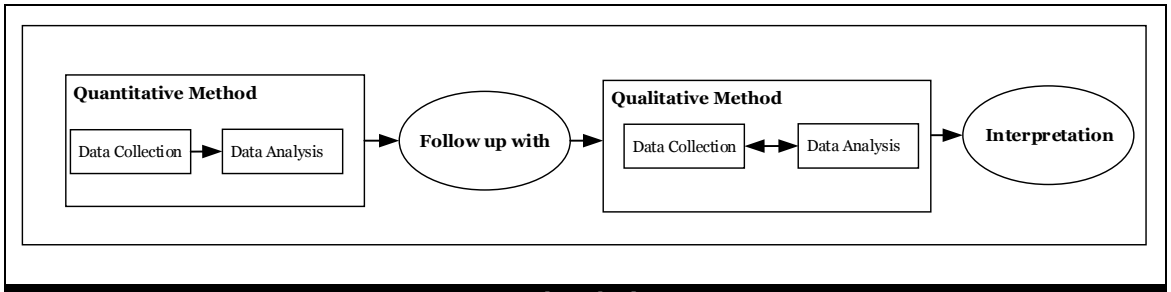

Figure 4. 5. Mixed methods time orientation

This research uses a sequential explanatory mixed methods design (i.e., the quantitative approach followed by the qualitative approach to help explain or elaborate results). Venkatesh et al. (2013) suggested using an explanatory mixed methods design when applying an existing theoretical foundation to a new or novel context. First, the quantitative approach will offer new insight based on the context-specific findings, which can be elaborated or explained by the subsequent qualitative approach. Furthermore, this design is beneficial when unpredicted results emerge from the quantitative approach (Creswell 2009). In addition and as stated previously, both areas (PV and Gov2.0) are relatively new, and the sequential design can be helpful in the management of findings emerging from the first stage. PV co-creation via Gov2.0 is still an emerging phenomenon (Criado et al. 2013) and this research is employing an explanatory approach to investigate the phenomenon of interest. Based on these suggestions, and considering the overall aim and objectives of this research, a sequential explanatory mixed methods design was chosen.

4.5 Research Methods

This research employs a qualitative survey and a qualitative case study as research methods. As stated previously, a sequential explanatory mixed methods design (i.e., survey method followed by case study to help explain or elaborate results) was used. Employing a survey research method and an online questionnaire as quantitative data collection technique, can offer breadth to the research by collecting data from many participation (i.e., citizens and government officials) about different aspects of the phenomenon of interest. On the other hand, employing a case study research method and interviews as a qualitative data collection technique, can offer the depth to the research by obtaining deep insights and rich descriptions from informants (i.e., citizens and government officials). The two research methods were applied in two stages, where the survey offered breadth and the case study provided in-depth insights. This section is divided into the survey method (section 4.5.1) and the case study method (section 4.5.2); in each subsection, the specific data collection and data analysis techniques used are described.

4.5.1 Survey

Survey research involves the collection of primary data from all or part of a population in order to determine the distribution and the relationships of certain variables (Andres 2012). The aim of the survey method may be to generalise to larger populations or to transfer the findings from a particular context to similar ones (Marshall and Rossman 2006). Thus, the survey method can be conducted from both quantitative and qualitative perspectives. Quantitative research measures the relationships between variables and makes the observation more explicit (Neuman 2011). These

variables can be measured, so numerical data can be collected and analysed using mathematical and statistical techniques (Creswell 2009). Usually, it starts with theoretical assumptions, identifying facts, eliminating potential bias, controlling alternative causes to derive results that can be generalised to larger populations and replicate the findings (Creswell 2009). Moreover, the quantitative approach allows for a range of statistical analyses to be conducted, from simple to more complex models. The quantitative approach is suitable for the testing of theories and hypotheses, and also ideal when trying to measure personal beliefs, behaviours, and opinions of a population in order to discover their perceptions and attitudes to the phenomenon of interest (Babbie 2013). This research investigates citizens' and government officials' perceptions of Gov2.0 in order to understand citizens' behaviour and attitudes towards Gov2.0. Therefore, the survey method is appropriate.

According to Babbie (2013), surveys are commonly used for individuals or organisations as the units of analysis, though in the latter case, some individuals must serve as respondents. This research has two units of analysis: individuals (i.e., citizens), and organisations (i.e., government agencies), and for the latter, government officials will serve as respondents. Surveys are widely used among the target population, public opinion polls being popular examples of this use (Babbie 2013). By the same token, the use of respondents (i.e., government officials/executives) to collectively reflect on the organisation to which they belong is common (Yin 2014). The use of a survey method allows large numbers of participants to be reached in a wider context. It also contributes to the validity and reliability of the research findings. This research uses the survey method as it is able to provide quantitative or numerical data through direct questions directed at a sample of the target population (Creswell 2013). It is probably the best method for collecting data from a population too large to observe or interact with directly (Babbie 2013). In addition, it is viewed as a structured, replicable method that saves effort, cost and time (Bryman 2012). Surveys may be used for descriptive, explanatory and exploratory purposes (Babbie 2013). However, some have argued (e.g. Tanner 2013) that descriptive and explanatory purposes are more common. This research uses the survey method to explain the interrelationship of the identified variables and discover causal links between them.

4.5.1.1 Data collection technique

Fink (2002) outlined four types of data collection techniques in the survey method: self-administered questionnaires; structured interviews; structured record reviews; and structured observations. The last three types are relatively expensive and time-consuming, which makes them

unsuitable for use with a large population or wide area (Bryman 2012). Others have grouped them into three types: questionnaires (print or online), interviews (face-to-face), and observation (Tanner 2013). The difference between the first two (i.e. questionnaire and interview) is that respondents in the former read questions and give answers themselves independently of the researcher, whereas in the latter, the interviewer reads a set of questions (often called the interview schedule or protocol) to the respondents and records responses him/her self. To simplify the discussion, I will use the terms 'questionnaire' for the first and 'interview protocol' for the second.

Questionnaires are the most popular data collection technique in surveys with the aim of generalizing from a sample to a population (Fowler 2014). The survey method may be cross-sectional -data collected at one point in time- or longitudinal studies -data collected over time. This research aims to provide a snapshot of the phenomenon of interest over a short period of time. This strategy is cost-effective and the findings can be generalized to the larger population (Bryman 2012). This research collected data at a given period of time, as it seeks to discover participants' perceptions and points of view at that particular time and not over time, and also due to time restrictions. Therefore, considering the objectives and constraints of research, a cross-sectional online questionnaire was used as a data collection technique in Stage 1.

Questionnaires can include questions (i.e., open-ended or/and closed-ended) and/or statements. Typically, the purpose of questions is to obtain answers; however, statements are used to determine the extent to which a respondent holds an attitude or viewpoint. Typically, a five-point Likert scale is used where respondents indicate their responses to statements by marking 'strongly agree', 'agree', 'neutral', 'disagree', or 'strongly disagree'. Open-ended questions provide the opportunity to gather in-depth data and are chiefly used in qualitative interviews, whereas closed-ended questions provide greater uniformity of answers and more popular in survey research. The use of both questions and statements makes the questionnaire design more flexible and interesting (Babbie 2013), therefore both where included in the questionnaire. Quantitative data offers the advantages that numbers have over words as measures of quality (Babbie 2013) and can facilitates statistical inferences to reveal correlations between variables (Bryman and Cramer 2009). Data generated and analysed are usually used to test the hypotheses and determine whether or not significant relationships exist.

The self-completed questionnaire may be one of three types: postal, telephone and Web-based (Neuman 2011). There is no best type; however, some types are better for some topics, situation, and population (Dillman et al. 2009). The postal questionnaire was not an option for this research

due to the limited availability of mailboxes, and the lack of postal codes in Saudi Arabia. Web-based questionnaires have much to offer, overcoming some of the disadvantages of the previous types. Advantages include ease of administration, fast response times, better response rates, responses are downloadable into a database, convenience for respondents and relatively inexpensive and cost-effective (Andrews et al. 2003; Gurău 2007). Furthermore, web-based questionnaires are economical to conduct, user-friendly with flexible layout, allow for a prompt response, offer anonymity and are more convenient for the respondent, and it takes less time to collect and analyse the data (Bryman and Cramer 2009). Additional features of the web-based questionnaire are its ability to configure data entry according to the respondents' answers. Some fields could be eliminated, hidden or displayed to reduce the number of non-responses to the questions. Also, the drop-down menus offer many options for selection, and it is possible to link and highlight some references to definitions and examples throughout the questionnaire.

Singh and Burgess (2007) argued that web-based questionnaires are the most appropriate method for investigating technology- or Internet-based topics. Furthermore, Babbie (2013) pointed out that some populations are perfectly suited to web-based questionnaires. For example, he stated that research about online companies should be conducted online. With web-based questionnaires, the researcher can access a large of numbers of respondents more cheaply than by traditional means, by posting questions on dedicated sites and collecting data from potentially thousands of participants with access to the Internet (Couper 2000). Furthermore, web-based questionnaires enable multimedia content in a standardized way, which was extremely difficult using traditional types of questionnaires. This research employed an online questionnaire as the data collection technique because potential respondents are most likely to be engaged online, hence they are more likely to favour an online questionnaire. To establish confidence in the questionnaire results, issues of sampling, potential sources of bias and error, design and validation process, and pilot testing of the questionnaire need to be considered, and are discussed next.

Defining the population

In order to generalize the survey findings and make assertions about a population, a carefully selected representative sample must be obtained. Sampling procedures for quantitative research rely on mathematical probability and can be very accurate if carefully executed (Neuman 2011). However, in qualitative research, sampling is different; the idea is not to represent the entire population, but to sample some aspects of the complex social world that could provide insights in order to understand the issue or the relationship. The goal is to obtain an in-depth understanding

about the phenomenon of interest and generalise to the theory, not the population (Flick 2009). For the survey method (Stage 1), the sample needs to be representative of the entire population. Thus, the sampling process needs to define the population, identify the sample size, specify the sampling frame, and determine the sampling technique (Neuman 2011). The target population for this research are Saudi Arabian adult citizens and government officials who are already engaged online, using Web2.0 applications and who may or may not have used Gov2.0. This research focuses on citizens who are "able but unwilling" to participate, because they are not very interested, do not have the time, or do not trust government to make good use of their input, and excludes citizens who are willing but unable. This research aims to investigate why some citizens are actively using Web2.0 applications but not using Gov2.0 as much. Therefore, the digital divide was excluded and expect the target population to possess minimal level of literacy and computer efficiency to be able to access and navigate the Internet.

Shaping the sampling frame

As noted earlier, the population used for this research are Saudi Arabian adult citizens and government officials who are already engaged online, using Web2.0 applications and who may or may not have used Gov2.0. The target population can be viewed as a set of elements from which a sample is drawn (e.g., the adult population of Saudi Arabia). After defining the targeted population, a sampling frame must be specified. A sample frame is a list of approximate elements or cases in the population such as all residential telephone numbers (for a telephone survey) or all personal e-mail addresses (for web surveys) (Couper 2000). The sampling frame for this research population is the access to the Internet and Web2.0 applications, as it is unrestricted and users are able to participate in the online survey. The respondents were invited using the link to the online questionnaire and several government agencies were asked to invite their clients (i.e. citizens) via their Gov2.0. The questionnaire was also promoted via blogs and threads of various interests, different national government websites and forums in different locations (provinces and cities) and various Web 2.0 applications (e.g., Twitter and Facebook) to attract a heterogeneous sample of respondents. The Web 2.0 applications were selected as they were openly accessible and the administrators of government agency websites agreed to post the questionnaire link on their sites. The aim was to attract a representative sample of Saudi Arabian citizens with various levels of education, from different ethnic backgrounds, gender and age groups, and from a wide geographical area. Similar research from the e-government literature suggested, generally, a sample size be between 300 and 1000 (Comrey and Lee 1992; Tabachnick and Fidell 2007). Hence, this research targeted a range of 500 to 1000 respondents.

Determining the sampling technique

Two strategies for quantitative sampling can be used: probability sampling or the "gold standard", and the second is non-probability sampling, which is less accurate but acceptable when the first one is impossible, too costly, time-consuming or impractical (Neuman 2011). Probability sampling aims to produce a representative sample from a targeted population. It enhances the chances of creating a representative sample, and each unit of the random sample has an equal probability of inclusion. However, not much research studies are derived from probability sampling (Bryman and Cramer 2009). Probability sampling is not always feasible and might not be the most accurate sampling strategy. Mitchell (1985) reviewed more than 100 papers in the organisation literature which used sampling, and of these, only (20%) employed probability sampling. As noted earlier, probability sampling sometimes is impossible and in some situations it would not be appropriate even if it were possible (Babbie 2013). For example, when it is very difficult to get a list of all the targeted population, non-probability sampling is suitable.

Non-probability sampling has many techniques, the major two being: convenience sampling and quota sampling. Convenience sampling is non-random sampling, where the researcher selects anyone he or she encounters based on convenience. This technique can misrepresent the population and is not recommended for the quantitative approach. On the other hand, quota sampling is a non-random sampling method, where the researcher first identifies relevant categories from the population and selects a fixed number for each category. The category should capture the diversity of the targeted population such as education, age groups and geographic location. Quota sampling, if well-designed, is an acceptable technique (Neumann 2011). It is similar to probability sampling in addressing the issue of representativeness (Babbie 2013). However, the web-based questionnaire has changed the sampling techniques. Couper (2000; 2008) reviewed approaches for web-based questionnaires and suggested sampling techniques for non-probability sampling including: polls as entertainment; unrestricted self-selected questionnaire; and volunteer opt-in panels. The second technique, the unrestricted self-selected questionnaire, is appropriate for this research which uses open invitations on portals, websites, and Web 2.0 applications. This technique is probably the most predominant form of web-based questionnaire, and has been used by many organizations with established scientific credibility (Couper 2000); thus, it was adapted for this research. Although, as a sampling technique, the use of open invitations via Web2.0 applications is sometimes questioned in the literature, this technique was chosen because the targeted population were Web 2.0 applications users who were more familiar with Web2.0 and therefore more likely to trial Gov2.0.

Potential sources of bias and error

Generally, the major sources of bias or error in surveys include coverage, sampling, measurement and non-response error (Groves 2006). Coverage error is the mismatch between the target population and the frame population. Sampling error occurs when not all elements of the frame population are measured. Measurement error is the difference between the results and the values of those particular variables. This could be because of the social desirability bias where respondents give socially acceptable answers rather than honest ones (Neumann 2011). Another reason for the measurement error may be the poor questionnaire design (Rea and Parker 2014). Non-response error arises when not all people included in the sample are willing or able to complete the questionnaire.

By the end of 2016, the Internet users in Saudi Arabia reached 24 million (74.9%) compared to 18.3 million users (60.1%) at the same time in 2015, which shows the relatively high penetration throughout around three quarters of the population (MCIT 2017). These findings suggest that the "Internet population" (if it can be defined this way) is not quite the same as the general population of Saudi Arabia (a total population of over 31 million) in many respects; thus, in order to address the coverage issue, the targeted population for this research is limited to Internet users. Sampling error could be minimized by ensuring the diversity of the population; thus, the sample needs to represent different ethnic backgrounds from a wide geographical area. Also, it should represent different levels of education, gender and age groups. To reduce the social desirability bias, questions were phrased so as to make norm violation less objectionable. Further, the questionnaire gave no hint of the GPVM and hypotheses, and the order of the questions was arranged to mitigate the respondents' likelihood of guessing the research relationships (Podsakoff et al. 2012). Apart from a personal motivation, no incentives were given as we wanted to recruit intrinsically motivated citizens. A non-response bias test was performed by comparing responses from early and late respondents using the independent sample tests (t-test). Given that responses were received evenly over the survey period (Moore and Tarnai 2002) and multiple follow-up reminders were sent, responses were classified as early or late based on the midpoint of the data collection period. The t-test showed no statistically significant differences between the two respondent groups for all the variables, indicating that non-response bias was not present (Armstrong and Overton 1977). This method is commonly used in IS research (Molla and Licker 2005; Saprikis and Vlachopoulou 2012).

Questionnaire design and validation process

The questionnaire instrument was developed to answer the research questions. Questionnaire design is a highly creative process and should take into account the aim and objectives of the research (Colton and Covert 2007). It involves giving careful consideration to a number of aspects including developing the correct scale measurement, choosing the appropriate wording of questions and content, selecting an appropriate structure and design for the layout, and testing the questionnaire to ensure that quality data is collected. According to Colton and Covert (2007), a questionnaire should begin by introducing the researcher, explaining the purpose and benefits of the research, defining the type of information to be obtained, and describing the instructions of how to use the questionnaire. Following this advice, a cover letter was developed to invite respondents to participate in the questionnaire, as well as explaining the confidentiality and anonymity aspects of the questionnaire. Voluntary participation is explained, as well as the estimated time required to complete the questionnaire. Finally, the letter includes clear instructions and guidance on how to complete the questionnaire, and provides the researcher's contact details for further questions or concerns.

The literature review and the GPVM were the building blocks used for developing the questionnaire. Questions were designed on the basis of prior questionnaires approved for their validity and reliability. The first section of the questionnaire gathers general demographic information about the respondents such as gender, age, education background and occupation. This section of the questionnaire consists of multiple-choice questions, and begins with a few easy items to stimulate the respondents when answering the rest of the questions. Personal, fact-finding questions are very helpful and give better insights into the data by categorising the respondents. The second and third sections of the questionnaire obtained information about the respondents' experiences with Web2.0 applications, and Gov2.0. Multiple-choice, closed-ended questions were used to obtain respondents' opinions, beliefs and attitudes towards Web2.0 applications, and Gov2.0. Most of the questions in the second and third sections were adapted from previous literature, and modified to ensure enhanced validity for this research. The fourth section of the questionnaire investigated the GPVM constructs where a five-point Likert scale was used (Likert 1932) ranging from scale ranging from "Strongly agree" (1) to "Strongly disagree" (5) with standardized and quantified responses. Likert scales are mostly used for social science and researchers have also used seven-point and nine-point scales. Co-efficient alpha reliability with a Likert scale has been shown to increase up to the use of five-point, but then it levels off (Lissitz and Green 1975). Therefore, a five-point Likert scale was suitable in this research and it is also

because it is simple to code and administer (Neuman 2011). Additionally, it is common practice to treat data obtained from Likert scales as interval data (Brown 2011). The questionnaire concluded with an open-ended question inviting the respondents to add any comments or suggestions relevant to the topic. This question is intended to give participants the opportunity to express their personal experiences and feelings. Also, the questionnaire asked respondents to provide their contact details if they were interested in participating in a further interview. Each section of the questionnaire was presented on a separate page to ensure that it was easily categorised and understood by the respondents (See Appendix 1 for citizen and government officials' questionnaire).

The questionnaire was designed using an online survey software tool, Qualtrics[7] that enabled enhanced design and wider potential distribution. This software was chosen because Monash University has an access agreement that makes Qualtrics services available to all academic staff, professional staff and Higher Degree by Research (HDR) students. It offers many features including the prevention of multiple responses from the same IP address, checking for missing questions, wrong type entries, and a skip-logic feature that allows some questions to be skipped based on the respondents' answers. It also allows instant comparisons to be made between the data collected to date, as well as displaying simple analysis of data. In addition to these features, Qualtrics was chosen because of the nature of the participants and the 24/7 availability. The online questionnaire gathered data over a three-month period (May to July 2016) and was distributed by sending the link to potential respondents via government websites and also as well as through Web2.0 applications.

Conceptualisation and operationalisation

A construct can be defined as a concept or idea that is not directly observable or measureable, such as depression, satisfaction, and intelligence (Colton and Covert 2007). These constructs (or latent variables) can be defined from different perspectives, and may convey different meanings to different people. Measurement connects ideas and concepts with specific things to make those ideas and concepts visible. Measurement items link data to constructs and help to make it observable. Neuman (2012) categorised the measurement process into two major parts: conceptualization and operationalisation. Conceptualization takes an abstract construct and develops a clear, rigorous, systematic conceptual or theoretical definition. The process of construct

[7] (www.qualtrics.com)

conceptualization is critical for the effective measurement of an attribute representative of the construct (Neuman 2011). Operationalization, on the other hand, refers to linking a conceptual definition to a set of specific measurement items or indicators. De Vellis (1991) defined items as *"collections of scales intended to reveal levels of theoretical constructs, not readily observable by direct means"* (p.8). Items are developed specifically for the purpose of measuring a construct. In order to develop measurements for the GPVM, each construct has been conceptualised first, and then operationalized. For the sake of consistency, I will use the term 'construct' to include concept, idea, factor and variable; and 'item' to include measurement, statement, and indicator. The scale described by Nunnally et al. (1967) was used to develop the questionnaire instrument. To operationalize the constructs in the GPVM, items from prior literature approved for their validity and reliability were selected and modified to suit this research context (Neuman 2012). New items were also developed from scratch using the 10-step procedure established by Mackenzie et al. (2011) for scale development as shown in Figure 4.6.

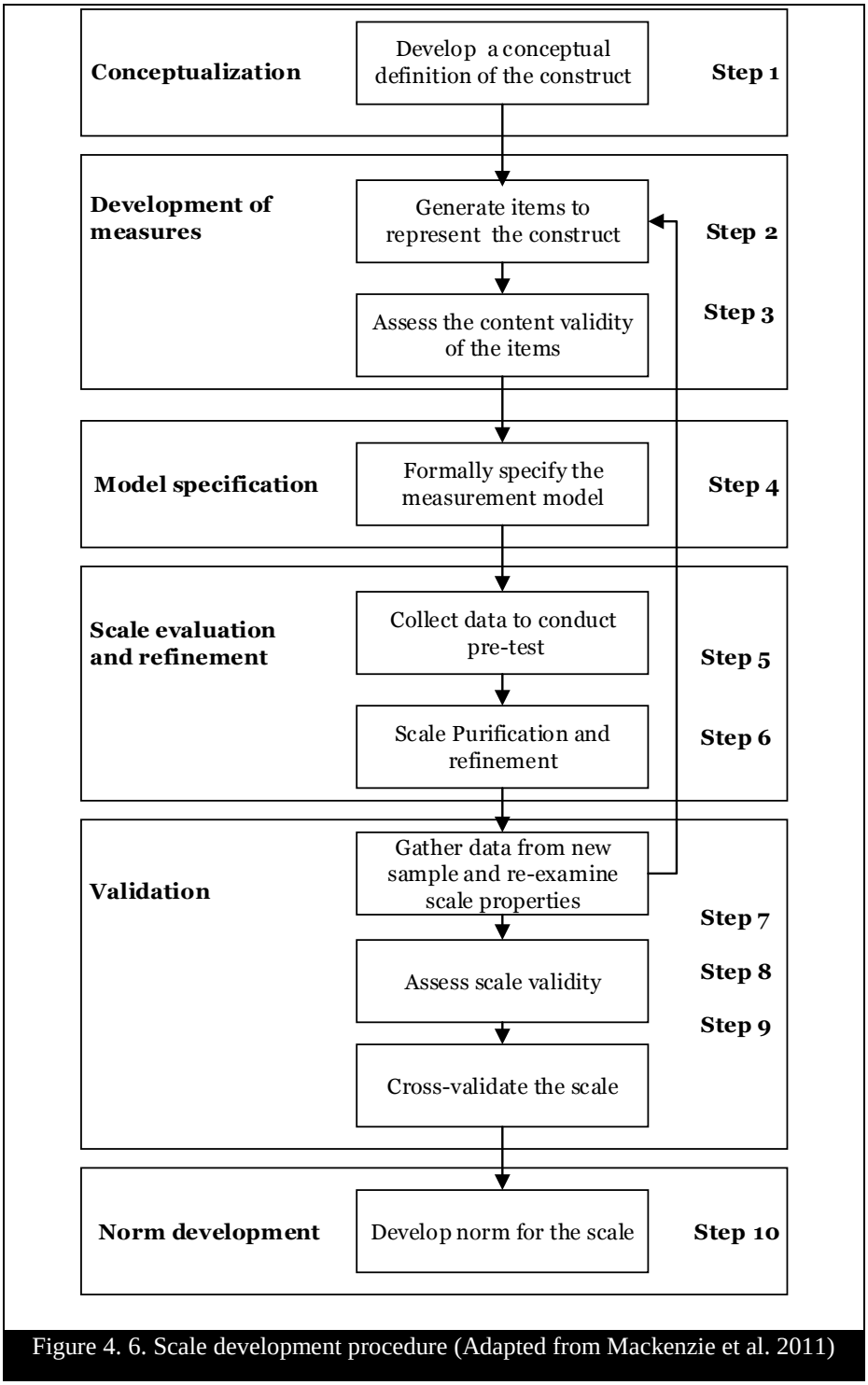

Figure 4. 6. Scale development procedure (Adapted from Mackenzie et al. 2011)

Lewis et al. (2005) presented a comprehensive methodology for developing constructs in IS research that is organised into three stages. First, the construct domain is established. Next, building on the domain, a set of items is generated and a questionnaire is designed, assessed and refined using multiple steps. In the final stage, data are obtained and collected from the questionnaire and its measurement and are examined iteratively to purification. This construct

development methodology is similar to that of Mackenzie et al. (2011), which has been adapted for this research, although the latter is more detailed and has been added to and refined over years of practice. According to the Mackenzie 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 GPVM constructs, none was appropriate for the purposes of this research, because they focused on the government perceptive (Reddcik 2011) or they have an underlying assumption about the technology platform (Kraemer and 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 research specifies the domain of constructs by stating that they are designed to assess PV co-creation within the e-government field. In terms of the level of analysis, as stated previously, this research has two units of analysis: individuals (i.e., citizens), and organisations (i.e., government agencies), and for the latter, government officials will serve as respondents.

Following Mackenzie et al.'s (2011) procedures, conceptual definitions of all the constructs have been developed, and presented in Tables 3.3 and 3.4 (Chapter Three). After all the constructs had been conceptually defined, they were operationalized using validated items from prior related researches. The relevant literature was surveyed for validated measures wherever possible, and these items were modified to fit the Gov2.0 context. For some constructs, items were developed using the development guidelines in the literature (MacKenzie et al. 2011; Moore and Benbasat 1991; Lewis et al. 2005). The items generated initially were refined in several stages that included academic interviews, expert interviews, a two-stage Q-sorting exercise, translation, pre-testing and a pilot test. A summary of the development process of the questionnaire instrument is presented in Table 4.3 and discussed next.

Table 4. 3. Questionnaire instrument development process

Task	Description
Construct definition	Definitions of constructs were derived from a variety of sources including pre-existing definitions, and mostly prior relevant literature reviews.
Item generation	Items were developed for the constructs from relevant literature.
Academic interviews	Four interviews were conducted with senior IS academics. Minor modifications were made to the items.
Expert interviews	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 (Moore and Benbasat 1991) was conducted to improve construct validity. This exercise was conducted using the Qualtrics Q-sorting feature, whereby 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.
Translation	To ensure the quality and efficiency of the translation, a two-stage translation process from English into Arabic language was conducted. First, it was completed by a certified translation office in Saudi Arabia, whose staff members are fluent in both languages. Second, a back translation (Brislin 1970) from Arabic into the language of the original text, English, was deployed by two Saudi linguistics PhD students.
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	Thirty academics, professionals and students in the e-government realm completed the questionnaire. Minor changes were made based on their feedback.

Items are developed to measure phenomena that we believe to exist because of our theoretical understanding of the world but that we cannot assess directly. For instance, we might invoke depression to explain a behaviour that we observe; the depression is not equivalent to the behaviour we see, but underlies it. Sometimes, we do not have access to behavioural information (e.g. survey); therefore it may be more useful to assess the construct by means of a carefully constructed and validated scale. Constructs are the underlying characteristics, whereas variables are essentially what we can observe or measure of a characteristic. In order to ensure the reliability and validity of the questions (Neuman 2011), and to confirm that respondents fully understand the questions, this research used multiple items 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 construct are needed to test the homogeneity of items within each latent construct. Adequate internal consistency reliabilities can be obtained with as few as three items (Hinkin 1998), and adding more items indefinitely makes progressively less impact on scale reliability (Carmines and Zeller 1979). These findings suggest that the goal is to retain four to six items for most constructs.

A pool of 137 items was created from a thorough review of the relevant literature for 23 constructs (12 constructs for the citizen model, 11 constructs for the government model). The 137 items were tested during November 2015 by means of informal interviews with academics and e-government experts to review and revise the identified items. The interviewees were asked to check the face validity of the items and their suitability for the research context. Also, they were asked to identify any issues in terms of wording, readability and repetition. Based on the outcomes of these sessions,

minor modifications were made to several items. The next step was a Q-sorting exercise that is explained next.

Q-Sorting

The Q-sorting exercise is a factor analysis or scaling technique that helps to categorise the newly-developed or modified items (Block 1961). It was first introduced by Stephenson (1953) and then further developed by Brown (1996). It has been used in psychology, social sciences, marketing and IS research to investigate people's opinions and viewpoints. In contrast to factor analysis, which examines the correlation between variables, Q-sorting explores the correlation between individuals. In Q-sorting, the items are the sample and the people who complete the Q-sort are the experimental condition (Cross 2004). It is usually used to assess the reliability and validity of a questionnaire's items that have been developed for a survey research (Nahm et al. 2002). It is an iterative process in which the level of agreement between judges forms the basis for an evaluation of the construct validity and enhances the reliability of the constructs. 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). Specifically, Moore and Benbasat's (1991) procedure was chosen as it is one of the most cited procedures for scale development in IS research.

The Q-sorting follows a simple procedure, where all the statements must be accessible to respondents and the sorter decides which must be changed until she/he feels satisfied about the order. Firstly, the statements are divided into three groups: not relevant, important and essential. In the following iterative process, each group is carefully examined, eventually leading to the distribution of all statements. The respondents make a subjective judgment regarding the placement of each statement, where constructs that have a high degree of correct placement of statements within them can be considered to have a high degree of construct validity and reliability (Lewis et al. 2005). As Block (1961) puts it, *"the casual but still informative method of simply identifying the discrepantly placed Q-items is recommended."* (p.72). The exercise involves two stages. In the first stage, two independent judges are asked to allocate the questionnaire items to different constructs based on each construct's conceptual definition. Based on this stage, the inter-judge agreement is calculated. In the second stage, questionnaire items that are classified incorrectly or found to be ambiguous in the first stage are reworded or deleted, in order to improve the agreement between the judges. This two-stage process is carried out repeatedly until a satisfactory level of agreement

is reached. Nahm et al. (2002) applied the Q-sorting exercise to pre-test the items generated from a literature review and before the final questionnaire is administrated.

In this research, items that were generated to measure the constructs were placed in a pool and were subjected to a two-stage Q-sorting exercise by two independent judges in each round. Each round consisted of different pairs of judges. Judges were allowed to ask any questions related to the sorting procedure and no collaboration between the judges was allowed (Brown 1996). The judges in the Q-sorting process were chosen based on two criteria: either they represent the target population of this research or they are experts in the field. Two participants were IS academics in Saudi Arabia, one participant was a consultant in the e-government program in Saudi Arabia, and one participant was an IT manager in a government ministry. Participants were grouped in pairs, an academic and a practitioner in each round. The judges were asked to sort the items into groups representing all the constructs. The level of agreement and disagreement between the sorted items is used as an indicator of the constructs' validity. 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 and Benbasat 1991). For Kappa, no general agreement exists, although many scholars have suggested the following: values from 0.76 -1.00 are deemed to be excellent agreement, values from 0.40 - 0.75 are considered to be fair to moderate agreement, and values from 0.39 or less are deemed poor agreement (Landis and Koch 1977). As for the hit ratio, the higher the percentage of items placed in the correct construct, the higher will be the degree of inter-judge agreement. The inter-judge agreement level is measured by the number of items that both judges agree to place into a particular category. After that, the number of agreed items is divided by the total number of items to obtain the percentage of the inter-judge agreement.

The GPVM constructs together with their definitions were presented to the judges. A pool of 137 items was presented randomly, and each judge 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 the first sorting round, the two judges agreed on 109 out of the 137 items; an average "hit ratio" of 65 percent was attained as 179 of 274 (137 items*2 judges) items were correctly classified and the computed Kappas also averaged above 0.80 (Cohen 1960). In order to investigate the reason for the misclassifications in round one, the ambiguous items that were placed into more than one category or in the "Not Applicable" category were careful analysed. This analysis resulted in a rewording of the ambiguous items and the deletion of undetermined items. Specifically, 33 items were deleted,

and 28 items were reworded. The second sorting round consisted of 104 items for the constructs. The two judges agreed on 90 out of the 104 items, a hit ratio of 88 percent was registered, a 23 percent improvement on round one, as 183 of 208 (104 items*2 judges) items were correctly categorised. The calculated Kappas yielded values of above 0.90. Following the Landis and Koch (1977) guidelines for acceptable levels for Cohen's Kappa Index, which deemed above 0.76 to be an excellent agreement level, it was decided to stop the Q-sorting exercise with Cohen's Kappa of 0.91, and the average placement ratio of 88 percent, indicating a high level of reliability and construct validity.

According to MacKenzie et al. (2011) the decision to model a construct as unidimensional (i.e., reflective), formative, or multidimensional depends largely on the construct itself and "the generality or specificity of theoretical interest" (p. 713). All the GPVM constructs, except PV, were operationalised as unidimensional variables, and were evaluated through reflective items. In this research, PV is a complex concept and was therefore modelled as a multidimensional construct to allow for more thorough measurement and analysis. The PV construct has a formative relationship with sub-constructs (trust, commitment, fairness), yet the sub-constructs consist of reflective items. A multidimensional construct that has a formative relationship between the construct and sub-constructs should be developed when multiple sub-constructs and measurement items are essential to fully capture the complete domain of the construct. These multiple dimensions are grouped together under the same multidimensional construct since each dimension represents some aspect of the overall latent construct (Law and Wong 1999). With unidimensional constructs such as reflective constructs, by definition, all of the items should be measuring the same aspect of the latent construct, whereas multidimensional constructs are capturing multiple dimensions. The final validated questionnaire consists of four items for each construct, except for the government synergistic integration construct (SNG) have six items and the citizen PV construct have 14 items which gives a total of 104 items. All the items of constructs and their references are presented in Tables 4.4 and 4.5.

Table 4. 4. Citizen Model items

Construct	Items	Reference
Perceived dialogue (PD)	▪ I would use Gov2.0 when I feel that a government agency is listening to me. ▪ I would use Gov2.0 when a government agency is more interactive. ▪ Gov2.0 allows informal conversation with a government agency. ▪ Overall, I believe that using Gov2.0 will enable me to have a conversation with a government agency.	Prahalad and Ramaswamy (2004)
Perceived risk (PR)	▪ I believe that there could be negative consequences from using Gov2.0. ▪ I feel that the risks outweigh the benefits of using Gov2.0. ▪ I would feel unsecure to interact to a government agency using Gov2.0. ▪ Overall, it is risky to interact with a government agency using Gov2.0.	Colesca (2009); Gefen et al. (2003);
Perceived benefits (PB)	▪ Using Gov2.0 enables me to accomplish activities more quickly. ▪ Using Gov2.0 makes it easier to interact with a government agency. ▪ Using Gov2.0 will improve my experiences with a government agency. ▪ Overall, I believe that using Gov2.0 is superior.	Moore and Benbasat (1991)
Sense of control (SC)	▪ I feel that Gov2.0 offers me more choices to interact with a government agency. ▪ Using Gov2.0 gives me greater flexibility to interact with a government agency. ▪ When using Gov2.0, I fell that I could have influence over the government policy and legislation. ▪ Overall, I feel Gov2.0 offers positive perception of power over the relationship with a government agency.	Ryan and Deci (2000); Thomas and Velthouse (1990)
Sense of impact (SI)	▪ I believe that Gov2.0 allows me to influence the outcome of an activity when interacting with a government agency. ▪ When using Gov2.0 to report problems I feel that I am helping. ▪ Using Gov2.0 makes me feel that my voice is been heard. ▪ Overall, using Gov2.0 helps me to achieve the desire outcome.	Bandura (1986); Thomas and Velthouse (1990)
Meaningfulness (MF)	▪ Using Gov2.0 was not a relevant experience for me. ▪ Using Gov2.0 was a rewarding experience for me. ▪ Using Gov2.0, encourage me to participate more than I usually do using other means. ▪ Overall, using Gov2.0 made me more open to sharing.	Nehari and Bender (1978); Thomas and Velthous (1990)
Competence (CC)	▪ I would feel comfortable using Gov2.0 on my own. ▪ I believe that I am able to use Gov2.0 competently. ▪ For me, feeling comfortable using a Gov2.0 on my own is important. ▪ Overall, I believe that I am confident to use Gov2.0.	Bandura (1986); Thomas and Velthouse (1990)
Citizen willingness to co-create PV (WC)	▪ I would be motivated to use Gov2.0 if it was tailored to my needs. ▪ I would be ready to use Gov2.0 if it makes me achieve my goals. ▪ I would be prepared to use Gov2.0 if it helps me achieve my objectives. ▪ Overall, I would be more willing to interact with a government agency using Gov2.0 if it enables me to realize the public values I need.	Alford and O'Flynn (2009)

Synergistic integration via Gov2.0 (SNC)	▪ Using Gov2.0 makes me collaborate with a government agency. ▪ I believe that Gov2.o offers me with means to pressure a government agency. ▪ I believe that Gov2.0 forms a strong tie with a government agency based on establish standards. ▪ Overall, I feel that Gov2.0 facilitate integrating my views with a government agency.	Sarker et al. (2012); Madhok and Tallman (1998)
Engagement via Gov2.0(PTC)	▪ I would spend a lot of time sharing information about my needs and opinions with a government agency using Gov2.0. ▪ I would put a lot of effort into expressing my personal needs to a government agency using Gov2.0. ▪ I would always provide suggestions to a government agency using Gov2.0 to improve the overall experience. ▪ Overall, I would be very much involved via Gov2.0.	Barki and Hartwick (1994); Hand and Ching (2011)
Satisfaction with Gov2.0(SF)	▪ I am pleased with my use of Gov2.0. ▪ I am contented with my use of Gov2.0. ▪ Using Gov2.0 to interact with a government agency meets my expectations. ▪ Overall, my experience of Gov2.0 is satisfactory.	Li and Gregor (2011)
Public value (PVC)	Trust ▪ I believe that the use of Gov2.0 would maintain trust and legitimacy of the government agency. ▪ I trust the government agency to keep my best interests in mind. ▪ The government agency can be trusted to carry out Gov2.0 interactions faithfully. ▪ Overall, Gov2.0 is now a robust and safe environment in which to interact with a government agency. Commitment ▪ I support the use of Gov2.0 to deliver public services. ▪ Gov2.0 provides me with attachment to government outcomes. ▪ Gov2.0 enables me to accept the government outcomes. ▪ Overall, Gov2.0 makes me committed to interact with a government agency. Fairness ▪ Gov2.0 provides equity in public services. ▪ Gov2.0 enables due processes in public services. ▪ Fairness is very important to me whether the service is for myself or others. ▪ Overall, I think Gov2.0 offers fairness	Moore (1995); Cordella and Willcocks (2010); Talbot (2011)

Table 4. 5. Government model items

Construct	Items	Reference
Responsiveness (RV)	▪ Gov2.0 helps my government agencies to be more active with citizens. ▪ Gov2.0 enables my government agencies to be aware of citizen concerns. ▪ My government agency uses Gov2.0 for faster response to citizen. ▪ Overall, Gov2.0 enhances my government agency's responsiveness	Jørgensen and Bozeman (2007); Yang and Callahan (2007)
Legitimacy (LG)	▪ Gov2.0 helps my government agencies to gain more authority. ▪ Gov2.0 enables my government agencies to be politically and legally sustained. ▪ My government agency uses Gov2.0 for gaining citizens' support. ▪ Overall, Gov2.0 enhances my government agency's legitimacy.	Yang and Callahan (2007)
Transparency (TP)	▪ Gov2.0 helps my government agencies to be open in the decision-making process. ▪ Gov2.0 enables my government agencies to disseminate information. ▪ My government agency use Gov2.0 for regular broadcasting of information in a timely manner. ▪ Overall, Gov2.0 enhances my government agency's openness and transparency.	Jørgensen and Bozeman (2007); Wong and Welch (2004)
Accountability (AC)	▪ Gov2.0 helps my government agency to be accountable. ▪ Gov2.0 makes my government agency take responsibility. ▪ My government agency use Gov2.0 for reaching out to citizens. ▪ Overall, Gov2.0 enhances my government agency's accountability and responsibility.	Bannister and Connolly (2014); Bertot et al. (2010)
Resources (RS)	▪ Involving citizens via Gov2.0 consume too much time of our government agency. ▪ Gov2.0 enables our government agency to work efficiently. ▪ Gov2.0 enables our government agency to work effectively. ▪ Overall, involving citizens in Gov2.0 consume too much resources of our government agency.	Moore (1995)
Perceived power relationship (PPR)	▪ My government agency uses Gov2.0 for gaining power over issues of concern. ▪ Gov2.0 helps my government agencies to achieve the desired moral consequences. ▪ Gov2.0 enables my government agencies to make the required power balance implications. ▪ Overall, Gov2.0 enhances my government agency's power.	Li and Gregor (2011); Meynhardt et al. (2014)
Competence (CG)	▪ Gov2.0 helps my government agencies to actively engage citizen. ▪ Gov2.0 enables my government agencies to interact with citizens successfully. ▪ My government agency uses Gov2.0 to increase its capabilities. ▪ Overall, Gov2.0 enhance my government agency competence when collaborating with citizen.	Prahalad and Ramaswamy (2004)
Government agency willingness to co-create PV (WG)	▪ The government agency would be motivated to use Gov2.0 if it were tailored to its needs. ▪ The government agency would be ready to use Gov 2.0 if it helps it to achieve its goals. ▪ The government agency would be prepared to use Gov 2.0 if it helps it to achieve its objectives. ▪ Overall, I think my government agency would be more willing to interact with citizens using Gov2.0 if it enables it to deliver the public values they need.	Alford and O'Flynn (2009)

Synergistic integration via Gov2.0 (SNG)	▪ Using Gov2.0 makes my government agency collaborate with citizens ▪ I feel that Gov2.0 will support my government agency's understanding of matters of shared interest with citizens ▪ My government agency would use Gov2.0 if many other government agencies use it. ▪ My government agency would use Gov2.0 if it were popular among staff. ▪ My government agency uses Gov2.0 to influence citizens to adapt to its expectations. ▪ Overall, my government agency uses Gov2.0 to facilitate integrating its views with citizens.	Madhok and Tallman (1998); Sarker et al. (2012)
Engagement via Gov2.0 (PTG)	▪ Because of the specific nature of our work, citizen participation via Gov2.0 is only window dressing. ▪ Citizen involvement via Gov2.0 should be controlled so as not to impair our work efficiency. ▪ It is the executive officials' business, not the administrators' job to initiate citizen participation programs via Gov2.0. ▪ I think citizen participation via Gov2.0 should be adopted in all governmental areas and functions.	Barki and Hartwick (1994)
Public value (PVG)	▪ I believe that the use of Gov2.0 would maintain trust and legitimacy of the government agency. ▪ I support the use of Gov2.0 to deliver public services. ▪ I think that the use of Gov2.o would help to achieve the government agency's desired social outcomes. ▪ Overall, I support the use of Gov2.0 to interact and engage citizens.	Meynhardt (2009); Talbot (2009)

Translation

Since the targeted population for this research is Saudi Arabian citizens and government officials, the questionnaire was translated into the Arabia language, with the English version of the questionnaire also being available. In order to ensure the translation quality, the translation process was completed with the aid of a certified translation office in Riyadh, Saudi Arabia, whose staff are fluent in both languages and the translation was checked by several translators from the team. Furthermore, back-translation, which is the translation of a transcript back into the language of the original text, was deployed as it is the most commonly used in cross-language research (Brislin 1970). Specifically, to ensure the accuracy of the translation, the Arabic version of the questionnaire was translated back to the English version by two Saudi linguistics PhD students studying in Australia. Both comments were compared in order to resolve any discrepancies and then integrated into the final version, which was then available for pre-testing and piloting. Although using the English language is common in Saudi Arabia, respondents were provided with the link to both languages, to ensure better understanding and a higher response rate.

Pre-test

The purpose of pre-testing is to receive empirical feedback from a controlled sample to ascertain the suitability of the initial questionnaire. Pre-test respondents should be chosen in accordance with the unit of analysis and should be fairly knowledgeable about the construct being studied. Pre-test subjects should be asked to complete the initial questionnaire first and then provide feedback on the initial questionnaire design, such as layout, content, understandability, terminology, ease of completion and amount of time required for completion. Respondents should also identify specific items that should be added or deleted from the questionnaire, as well as make suggestions for improvements. Responses from the pre-test should be reviewed and enhancements made to the instrument based on the feedback of the respondents. Pre-testing is part of a cyclical process of data collection and instrument refinement that continues throughout the questionnaire design and validation process. To further improve the content validity of the questionnaire, three academics were asked to pre-test the initial questionnaire. They suggested reducing the length of the cover letter in order to encourage a higher response rate. Also, they made some suggestions for clarifications, and accordingly minor changes were made to the wording, length and structure of the questionnaire. Neuman (2012) stated that there is no absolute proper length of a questionnaire. Many researchers have had success with questionnaires as long as ten pages; however, response rates drop significantly for long questionnaires. The questionnaire designed for

this research was seven pages long and according to the pre-testing that was conducted with respondents, the average time needed to complete the questionnaire was around15 minutes for the citizen's questionnaire and 10 minutes for the government official's questionnaire. The instrument was then ready for piloting.

Pilot study

Moore and Benbasat (1991) suggested that the development of a questionnaire goes through three stages: item creation from the existing literature, item review to ensure its usability, and item testing before the final version is produced. Pilot testing is one of the most critical steps in developing an effective questionnaire (Shaughnessy et al. 2009). Pilot testing is conducted to check all instructions and procedures, and to help identify any revisions or modifications that are needed (Newcomer et al. 2015). Despite all the steps taken to avoid any errors before the final questionnaire distribution, mistakes do frequently appear. Sometimes, these small mistakes may have a substantial effect on the questionnaire (Brace 2008). One way to tackle this problem is by pilot testing the questionnaire with a small sample. Lewis et al. (2005) considered the pilot test as a 'dress-rehearsal' for the final questionnaire. Thus, conducting a pilot study is crucial for increasing the questionnaire's accuracy. Furthermore, it provides the researcher with advanced warning before the large-scale deploy. Following revisions from the pre-test, a pilot test was conducted in order to improve the reliability and readability of the questionnaire (Neuman 2012). Also, this was done to identify possible clarity and accuracy issues and to further appraise and refine the questionnaire (Lewis et al. 2005). The purpose of the pilot test 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, as well as their similarity to the final population sample. Hunt et al. (1982) surveyed the literature for the size of a pilot study sample, and found that 12 is acceptable, 20 is satisfactory, whereas 30 is excellent and recommended.

As the final sample for this research is Saudi Arabian citizens and government agencies officials, this pilot test involved 30 Saudi academics, practitioners and students in the e-government realm. They completed the questionnaire in Riyadh during Dec 2015 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. Also, they were asked to offer suggestions for enhancement, including the addition or deletion of any items as they thought necessary. Respondents had the opportunity to comment on each item separately and to provide feedback on the entire questionnaire. Pilot tests usually

detect common mistakes such as spelling/typo errors, inconsistent use of concepts/words, overlapping questions, and missing or incorrect instructions. The pilot test results were closely examined and appropriate adjustments were made to the questionnaire based on the respondents' observations. Feedback from the pilot testing was very useful and taken into account when redesigning and refining the questionnaire and highlighted any clarity and accuracy issues accordingly. After reviewing, comparing and evaluating the pilot test respondents' comments, minor changes were made to the revised questionnaire such as item rewording, regrouping, and deleting in some cases. Furthermore, the pilot test participants were asked for additional suggestions for possible improvements. The final output of this test enhanced the questionnaire quality and contributed to its final design.

Reliability and validity of the questionnaire

Reliability and validity are essential for establishing the truthfulness, credibility and believability of research findings (Neuman 2011). The reliability and validity of measurements are very important assessments of social research. In particular, when quantitative methods are used, measurements of respondents' views and attitudes need to be consistent and accurate (Collis and Hussey 2009). Reliability refers to the dependability or consistency of the measures of a variable. It implies that the same thing can be repeated under very similar conditions. Nunnally (1967) argued that *"Consistency is necessary but not sufficient for construct validity"* (p. 92). Validity is about how well the construct is defined by the items and is free from random error, whereas reliability concerns the consistency of the items. Validity refers to truthfulness and correctness or how well an idea matches the reality. According to Bryman (2012), validity is concerned with the research integrity, and whether or not it has measured the required concepts, and achieved what was intended. Bhattacherjee (2012) argued that measurement validity refers to the extent to which it adequately represents the underlying construct that it was intended to measure. Simply put, validity addresses how well the conceptual definition and its indicator align with one another. Validity is more difficult to achieve than reliability; however, triangulation of data through multiple sources and respondents can improve research validity (Parry 1998). Reliability is defined as the consistency of the measure of a concept (Bryman and Bell 2007). Reliability is an assessment of the degree of consistency between multiple items of a construct (Trochim 2006). Reliability can be confused with the idea of a valid measure; however, the term 'reliable' means repeatability or consistency (Neuman 2011). A measure is reliable if it produces the same result over and over again. Hence, a dependable measure needs to be both reliable and valid. The measurement instruments need to be evaluated in terms of their validity and reliability to ensure the accuracy of the collected data (Straub

et al. 2004). Hair et al. (2014) suggested carrying out the reliability test with the data before the validity test. Furthermore, the reliability of the measurements provides an in-depth evaluation to detect any potential insufficiency and minimise any potential errors (Bryman 2012). Straub et al. (2004) emphasised that reliability is concerned with ensuring that measurements are true reflections of the phenomenon of interest. Thus, a measurement's reliability refers to whether it will be interpreted consistently in different circumstances (Field 2009). Therefore, reliability could be defined as measuring a concept consistently, so that research findings would be confirmed if the test were repeated.

Bryman (2012) divided reliability into three types: stability, internal reliability, and inter-observer consistency. Stability ensures the stability of measurement over time by the test-retest method. Internal reliability ensures the consistency of the results across items by the Cronbach's alpha test. Inter-observer consistency ensures that the observers' subjective judgement of the same phenomenon is consistent. Trochim (2006) proposed a fourth estimate of reliability that is the parallel-forms reliability. This test is to ensure the consistency of the results of two tests constructed in the same way from the same content domain. The reliability test-retest measures responses over time, which ideally should not be too varied, so the item is reliable at any point in time. The stability or test-retest method is not always feasible as it needs more time and there might be an element of learning from the previous questions. Peter (1981) problematized the direct reliability test-retest as respondents tend to answer the second time in the same way they did the first time (i.e. self-herding). Reliability analysis is concerned with the internal consistency between multiple items of a factor (Trochim 2006). The reliability of measurements is determined usually by using two techniques, the Cronbach's alpha, which is the most common method of measuring the homogeneity among multi-point items, and the test-retest method by repeating the questions in a different form within the questionnaire. The issue with the test-retest reliability is that respondents tend to respond to an item in the same way a second time as they did the first (Peter 1981). The common statistic for evaluating reliability is the internal consistency, where items should measure the same construct, thus indicating that they are highly inter-correlated (Churchill 1979). 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 2001). 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 commonly-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 evidently more desirable (Nunnally et al. 1967). As a result, if any item does not exhibit acceptable reliability, it should be dropped from the construct based on the size of the item loadings in order to increase the alpha co-efficient. At each repetition, items with the smallest loadings should be dropped and the process is stopped when an acceptable alpha is achieved. In this research, to identify the construct reliability or internal consistency, all the items were analysed and evaluated using Cronbach's alpha test as recommend by Churchill (1979). The reliability test was conducted on the pilot testing data to estimate the internal consistency of each group of items for every construct. The reliability function of the Statistical Package for Social Sciences (SPSS) was used to calculate Cronbach's alpha. The results show that the reliability results of the factors range from 0.712 to 0.901, which indicates statistically significant results because they are within the recommended range of values. Therefore, constructs reliability for all factors are deemed to be adequate.

The aim of the validity testing is to offer scholars, their colleagues, and society by and large a great degree of confidence that the methods being used are useful in the quest for scientific truth (Nunnally 1967). Validity is defined as the extent to which research is accurate (Hair et al. 2014). Validity ensures that a measure or set of measures correctly represents the concept of the study, the degree to which it is free from any systematic or non-random error. Validity is concerned with how well the concept is defined by the measures, while reliability refers to the consistency of the measures. A number of researchers, among them Cook and Campbell (1979) and Straub et al. (2004), have discussed validities. A general typology of these validities and the respective terms used are depicted in Table 4.6.

Table 4. 6. Validity typology (Adapted from Straub et al. (2004)

Validity	Terms used for it
Validation of data gathering	Instrument/instrumentation validity
Rejecting rival hypotheses	Internal validity
Statistical inference	Statistical conclusion validity
Generalizability	External validity

According to Bryman (2012), although the data source is reliable, if the research does not measure what it is intended to measure, its findings could potentially suffer low validity and consequently be worthless. Bryman and Cramer (2009) divided validity into two main types: face validity and construct validity. Face validity is the measure reflecting the content of the concept. It refers to whether a measurement/indicator of a construct makes sense in the judgment of the scientific community. Construct validity is the measure of the multi-indicators drawn from theory to assess the convergence and discriminant validity between indicators. It refers to whether a

measurement/indicator represents all aspects of the conceptual definition of a construct. Besides these two types, Neuman (2011) further defined validity as truthfulness, and divided it into three main types: face validity, content validity, and construct validity. Construct validity refers to using multiple measurements/indicators to test a construct, and has two subtypes: how well the indicators of one construct converge (convergent validity) or how well the indicators of different constructs diverge (discriminant validity).

Generally speaking, measurement validity can be categorised into four major types: face validity, content validity, external validity, and construct validity. In this research, a number of procedures have been utilised to handle these types of validity to ensure the rigour and relevance of the research outcome. Face validity indicates that the items on the questionnaire are clear and understandable to the respondents and make sense in the judgment of others (Neuman 2012). The scientific community judges whether the indicators really measure the construct. This is usually done by presenting the questionnaire to academics and practitioner experts to determine whether it looks valid or invalid at face value (Colton and Covert 2007). As outlined in Table 4.3, during the questionnaire development process, the initial items were informally tested by four senior academics who are considered as experts in IS and e-government research fields. Specifically, two academics were from a highly ranked Australian university, and the other two were from a Saudi Arabian university as the population for this research is Saudi Arabian. Minor modifications were made based on their feedback. Furthermore, five interviews were conducted with senior managers of an e-government agency from ministerial and local government in Saudi Arabia. Based on their feedback, minor modifications and improvements were made to produce better wording of some items. Feedback on the modified items was further solicited from academics to ensure the clarity and the overall usability of the instrument.

Content validity is about ensuring that the measurement represents all aspects of the construct conceptual definition. Hence, a multiple scale was developed for each construct addressing the underlying concepts of these constructs and all parts of the definition to improve the content validity (Neuman 2011). Specifically, at least four items for each construct were obtained. Furthermore, previous constructs and their items that had been tested and proven to be reliable and valid were adapted from existing research in IS, e-government, social science and other related fields. External validity is about generalisation of the research results, and the extent of agreement with existing measurements. Accordingly, this research aimed at a representative sample of the research population as discussed in the sampling section, and the use of previous reliable and valid items, if possible. Construct validity is considered as the most important type of measurement

validity (Jackson 2014). Construct validity is applied for measures with multiple indicators, to ensure that they operate in a consistent manner.

Construct validity refers to the extent to which the constructs that underpin the research are correlated with their measurement. 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). The indicators should have not only convergent validity, but also discriminant validity. Discriminant validity is achieved if the indicators are sufficiently different from other unrelated indicators and load more strongly on their associated constructs than on any other constructs. Items that have loadings below the threshold should be omitted from the final instrument, as should those items loading on multiple constructs. 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.

In this research, convergent validity and discriminant validity were assessed by conducting factor analysis, which is a technique that identifies the number of constructs from a large number of items in the analysis (Hair et al. 2006). Generally, factor analysis can be divided into two types: exploratory factor analysis (EFA), which is performed when there may be uncertainty about the number of constructs (Zikmund et al. 2010), and confirmatory factor analysis (CFA) which is performed when strong theoretical expectations about the constructs subsist (Hair et al. 2006). Both factor analyses were conducted on the final empirical data in Chapter Five. However, for the purpose of the pilot test, only exploratory factor analysis was performed. The reason is that CFA requires a large sample size, 5–10 observations for each construct (Hair et al. 2006), and since many items were adapted from the literature review, it was important to test the relationship between all the constructs and items without grouping them together by conducting EFA.

In addition to testing the construct validity, EFA was used as a reduction tool to identify the appropriate items for each construct. The principal component analysis (PCA) method with Varimax rotation yielded a consistent grouping with the identified constructs, ensuring the accuracy of the proposed constructs. All items have loadings on their related constructs over the cut-off of 0.50, thereby demonstrating convergent validity. Also, all items load more strongly on their associated construct than on other constructs, suggesting good discriminant validity. Thus, the initial results indicate that the constructs can be used to test the GPVM. After establishing validity, reliability should be assessed by conducting Cronbach's co-efficient alpha. Although the

validity and reliability tests here have demonstrated the robustness of the questionnaire, it was conducted on the pilot test data. Thus, the complete and final empirical data of this research were then subjected to the same validity and reliability tests as discussed in Chapter Five.

4.5.1.2 Data analysis technique

The IBM SPSS software application version 23 and Structural Equation Modelling (SEM) were used to analyse the questionnaire data. SEM analysis can be divided into two common methods: partial least squares (PLS-SEM) and covariance-based SEM (CB-SEM) (Chin 1998). CB-SEM is appropriate for theory testing (Raykov and Marcoulides 2006) and confirmation of variables (Blunch 2013). Qureshi and Compeau (2009) compared the two SEM methods in IS research and concluded that CB-SEM is best suited to a normal dataset, relatively large sample size and the reflective constructs. Thus, CB-SEM was used in this research. CB-SEM can be traced back to the original development by Joreskog (1973), Keesling (1972) and Wiley (1973). Since then, it has gained widespread popularity due to the availability of computer programs such as EQS, Mplus, LISREL, and AMOS (Chin 1998). Specifically, the Analysis of Moment Structures (AMOS version 23), a CB-SEM technique, was chosen for the quantitative data analysis. AMOS is a computer program that is an add-on to SPSS that gained popularity because it was among the first programs to use a graphical user interface (GUI) rather than syntax commands or codes.

SPSS was used to report descriptive statistics such as frequency, central tendency, standard and variations. EFA and CFA were conducted to refine the items if needed, and to assess convergent validity and discriminant validity as well as reliability (Hair et al. 2006). SEM is an advanced multivariate statistical analysis technique that is used to analyse structural relationships. It combines factor analysis and multiple regression analysis that allows testing the relationship between measured variables and latent constructs. SEM is preferable because it can estimate multiple and interrelated dependencies in a single analysis.

There are two types of SEM analysis: the measurement model and the structural or path model. The measurement model represents the relationships between constructs and their items, whereas the structural model represents the relationships between all constructs, and determines the causal relationships (Blunch 2013). There are three types of causal models:

- One or more independent variables and one dependent variables with ingoing arrows
- Several independent and dependent variables with ingoing and outgoing arrows with acyclicity (it is not possible to pass through the same box twice by following the arrows)

- Several independent and dependent variables with ingoing and outgoing arrows with cyclicity; i.e. you can walk your way through the model by following the arrows and pass the same variable several times; in other words, a variable has an effect on itself .

In SEM, there are two types of constructs: exogenous and endogenous. Exogenous are the latent multi-item equivalent of independent variables. They are determined by factors outside of the model; i.e., they are not explained by any other construct or variable in the model. Endogenous constructs are the latent multi-item equivalent of dependent variables. They are determined by factors within the model. The GPVM is an acyclic model with six exogenous and five endogenous constructs for the citizen sample and six exogenous and four endogenous constructs for the government model.

SEM is very useful for assessing the relationships comprehensively, providing a transition from exploratory to confirmatory analysis. Furthermore, SEM is able to incorporate both formative and reflective constructs conjointly in a structural model. Therefore, the SEM is appropriate given the objectives of this research, rather than using a multiple regression approach alone. The questionnaire data analysis was conducted in two steps: (1) GPVM construct scale development; and (2) GPVM hypotheses-testing. In the first step, EFA and CFA tested the measurement theory by providing evidence of the validity of measures based on the model's overall fit and other evidence of the construct realibity and validity (Hair et al. 2014). For the second step, AMOS was use to analyse the strength and direction of hypotheses relationships (Chin et al. 2003). A detailed description of all these tests is presented in Chapter Five. It is worth mentioning that in this research, it is not necessary to match the individual citizens' or government officials responses in the two stages of the data collection as this research design does not apply the before-and-after evaluating differences as is done in experiments with a control group. Instead, this research surveyed respondents' perceptions about the GPVM and follow up with interviews to gain further insight into specific Gov2.0 applications. The questionnaire did not request any information which could lead to the individuals being identified. However, at the end of the questionnaire, respondents (citizens and government officials) were asked to provide their contact details if they wished to participate in Stage 2 of this research.

However, like any other research method or data collection technique, surveys and questionnaires have limitations. The researcher's development of questions and answers (where these are closed-ended) can cause bias and false representations. As the structured answers do not always reflect respondents' opinions, they might just pick the nearest match if the researcher has overlooked

some important responses. Also, the questions could be leading/loaded, or double-barrelled with multiple parts (Babbie 2013). The order effect or sequence of the questions might be influence respondent who does not have strong views or is less educated, where answers to previous questions influence later ones (Neuman 2011). Another problem associated with quantitative data is that it is difficult to ensure that the researcher and the respondent have the same understanding of the meanings of words, and the data could become de-contextualized (Rossman and Wilson 1994), without prompting or probing by the researcher. More broadly, survey method limitations include lack of ability to observe body language, lack of variables manipulation and lack of control of the data collection environment (Bryman and Cramer 2009). Taking into consideration the limitations stated above, and as the quantitative research by itself cannot capture the complexity of the phenomenon of interest, a qualitative research will support it by giving a more comprehensive view. The analytical process of the relationship between variables creates a static view of life that may not reflect the dynamics of real life (Bryman 2012). The qualitative research is expected to include the social environment of the respondents, which is discussed next.

4.5.2 Case study

Case study entails the details and intensive analysis of a single case. According to Stake (1995), case study research is concerned with the complexity and particular nature of the case at hand. The most common use of the term 'case' associates the case study with location, such as community or organisation. The focus is upon an intensive examination of the setting. Often, there is a tendency to associate case studies with qualitative research, but such link is not always appropriate. Case study design, often, favours qualitative methods such as observation and interviews because these methods enable an intensive and detailed examination of a case. However, case studies are frequently used for conducting both quantitative and qualitative research, an approach that has been employed by this research (i.e. mixed methods research).

In some instances, when an investigation is based exclusively upon quantitative research, it can be difficult to determine whether to call it a case study or cross-sectional research (Bryman 2012). What distinguishes a case study is that the researcher is usually concerned with explaining the unique features of the case, which is known as the *idiographic* approach. Cross-sectional design is known as a *nomothetic* approach, more often concerned with generating statements that are plausible regardless of time and location. Nevertheless, a research may have both elements. Yin (2014) defines a case study as *"an empirical inquiry of a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident"* (p.18). Case study research

focuses on understanding the dynamics of a "case" within its "real-life" context (Yin 2014). The application of a variety of research techniques to a case study improves the transferability of the findings (Flick 2009). In case study design, the selection of the population allows for controlling the environmental variation and reducing extraneous variation, which clarify the findings (Eisenhardt 1989). In this research, although the investigation predominantly involves quantitative research, the purpose of the qualitative research is to obtain a complementary and comprehensive view of the phenomenon of interest. I prefer to describe the qualitative research as a case study design as it was conducted on specific cases, where the focus of interest was in its own right; hence, this research employed case study design in stage 2 of the data collection process. The term 'case study' can refer to either single or multiple case studies and the design can be holistic (single unit of analysis) or embedded (multiple units of analysis) (Yin 2009) as shown in Figure 4.7.

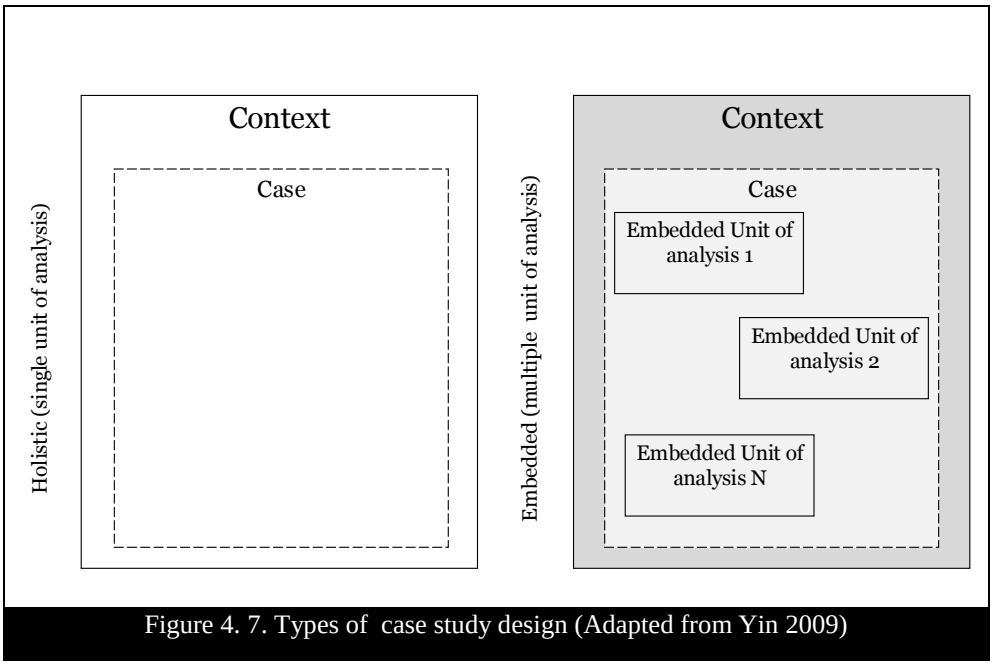

Figure 4. 7. Types of case study design (Adapted from Yin 2009)

For example, a case study of a government agency can be conducted at two levels of analysis: citizens and government as embedded "sub- cases". The embedded case study offers two advantages over the holistic. First, it enables the acquisition of clear and detailed insight rather than abstract level data. Second, it enables greater focus on and control over the direction of the research as evidence begins to emerge. Therefore, a multiple embedded (multiple units of analysis) case study design has been chosen for Stage 2 of this research (Figure 4.7).

According to Eisenhardt (1989), case studies can be used to provide descriptions, to test theory, or to generate theory. This determines the choice of either single or multiple case studies. While focusing on a single case will provide rich insights, having multiple cases might help to strengthen

the findings through replications, comparisons, or hypothesized variations (Yin 2014). In general, a single case study can be vulnerable; the analytic benefits from having at least two cases may be important. Two cases at least allow direct replication and the findings are more substantial than those derived from a single case. Moreover, the overall study of multiple cases is regarded as more robust (Yin 2014). According to Yin (2009), multiple case designs can follow a literal replication logic (predicting the same results) or a theoretical replication logic (predicting contrasting results). After choosing the case study design, whether single or multiple, holistic or embedded, the researcher needs to define the unit of analysis, or the "case". Yin (2009) argues that the unit of analysis needs to be a specific, real-life "case" not an abstraction such as a topic, but a representation of it. The unit of analysis can be more concrete (individuals or organizations) or less concrete (communities or relationships). As mentioned previously, in this research there are two levels of analysis: citizens and government. Case studies usually combine data collection techniques such as archives, interviews, and observations. The data may be qualitative (e.g., words), quantitative (e.g., numbers), or both. Yin (2009) distinguished five types of case studies as presented in Table 4.7.

Table 4. 7. Types of case study

Case	Description
Critical case	Testing a well-developed theory to confirm, challenge, or extend it.
Extreme or unique case	When circumstances are so rare or unique that they are worth analysing
Representative or typical or exemplifying case	The objective is to capture the circumstances and conditions of an everyday or commonplace situation
Revelatory case	When the opportunity is presented to observe and analyse a previously inaccessible phenomenon
Longitudinal case	Studying the same case at two or more junctures to examine changes over time.

In terms of case study types, this research targeted typical cases (Table 4.7). As this research aims to provide rich insights that are consistent with its explanatory nature, the selection of cases will follow literal replication logic. Yin (2014) suggested using two to three case studies for literal replication logic; therefore, three case studies with two levels of analysis, citizens and government agencies are selected. In designing the case studies, a number of guidelines have been reviewed and consulted. Eisenhardt (1989) identified eight steps and activities necessary for building theories from cases. Yin (2009) developed procedures for rigorous application of case studies. Both guidelines have been the foundation of Stage 2. Unlike other methods, data collection via case studies often overlaps with data analysis at different stages. For example, some information from an interview with an informant might conflict with information gathered at an earlier

interview. The interview is considered to be a data collection process, but investigating the conflict is considered as data analysis. This allows mutual inference between them, and data collection plans can be modified quickly while still in the field.

4.5.2.1 Data collection technique

There are many qualitative data collection techniques such as informant observation, interviews, focus groups, and language-based approaches such as discourse analysis and conversation analysis (Bryman 2012). The choice of an appropriate data collection technique is crucial for gathering data that is appropriate for the research problem (Vanderstoep and Johnston 2008). According to Yin (2009), interviews are one of the most important sources of case study data. Interviews provide in-depth understanding of the meanings informants assign to their answers (Flick 2006). The qualitative research interview is intended to reveal the informants s' understanding of the world, to unfold the meaning of their experience, and to discover their subjective perspective of the phenomenon of interest (Kvale and Brinkmann 2009). The interview is a professional conversation; it is an inter-view, or inter-change of views where knowledge about a theme of mutual interest is constructed in the inter-action between the interviewer and the interviewee (Kvale and Brinkmann 2009).

There are many forms of interviews such as in-depth interviews, focused interviews, and structured or standardised interviews (Flick 2006; Yin 2009). However, in qualitative research, the main two types are the unstructured interview and the semi-structured interview (Bryman 2012; Williamson 2013). In the unstructured interview, the interviewer has a list of topics that are to be covered. The phrasing and questions vary from one interview to another. On the other hand, in semi-structured interviews, the interviewer has a series of questions but can change the sequence, and can ask further questions in response to significant replies. Semi-structured interviews, in particular, have attracted interest and are widely used (Flick 2006). They allow for friendly conversations rather than formal responses to structured queries. In other words, although the investigator will be pursuing a consistent line of inquiry, the actual questions are likely to be fluid rather than rigid (Rubin and Rubin 2011). Informed by the GPVM and the findings from Stage 1 of data collection, stage 2 employed semi-structured interviews as a data collection technique. This technique is appropriate for case research because it can provide more insights about the phenomenon of interest (Benbasat et al. 1987).

Sampling

Probability sampling is rarely used in qualitative research. Often, it is not feasible because of the constraints of ongoing fieldwork (Bryman 2012). Further, in many cases, it is difficult and sometimes impossible to map the population from which a random sample might be taken in order to create a sampling frame. However, the main reason why qualitative researchers rarely use probability sampling is that they typically want to ensure access to as wide a range as possible of informants or cases that are relevant to their research (Bryman 2012). Purposive sampling is a non-probability form of sampling, where the researcher does not seek the participants on a random basis. Rather, the goal is to sample the informants or cases in a strategic way, in order to ensure that those who are sampled are relevant to the research context (Teddlie and Yu 2007). The logic behind purposive sampling is that it will enable the researcher to gain a deeper understanding of the phenomenon of interest (Creswell 2009; Neumann 2006). Preferably, the researcher should aim to obtain a sample of a variety of informants that differ from each other in key characteristics relevant to the research question. The main types of purposive sampling are summarized in Table 4.8.

Table 4. 8. Types of purposive sampling (Adapted from (Patton 1990; Palys 2008)

Sampling	Description
Extreme sampling	Cases that are unusual or unusually at the far end of a particular dimension of interest
Typical case sampling	Cases that exemplify a dimension of interest
Critical case sampling	Crucial cases that permit a logical inference about a phenomenon of interest
Criterion sampling	All cases that meet a particular criterion
Theoretical sampling	Selecting cases with reference to the quest for a theoretical understanding (Glaser and Strauss 1967)
Snowball sampling	Sampled cases propose and suggest other cases that are relevant to the research context
Opportunistic sampling	Capitalizing opportunities to collect data from certain cases that are largely unforeseen but are relevant to the research context

However, the sampling of cases from the chosen population is neither necessary, nor even preferable (Eisenhardt 1989); case studies research relies on theoretical sampling (Glaser and Strauss 1967). Case studies, like experiments, are generalizable to theoretical propositions, not to populations or universes. The goal of case studies research is analytical or theoretical generalization, not statistical generalization (Darke et al. 1998). However, there are two different levels of sampling that are sometimes intermingled, especially in qualitative research based on cases studies. With such research designs, the researcher must first select the cases, then units within each case. Sampling should seek both heterogeneity (differences) and homogeneity (similarity) (Bryman 2012). The sampling criteria for Stage 2 is disused next.

Sampling of context

Target Population

The target population were internally those government agencies that were currently using Gov2.0 and had won or been nominated for the YESSER award at least two times. YESSER (Arabic translation of 'simplify') is a national program initiated by the Saudi Arabian government to transform Saudi Arabia into an information society and provide better and easy-to-use e-government services. To successfully implement this strategy, several committees were formed including a higher supervisory committee comprising the minister of finance and minister of MCIT, and the governor of the CIT Commission controls the program. A steering committee was formed from the higher committee with members representing the Ministry of Finance, Ministry of Communications and Information Technology (MCIT) and Communications and Information Technology Commission (CITC) in addition to the program's general director. YESSER program has initiated the Saudi Arabian "e-government Achievement Award"[8] to encourage government agencies to increase their efforts to become an "information society". The Award is designed to inspire government agencies to cooperate and implement e-services in order to better serve the community. Among the requirements to apply for this award, government agencies must improve their business methods and work in complementary ways with each other to provide high quality and effective electronic services to the public: citizens, residents, and businesses.

The YESSER program has several categories of winners, one of which is citizen engagement. This award category recognizes those government agencies that consider and use suggestions and recommendations made by users (public, private or government) by means of ICTs tools, which include the use of Gov2.0 to improve their services, and/or consider it during the development of policies and regulations. The program had had four released lists (2011, 2012, 2014 and 2015) and the targeted cases were those government agencies that have been listed in the relevant categories more than once.

Government level

As this research refers to Gov2.0 in general, all levels of government (i.e. national, state and local) were considered initially; however, as it is still an emerging concept, I decided to focus particularly on the national level as it had a greater level of maturity and more followers.

[8] In 2016 the name has changed to Enjaz award.

Number of case

As noted earlier, the selection of cases followed literal replication logic; therefore, three case studies with two levels of analysis, citizens and government agencies are selected.

Criteria for case selection

In order to maximise the theoretical implications of this research findings, the cases that are chosen should represent a typical case (Creswell 2013) or an instrumental case (Flick 2009). The goal is to capture the circumstances and conditions of a typical situation. The criteria for such case are as follows:

Focus on citizen engagement

This research focuses on investigating PV co-creation via Gov2.0. The variety of Gov2.0 platforms used by government agencies may provide richer insights regarding its influence on the engagement process. Thus, cases which exhibit multiple uses of Gov2.0 platforms such as social networking sites, blogs, microblogs and discussion forums were considered.

Temporal dimension of Gov2.0

Because this research aims to understand the process of co-creation, it will benefit from investigating government agencies Gov2.0 that exhibit temporal dimension so that a sufficient longitudinal perspective can be realised. A case may be represented by the use of Gov2.0 that has lasted for a considerable of time.

Existence of co-creation activities

This research is interested in examining the co-creation activities enabled via Gov2.0.Therefore; a key criterion for the case is the existence of such online activities.

PV driven

Government agencies' use of Gov2.0 may be PV-driven or otherwise. This research targeted cases that were motivated by the realisation of PV. This was done by studying the government agencies' online presence, mission and vision statements, and activities. This focus should facilitate the link between co-creation and PV via Gov2.0 context.

Case selection

A total of seven cases met the criterion stated above. Initially, four of them agreed to participate, one withdrew later, and the remaining three cases were ***Ma3an***, ***Kamnapp*** and ***@eMoroor***, which were considered adequate for the purpose of literal replication logic (Yin 2009). Literal replication

was chosen as it offers sufficient variance, thereby enhancing the research findings. After deciding on the cases, this research sought to reduce the risk of obtaining invalid information by targeting specific informants who would make a valuable contribution to the research (Coyne 1997). Government officials with managerial and/or technical positions in the IT department were targeted for the interviews. A total of nine interviews were conducted. On the citizen side, the only criterion used to identify potential interviewees was their usage of a specific Gov2.0 application (i.e. Ma3an, Kamnapp, @eMoroor). As indicated earlier (section 4.5.1), the questionnaire asked the respondents from Stage 1 to provide their details if they were interested in participating in interviews. A total of 23 expressed their interest, although only eight agreed to participate; thus, eight interviews were conducted.

A review of the guidelines for sample size of interviews shows no agreement between scholars. According to Creswell (2002) and Onwuegbuzie and Collins (2007), the minimum recommended sample size for interviews in case studies is three to five informants. Marshall (1996) suggested using the purpose of the qualitative approach as an indicator. As this research employs a complementary mixed methods approach, where the qualitative approach complements the quantitative approach, the number of interviews is deemed acceptable. A detailed description of the interviewees is provided in Chapter Six.

Stage 1 of the data collection process provided a broad view of PV co-creation via Gov2.0 at an abstract level. Stage 2 sought to examine a specific Gov2.0 in order to understand the process of PV co-creation. As this research seeks to explain the PV co-creation via the Gov2.0 process, an extensive and in-depth analysis of the case studies was required. The three case studies were chosen because of the criterion presented above and their agreement to participate (opportunistic). The selection of three specific Gov2.0 applications enabled the control of environmental variation, while the focus on the national level of government constrained variation due to the differences in size of government agencies. Thus, specification of this population reduced extraneous variation and clarified the domain of the findings as those government agencies operating at the national level. Two of the case studies (Ma3an and Kamnapp) were winners of or nominees for the YESSER program Enjaz Award. The third case study @eMoroor, was not a winner of or a nominee for the Award and was selected to avoid the survivorship bias (McRaney 2013; Shermer 2014; Zimmer 2013), as the research was keen to investigate middle and low government agencies performers as well.

The three case studies are briefly described next.

- ***Ma3an***

This is a portal for the Ministry of Labour in Saudi Arabia that uses crowd-sourcing with the goal of sharing knowledge (open data), enabling participation, improving innovation and efficiency. Ma3an[9] (Arabic translation of 'together') was first introduced in December 2013 and has been nominated for the YESSER award for Gov2.0 in its previous releases. It started as a portal under the name "Together we improve" to post draft policies and regulations to the public to get feedback and crowd-sourcing. It was a two-way participation initiated by the government. The meaning of the word Ma3an is 'to collaborate and work hand-in-hand'; hence, the origin of this initiative's name. It is a transparent and cooperative joint platform intended to encourage and facilitate citizen participation regarding certain issues. In Feb 2016, the government implemented the second phase and renamed the project the "Together portal" that included seven services: open data, open tendering, have your say in draft policies, innovate (new ideas and suggestions), report (any wrong doing from the private sector), alert (any government wrongdoing), and evaluate (their services). It aims to enable transparency, participation, and collaboration. During phase one, the program posted 40 draft policies, received 9,000 comments, had 30,000 users, received100,000 votes, and the website had 280,000 visits (clicks).

- ***Kamnapp***

This is an app for the General directorate of public security in Saudi Arabia that uses crowd-sourcing to report traffic and criminal activates within metropolitan, rural and remote zones. Kamnapp (Arabic translation of 'we are all security') is part of a strategic plan to transform public security through four strategies: crowdsourcing citizens, use of the latest technologies, e-services portal, and partnerships with the private sector. It allows users to upload photos, obtain GPS coordinates, and just-in-time information. The app is available on both iOS and Android, and was first introduced on 28 Feb, 2016.

In March 2016, the total number of users was 201,501 with an average monthly increase of 35,133. By April 2017, the number of users had reached 612,638. The average number of monthly reports is 23,665. Kamnapp offers three main services:

[9] For more information on ma3an please check the website (http://www.ma3an.gov.sa)

- Reporting traffic incidents /violations within the metropolitan zone (e.g. speed hooning, crossing red light, etc.);
- Reporting crime or suspicious activities within metropolitan zone (e.g. property damage, burglary, public safety related issues, etc.);
- Reporting traffic or crime in rural and remote areas (e.g. speed hooning, stolen vehicles, etc.).

A user needs to register by using his/her national ID and phone number; then he/she receives a one-time password to complete the registration process. After sending a request, the app will send a confirmation message to the user. On completion of a request, the user receives a text notification of the outcome and a thank you note, and is asked about his/her satisfaction with the service. If the user is dissatisfied, an internal review of the request treats it as a complaint and initiates an internal review of the service.

- ***@eMorror***

This is a Twitter account for the General department of traffic in Saudi Arabia that is used to disseminate information and interact with users. First introduced in June 2013, as of June 2017 it had 523,000 followers, with over 100,000 tweets having been posted. The purposes of this account are to promote transparency by regular information dissemination, engagement by interaction with citizens and answering their queries, and to launch road safety campaigns and accident prevention programs. It aims to build a community of safe drivers through educating citizen by making safety campaigns and accident prevention programs more accessible and relevant. It also aims to promote engagement by reaching out and having daily interaction with citizens in order to encourage them to work together more effectively, and at the same time building communities that foster and support the health and well-being of everyone. Furthermore, @eMorror targets improving and enriching lives through educating citizens about road safety tips and facts. It has now established itself as one the most followed Gov2.0 applications and can be regarded as a leader of the Ministry of Interior Gov2.0 applications with strong links to citizens countrywide. It regularly initiates activities such as road safety campaigns and accident prevention programs.

Interview protocol design and validation process

A qualitative interview inquiry involves an investigation carried out in seven stages: thematising, designing, interviewing, transcribing, analysing, verifying, and reporting (Kvale and Brinkmann 2009). Thematising refers to the formulation of research questions, the theoretical clarification of

the theme investigated, the why, and what of the study. Designing refers to planning the procedures, applying the techniques and deciding how the study should be conducted. Interviewing refers to conducting the interviews based on an interview guideline with a reflective approach of the situation. Transcribing refers to preparing the interview materials for analysis, including transferring oral speech to written text. Analysing refers to deciding on the modes of analysis appropriate for the interviews. Verifying refers to ascertaining the validity, reliability, and generalizability of the interview findings. Finally, reporting refers to communicating the findings of the study in a readable way. These seven stages serve as a general guideline, and are a description rather than prescription, and the linear progression could be replaced by an iterative approach based on the circumstances (Rubin and Rubin 2011).

At the heart of the interview protocol is asking substantive questions that reflect the line of inquiry. Yin (2009) suggests using an empty matrix to be populated by the researcher during the interview and afterwards. The matrix should indicate the type of data to be collected to ensure that parallel information from different sites is collected, particularly where a multiple-case design is being used. Also, the matrix should help to determine what will be done with the data once collected. Following the Kvale and Brinkmann (2009) and Jacob and Furgerson (2012) guidelines on designing the interview protocol, the questions concerned the main themes of the GPVM in relation to the case studies. The interviews started with questions intended to elicit demographic information from interviewees, and to understand their characteristics. The interview protocol included introductory questions, follow-up questions, and probing questions as suggested by Bryman (2012) and Kvale and Brinkmann (2009). Also, Charmaz (2002) distinguished three types of questioning techniques: initial open-ended, intermediate questions, and ending questions that were incorporated in the interview protocol accordingly. The interview protocol included open questions (e.g. "what do you think of Gov2.0, and why do you use it?"). Additionally, theory-driven, hypotheses-directed questions were asked (e.g. "Is sense of impact important for you to participate via Gov2.0?"). The questions were used to encourage informants from the three case studies to express their views about their experiences. Follow-up questions encouraged the informants to elaborate on the main themes and provide in-depth and detailed answers. When the informants' answers were too short or incomplete, probing questions were asked to keep the discussions going in order to obtain complete and clearer answers (Rubin and Rubin 2011). It is worthwhile mentioning that some of the interview questions included were not the focus of this research; however, they were included to understand the context of the Gov2.0 process in the three case studies. Furthermore, the qualitative data analysis provided the researcher with insights

and in-depth understanding about the phenomenon under investigation. A detailed discussion of the thematic analysis is presented in Chapter Six.

The interview protocol was pre-tested with academics experts and e-government users in Saudi Arabia. The feedback was incorporated and revisions were made to ensure that the questions were coherent and unambiguous (Kvale and Brinkmann 2009). The interview protocol is shown in Appendix 2 and detailed discussion about the interviews are in Chapter Six. Data collection should stop when theoretical saturation is achieved. This occurs when learning about the observed phenomenon is minimal because nothing new is emerging or being added, and the researcher has seen it before in the collected data (Glaser and Strauss1967). Generally, the procedures for data collection were effective as they produced a substantial amount of new data from citizens and government officials about their Gov2.0 experience, and it was reasonable to end the qualitative data collection at that point in time.

4.5.2.2 Data analysis technique

Qualitative analysis is the examination and interpretation of qualitative data for the purpose of discovering underlying meanings and patterns of relationships (Babbie 2013). According to Miles and Huberman (1994), qualitative data analysis consists of three activities: data reduction, data display, and conclusion drawing and verification. Data reduction refers to the process of selecting, focusing, simplifying, abstracting, and transformation of the collected data. It is part of the analysis, where the researcher makes the analytical choices of which data to code, which to pull out, and which story to tell, or as Tesch (1990) called it: *"data condensation.*". Data display refers to the process of organizing, compressing, and presenting the data in the form of matrices, charts, or graphs. Conclusion drawing and verification are the third activities and include the emergence of meanings from the data and verification through inter-subjective consensus with the scientific community. Qualitative coding is an integral part of data analysis; it enables the researcher to go beyond the description of the raw data, and think about them at an abstract level:

"Codes are tags or labels for assigning meaning to the descriptive information collected during a study. Codes usually are attached to "chunks" of varying size –words, phrases, sentences, paragraphs, connected or unconnected to a specific setting" (Miles and Huberman 1994, p. 56).

Charmaz and Belgrave (2007) described coding as the main link between data collection and the explanation of its meanings. Pattern is repetitive, regular, or consistent occurrences of data that appear more than twice (Saldaña 2016). Qualitative research seeks patterns to explain the world in a more comprehensible, predicable and tractable way (Saldaña 2016). Patterns can be in the form

of similarities (things happen the same way), differences (they happen in predictably difference ways), frequency (they happen often), sequence (they occur in a certain order), or causation (one appears to cause another) (Saldaña 2016). Bernard (2017) explained that analysis is the search for patterns in the data and for reasons why those patterns exist. Coding enables the organising and grouping of similar coded data into categories. Miles and Huberman (1994) argued that categories impute meanings, and coding computes them. Charmaz (2014) described coding as the bones of the analysis, and categorising as the skeleton. Synthesis combines different things in order to create a new whole, and this is the primary purpose of qualitative data analysis with the transition from coding to categorizing to themes or concepts.

A theme is an abstract entity that brings meaning to experience by capturing it in meaningful manifestations (DeSantis and Ugarriza 2000). A theme is the outcome of coding, categorizing, and analytic reflection (Saldaña 2016). Rossman and Rallis (2003) explained the difference between a category and a theme: *"a category is a word or a phrase describing some data that is explicit, whereas a theme is a phrase or a sentence describing more subtle and tacit processes"* (p.282). Thematic analysis refers to a systematic analysis of qualitative data by coding and categorizing similar or related concepts in order to identify the underlying themes (Boyatzis 1998). It enables the decomposing of complex qualitative data into a number of themes to understand and interpret experiences and observations regarding people, events, and circumstances (Attride-Stirling 2001). A theme is the outcome of coding, categorizing, and analytic reflection (Saldaña 2016). Figure 4.8 shows the process of qualitative data analysis.

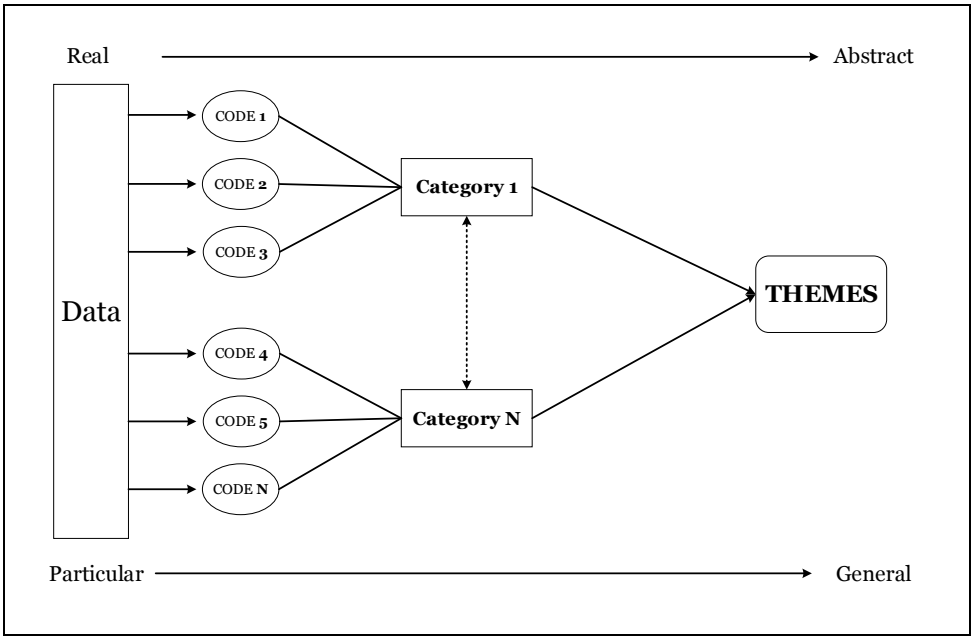

Figure 4. 8. Code to theme in qualitative inquiry (Adapted from Saldaña 2016)

Miles and Huberman (1994) classified codes according to three types: descriptive codes entail little interpretation, rather attributing a class of phenomena to a segment of text. Interpretive codes entail more interpretation focusing on the underlying concepts, which is more complex. Pattern codes are inferential and explanatory and seek to derive patterns emerging from the text usually by grouping the previous two types (i.e. descriptive, interpretive*)* into a smaller number of themes. Strauss (1987) outlined three stages of qualitative data coding in grounded theory: open coding, axial coding, and selective coding. Open coding is the first stage, whereby data is examined and condensed into preliminary codes. Second is axial coding, whereby data is organized, linked, and categorised. Selective coding is the last stage; here, data is scanned and selectively chosen to illustrate themes. Coding requires an analytical lens to interpret the data. Miles and Huberman (1994) suggested creating a list of codes prior to fieldwork, and referencing a conceptual framework can be the best defence against data overload during data analysis. Yin (2009) proposed four general analytical strategies for analysing case studies: relying on theoretical proposition, developing a case description, using both qualitative and quantitative data, and examining rival explanations.

As the qualitative approach was informed by the GPVM, pattern coding was used to analyse the qualitative data, and the main themes of the GPVM were used as a starting point. Other themes were allowed to emerge when they did not fit the predefined ones. Further, the GPVM was relied upon as a guideline when analysing data because case studies were used to validate the GPVM, provide in-depth understanding, and discover any emerging themes that might be relevant to the

research context. Yin (2009) suggested using one or more of five analytic techniques: pattern matching, explanation building, time-series analysis, logic models, and cross-case synthesis. Pattern matching compares empirically-based patterns with predicated ones (Trochim 1989). Another similar analytical strategy for analysing qualitative data is the illustrative method originally developed by Bonnell (1980) in sociology and popularized by Neuman (2011) as a qualitative research method. The illustrative method applies existing theory to a setting by providing conceptual empty boxes that get filled with empirical evidence. Figure 4.9 shows how the illustrative method was used for the qualitative data analysis.

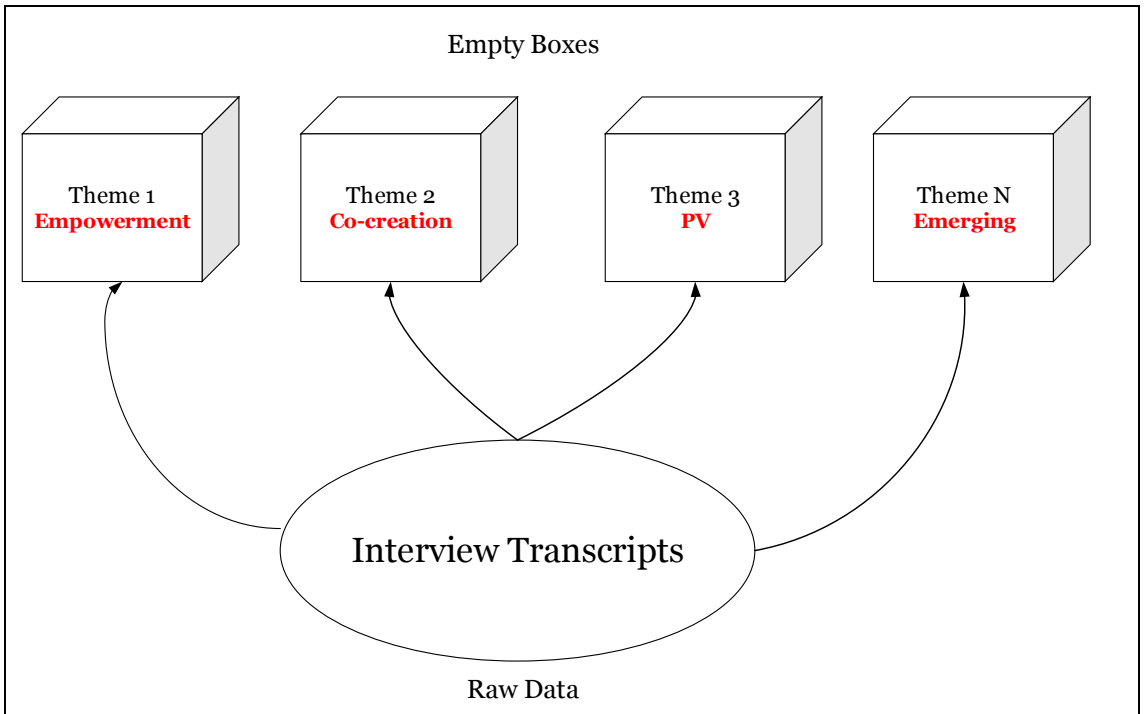

Figure 4. 9. The illustrative method for qualitative data analysis (Adapted from Neuman 2011)

The main themes of this research were considered as empty boxes and filled with empirical evidence from the raw data (Neuman 2011). This method is similar to pattern matching (Yin 2009), and the pattern coding technique (Miles and Huberman 1994), where initial lists of codes are generated based on the theoretical model, and quotations from the interview transcripts are matched to the codes. A key aspect of the data analysis is the precise transformation of the collected data (Flick 2006). All interviews recorded on notes and audios were transcribed into raw data with no changes. Following the recommendations of Bernard and Ryan 2009, initial coding and categorisation were conducted as data were transcribed. Silverman (2011) suggests listening again to the audio recordings after the initial transcript to ensure that all comments are correctly categorised. This point is especially important due to the fact that the interviews were conducted

in the Arabic language and translated into English when needed. An important aspect of data analysis is the interpretation technique (Flick 2006). Interpretation is not just a matter of passively reading the text, but the process of actively reading that produces relevant ideas and concepts from the text (Creswell 2009). Most of the coding for thematic analysis in this research was conducted manually using pen and paper. Furthermore, I spent extensive time in the field, studying the government use of Gov2.0 and conducting field research for about three months during 2015-2016 in Riyadh, Jeddah and Dammam, three major cities in Saudi Arabia. Creswell (2009) highlighted the importance of fieldwork to help convey details about the location and people under research that leads to credibility and accuracy of findings. Also, I did not omit any negative or odd findings that counter the research themes, but presented them without bias.

4.6 Ethical Considerations

In the research process, it is very important to comply with ethical considerations such as the protection of participants from any harmful consequences, data protection and confidentiality. Because this research involved human subjects, careful consideration of the ethical conduct was crucial. Humans, as research participants, should not be subjected to unethical research practices that might cause them harm (e.g. physical dangers, risk of reputation, financial loss) (Bryman 2012). Before conducting the empirical phase of this research, mandatory ethics approval was obtained from Monash University. Accordingly, I completed the required ethics application for both stages of the research (i.e. questionnaires and interviews).The ethics application included details about this research, and information regarding the potential participants and the recruitment process to ensure that the ethics requirements were satisfied and the privacy of the participants was guaranteed. This research has adhered to the ethical review process and has been granted an Ethics approval from the Monash University Human Research Ethics Committee (MUHREC) for data collection from for the period between 19 August 2015 and 19 August 2020 (project number CF15/3097-2015001309) the letter of approval is presented in Appendix 3.

The questionnaire, initial interview protocols, explanatory statement and consent forms were included in the ethics application (See Appendix 4 for a copy of the explanatory statement and consent forms). The explanatory statements and consent forms were prepared to give the participants in-depth information about: the aim and objectives of this research; confidentiality in accordance with the ethics standards of Monash University; the significance of their participation; and their right to withdraw at any time without any penalties. The consent form acknowledged that they had read and understood the explanatory statement explaining the interview procedures

involved in this research and consenting to participate. Full contact details for me -the researcher- the research supervisors and the MHREC were also attached to the explanatory statement. Also, the details of a contact person from a large local university's Research Ethics Committee in Riyadh (Capital city of Saudi Arabia) were included for those who wished to contact someone in Arabic. As the data collection of this research was conducted in Saudi Arabia, an Arabic version of these documents was provided in addition to the English copy. In order to ensure the translation quality, the translation process was completed with the aid of a certified translation office in Saudi Arabia.

Questionnaire invitations were sent via blogs and threads of various interests, different national government websites and forums in different locations (provinces and cities) and various Web 2.0 applications (e.g., Twitter and Facebook) to attract a heterogeneous sample of respondents, and included the explanatory statement and consent forms. For the interviews, an invitation to participate and the explanatory statement were sent in advance to all informants. Also, all the interviewees were asked to complete and sign an informed consent form prior to interviews. Furthermore, at the beginning of the interview, the two letters were given to the participants who had not returned the signed forms via email. In terms of the interviews locations, it was decided to choose places that were convenient for participants such as work places, informants' homes, restaurants, cafes, and hotel lobbies.

4.7 Summary

The chapter began with an overview of the philosophical foundations of research including research paradigm, methodology, and methods. This research adapted a pragmatist paradigm, which is suitable for this research context as a middle ground between positivist and interpretivist perspectives of the world. The chapter discussed the rationale for employing the mixed methods research using sequential explanatory strategies of data collection: quantitative data from a questionnaire; and qualitative data from three case studies. The chapter has also outlined the data collection and analysis for both research methods followed by ethical considerations. The following two chapters present the analysis and results of these two stages.

CHAPTER FIVE
SURVEY ANALYSIS

5.1 Overview

This chapter presents the results of the quantitative research, which was conducted through a survey method. A cross-sectional online questionnaire was employed as a data collection technique; its development and distribution process was discussed in Chapter Four. The data collected from the questionnaire was analysed using a number of statistical techniques. The chapter begins by describing the methods used to check the data quality including data screening (section 5.2) and data preparation (section 5.3) to ensure its appropriateness for analysis. It includes dealing with missing data and outliers, as well as testing the data's normality and reliability. Section 5.4 presents the descriptive statistics that includes the demographic profiles of the respondents (citizens and government officials), and their experience in using Web2.0 and Gov2.0. Next, both exploratory (section 5.5) and confirmatory (section 5.6) factor analysis is performed to ensure that all the constructs in the model are valid and reliable. Finally, SEM analysis is conducted to test the measurement and structural model and the interrelationships between the constructs in the GPVM (section 5.7). This includes findings from the hypotheses testing of GPVM's direct and indirect paths. Section 5.8 summarises the chapter.

As mentioned in section 4.5.1, the questionnaire design and administration were conducted in two steps: (1) GPVM construct scale development; and (2) GPVM hypotheses-testing. For both steps, a well-known procedure was applied to develop the meanings and relationships of constructs (MacKenzie et al. 2011), design and administration procedures (DeVellis 2003), and techniques to ensure face and content validities (Lewis et al. 2005; Moore and Benbasat 1991). Figure 5.1 summarises the steps involved in the quantitative data analysis and shows the order in which they are presented in this chapter.

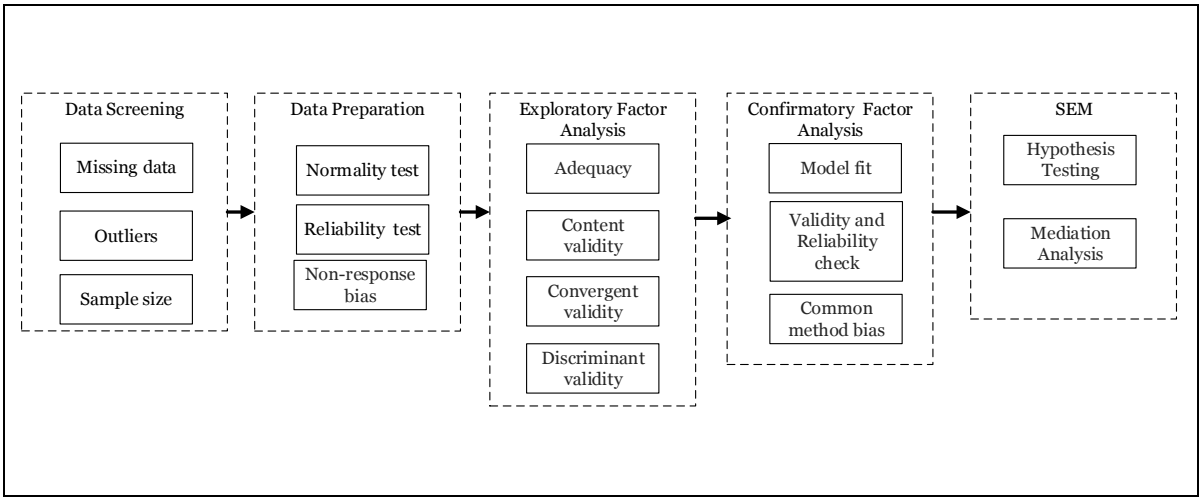

Figure 5. 1. The GPVM validation and testing

The variety of statistical techniques available for the analysis of quantitative data poses a major challenge for researchers. Quantitative data analysis can be divided into two main categories: (1) descriptive statistics to obtain a description of the basic patterns of the data, and (2) inferential statistics to test hypotheses by using the data to make precise statements or inferences about the wider population from which the sample was drawn, with an acceptable level of confidence. This research used both types of statistical analysis as it aims to understand patterns that might emerge from the data, and reach conclusions regarding the research hypotheses.

5.2 Data Screening

Data for the hypotheses testing were gathered over a three-month period (May to July 2016). This research's two units of analysis (i.e. citizens and government officials) were analysed separately. The data were downloaded from Qualtrics in .sav format that is compatible with SPSS, the statistical package which is used for analyses. All data were transferred to SPSS and each variable was labelled with a unique abbreviation for identification purposes (e.g. meaningfulness items were coded MF1, MF2, etc.). MF1 statement was negatively worded and thus had to be revised in SPSS. To obtain accurate results from the SEM analysis, specific data screening techniques were applied. These techniques include dealing with missing data (Kaplan 2008), managing outliers (Byrne 2010), and determining the appropriate sample size (Schumacker and Lomax 2004), which are discussed next.

5.2.1 Missing data

Checking for missing data is the first step in the data screening stage. This includes checking the datasets for any errors or omissions that could disturb the model in SEM analysis (Kaplan 2008).

Although the data were downloaded directly from the online database (Qualtrics), visual inspection was necessary to ensure all datasets were complete and accurate. There was a total of 1098 responses to the online questionnaire, 766 were from citizens and 332 from government officials.

Out of the 766 citizen's responses, 10 were partially completed. These incomplete responses were examined and it was found that more than 30% of the values were missing, which are too many to impute the median for ordinal scale and the mean for continuous scale value for those missing entries. Thus, imputing was not an option as these would have unduly biased the results (Byrne 2010). Thus, the 10 incomplete responses were excluded from the dataset. Next, to examine the unengaged responses, the time required to complete the questionnaire and the standard deviation (SD) for the Likert scale questions (58 items) were checked. As suggested by the questionnaire pre-testing stage, the average time needed to complete the questionnaire was around 15 minutes; thus, any responses that took less than 15 minutes were examined. For the SD, the goal is to have variance in the response to make sure that no-one answered the whole questionnaire using the same scale for every single item (e.g. Agree). All citizen sample responses took longer than 15 minutes, and the SD results ranged from a low of 0.427 to a high of 1.528 (See Table 5.1). As the questionnaire used a five-point Likert scale, less than 0.450 SD is not recommended. Only two responses were below 0.450 at 0.427 and 0.446, thus a visual inspection of the answers was necessary. These two responses had answers that varied across the 58 items and thus it was decided to retain them. The final dataset for the citizens' sample was 756 usable responses.

For the government officials' sample, out of the 332 responses, three were partially completed. The incomplete responses were examined and it was found that more than 30% of the values were missing. Thus, imputing was not an option and the three incomplete responses were discarded from the dataset. The suggested average time needed to complete the government officials' questionnaire was around 10 minutes; thus, any responses that took less than 10 minutes were inspected. All the government officials' sample responses took longer than 10 minutes, and the SD for the Likert scale question (46 items) results ranged from a low of 0.366 to a high of 1.423 (See Table 5.2). 15 responses were below the recommended SD value of 0.450; thus, a visual inspection of the answers was conducted. For the 13 responses with SD above (0.40), the answers varied, and for the other two with SD less than 0.40, the answers were almost the same. Thus, it was decided to keep the 13 responses with SD above 0.40 and discard the two below 0.40. The final dataset for the government officials' sample was 327 usable responses.

5.2.2 Outliers

Outliers are responses or answers with a unique characteristic identifiable as distinctly different from other responses or answers (Hair et al. 2014). In other words, it is the unusually high or low value or a combination of values across variables that make that response or answer stand out from the others. Outliers are not problematic or beneficial per se, rather they must be viewed within the analysis context. For example, outliers may distort the statistical results if they are not representative of the population. In contrast, outliers may discover characteristics that are different from the majority of the sample, which would not be found in the normal analysis. Thus, it is imperative to examine the presence of outliers and ascertain their influence. For this research's online questionnaire, all the answers were from a pre-selected list and the force responses option was activated; thus, no outliers were detected.

5.2.3 Sample size

This research targeted Saudi Arabian citizens who use Web2.0 applications but may or may not use Gov2.0, and government agencies that have started using Gov2.0. As mentioned in section 4.5.1, the sampling frame of this research's population is the access to the Internet and Web 2.0 applications. The online questionnaire was distributed by sending the link to potential respondents via government websites and through Web2.0 applications. It was promoted via blogs and threads of various interests, different national government websites and forums in different locations (provinces and cities) and various Web2.0 applications (e.g., Twitter and Facebook) to attract a heterogeneous sample of respondents. The aim was to attract a representative sample of Saudi Arabian citizens with various levels of education, from different ethnic backgrounds, gender and age groups, and from a wide geographical area. As for the government agencies, the focus was on the national level as it was more mature and had a greater number of users. Some scholars have discussed how to determine an adequate sample size and certain formulas have been proposed in many studies (Creswell and Plano Clark 2011). However, it was difficult to employ any of these formulas here as this research used open invitation as a sampling technique (section 4.5.1). Although statistics about the number of active Web 2.0 users in Saudi Arabia are few and far between, there is a paucity of reliable statistics on actual users of Gov2.0 initiatives.

A small sample size may hinder some important statistical analyses and yield questionable or invalid results (Collis and Hussey 2014). On the other hand, larger sample sizes may be impractical due to resource availability. Also, different statistical tests require different sample sizes; therefore, many researchers support the use of rule of thumb to determine an adequate sample size for different

statistical tests. For example, researchers generally would not factor analyse a sample of fewer than 50 cases, and preferably the sample size in this case should be more than 100 (Hair et al. 2014). Lewis et al. (2005) suggested that a sample size of 100–200 is sufficient. Tabachnik and Fidell (2007) considered a suitable sample size for conducting factor analysis should exceed 300 cases. A general rule for structural equation modelling (SEM) analysis is that over 200 responses are an adequate sample (Kline 2015). SEM requires a large sample size in order to maintain statistical power and obtain stable parameter estimates and standard errors (Shumacker and Lomax 2004). The need for larger sample sizes is also due to the use of multiple indicators to define latent variables. Thus, any sample size between 100 and 300 is recommended for SEM (Hair et al. 2006).

However, too many variables require the computation of too many correlations in the factor analysis and many of these correlations could be significant and appear in the factor analysis just by chance. Another rule of thumb relates to the number of the variables and suggests more observations than the number of variables to be analysed (Schumacker and Lomax 2004). Hair et al. (2006) argued that factor analysis requires a minimum of five observations for each variable (a ratio of 5:1) in order to avoid computation difficulties and to minimize the chances of over-fitting the data (i.e. deriving factors that are sample specific with little generalization). Thus, it is recommended that the most parsimonious set of variables be employed, guided by conceptual and practical considerations and to obtain an adequate sample size for the number of variables examined. The sample size for this research was adequate for conducting factor analysis as it exceeded 300 cases (i.e. 756 for the citizen sample and 327 for the government sample). Furthermore, the number of observations per variable exceeded the desired ratio of 5:1. The citizen sample had (58 variables* 5) 290 observations and the government sample had (46 variables* 5) 230 observations. Thus, it can be argued that the sample size for this research meets the conditions for both factor analysis and SEM.

5.3 Data Preparation

After screening the questionnaire data to ensure its suitability for statistical analysis, all indicators and latent variables were tested for normality and reliability to determine the most appropriate analysis and testing techniques (De Vaus 2002).

5.3.1 Normality testing

A normality test is one of the first measures of data to confirm its usability and representativeness of the target population. Normality is a key assumption in multivariate data analysis (Hair et al.

2014). Furthermore, a normality test ensures that the data is normally distributed across the sample and no extremely high or low scores from a few respondents can skew the overall results (Byrne 2010). Normality is tested by checking the shape of the distribution of scores across the sample and the statistics of a single variable that estimates the normal distribution (Hair et al. 2014). The shape of the distribution can be described by two measures: kurtosis and skewness. These values and their standard errors are often used as an indicator of the normality of the data on variables across the sample (Groebner and Shannon 1992; Hair et al. 2014). Kurtosis refers to the peak and tail of the distribution and measures the relationship between a distribution's tails and its most frequent values. A peaked distribution is called a positive kurtosis or leptokurtic and a flatter distribution is called a negative kurtosis or platykurtic. Skewness refers to the direction of the data distribution: whether it is unbalanced and shifted to one side (left or right) or centred. A positive skew represents a distribution shifted to the left and a negative skew represents a distribution shifted to the right (Byrne 2013; DeCarlo 1997). According to Hair et al. (2014), the data is normally distributed if the values are between +2.58 and 2.85. However, Tabachnick and Fidell (2007) suggested a more lenient threshold of between +3 and -3. SPSS was used to conduct the kurtosis and skewness test to examine the distribution of the data. Table 5.1 and Table 5.2 show the mean, SD, skewness, kurtosis for the data collected from citizens and government officials respectively. As mentioned in section 5.2 each variable was labelled with a unique abbreviation for identification purposes, as shown in Table 5.1 For example, PD1 refers to item 1 of the perceived dialogue construct and PD2 to item 2, etc. For PV construct the items also refers to which dimension it belongs as well, e.g. PVC1_TS1 refers to item 1 of trust and PVC5_CM1 refers to item 1 of commitment, etc.

Table 5. 1. Citizen sample descriptive statistics

Item	N	Mean	SD	Skewness	Kurtosis
PD1	756	1.89	.956	1.259	1.326
PD2	756	1.95	.955	1.233	1.381
PD3	756	1.91	.953	1.248	1.361
PD4	756	1.91	.958	1.250	1.327
PR1	756	2.01	1.073	1.127	.811
PR2	756	2.00	1.067	1.142	.862
PR3	756	2.02	1.065	1.140	.887
PR4	756	2.02	1.065	1.144	.900
PB1	756	2.03	1.045	1.095	.704
PB2	756	2.03	1.040	1.076	.668
PB3	756	2.03	1.044	1.089	.699
PB4	756	2.04	1.041	1.094	.723
SC1	756	2.05	1.177	.749	-.333
SC2	756	2.32	1.155	.757	-.299
SC3	756	2.42	1.267	.748	-.351

SC4	756	2.51	1.371	.748	-.322
SI1	756	2.03	1.108	1.044	.393
SI2	756	2.05	1.096	1.033	.415
SI3	756	2.03	1.104	1.050	.412
SI4	756	2.03	1.104	1.051	.410
MF1	756	2.03	1.051	1.006	.397
MF2	756	2.02	1.044	1.020	.468
MF3	756	2.02	1.042	1.028	.495
MF4	756	2.01	1.057	1.032	.443
CC1	756	2.05	1.177	.973	-.085
CC2	756	2.32	1.155	.539	-.682
CC3	756	2.42	1.267	.577	-.810
CC4	756	2.51	1.371	.546	-1.001
WC1	756	2.12	1.117	.943	.095
WC2	756	2.14	1.106	.955	.176
WC3	756	2.12	1.117	.946	.113
WC4	756	2.11	1.119	.950	.094
SNC1	756	2.13	1.162	.971	.072
SNC2	756	2.16	1.151	.962	.105
SNC3	756	2.13	1.163	.972	.068
SNC4	756	2.13	1.165	.972	.069
PTC1	756	1.96	1.078	1.173	.778
PTC2	756	2.00	1.062	1.143	.802
PTC3	756	1.98	1.070	1.157	.788
PTC4	756	1.99	1.068	1.155	.793
SF1	756	2.11	1.023	.947	.419
SF2	756	2.12	1.019	.951	.450
SF3	756	2.12	1.023	.950	.423
SF4	756	2.10	1.026	.955	.422
PVC1_TS1	756	2.12	1.091	.892	.049
PVC2_TS2	756	2.12	1.132	.979	.143
PVC3_TS3	756	2.12	1.134	.984	.135
PVC4_TS4	756	2.12	1.133	.989	.164
PVC5_CM1	756	2.09	1.105	.905	.010
PVC6_CM2	756	2.11	1.137	.942	.076
PVC7_CM3	756	2.12	1.126	.930	.088
PVC8_CM4	756	2.09	1.145	.948	.052
PVC9_FA1	756	2.01	1.039	1.031	.466
PVC10_FA2	756	2.02	1.028	1.024	.514
PVC11_FA3	756	2.00	1.042	1.029	.447
PVC12_FA4	756	2.01	1.034	1.024	.482
PVC13	756	2.12	1.097	.892	.024
PVC14	756	2.10	1.100	.894	-.007

Table 5. 2. Government sample descriptive statistics

Item	N	Mean	SD	Skewness	Kurtosis
RV1	327	2.56	1.344	.321	-1.282
RV2	327	2.69	1.297	.288	-1.183
RV3	327	2.67	1.290	.322	-1.138
RV4	327	2.62	1.323	.326	-1.191
LG1	327	2.67	1.325	.424	-.985
LG2	327	2.64	1.351	.386	-1.055
LG3	327	2.65	1.355	.398	-1.066
LG4	327	2.63	1.354	.391	-1.075
TP1	327	2.87	1.381	.124	-1.293

TP2	327	2.92	1.375	.130	-1.301
TP3	327	2.82	1.407	.145	-1.343
TP4	327	2.78	1.419	.135	-1.369
AC1	327	2.71	1.377	.192	-1.338
AC2	327	2.70	1.382	.192	-1.342
AC3	327	2.71	1.355	.199	-1.300
AC4	327	2.69	1.361	.176	-1.337
RS1	327	2.60	1.309	.341	-1.124
RS2	327	2.64	1.337	.405	-1.097
RS3	327	2.65	1.290	.342	-1.086
RS4	327	2.61	1.308	.340	-1.140
PPR1	327	2.77	1.323	.234	-1.140
PPR2	327	2.76	1.378	.209	-1.225
PPR3	327	2.70	1.364	.242	-1.231
PPR4	327	2.70	1.339	.229	-1.215
CG1	327	2.65	1.290	.327	-1.029
CG2	327	2.69	1.309	.401	-1.012
CG3	327	2.64	1.317	.372	-1.040
CG4	327	2.64	1.315	.379	-1.033
WG1	327	2.68	1.300	.278	-1.157
WG2	327	2.75	1.363	.279	-1.233
WG3	327	2.69	1.323	.275	-1.175
WG4	327	2.66	1.319	.267	-1.191
SNG1	327	2.54	1.303	.380	-1.107
SNG2	327	2.74	1.298	.363	-1.059
SNG3	327	2.65	1.264	.356	-1.037
SNG4	327	2.60	1.302	.347	-1.103
SNG5	327	2.56	1.309	.336	-1.170
SNG6	327	2.59	1.283	.348	-1.101
PTG1	327	2.73	1.324	.324	-1.141
PTG2	327	2.75	1.341	.280	-1.181
PTG3	327	2.73	1.309	.269	-1.153
PTG4	327	2.70	1.283	.283	-1.122
PVG1	327	2.63	1.316	.244	-1.215
PVG2	327	2.78	1.332	.198	-1.221
PVG3	327	2.66	1.274	.221	-1.184
PVG4	327	2.63	1.271	.189	-1.250

As shown in Tables 5.1 and 5.2, the skewness and kurtosis measures for all the latent variables and corresponding indicators fall within the +2 and -2 threshold, indicating the data is normally distributed.

5.3.2 Reliability testing

The internal reliability was assessed by conducting the Cronbach's alpha test, which is the most common method of measuring the homogeneity among multiple items. Cronbach (1951) proposed the Cronbach's alpha test, which splits the data, computes the correlation coefficient for each split, and compares the average correlation of each construct's item with all other items (Pallant 2011). Cronbach's alpha is computed for each construct's components to arrive at an overall score from the factor analysis (Cronbach 1971). Cronbach's alpha values range from 0 (no internal reliability) to 1 (perfect internal reliability) (Hair et al. 2014). There is no universal

agreement on Cronbach's alpha values. An alpha score of 0.60 to 0.70 is considered to be the lower acceptable limit, although higher than 0.8 is more desirable (Nunnally 1978). Hair et al. (2014) recommended 0.70 as good internal reliability, Pallant (2001) on the other hand, argued that 0.60 may signify good internal reliability. Hinton et al. (2004) suggested 0.50 and below as low, 0.50-0.70 as high moderate, 0.70-0.90 as high and 0.90 and above as excellent. Thus, the acceptable cut-off score for Cronbach's alpha to ensure internal consistency is higher than 0.60 for exploratory research and higher than 0.70 for confirmatory research (Straub et al. 2004). The value will generally increase for factors that have more variables, and decrease for factors with fewer variables. Each factor should aim to have at least three variables, although two variables are sometimes permissible. Using the reliability analysis in SPSS, the Cronbach's alpha was calculated (Churchill 1979; Hair et al. 2014). Table 5.3 presents the Cronbach's alpha for the citizen sample.

Table 5. 3. Citizen sample reliability test

Construct	Number of items	Cronbach's alpha
Perceived dialogue (PD)	4	0.916
Perceived risk (PR)	4	0.890
Perceived benefits (PB)	4	0.894
Sense of control (SC)	4	0.893
Sense of impact (SI)	4	0.895
Meaningfulness (MF)	4	0.793
Competence (CC)	4	0.793
Citizens willingness to co-create PV (WC)	4	0.894
Synergistic integration via Gov2.0 (SNC)	4	0.796
Citizen engagement via Gov2.0 (PTC)	4	0.793
Citizen satisfaction with Gov2.0 (SF)	4	0.895
Public value (PVC)	14	0.932

The citizen sample reliability results ranged from 0.793 to 0.932 across all constructs. This shows the consistency of the scale indicators, reliability of the data and homogeneity of the items. Table 5.4 presents the Cronbach's alpha for the government sample.

Table 5. 4. Government sample reliability test

Construct	Number of items	Cronbach's alpha
Responsiveness (RV)	4	0.783
Legitimacy (LG)	4	0.886
Transparency (TP)	4	0.883
Accountability (AC)	4	0.783
Resources (RS)	4	0.933
Perceived power relationship (PPR)	4	0.883
Competence (CG)	4	0.717
Government willingness to co-create PV (WG)	4	0.781
Synergistic integration via Gov2.0 (SNG)	6	0.884
Engagement via Gov2.0 (PTG)	4	0.876
Public value (PVG)	4	0.913

The results show that the reliability results of the constructs range from 0.717 to 0.933, which indicates statistically significant results because they fall within the recommend values. Therefore, construct reliabilities for all constructs are adequate and demonstrate an excellent internal consistency. As reported in section (4.5.1), a non-response bias test was performed by comparing responses from early and late respondents using the independent sample tests (t-test). The t-test showed no statistically significant differences between the two respondent groups for all the variables, indicating that non-response bias was not present.

5.4 Descriptive Analysis of the Questionnaire

This section reports the demographics of the questionnaire respondents and their experiences with Web2.0 application and Gov2.0. First, the citizen sample is described followed by the government sample.

5.4.1 Citizen sample

5.4.1.1 Demographics profile

The first section of the questionnaire on the respondents' demographics provides better insights into the data. The profiles of respondents included their gender, age, education, region and employment. Table 5.5 and Figures (5.2, 5.3, 5.4, 5.5 and 5.6) present the profiles of the citizen sample respondents.

Table 5. 5. Citizen sample demographics of respondents

Demographic Variables		Count/frequency	Percentage
Gender	Male	419	55.4%
	Female	337	44.6%
Age	18-25	180	23.8%
	26-35	190	25.1%
	36-45	253	33.5%
	46-55	77	10.2%
	55-65	55	7.3%
	Over 65	1	0.1%
Education	High school or less	28	3%
	Diploma	166	22%
	Undergraduate	446	59%
	Postgraduate	116	16%
Region	Central	280	37%
	Northern	76	10%
	Southern	83	11%
	Eastern	128	17%
	Western	189	25%
Employment	Private	268	35.4
	Self-employed	130	17.2%

	NGO	65	8.6%
	Student	186	24.6%
	Unemployed	68	9%
	Retired	39	5.2%

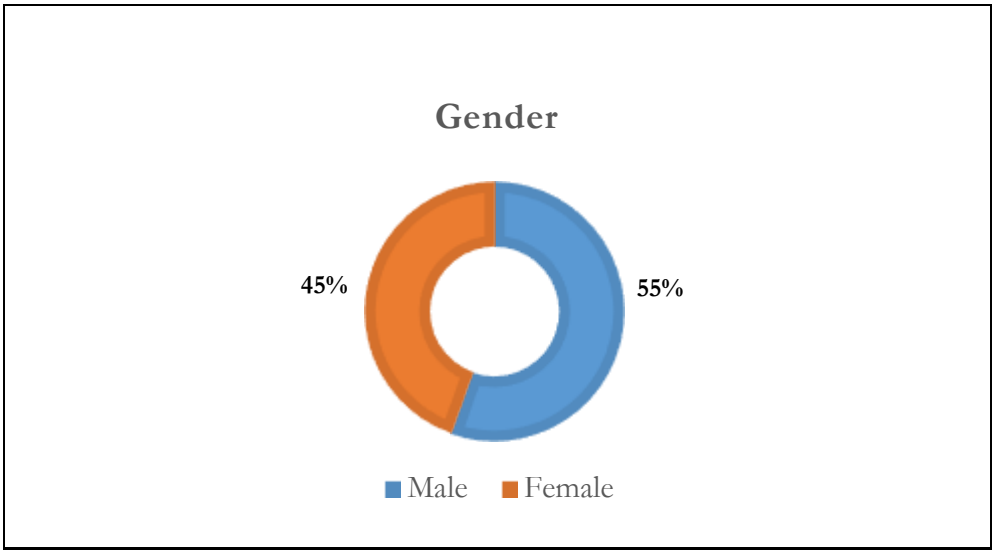

Figure 5. 2. Citizen sample gender

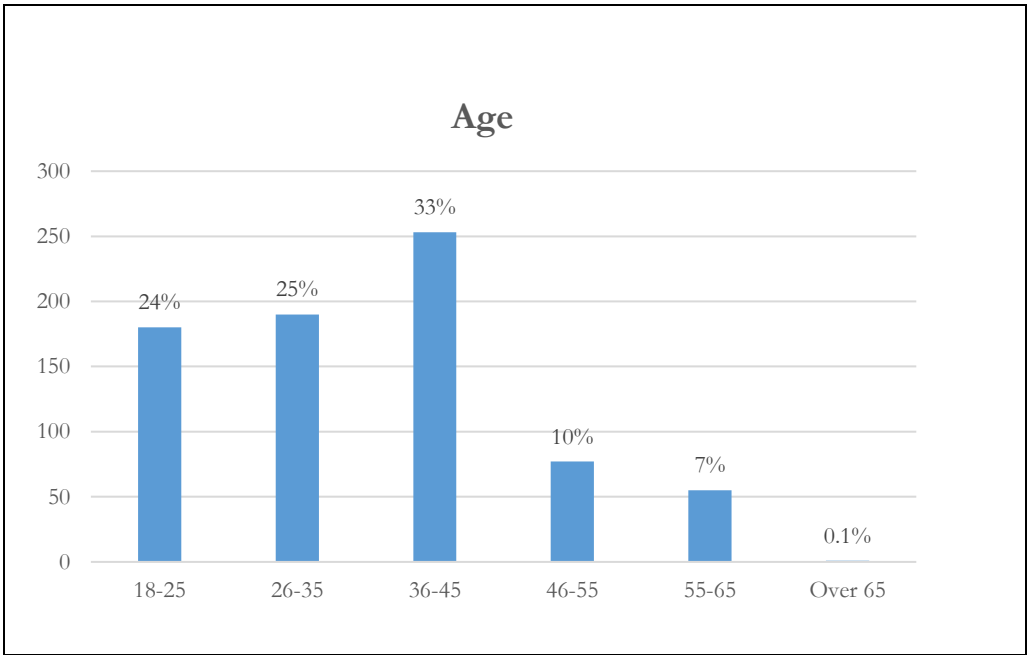

Figure 5. 3. Citizen sample age

The gender percentage was almost 45% females and 55% males. In terms of age, the largest age group was '36–45' (33.5%), followed by '26–35' (25.1%), and '18–25' (23.8%). The three age groups above 45 years old made up a mere 17 %. This result reflects the median age of the Saudi population for the last three years (2015-2017) which is 28 years (Worldometers 2017). According

to the Saudi Arabian National Information Centre (NIC) (2014) 80% of the Saudi population are under 40.

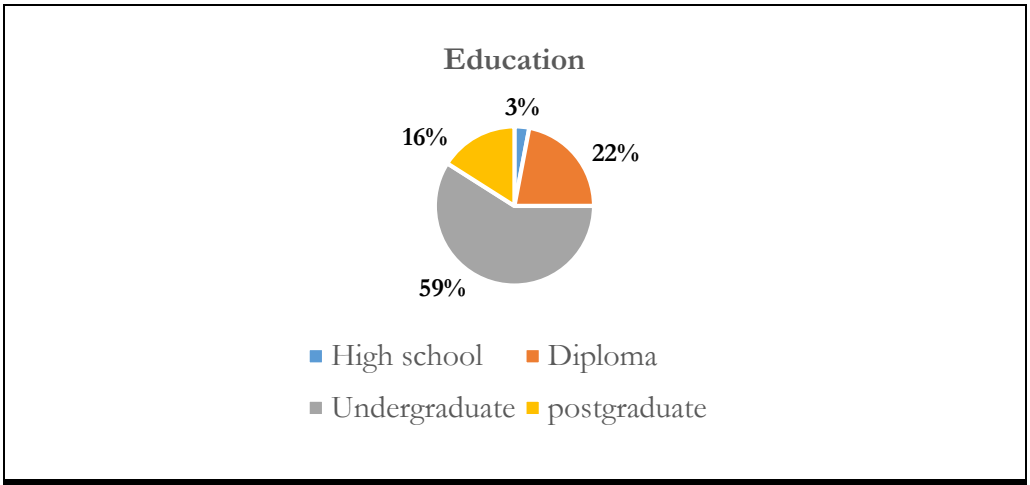

Figure 5. 4. Citizen sample education

The majority of respondents held a university degree (59% undergraduate and 16% postgraduate), while (22%) had a diploma, and only (3%) had finished high school or less.

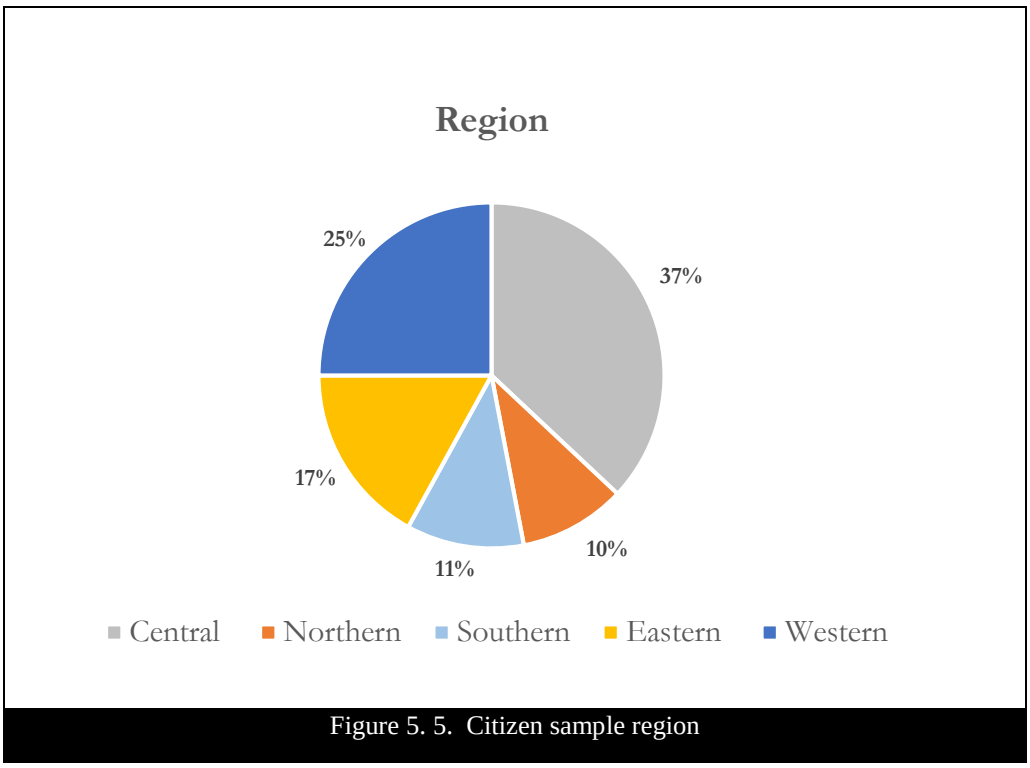

Figure 5. 5. Citizen sample region

The respondents' regions spread over the five main areas. Although Saudi Arabia is divided into 13 provinces (MOFA 2010), it is usually grouped into five main regions (Fanack 2009). Most of the respondents were from the three largest regions: central, western, and eastern with (37%),

(25%), and (17%) respectively. This similar to the Saudi Arabian population distribution as almost 70% of the population lives in these three regions (GASTAT 2017).

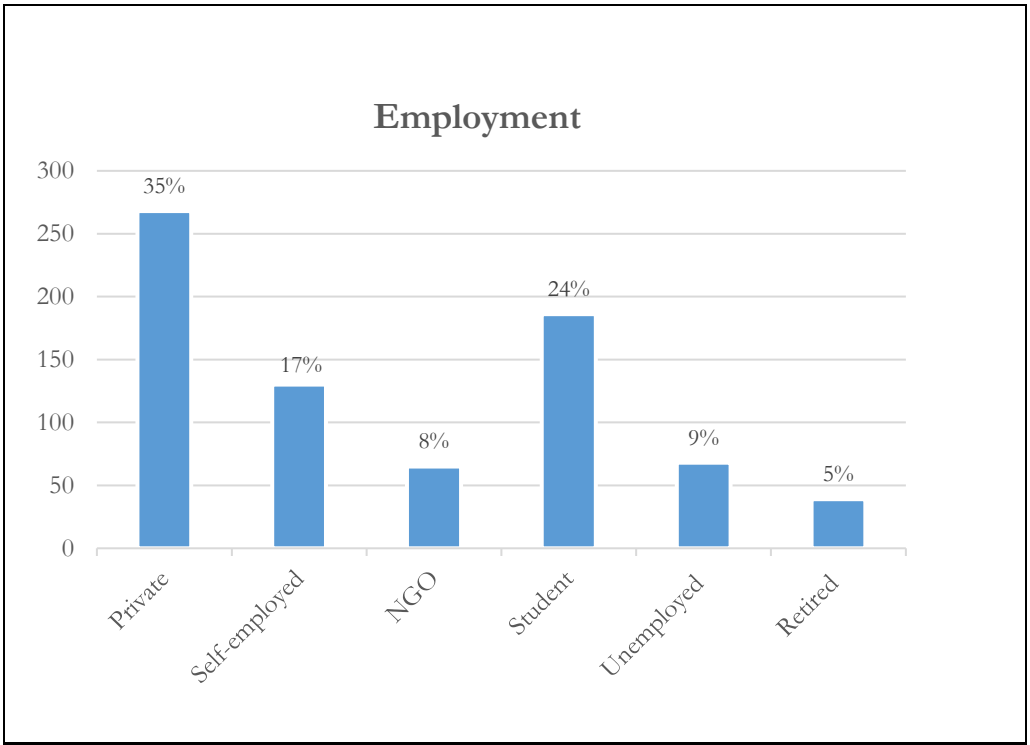

Figure 5. 6. Citizen sample employment

As shown in Table 5.5 and Figures 5.2, 5.3, 5.4, 5.5 and 5.6, the distribution of respondents is considered to be representative of the Saudi population census (GASTAT 2017). The current employment status of the respondents varied with 35% working in the private sector. This was followed by 24% students, and 17% were self-employed. Unemployed participants accounted for 9%, while 8% of the participants worked for non-profit organisations. Only 5% of the participants were retired. It is worth pointing out that, although the majority of Saudi citizens work in the public sector (Dobbs et al. 2015), the citizen sample excluded the government employees as they were included in the government sample. The high percentage of the private-sector workers is probably attributed to the government's recent efforts to 'Saudization', or what is officially known as the Saudi nationalization scheme (Stratfor 2016). The aim of this scheme is to increase the employment of Saudi nationals in the private sector and ultimately target the unemployment issue, where the current unemployment rate is 12.1% (Al-sulami 2017). The high percentage of students is explained by the recent investment in improving the education sector and the establishment of the King Abdullah Scholarship Program (KASP) in 2005. Saudi Arabia spends 25% of its GDP on education. For example, the number of universities has increased from 8 to 25 in the last decade (Pavan 2016; SACM 2016). The citizen sample represents a variety of age groups, education

background, and geographical locations. This fact contributes to the generalizability of the results of this research.

5.4.1.2 Social networking platforms experience

To explore the respondents' Web2.0 experience and usage patterns, four questions were asked in this section of the questionnaire. The first question asked about the respondents' frequency of Web2.0 application usage, and the responses revealed a high rate of frequent usage (over 75%) as shown in Table 5.6.

Table 5. 6. Citizen sample usage of Web2.0

Question		Frequency	Percentage
Frequency of using Web2.0	Very Often (e.g. at least once a day)	568	75.1%
	Quite Often (e.g. a few times a week)	116	15.3%
	Sometimes (e.g. a few times a month)	62	8.2%
	Rarely (e.g. once every few months)	2	0.3%

The majority of respondents (75.1%) use Web2.0 platforms on a daily basis, followed by 15.3% using it a few times per week. Around 8 % of the respondents use Web2.0 platforms several times a month. Less than 1% claimed to use Web2.0 platforms rarely (i.e. once every few months). This confirms the high level of Web2.0 usage in Saudi Arabia as indicated by many reports (Salem 2017).

The next question asked about the Web2.0 applications most used by the respondents. As expected, Twitter and Facebook were among the most used, accounting for more than 80% as shown in Table 5.7.

Table 5. 7. Citizen sample popular Web2.0 applications

Question		Frequency	Percentage
Popular Web2.0 application	Twitter	428	56.6%
	Facebook	229	30.3%
	YouTube	39	5.2%
	LinkedIn	3	0.4%
	Google+	2	0.3%
	Instagram	39	5.2%
	Snapchat	9	1.2%

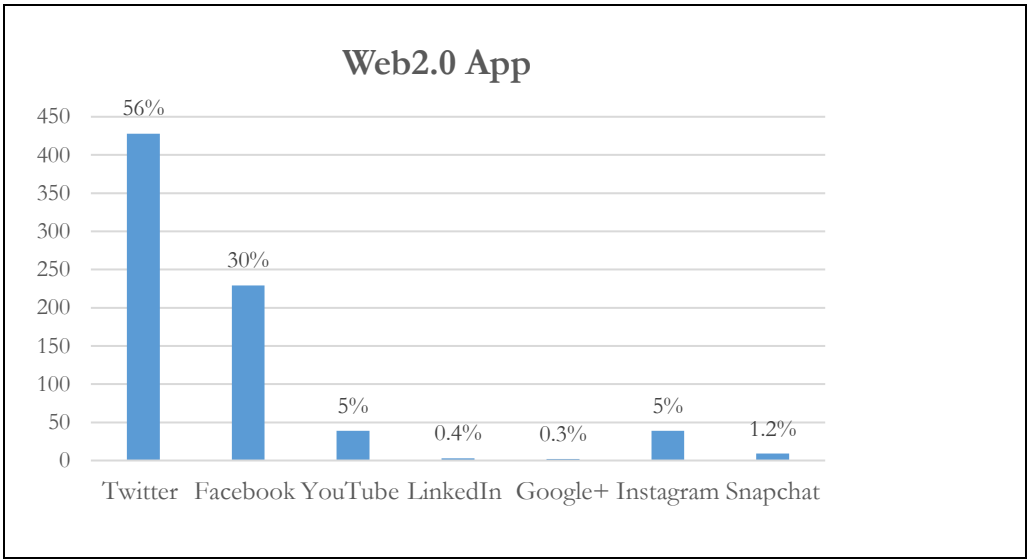

Figure 5. 7. Citizen sample popular Web2.0 applications

Several recent reports have shown that Saudi Arabia has one of the world's highest numbers of Twitter users relative to its number of Internet users; and the same goes for Facebook and YouTube users (Salem 2017).

The third question asked about the respondent's access to Web2.0 platforms. This question had a multiple-response set where respondents could make several choices as, in reality, one can access Web2.0 applications by means of more than one device as shown in Table 5.8 and Figure 5.8.

Table 5. 8. Citizen sample access to Web2.0 applications

Question		Frequency	Percentage Cases	Percentage Overall
Access to Web2.0 application	Computer	45	3.9%	3.9%
	Tablet	378	50%	32.7%
	Smartphone	724	95.8%	62.7%

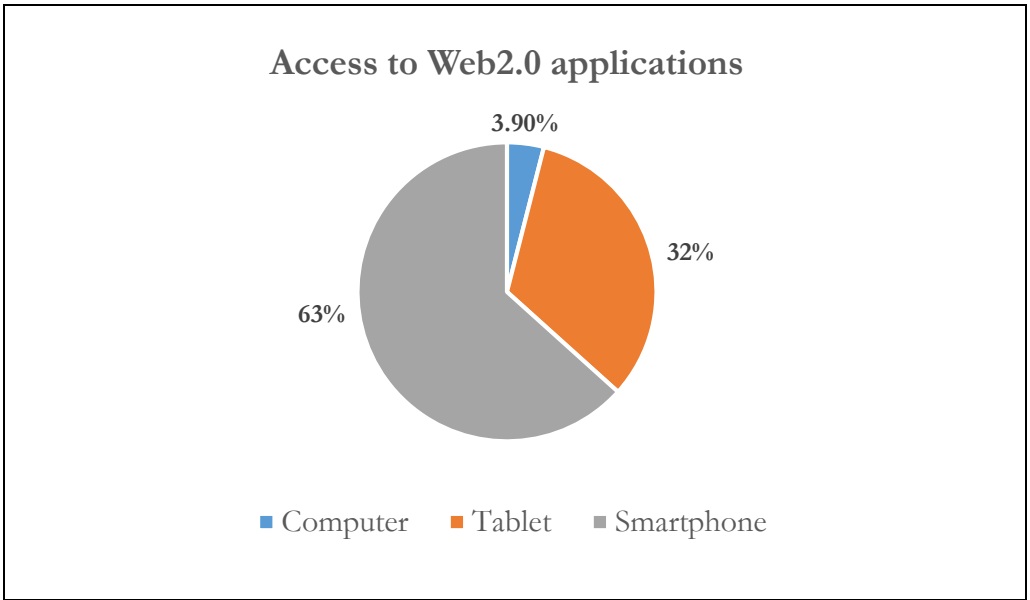

Figure 5. 8. Citizen sample access to Web2.0 applications

As expected, 63% of the respondents use smartphones to access Web2.0 application. This is not surprising as the Arab Gulf countries have the highest penetration of smartphones in the world (Economist 2015).

The final question of this section asked about the purpose of using Web2.0 applications. Again, this question had multiple response sets as users might use Web2.0 applications for more than one purpose as shown in Table 5.9.

Table 5. 9. Citizen sample purpose of using Web2.0 applications

Question		Frequency	Percentage Cases	Percentage Overall
Purposes of using Web2.0 application	Information seeking	684	90.5%	32.4%
	Browsing and/ or surfing	553	73.1%	26.2%
	Entertainment	255	33.7%	12.1%
	Shopping	61	8.1%	2.9%
	Socializing	325	43%	15.4%
	Self-expression	225	29.8%	10.7%

Information seeking was the prevalent reason for using Web2.0 applications (90.5%). This is consistent with the findings of Cahier et al. (2007) and Etter (2013) that information seeking is one of the main reasons for using Web2.0 applications. Browsing came second with 73%, and 43% were for socializing. This was to be expected as the majority of the respondents were less than 45 years of age. Entertainment had 33.7% and self-expression followed with 29.8%. Again, this is similar to the findings of Scheepers et al. (2014) who analysed social media use. Shopping was (8.1%), which is an emerging trend in Saudi Arabia. Many small businesses in Saudi Arabia are

using Web2.0 applications (e.g. Twitter and Instagram) as virtual shops (Al-Husain and Mirza 2015).

5.4.1.3 Gov2.0 experience

To explore the respondent's Gov2.0 experience and usage patterns, four questions were asked in this section of the questionnaire. The respondents were asked to reflect on their overall average experience using Gov2.0 as some platforms are better than others. The first questions concerned the frequency of Gov2.0 usage, and the responses revealed a low rate of daily usage of only 1.1% as shown in Table 5.10.

Table 5. 10. Citizen sample usage of Gov2.0

Question		Frequency	Percentage
Frequency of using Gov2.0	Very Often (e.g. at least once a day)	8	1.1%
	Quite Often (e.g. a few times a week)	388	51.3%
	Sometimes (e.g. a few times a month)	325	43%
	Rarely (e.g. once every few Months)	24	3.2%

On the other hand, more than half of the respondents (51.3%) use Gov2.0 platforms on a weekly basis, followed by 43% using it a few times a month. Around 3% reported using Gov2.0 rarely (i.e. once every few months). When comparing the findings of Web2.0 and Gov2.0 respondents' use as shown in Figure 5.9, the majority (76.1%) of respondents reported using Web2.0 platforms such as Facebook and Twitter on a daily basis, while only a few (1.1%) reported using Gov2.0 on a daily basis. These findings are consistent with previous research that showed people are more actively engaged in Web2.0 than in Gov2.0 (Osimo 2010). These results also demonstrate the suitability of the respondents for the purpose of investigating the poor use of Gov2.0.

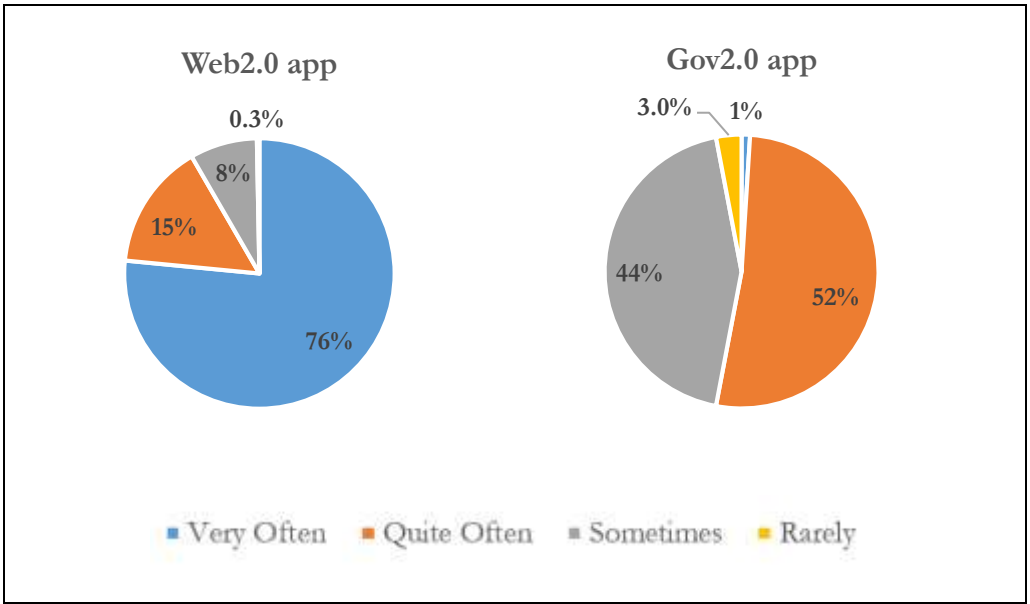

Figure 5. 9. Citizen sample Web2.0 and Gov2.0 use

The next question asked respondents about the primary Gov2.0 platforms they use for interacting with a government agency. Similar to the participants' patterns when using Web2.0 platforms, Twitter and Facebook emerged at the top of Gov2.0 use with around 90% for both as shown in Table 5.11.

Table 5. 11. Citizen sample popular Gov2.0 applications

Question		Frequency	Percentage
Popular Gov2.0 application	Twitter	291	38.5%
	Facebook	405	53.6%
	YouTube	7	0.9%
	LinkedIn	0	0.0%
	Google+	0	0.0%
	Instagram	42	5.6%
	Snapchat	1	0.1%

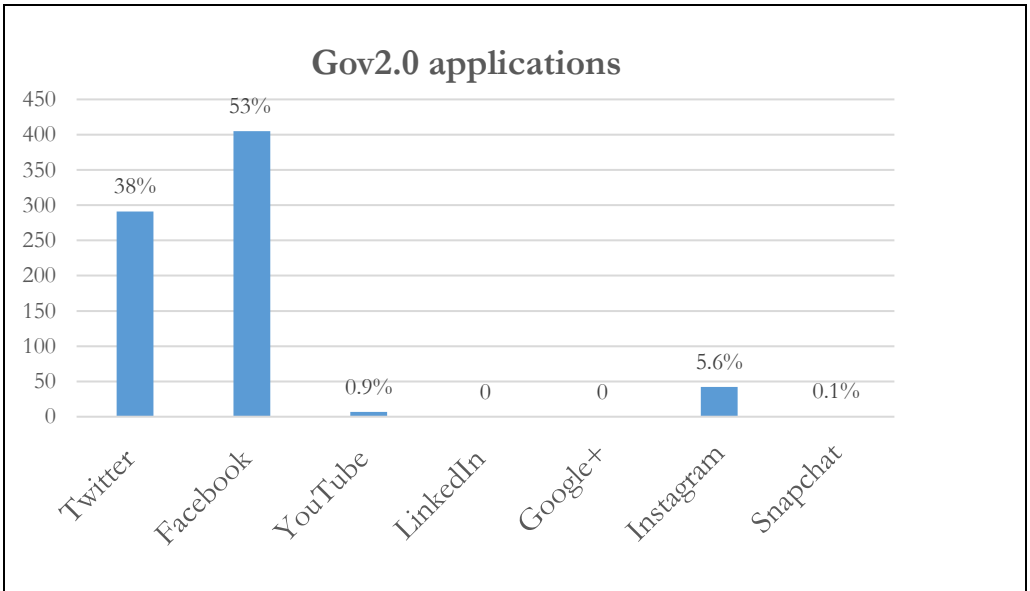

Figure 5. 10. Citizen sample popular Gov2.0 applications

Generally speaking, it can be said that a similar pattern of platform choice (mostly Twitter and Facebook) was found for the respondents' Web2.0 and Gov2.0 use. However, in Gov2.0, Facebook came first with more than half (53.6%), followed by Twitter with more than one third of participants (38.5%). Instagram was next at (5.6%), and the remaining platforms were around (1%) (i.e. YouTube 0.9%, Snapchat 0.1%, LinkedIn and Google 0.0%). These results suggest two points: first, citizens use Gov2.0 mainly via Twitter and Facebook. Second, and perhaps as a result of the first, many government agencies do not have presence on many platforms (e.g. LinkedIn and Google+) as they want to be where the citizens already are.

The next question asked about the purpose of using Gov2.0 applications, which had multiple response sets as users may have more than one purpose as shown in Table 5.12.

Table 5. 12. Citizen sample purpose of using Gov2.0 applications

Question		Frequency	Percentage Cases	Percentage Overall
Purposes of using Gov2.0 application	Search for information	51	6.7%	2.5%
	Download forms	1	0.1%	0.0%
	Transactions (e.g. e-payment)	0	0%	0%
	Communication with senior government officials directly	700	92.6%	33.9%
	Suggest new ideas or improvements for government services	695	91.9%	33.6%
	Give feedback on or evaluation of government services I have used	512	67.7%	24.8%
	Complain about government services challenges and problems	96	12.7%	4.6%

Communicating with senior government officials directly (92.6%) and suggesting new ideas and improvement to government workings (91.9%) were the most popular reasons for Gov2.0 use. Next, giving feedback and evaluating government services accounted for (67.7%), followed by complaining about problems with (12.7%). Searching for information by using Gov2.0 was reported at being only (6.7%). Downloading forms and making payments came last with 0.1%. This was to be expected as not many Gov2.0 platforms offer transaction facilities (Chang and Kannan 2008). These numbers suggest that citizens are willing to use Gov2.0 for PV co-creation, if the opportunity is presented.

Table 5.13 reports the main obstacles to citizen engagement via Gov2.0 from the citizen respondents' perspective.

Table 5. 13. Citizen sample main obstacles to citizen engagement via Gov2.0

Question		Frequency	Percentage Cases	Percentage Overall
Main obstacles to citizen engagement via Gov2.0	Citizens don't have time	158	20.9%	6.6%
	Citizens promote their own agenda	183	24.2%	7.6%
	Citizens don't trust government	224	29.6%	9.3%
	Inadequate government-citizen communication	277	36.6%	11.5%
	Participation objectives poorly defined	338	44.7%	14%
	Citizens don't have expertise	402	53.2%	16.7%
	Government agencies don't have enough financial resources	383	50.7%	15.9%
	Government officials want to control agenda	317	41.9%	13.2%
	Administrators don't have time	88	11.6%	3.7%
	Government officials don't trust citizens	36	4.8%	1.5%

The main four obstacles were "Citizens don't have expertise" (53%), "Government agencies don't have enough financial resources" (50%), "Participation objectives poorly defined" (44%), and "Government officials want to control agenda" (41%). This shows that government agencies need to address these issues in order to co-create PV via Gov2.0.

Next, the respondents were asked to report their use of Gov2.0 to interact with government agencies versus other means (e.g. phone, face-to-face etc.) as shown in Figure 5.11.

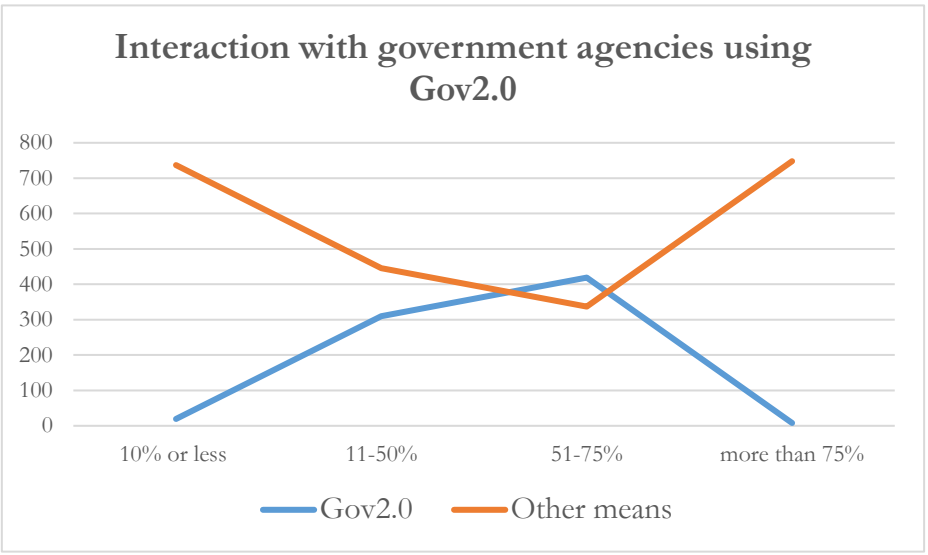

Figure 5. 11. Citizen sample use of Gov2.0 compare to other means to interact with government agencies

The majority of respondents (55%) reported using Gov2.0 for between (51-75%) of all their interactions. Around 40% said they use Gov2.0 between (11-50%). Less than 10% and more than 75% of interactions via Gov2.0 were the least with 2.5% and 1.1% respectively. These results show that the use of Gov2.0 to interact with government agencies are in the middle range among the respondents.

The final two questions in the citizen questionnaire asked the respondents to report their views of improvements in Gov2.0 and to predict their future Gov2.0 usage. As Figure 5.12 shows, nearly two-third of the respondents reported that improvements in Gov2.0 can have a strong impact on their confidence and trust in government. They also have a positive influence on their belief that the government is forward-looking and increases their overall satisfaction, which in turn enhances PV.

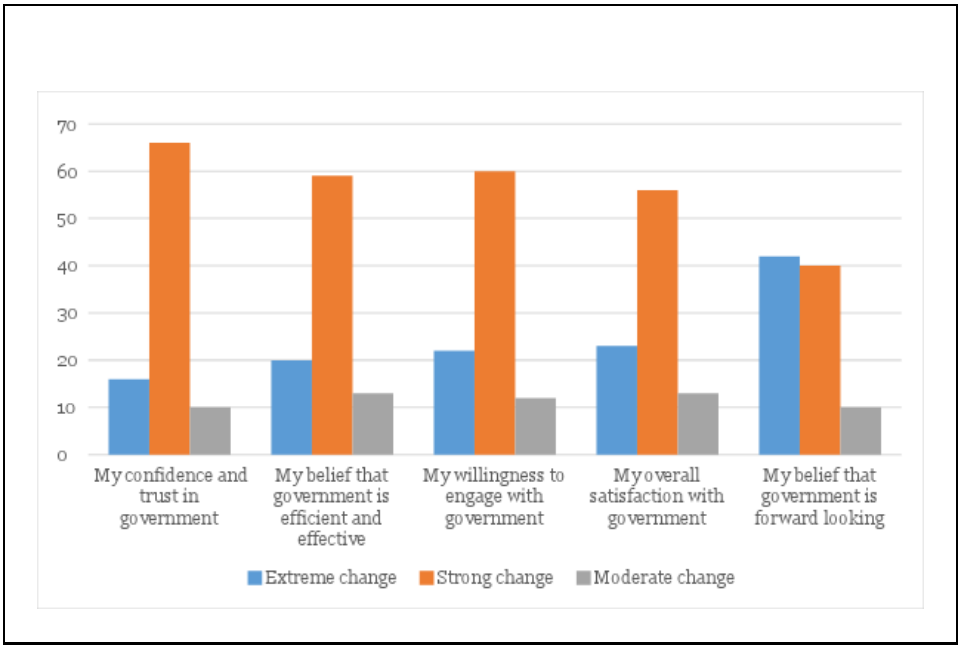

Figure 5. 12. Citizen sample views on Gov2.0 improvements

Finally, more than half of the respondents expected that they would use Gov2.0 in the next two months as shown in Figure 5.13.

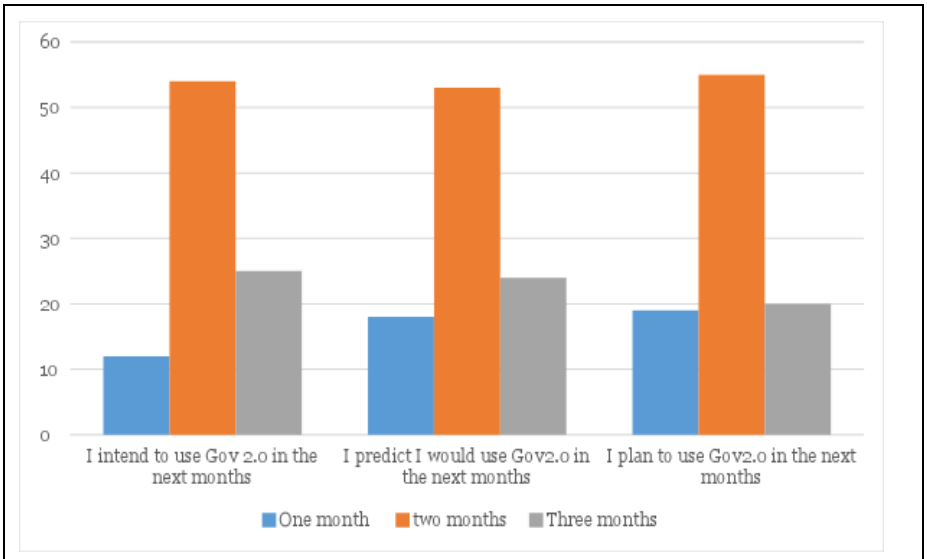

Figure 5. 13. Citizen sample future use of Gov2.0

Overall, the citizen sample respondents' answers revealed that they were ready and prepared for using Gov2.0 to interact with their government, which is an opportunity for engaging with the digital citizen. Government agencies need to make the Gov2.0 experience simpler, smoother and more efficient. Done well, government agencies will earn citizen commitment and trust. Now, the discussion turns to the government sample.

5.4.2 Government sample

5.4.2.1 Government officials and government agency profile

The first section of the questionnaire elicited the respondents' demographics and their government agency profile to obtain better insights of the data. The profiles of respondents included their gender, age, education and position. Table 5.14 and Figures (5.14, 5.15, 5.16, 5.17 and 5.18) presents the profile of the citizen sample respondents.

Table 5. 14. Government sample demographics of respondents

Demographic Variables		Frequency	Percentage
Gender	Male	211	64.5%
	Female	116	35.5%
Age	18-25	13	4%
	26-35	76	23.2%
	36-45	104	31.8%
	46-55	95	29.1%
	55-65	39	11.9%
	Over 65	0	0.0%
Education	High school or less	1	0.3%
	Diploma	18	5.5%
	Undergraduate	232	70.9%
	Postgraduate	76	23.2%
Role	Executive level	11	3.4%
	Managerial level	70	21.4%
	Technical/operational level	246	75.2%
Years of service	Less than one year	4	1.2%
	1-5 years	38	11.6%
	6-10 years	211	64.5%
	11-15 years	65	19.9%
	More than 15 years	9	2.8%
Region	Central	155	47.4%
	Northern	29	8.9%
	Southern	39	11.9%
	Eastern	54	16.5%
	Western	50	15.3%
Sector	ICT	77	23.5%
	Economy & tourism	46	14.7%
	Education, culture, & media	22	6.7%
	labour & employment	76	23.2%
	Social welfare	25	7.6%
	Housing & municipal	21	6%
	Health & medical services	15	4.6%
	Environment & agriculture	16	4.9%
	Transportation & utilities	24	7.3%
	Security & Defence	5	1.5%

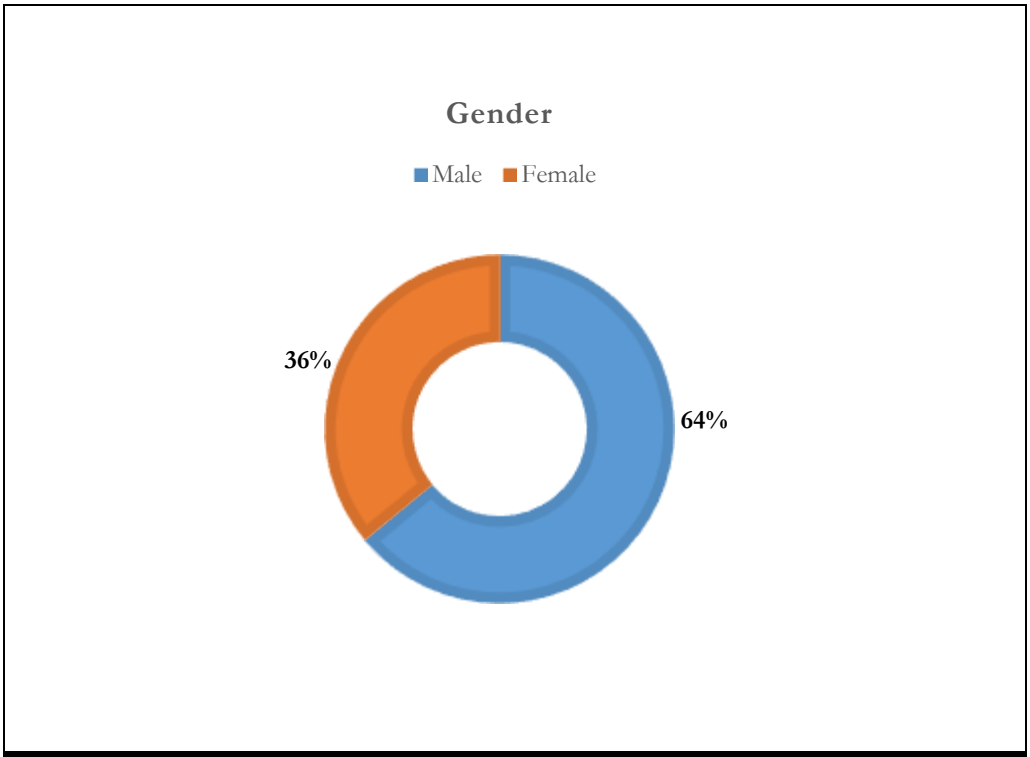

Figure 5. 14. Government sample gender

As shown in Figure 5.14, the gender percentage was almost two third males (64.5%). This is similar to the work force as most of the government employees are male. As a matter of fact, Saudi Arabia has the largest gender gap in terms of employment rates (OECD 2016).

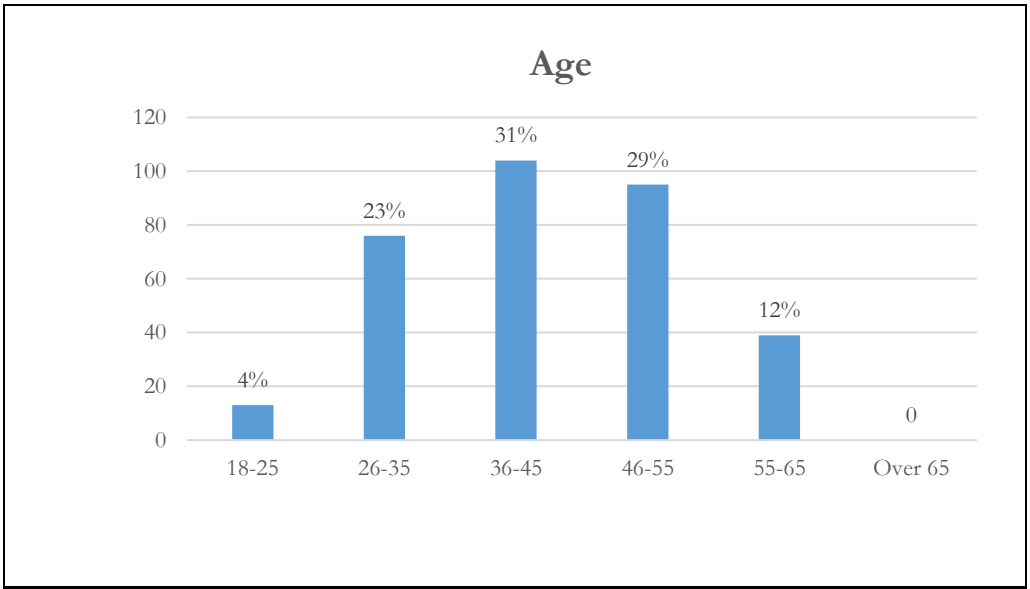

Figure 5. 15. Government sample age

In terms of age, the largest age group was '36–45' (31.8%), followed by '46–55' (29.1%), and '26–35' (23.2%).

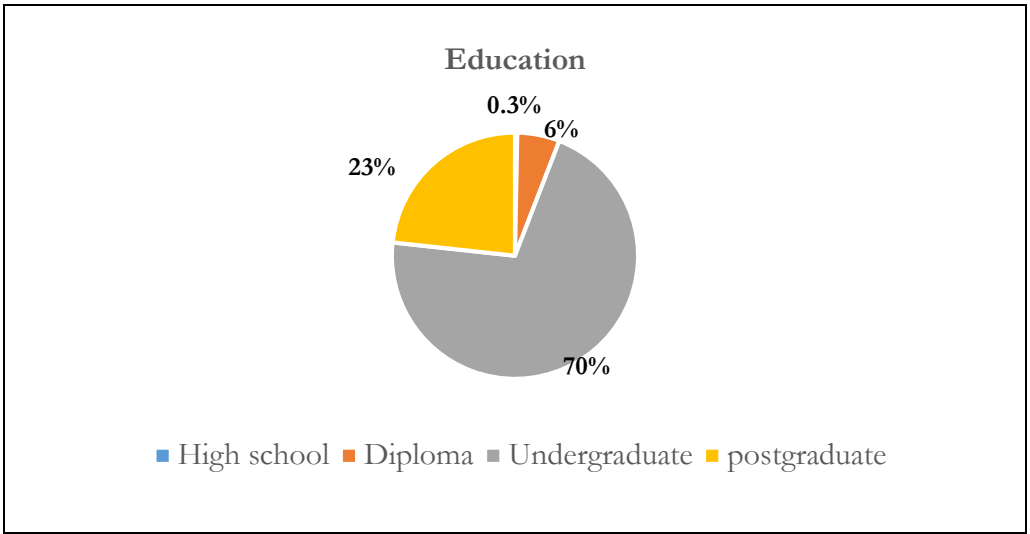

Figure 5. 16. Government sample education

The majority of respondents held a university degree (70.9% undergraduate and 23.2% postgraduate), indicating that Saudi Arabia has one of the highest percentages of graduates among OECD countries (OECD 2016).

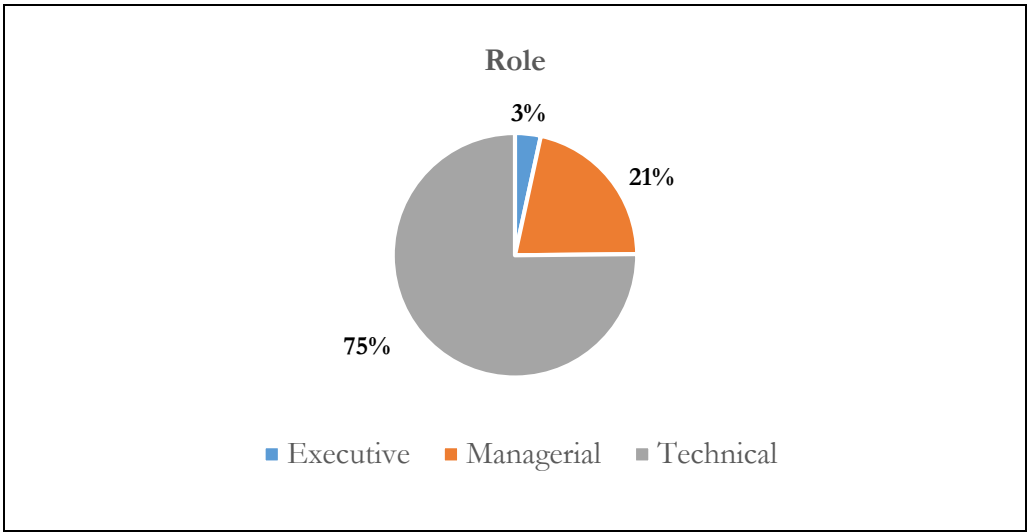

Figure 5. 17. Government sample roles

The respondents' roles were mainly at the technical/operational level (75.2%); the executive and managerial level were nearly (25%). Of course all them were working for the government as this is the government sample. The combination of respondents from technical and managerial levels adds to the validity of the findings as each group shed light on specific aspects such as the day-to-day operations and the management of resources.

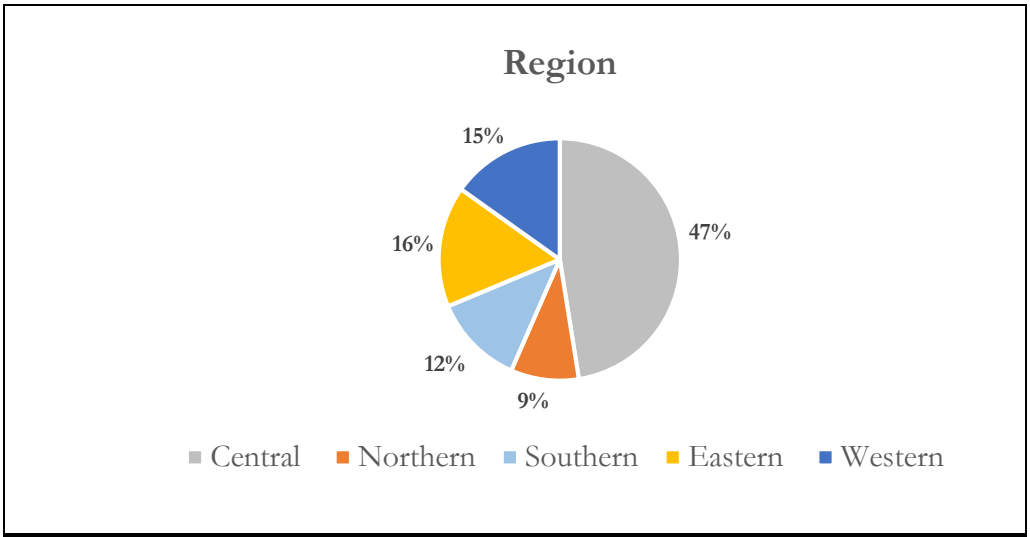

Figure 5. 18. Government sample region

Almost half of the respondents (47.4%) were from the central region (i.e. Riyadh); the eastern and western regions followed with (16.5%) and (15.3%) respectively. The government officials sample represents different government roles (i.e. executive, managerial, and technical/operational) with a majority of respondents having more than five years' experience working in the government sector (87.2%) (See Table 5.14).

5.4.2.2 Gov2.0 experience

To explore the government agencies' Gov2.0 patterns, four questions were asked in this section of the questionnaire. The first question related to the frequency with which the government agency made use of Gov2.0. The results are presented in Table 5.15.

Table 5. 15. Government sample usage of Gov2.0

Question		Frequency	Percentage
Frequency of using Gov2.0	Very Often (e.g. at least once a day)	114	34.9%
	Quite Often (e.g. a few times a week)	181	55.4%
	Sometimes (e.g. a few times a month)	21	6.4%
	Rarely (e.g. once every few months)	2	0.6%

More than half of the respondent's government agencies (55.4%) use Gov2.0 several times a week, followed by (34.9%) on a daily basis. This shows a high level of Gov2.0 usage in Saudi Arabia on the government side. However, it seems that despite its frequent use, it is structured as a one-way communication.

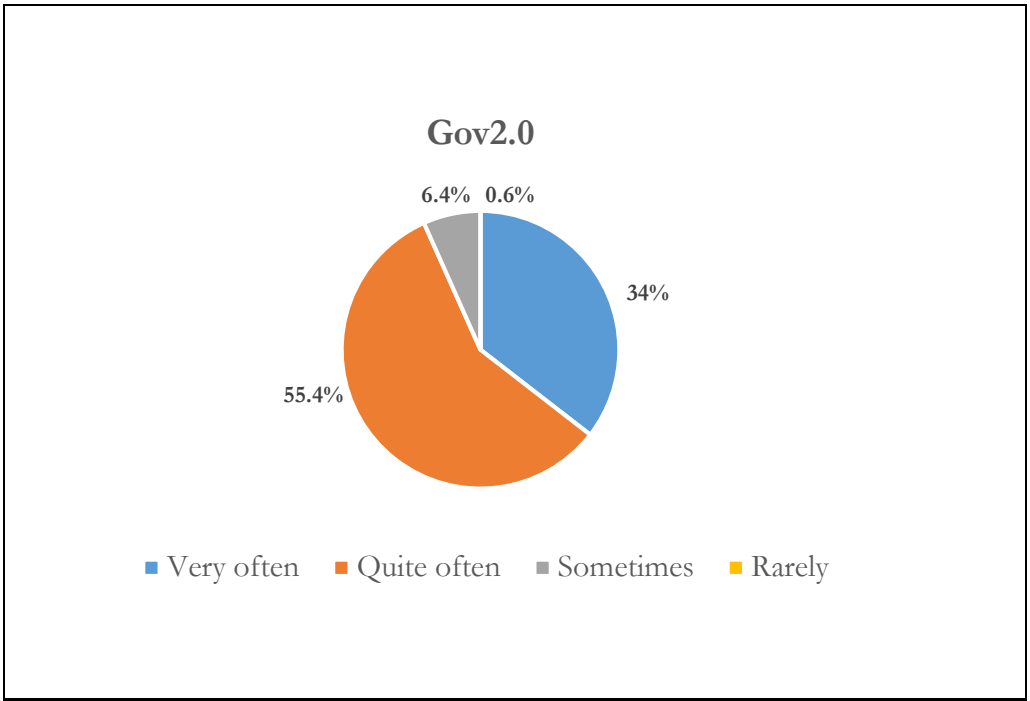

Figure 5. 19. Government sample Gov2.0 use

The second question sought to discover the Gov2.0 applications most frequently used by the respondents' government agencies. As expected, Twitter and Facebook were among the most popular Gov2.0 applications at 85% as shown in Table 5.16.

Table 5. 16. Government sample popular Gov2.0 applications

Question		Frequency	Percentage
Popular Web2.0 application	Twitter	229	70%
	Facebook	49	15%
	YouTube	19	5.8%
	LinkedIn	1	0.3%
	Google+	3	0.9%
	Instagram	10	3.1%
	Snapchat	8	2.4%

This pattern of platform choice (mostly Twitter and Facebook) by government agencies is similar to that of the citizens. The network effects discussed in section 2.4.1 are at play, citizens attract government agencies to a platform, and vice versa; thus, PV can be co-created through the use of the most popular applications.

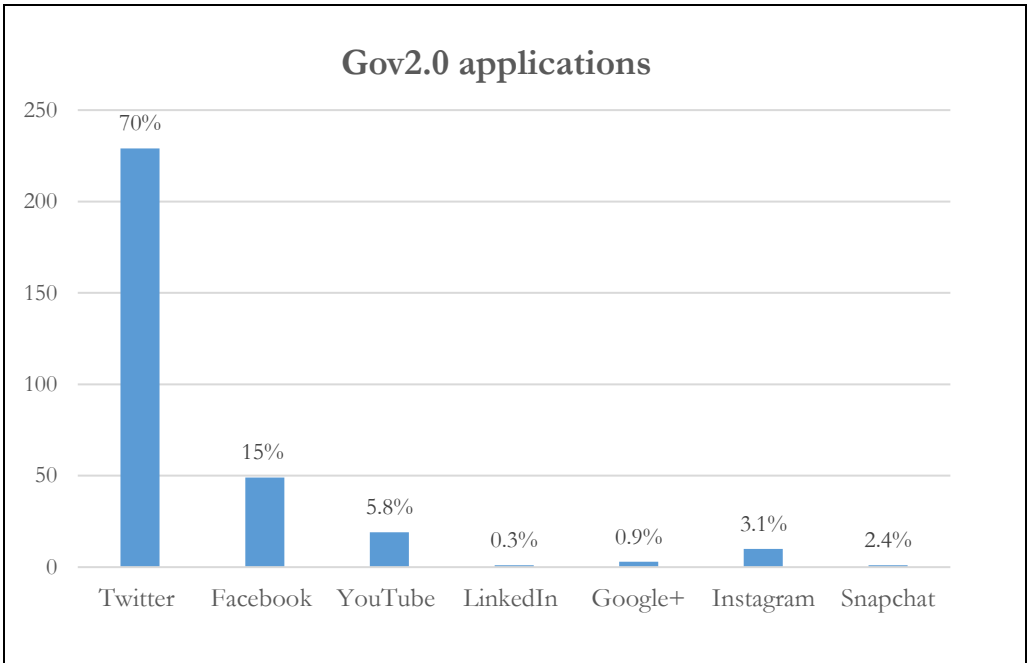

Figure 5. 20. Citizen sample popular Gov2.0 applications

Regarding the main reasons for using Gov2.0 applications, the question allowed multiple response sets as government agencies may have more than one purpose in using Gov2.0, as shown in Table 5.17.

Table 5. 17. Government sample purpose of using Gov2.0 applications

Question		Frequency	Percentage Cases	Percentage Overall
Purposes of using Gov2.0 application	Information dissemination	266	95%	28.5%
	Crowdsourcing (expertise and feedback)	77	27.5%	8.26%
	Transparency	269	96.21%	29%
	Communication	257	92%	27.5%
	Service delivery	2	0.72%	0.21%
	Community building	61	21.82%	6.55%

Transparency (96%), information dissemination (95%) and communicating with citizens (92%) were the most selected reasons for the use of Gov2.0 by the government agencies, accounting for around (85%) of the total responses. Service delivery was the least reason as not many Gov2.0 platforms have reached the service delivery level yet (Chang and Kannan 2008). These answers are as expected and justifiable as many of the government agencies in Saudi Arabia are still considering the pros and cons of Gov2.0 and service delivery via Gov2.o is rarely implemented.

The final question asked the respondent whether their government agencies allocated personnel specifically for Gov2.0 applications, and if so, how many. The reason for this question is to explore

how government agencies view Gov2.0 and its impact on resource allocation within the agency. Table 5.18 presents the results.

Table 5. 18. Government sample Gov2.0 resource allocation

Question			Frequency	Percentage
Dedicated personal staff for Gov2.0	Yes	1-5	21	13.1%
		6-10	18	
		More than 10	4	
	No	284		86.9%

As shown in Table 5.18, the majority of government agencies (86.9%) do not allocate dedicated personnel to Gov2.0 operations. This might be due to lack of financial and human resources (Hofmann 2014). However, this finding has taken a toll on the level of citizen uptake of Gov2.0.

Next, to ensure that the GPVM's multiple items reflect their corresponding constructs, exploratory factor analysis and confirmatory factors analysis were conducted.

5.5 Exploratory Factor Analysis (EFA)

EFA is a statistical technique that is commonly applied in social sciences and has many purposes. Its general purpose is to find a way to condense or summarise the information contained in a number of original variables into a smaller set of new composite factors with a minimum loss of information by searching and defining the fundamental underlying constructs (Rummel 1970). Moreover, Costello and Osborne (2005) suggested using EFA when developing an instrument for data collection (i.e. questionnaire). Field (2009) proposed other uses of EFA: first, to understand the overall structure of variables and second, to reduce the data set to a workable size whilst retaining as much original data as possible. According to Hair et al. (2014), EFA can be used to for data summarization and data reduction. In summarising the data, EFA derives the underlying dimensions that describe the data in much smaller numbers of constructs than in the original set. Data reduction extends this by creating a new set of constructs to partly or completely replace the original set. Either way, the researcher should always consider the conceptual underpinnings of the model. Assumptions in factor analysis are more conceptual than statistical. There is some underlying structure or theory that explains the relationship between the variables. The correlations, if they meet the statistical requirements, by itself does not guarantee the relevance. It is the researcher's responsibility to ensure that the observed patterns are conceptually valid and appropriate. Before conducting factor analysis, the researcher must ensure that the variables are sufficiently inter-correlated to produce representative factors. In fact, some degree of statistical

issues is desirable such as multicollinearity, which is the extent to which a variable is explained by other variables in the analysis (Hair et al. 2014).

As the sample size plays a big role in determining statistical significance, many researchers make a distinction between statistical significance and practical significance. Practical significance can be examined by looking at the effect of size and the factor loading. Statistical significance, on the other hand, means the level of statistical power (e.g. 0.05 or 0.01significance level). When used together, they can provide important information about the reliability and importance of statistical results (Urdan 2001). Table 5.19 presents the required factor loading based on the sample size (Hair et al. (2014).

Table 5. 19. Significant factor loading based on sample size (Adapted from Hair et al. 2014)

Factor loading	Sample size needed for significance*
0.30	350
0.35	250
0.40	200
0.45	150
0.50	120
0.55	100
0.60	85
0.65	70
0.70	60
0.75	50

*Significance is based on a 0.05 significance level

For example, in the citizen sample (N=756) for this research, a factor loading of 0.30 and above are significant. However, in the government sample (N=327), factor loading of 0.40 and above are significant based on a 0.05 significance level. EFA helps to group variables based on their correlations, and is usually conducted before CFA. An advantage of EFA over CFA is that no a priori theory regarding the relationships of items and constructs is applied (Gaskin 2016). Generally, EFA prepares the model for SEM. As some of the measurements used in this research were newly-developed or modified to suit the research context, the EFA analysis was carried out using SPSS. First, the citizen sample is described and then the government sample.

5.5.1 Factor extraction

The two main methods for factor extraction are common factor analysis and principal component analysis. The selection of which one of the two similar, yet unique, methods for extracting or defining the factors to represent the structure of the variables in the analysis depends on two criteria: the objectives of the factor analysis and the prior knowledge about the variance in the variables (Hair et al. 2014). Common factor analysis, by definition, considers only the common or shared variance and excludes the specific and error variance. Principal component analysis, in

contrast, considers the total variance and derives factors that contain small proportions of specific variance and in some cases error variance. Common factor and component analysis models are widely used; however, the component analysis models are the default method for factor analysis in most statistical programs. Beyond the debate about which factor extraction method and rotation to use, considerable empirical research has demonstrated similar results when the number of variables exceeds 30 or the communalities exceed 0.60 (Mulaik 1990; Snook and Gorsuch 1989; Velicer and Jackson 1990). Field (2009) stated that SPSS default option for extraction factor, which is the Kaiser criterion for retaining factors with Eigen values greater than one, is acceptable if the sample exceeds 250 responses and the average for communalities is greater than 0.6.

Following the Hair et al. (2014) suggestion, in this research, PCA was chosen as an extraction method with Varimax rotation based on the "Eigenvalues greater than one" function. This extraction method was chosen because the analysis focuses on data reduction or the minimum number of factors that are needed to account for the total variance (Hair et al. 2014). Furthermore, PCA is more appropriate when prior research shows that both specific and error variances account for a relatively small proportion of total variance. There are two main types of factor analysis: R-type which analyses relationships/correlation among variables to identify groups of variables forming latent dimension (factors), and Q-type which analyses correlations among respondents based on similar patterns. This research uses R- type as it investigates the correlation among variables only. Blunch (2013) suggested using the component analysis when the purpose of the analysis is to summarize the number of correlating variables in a few variables with the smallest possible loss of information. Pallant (2011) recommended using the Varimax rotation to minimise the number of variables that have high loadings on each factor. The aim is to obtain a simple structure, where each variable loads strongly on only one component and each component being represented by a number of strongly loading variables. The first attempt of EFA resulted in 13 factors as shown in Table 5.20.

Table 5. 20. Citizen sample EFA first attempt

Item	Component												
	1	2	3	4	5	6	7	8	9	10	11	12	
PD1								.844					
PD2								.833					
PD3								.852					
PD4								.854					
PR1											.790		
PR2											.791		
PR3											.797		
PR4											.799		
PB1						.860							
PB2						.857							

PB3						.862							
PB4						.859							
CC1		.348	.336					.337				-.422	
CC2		.348	.341					.324				-.422	
CC3		.345	.341					.330				-.426	
CC4		.350	.341					.334				-.422	
SC1													.388
SC2													.675
SC3													.713
SC4													.711
MF1					.872								
MF2					.865								
MF3					.871								
MF4					.870								
SI1	.857												
SI2	.859												
SI3	.860												
SI4	.861												
WC1		.870											
WC2		.872											
WC3		.871											
WC4		.873											
SNC1				.875									
SNC2				.875									
SNC3				.874									
SNC4				.872									
PTC1							.849						
PTC2							.855						
PTC3							.854						
PTC4							.857						
SF1			.866										
SF2			.869										
SF3			.865										
SF4			.865										
PVC1_TS1										.862			
PVC2_TS2												.727	
PVC3_TS3												.733	
PVC4_TS4												.733	
PVC5_CM1										.851			
PVC6_CM2	.527	.304				.302							
PVC7_CM3	.524	.308				.310							
PVC8_CM4	.529	.314				.307							
PVC9_FA1									.836				
PVC10_FA2									.835				
PVC11_FA3									.834				
PVC12_FA4									.834				
PVC13										.866			
PVC14										.861			

*loadings less than .30 are not shown and items are sorted according to their order of appearance in the GPVM

The initial citizen GPVM had 12 constructs, with PV encompassing three dimensions (trust, commitment, and fairness), and 58 items. In the first round of EFA, most the items loaded on their corresponding construct, except for competence and PV. The competence construct items loaded into more than one factor or known as cross-loaded, which means that it represents some

aspects of both constructs, which is problematic. The PV three dimensions cross-loaded into six constructs instead of one. In the second attempt, the rotation function was changed to "fixed number of factors" and forced the items into 12 factors as per the GPVM, and kept an eye on the PV and CC constructs. Results of the second attempt are presented in Table 5.21.

Table 5. 21. Citizen sample EFA second attempt

Item	Component											
	1	2	3	4	5	6	7	8	9	10	11	12
PD1							.846					
PD2							.835					
PD3							.854					
PD4							.856					
PR1										.800		
PR2										.803		
PR3										.807		
PR4										.808		
PB1		.844										
PB2		.840										
PB3		.844										
PB4		.840										
CC1	.302		.308	.312			.339					-.438
CC2	.301		.306	.314			.326					-.438
CC3	.302		.311	.310			.331					-.442
CC4	.304		.310	.315			.336					-.438
SC1											.409	
SC2											.511	
SC3											.677	
SC4											.573	
MF1			.853									
MF2			.848									
MF3			.855									
MF4			.851									
SI1	.870											
SI2	.871											
SI3	.873											
SI4	.872											
WC1				.862								
WC2				.863								
WC3				.865								
WC4				.864								
SNC1						.839						
SNC2						.841						
SNC3						.838						
SNC4						.853						
PTC1											.857	
PTC2											.835	
PTC3											.831	
PTC4											.847	
SF1					.854							
SF2					.841							
SF3					.838							
SF4					.839							
PVC1_TS1								.865				
PVC2_TS2								.718				

PVC3_TS3								.724				
PVC4_TS4								.725				
PVC5_CM1								.854				
PVC6_CM2									.488			
PVC7_CM3									.482			
PVC8_CM4									.488			
PVC9_FA1									.836			
PVC10_FA2									.834			
PVC11_FA3									.834			
PVC12_FA4									.834			
PVC13								.367				
PVC14								.363				

*loadings less than 0.30 are not shown and variables are sorted according to their order of appearance in the model

The results of the second attempt showed that the competence items cross-loaded onto four constructs. PV items, on the other hand, showed little improvement with commitment and fairness dimensions items loading on one construct and the remaining items loading into another construct, with low scores for PVC13 and PV14. Following Hair et al.'s (2014) recommendation, the items with cross-loading namely CC1, CC2, CC3, and CC4, and with low scores, namely PVC13, PV14, were deleted. The third and last attempt of the EFA resulted in 11 factors and 52 items representing the citizen sample as shown in Table 5.22. The citizen sample was more than (+350), with a suggested level of significance for factor loading of 0.30. As shown in Table 5.22, all the factor loadings exceeded this criterion. In summary, the EFA resulted in the removal of competence constructs and its items due to cross-loading (CC; CC1, CC2, CC3, CC4), and the removal of two indicators of PV (PVC13, PVC14) due to their low loading scores. Thus, the citizen sample is comprised of 11 constructs and 52 items.

Communality is the extent to which an item correlates with all other items. It measures the common variance, whereby extracted factors might be explained. Higher communalities are preferable. If communalities for a particular variable are low (between 0.0-0.4), then that variable may struggle to load significantly on any factor. The low values appearing in the pattern matrix indicate candidates for removal. Tabachnik and Fidell (2007) suggested that communalities should be above 0.5 following extraction. Field (2009) stated that any extraction method is acceptable if the sample exceeds 250 participants and the average of communalities is greater than 0.6. In this research, for the citizen sample, 11 factors were extracted and the sample size exceeded 250 responses and the average of communalities is 0.925 with the results varying from a low of 0.608 to a high of 0.983 (Table 5.22).

Table 5. 22. Citizen sample final EFA and communalities

Item	Component											
	1	2	3	4	5	6	7	8	9	10	11	Communalities
PD1								.851				.928
PD2								.840				.900
PD3								.859				.932
PD4								.861				.938
PR1									.825			.935
PR2									.830			.930
PR3									.831			.948
PR4									.835			.947
PB1							.843					.980
PB2							.843					.972
PB3							.845					.983
PB4							.843					.981
SC1											.545	.905
SC2											.698	.895
SC3											.595	.907
SC4											.374	.910
MF1					.869							.975
MF2					.861							.965
MF3					.856							.975
MF4					.765							.970
SI1		.865										.954
SI2		.867										.951
SI3		.863										.962
SI4		.864										.962
WC1				.873								.957
WC2				.872								.952
WC3				.877								.961
WC4				.874								.957
SNC1			.802									.968
SNC2			.806									.965
SNC3			.803									.968
SNC4			.805									.970
PTC1						.823						.951
PTC2						.829						.941
PTC3						.831						.950
PTC4						.833						.952
SF1	.865											.968
SF2	.867											.971
SF3	.863											.966
SF4	.864											.968
PVC1_TS1										.856		.608
PVC2_TS2										.842		.900
PVC3_TS3										.830		.900
PVC4_TS4										.833		.910
PVC5_CM1										.731		.615
PVC6_CM2										.753		.816
PVC7_CM3										.811		.819
PVC8_CM4										.758		.826
PVC9_FA1										.844		.918
PVC10_FA2										.846		.917
PVC11_FA3										.840		.913
PVC12_FA4										.843		.918

*loadings less than 0.30 are not shown and variables are sorted according to their order of appearance in the model

The decision to stop the factor extraction process is based on the eigenvalues of the R-matrix, which is the best linear combination of variables. The most used technique is the latent root criterion, where each variable contributes a value of 1 to the total eigenvalue. Consequently, only those factors that have latent roots or eigenvslues greater than 1 are considered significant, and other factors with less than 1 are disregarded (Field 2009). According to Hair et al. (2014), using the eigenvalues to establish a cut-off is recommended when the number of variables is between 20 and 60. The research variables are 58 (citizen sample) and 46 (government sample); therefore, this process was appropriate.

Furthermore, this research also considered the percentage of variance criterion. This approach shows the cumulative percentage of total variance extracted by the successive factors. In natural sciences, the factoring procedure continues until the extracted factors explain at least 95 percent of the total variance. In contrast, in social sciences, where reality and information is less definite, achieving 60 percent of the total variance is usually satisfactory. Considering the importance of parsimony models by retaining factors with eigenvalues greater than one and in order to achieve the maximum percentage of total variance, this research stopped with 11 factors. The first factor explained about 45% of the variance and the second factor explained 10% of the variance (see Table 5.23). The total cumulative components explained approximately 92% of the data set variance.

Table 5. 23. Citizen sample total variance explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	23.701	45.578	45.578	23.701	45.578	45.578	5.186	9.973	9.973
2	5.635	10.837	56.415	5.635	10.837	56.415	5.049	9.710	19.683
3	3.092	5.947	62.362	3.092	5.947	62.362	4.814	9.258	28.941
4	2.850	5.481	67.843	2.850	5.481	67.843	4.796	9.224	38.165
5	2.440	4.691	72.535	2.440	4.691	72.535	4.470	8.596	46.761
6	2.328	4.477	77.012	2.328	4.477	77.012	4.450	8.558	55.318
7	1.908	3.669	80.681	1.908	3.669	80.681	4.347	8.360	63.678
8	1.847	3.552	84.233	1.847	3.552	84.233	4.324	8.316	71.994
9	1.706	3.281	87.514	1.706	3.281	87.514	4.279	8.229	80.223
10	1.426	2.742	90.256	1.426	2.742	90.256	3.728	7.170	87.393
11	1.195	2.297	92.554	1.195	2.297	92.554	2.683	5.161	92.554
12	.916	1.952	94.606						
13	.874	1.681	96.287						
14	.785	1.510	97.797						
15	.143	.274	98.071						
16	.095	.183	98.254						
17	.068	.130	98.383						
18	.063	.120	98.504						
19	.054	.103	98.607						
20	.050	.096	98.703						
21	.045	.087	98.790						
22	.043	.083	98.873						
23	.041	.079	98.952						
24	.037	.071	99.023						
25	.034	.066	99.089						
26	.033	.063	99.152						
27	.032	.061	99.213						

28	.028	.055	99.267						
29	.028	.053	99.321						
30	.027	.052	99.373						
31	.026	.050	99.422						
32	.023	.045	99.467						
33	.022	.043	99.510						
34	.022	.042	99.552						
35	.021	.040	99.593						
36	.019	.037	99.630						
37	.019	.036	99.666						
38	.018	.034	99.700						
39	.016	.031	99.731						
40	.016	.030	99.761						
41	.015	.029	99.789						
42	.014	.027	99.816						
43	.013	.026	99.842						
44	.013	.025	99.866						
45	.012	.022	99.889						
46	.010	.020	99.908						
47	.010	.020	99.928						
48	.009	.017	99.945						
49	.008	.016	99.961						
50	.007	.014	99.975						
51	.007	.013	99.988						
52	.006	.012	100.000						

*Extraction Method: Principal Component Analysis

For the government sample, the same factor extraction method was used. The results are shown in Table 5.24, with the first EFA attempt resulting in 11 factors.

Table 5. 24. Government sample EFA first attempt

Item	Component										
	1	2	3	4	5	6	7	8	9	10	11
RV1			.779								
RV2			.815								
RV3			.799								
RV4			.796								
LG1									.704		
LG2									.709		
LG3									.732		
LG4									.722		
TP1		.819									
TP2		.807									
TP3		.821									
TP4		.816									
AC1						.741					
AC2						.726					
AC3						.753					
AC4						.742					
RS1								.708			
RS2								.700			
RS3								.734			
RS4								.721			
PPR1				.755							
PPR2				.734							
PPR3				.759							
PPR4				.766							
CG1							.337			.408	
CG2							.420			.406	
CG3	.363						.335				
CG4	.351						.335				

WG1										.715	
WG2										.694	
WG3										.728	
WG4										.720	
SNG1	.780										
SNG2	.759										
SNG3	.801										
SNG4	.788										
SNG5	.794										
SNG6	.789										
PTG1											.696
PTG2											.657
PTG3											.690
PTG4											.689
PVG1					.717						
PVG2					.727						
PVG3					.740						
PVG4					.747						

*loadings less than .30 are not shown and items are sorted by their order of appearance in the GPVM

The initial government GPVM had 11 constructs, and 46 items. In the first round of EFA, all the items loaded on their corresponding constructs, except for the competence construct. The competence construct indicators had low loading scores and also cross-loaded onto more than one factor, thus this construct was deleted. The second and final EFA resulted in 10 factors and 42 items representing the government sample as shown in Table 5.25 with the communalities.

Table 5. 25. Government sample final EFA and communalities

Item	Component										
	1	2	3	4	5	6	7	8	9	10	Communalities
RV1			.789								.948
RV2			.824								.942
RV3			.807								.959
RV4			.807								.965
LG1							.716				.947
LG2							.718				.947
LG3							.743				.971
LG4							.732				.973
TP1		.822									.953
TP2		.810									.926
TP3		.825									.963
TP4		.821									.967
AC1					.755						.952
AC2					.741						.936
AC3					.766						.963
AC4					.757						.962
RS1								.711			.937
RS2								.703			.923
RS3								.737			.956
RS4								.724			.958
PPR1				.763							.946
PPR2				.743							.924
PPR3				.769							.967
PPR4				.773							.970
WG1									.722		.947

WG2									.703		.924
WG3									.736		.958
WG4									.727		.964
SNG1	.785										.924
SNG2	.763										.899
SNG3	.806										.925
SNG4	.791										.944
SNG5	.797										.941
SNG6	.792										.940
PTG1										.701	.942
PTG2										.663	.894
PTG3										.695	.951
PTG4										.694	.949
PVG1						.723					.923
PVG2						.732					.907
PVG3						.745					.937
PVG4						.752					.942

*loadings less than .30 are not shown and items are sorted according to their order of appearance in the GPVM

As the government sample was more than (+200), the suggested level of significance for factor loading is 0.40. As shown in Table 5.24, all the factor loadings exceeded this criterion. In the citizen sample, the average of communalities is 0.944 with the results varying from a low of 0.894 to a high of 0.973, which exceed the recommended threshold of 0.70.

The total variance for the government sample with 10 factors explained approximately 94% of the data set variance. The first factor explained about 65 % of the total variance and the second factor explained 5% of the variance (see Table 5.26). The high variance (65.61%) explained by the first factor suggests that common method variance due to single-source bias was an issue (< 50%) (Podsakoff and Organ 1986). Therefore, it was necessary to assess for common method when performing the CFA. Also, three constructs (SNG, PTG, and PVG) were under N1 (0.916, 0.787, and 0.721); however, since the factor loadings and communalities were above the recommended value (Hair et al. 2014), it was decided to retain them.

Table 5. 26. Government sample total variance explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	27.557	65.611	65.611	27.557	65.611	65.611	6.482	15.433	15.433
2	2.491	5.930	71.541	2.491	5.930	71.541	4.461	10.621	26.054
3	2.138	5.091	76.632	2.138	5.091	76.632	4.432	10.553	36.606
4	1.621	3.860	80.492	1.621	3.860	80.492	3.843	9.150	45.756
5	1.253	2.982	83.474	1.253	2.982	83.474	3.666	8.729	54.484
6	1.132	2.696	86.170	1.132	2.696	86.170	3.619	8.618	63.102
7	1.051	2.503	88.673	1.051	2.503	88.673	3.399	8.092	71.194
8	.916	2.182	90.855	.916	2.182	90.855	3.397	8.089	79.283
9	.787	1.875	92.730	.787	1.875	92.730	3.377	8.041	87.324
10	.721	1.717	94.447	.721	1.717	94.447	2.992	7.123	94.447
11	.179	.427	94.874						
12	.152	.361	95.234						
13	.136	.324	95.558						
14	.132	.315	95.873						
15	.127	.302	96.175						
16	.116	.277	96.452						
17	.115	.274	96.726						

18	.109	.259	96.985						
19	.100	.238	97.223						
20	.098	.234	97.456						
21	.084	.201	97.657						
22	.081	.192	97.849						
23	.077	.184	98.034						
24	.071	.170	98.204						
25	.070	.167	98.371						
26	.067	.160	98.531						
27	.063	.151	98.682						
28	.058	.139	98.821						
29	.054	.128	98.948						
30	.052	.123	99.071						
31	.051	.123	99.194						
32	.044	.105	99.299						
33	.043	.103	99.402						
34	.039	.092	99.494						
35	.038	.091	99.584						
36	.033	.079	99.663						
37	.031	.074	99.737						
38	.029	.069	99.805						
39	.025	.061	99.866						
40	.023	.054	99.920						
41	.018	.042	99.962						
42	.016	.038	100.000						

*Extraction Method: Principal Component Analysis

5.5.2 Adequacy

The data adequacy for factor analysis can be confirmed by two tests: Anti-image correlation matrix and Measure of sampling adequacy, and the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity (Pallant 2011).

5.5.2.1 Anti-image correlation matrix and Measure of sampling adequacy (MSA)

The anti-image correlation matrix shows the partial correlations among variables after factor analysis, representing the degree to which the factors explain each other in the results. The diagonal values are measures of sampling adequacy for each variable and the off-diagonal values are the partial correlations among variables. The results of the citizen sample MSA test are presented in Table 5.27.

Table 5. 27. Citizen sample MSA test

Construct	Anti-image Matrices										
	PD	PR	PB	SC	MF	SI	WC	SNC	PTC	SF	PVC
PD	.937[a]										
PR	-.063	.832[a]									
PB	-.087	-.184	.918[a]								
SC	-.265	.359	-.061	.837[a]							
MF	-.100	-.012	.149	-.132	.848[a]						
SI	-.115	-.212	-.105	-.138	.240	.878[a]					
WC	-.091	-.212	-.037	-.215	-.140	.101	.902[a]				
SNC	-.118	-.252	-.181	-.088	-.197	-.145	.138	.888[a]			
PTC	-.001	-.211	-.213	-.180	-.209	-.216	-.025	-.075	.877[a]		
SF	-.132	-.195	-.141	-.204	-.233	-.105	-.102	.142	.239	.865[a]	
PVC	.008	-.121	-.041	-.122	-.235	-.083	-.154	-.007	-.022	-.127	.937[a]

a. Measures of Sampling Adequacy (MSA)

Tabachnick and Fidell (2007) recommend a minimum MSA value of 0.50 and Hair et al. (2014) suggested a value above 0.70 to be in the acceptable range. The results of MSA in Table 5.27 exceed the two values, suggesting the data adequacy. Specifically, for the citizen constructs, the MSA values are in the range between 0.937 and 0.832. The government sample was also tested for MSA and the results in Table 5.28 exceed the recommended threshold, with MSA values ranging from 0.967 to 0.927.

Table 5. 28. Government sample MSA test

Construct	Anti-image Matrices									
	RV	LG	TP	AC	RS	PPR	WG	SNG	PTG	PVG
RV	.932[a]									
LG	-.435	.939[a]								
TP	-.046	.018	.927[a]							
AC	-.002	-.061	-.411	.942[a]						
RS	-.213	-.006	.019	-.101	.943[a]					
PPR	.022	-.190	-.224	-.107	-.275	.956[a]				
WG	-.005	-.107	-.048	.010	-.323	-.039	.938[a]			
SNG	.051	-.071	.087	-.108	-.066	-.008	-.373	.928[a]		
PTG	-.145	-.055	-.189	-.007	.029	-.026	-.074	-.353	.945[a]	
PVG	-.052	-.122	-.031	-.178	-.099	-.076	.022	-.146	-.228	.967[a]

a. Measures of Sampling Adequacy (MSA)

5.5.2.2 KMO and Bartlett's test

It is very important to conduct the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of Sphericity to ensure the data adequacy before proceeding to CFA. Hair et al. (2014) suggested applying KMO and Bartlett's test to ensure that the researcher can proceed to CFA. The KMO measure is an alternative method of examining the sampling adequacy (Kaiser 1970). It is the sum of all the squared correlation coefficients divided by the sum of all the squared correlation coefficients plus the sum of all of the squared partial correlation coefficients (Norusis 2003). The KMO can be calculated for individual and multiple variables and represents the ratio of the squared correlation between variables to the squared partial correlation between variables. A partial correlation measures the strength of the relationship between the dependent variable and a single independent variable when other independent variable effects are held constant (Hair et al. 2014). Bartlett's (1954) test of sphericity examines the hypothesis that the correlations in the correlation matrix are zero. If the correlation coefficient is zero, this means that all the variables are perfectly independent of one another (Field 2009). To reject the hypothesis, the Bartlett's test of sphericity needs to be significant (Tabachnick and Fidell 2007).

Bartlett's test of sphericity investigates whether the population correlation matrix resembles an identity matrix (i.e. whether the off-diagonal components are zero). According to Hair et al. (2014),

KMO tests whether the variables in a given sample are adequate for correlation, and Bartlett's test of sphericity tests the actual correlation between the variables. KMO values range from 0 to 1, whereas value close to 1 indicates a compact correlation pattern whereby factor analysis is suitable. Kaiser (1974) recommended an acceptance value greater than 0.5, and values between 0.5 and 0.6 as mediocre, values between 0.6 and 0.7 as middling, values between 0.7 and 0.8 as meritorious, and values above 0.9 as marvellous. On the other hand, Bartlett (1954) suggested that the Bartlett's test of sphericity should be significant (Sig. < 0.05) to indicate the presence of correlations among the variables. For suitable factor analysis, Tabachnick and Fidell (2007) suggested that Bartlett's test should show a significance level of ($p < 0.05$) and KMO should have a minimum value of 0.6. As a rule of thumb the KMO value should exceed the minimum threshold 0.6 and Bartlett's test should have a value ($p< 0.05$) (Hair et al., 2014). The KMO and Bartlett's test results for the citizen sample are presented in Table 5.29, and the government sample results are presented in Table 5.30.

Table 5. 29. Citizen sample KMO and Bartlett's test

Statistical test		Score/Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.940
Bartlett's test of sphericity	Approx. Chi-Square	103921.904
	Df	1431
	Sig.	0.000

Table 5. 30. Government sample KMO and Bartlett's test

Statistical test		Score/Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.942
Bartlett's test of sphericity	Approx. Chi-Square	2742.245
	Df	45
	Sig.	0.000

The KMO value for the citizen sample is 0.940, which confirms the adequacy of the sample for factor analysis, with a significant value using Bartlett's Test of sphericity of 0.000 ($p<0.01$), which is deemed to be excellent. Similarly, the government sample KMO value is 0.942, with a significant value using Bartlett's test of sphericity of 0.000, which is deemed to be excellent, too. Therefore, these results exceeded the minimum values and confirmed the appropriateness of both sets of data for confirmatory factor analysis.

5.5.3 Validity test

To validate the GPVM, three types of validity were evaluated: content validity, convergent validity, and discriminant validity (Hair et al. 2014). Content validity addresses the extent to which the indicators adequately cover the full content of a construct. Hair et al. (2014) defined content validity as the assessment of the degree of correspondence between the items selected to constitute

a summated scale and its conceptual definition. Hair et al. (2014) also call this form of validity as 'face validity'. Straub et al. (2004) defined content validity as *"the degree to which items in an instrument reflect the content universe to which the instrument will be generalised."* (p. 424), and they recommended establishing content validity through literature reviews and expert judges or panels. In order to test for content validity, the research instrument needs to be well-presented and all constructs must be adequately measured (Sarantakos 2005, Straub et al. 2004). According to Churchill (1979), content validity exists if the indicators and their related constructs look fine and the sample is appropriate.

The content validity of this research was established by the following steps: Firstly, this research employed theories and previously validated constructs and items from the related literature. Secondly, the research followed Mackenzie et al.'s (2011) procedures for conceptually defining all the constructs and refining the items based on experts' feedback. Thirdly, a Q-sorting exercise was carried out as outlined in Moore and Benbasat (1991), with satisfactory results (See section 5.4.1). Lastly, the procedures for the development of the GPVM and the questionnaire were validated via the IS/e-government community by publishing it in two reputable outlets (Aladalah et al. 2016; Aladalah et al. 2017).

Construct validity relates to operationalization or measurement between constructs (Cronbach and Meehl 1955). The concern is to consider the measurements of a given construct together and compare it to other constructs. Validation is not focused on the items itself, which are matters for content validity (Bagozzi 1980). Construct validity differs from internal validity in that it focuses on the measurement of individual constructs, whereas internal validity focuses on alternative explanations for the strength of links between constructs (Straub 1989). Construct validity is the extent to which a set of measured items actually reflects the theoretical construct that those items have been developed to measure. Thus, it deals with the accuracy of measurement. Evidence of construct validity can be established via statistical measures, which provides confidence that item measures taken from a sample represent the actual true score that reflects the population (Hair et al. 2014).

The validity and uni-dimensionality of the scale can be assessed using exploratory factor analysis and the correlation co-efficient. Therefore, to achieve construct validity, convergent validity and discriminant validity need to be considered. To establish construct validity in this research, each measurement scale was evaluated by convergent and discriminant validity tests first via EFA and next via CFA. (Byrne 2013, Hair et al. 2014). Convergent validity refers to what extent the proposed items that measure the same construct are correlated (Malhotra and Birks 2007).

According to Hair et al. (2014), convergent validity examines the extent to which a set of measures or indicators of a specific construct converge or share a high proportion of variance in common. Campbell and Fiske (1959) argued that researchers should apply convergent validity to demonstrate that measures are aligned with each other. Convergent validity assesses the degree to which two measures or more of the same concept are correlated. High correlation indicates that the scale is measuring its intended concept. Straub et al. (2004) in their guidelines of validation IS positive research paper stated that convergent validity is demonstrated when items assumed to "converge" on a construct, or show high correlations with one another, especially when compared to the convergence of items related to other constructs. The comparison with other constructs is what distinguishes convergent validity from reliability. A convergent validity test can be used to investigate whether a construct is a unidimensional construct representing only one dimension or a multidimensional construct having more than one dimension. Multidimensional constructs are constructs with more than one dimension, and each dimension can be measured using either reflective or formative indicators (Petter et al. 2007).

As mentioned in section (4.5.1.), all the GPVM constructs were unidimensional except for PV. In fact, unidimensionality is a key assumption within CB-SEM for reflective construct (Qureshi and Compeau 2009). Convergent validity is crucial for reflective variables, but less so for formative ones. Indeed, formative constructs, by definition, all the measures need not be highly correlated. For example, socio-economic status is measured by items such as household income and the number of children per household; both are indicators of this status, but may not be correlated (Jöreskog and Sörbom1989). By testing convergent validity, the construct validity can be examined (Brown 1996). For this research, convergent validity was assessed by examining: (1) factor loadings of all items, (2) average variance extracted (AVE) which reflects the overall amount of variance in the items accounted for by the latent construct, and (3) the reliability of constructs or composite reliability (CR) (Fornell and Larcker 1981; Hair et al. 2014). To estimate the relative amount of convergent validity, factor loading is assessed using EFA to determine a set of items measuring each theoretical construct (Kline 2015). All the factor loadings for the indicators were significant at $p < .001$, and are above the recommended value 0.70 for both citizen and government samples (Hair et al. 2014) (See Table 5.22 for citizen sample and Table 5.25 for government sample). Other measures of convergent validity (i.e. AVE, CR) are assessed with CFA (see section 5.6.2).

Discriminant validity refers to the extent to which latent constructs differ from each other, that is, their measures should "discriminate" (Straub et al. 2004). According to Hair et al. (2014), discriminant validity is the extent to which a construct is truly distinct from other constructs. Thus,

high discriminant provides evidence that a construct is unique and captures some aspect of a phenomenon that other measures do not. Discriminant validity determines the interrelations and differences between constructs of a model by showing the extent to which each construct capture elements of a phenomenon that can be explained by other constructs. Discriminant validity measures the relationship with other unrelated factors, where each item should load stronger on its associated factor than any other factors. In other words, there should not be any cross-loading (Hair et al. 2014). From Tables 5.22 and 5.25, all the items load more strongly on their associated factors than other factors, suggesting good discriminant validity. Furthermore, convergent and discriminant validity of the measurement scale were also assessed again with CFA (see section 5.6.2). Thus, the final EFA of the citizen and government samples are ready for CFA and SEM analysis.

5.6 Confirmatory Factor Analysis (CFA)

CFA enables the testing of how well the measured variable represents constructs. The combination of CFA results with validity tests, allows for better understanding of the quality of the measures (Tabachnick and Fidell 2007). While EFA explores the data and derives the factors from statistical results, CFA confirms or rejects the preconceived theory regarding the factors. In other words, CFA statistics indicate how well the theoretical specification of the factors matches the actual data (Hair et al. 2014). CFA is used to confirm a specific structure that had been developed from previous literature or EFA of the model. Unlike the EFA, when performing CFA, the number of factors along with their associated variables, are pre-determined. There are many reasons for conducting CFA including validation and testing measurement invariance and effects (Harrington 2008). The EFA provided the basis for conducting the CFA, which was carried out using SEM technique in AMOS to validate the GPVM and test the hypotheses.

SEM involves two types of models: the measurement model and the structural model. The measurement model describes the connections between the latent variables and their items (indicators). It is also called confirmatory factor analysis (CFA), which involves testing the model fit and discriminant validity. The structural model describes the causal connections between the latent variables, where the purpose of the path model is to test the hypotheses. Blunch (2013) suggested using the so-called two-step strategy when analysing the two models by starting with CFA and then analysing the full model. Before conducting the full model testing with SEM, it is important to assess the model fit and check the validity results.

5.6.1 Model fit

Model-fit is a critical concern when conducting SEM. The measurement model validity depends on: (1) establishing acceptable levels of goodness-of-fit (GOF) for the measurement model, and (2) finding specific evidence of construct validity. GOF indicates how well the specified model reproduces the observed covariance matrix between the items (the similarity of the observed and estimated covariance matrices). Over the years, researchers have developed many measures that represent various aspects of the model's capacity to reflect the data. Consequently, a number of alternative GOF methods are available, which can be grouped into three main categories: (1) Absolute measures, (2) Incremental measures, and (3) Parsimony fit measures (Byrne 2013). When assessing the model fit, the chi-square (X^2) must be examined first since it is the fundamental measure of differences between the observed and estimated covariance matrices. The goal is to achieve a relatively small X^2 value and large *p*-value indicating that no statistically significant difference between the two matrices exist to support that the proposed theory (model) fits reality (data) (Kline 2015). It is recommended that three to four fit indices be used to provide evidence of model fit, with at least one from each category (i.e. Absolute measures (e.g. GFI, RMSEA); Incremental measures (e.g. TLI, CFI); and Parsimony fit measures (e.g. PNFI), in addition to the X^2 value and the associated degrees of freedom (Hair et al. 2014; Tabachnick and Fidell 2007). Table 5.31 shows the model fit for the citizen and government sample for the three main fit categories.

Table 5. 31. Model fit indices

Fit indices	Benchmark (Hair et al. 2014; Tabachnick and Fidell 2007)	Citizen Sample	Government Sample
X^2		120.89	242.38
Df		21	19
X^2/Df	<3:1	3.47	2.77
P	>.05	.000	.000
Absolute fit measures			
GFI	>.90	.973	.975
RMSEA	<.08	.079	.074
Incremental fit measures			
TLI	>.90	.854	.965
CFI	>.90	.973	.988
Parsimony fit measures			
PNFI	>.80	.862	.849

Table 5.31 shows that all the results demonstrate good fit except for the citizen sample X^2/Df which was slightly above the recommended value (3.47). However, with larger samples (greater than 750), that is acceptable (Hair et al. 2014). Also, the TLI for the citizen model did not meet the recommended value 0.854 but was close to the borderline. The other incremental fit measures (CFI) met the recommended value, thus no modification was required. The model's overall GOF appears as an adequate fit. In addition, the multicollinearity was also checked; the results are presented in Tables 5.32 and 5.33.

Table 5. 32. Citizen sample Multicollinearity

Independent variable	Collinearity Statistics of the dependent variable PVC	
	Tolerance	VIF
Benchmark	>.1	< 3
PD	.502	1.925
PR	.438	2.284
PB	.521	1.920
SC	.466	2.148
SI	.536	1.864
MF	.537	1.862
WC	.588	1.701
SNC	.547	1.829
PTC	.502	1.993
SF	.525	1.905

Table 5. 33. Government sample Multicollinearity

Independent variable	Collinearity Statistics of the dependent variable PVG	
	Tolerance	VIF
Benchmark	>.1	< 3
RV	.422	2.372
LG	.377	2.651
TP	.428	2.334
AC	.411	2.435
RS	.360	2.778
PPR	.415	2.409
WG	.349	2.864
SNG	.323	2.098
PTG	.355	2.815

As seen from Tables 5.32 and 5.33, the variance inflation factor (VIF) values for all constructs were acceptable (i.e., between 1.46 and 2.20). Thus, there was sufficient evidence that the model was a reliable means of generating quality data.

5.6.2 Validity and reliability check

Further to the convergent validity test conducted via EFA (section 5.5.3), the AVE was assessed via CFA to indicate a summary of convergence of items that are accounted for by the latent construct. An AVE of 0.50 or higher provides a good support for adequate convergence (Straub

et al. 2004). An AVE measure should be computed for each latent construct. Also, the CR was assessed via CFA to indicate the square sum of factor loadings and the sum of the error variance terms for a construct. The rule of thumb is that 0.7 or higher suggests good reliability. The mean, SD, Cronbach's Alpha (CA), CR, and AVE values for both samples satisfied the criteria for adequate convergent validity (Fornell and Larcker 1981) as shown in Table 5.34 for citizen sample and Table 5.35 for government sample.

Table 5. 34. Citizen sample Mean, SD, Correlations, CA, CR and AVE

	Mean	SD	CA[a]	CR[a]	AVE[b]	PD	PR	PB	SC	SI	MF	WC	SNC	PTC	SF	PVC
PD	1.88	0.900	0.916	0.976	0.911	0.955 [c]										
PR	2.011	1.045	0.890	0.989	0.957	0.419	0.978									
PB	2.035	1.030	0.894	0.994	0.977	0.452	0.555	0.988								
SC	2.124	1.093	0.893	0.993	0.972	0.564	0.222	0.385	0.986							
SI	2.026	1.089	0.895	0.995	0.980	0.433	0.527	0.513	0.377	0.990						
MF	2.022	1.034	0.793	0.993	0.972	0.456	0.342	0.273	0.498	0.186	0.986					
WC	2.113	1.099	0.894	0.994	0.976	0.444	0.409	0.346	0.355	0.246	0.481	0.988				
SNC	2.138	1.150	0.796	0.995	0.981	0.439	0.533	0.506	0.355	0.478	0.381	0.243	0.991			
PTC	1.990	1.064	0.793	0.993	0.971	0.416	0.524	0.530	0.430	0.512	0.408	0.347	0.496	0.986		
SF	2.112	1.008	0.895	0.995	0.979	0.489	0.424	0.406	0.501	0.352	0.491	0.478	0.271	0.260	0.989	
PVC	2.018	1.023	0.994	0.994	0.976	0.432	0.447	0.398	0.479	0.369	0.526	0.491	0.362	0.405	0.499	0.988

[a] Internal consistency; [b] Convergent validity; [c] The square root of the AVE for each of the constructs along the diagonal.

Table 5. 35. Government sample Mean, SD, Correlations, CA, CR and AVE

	Mean	SD	CA[a]	CR[a]	AVE[b]	RV	LG	TP	AC	RS	PPR	WG	SNG	PTG	PVG
RV	2.633	1.281	0.783	0.983	0.935	0.967[c]									
LG	2.647	1.318	0.886	0.986	0.945	0.763	0.972								
TP	2.847	1.361	0.883	0.983	0.935	0.568	0.586	0.967							
AC	2.701	1.335	0.783	0.983	0.935	0.593	0.636	0.741	0.968						
RS	2.623	1.273	0.933	0.980	0.924	0.686	0.682	0.602	0.662	0.961					
PPR	2.73	1.317	0.783	0.983	0.935	0.613	0.684	0.673	0.676	0.726	0.967				
WG	2.695	1.290	0.781	0.981	0.929	0.621	0.677	0.581	0.622	0.757	0.657	0.964			
SNG	2.613	1.244	0.974	0.974	0.905	0.599	0.669	0.570	0.648	0.703	0.638	0.777	0.951		
PTG	2.727	1.269	0.876	0.980	0.924	0.663	0.680	0.654	0.660	0.670	0.658	0.701	0.779	0.955	
PVG	2.675	1.248	0.913	0.973	0.900	0.646	0.687	0.628	0.698	0.688	0.669	0.652	0.716	0.743	0.949

[a] Internal consistency; [b] Convergent validity; [c] The square root of the AVE for each of the constructs along the diagonal.

To further assess the convergent validity, CFAwas performed on the model. For the citizen sample, eight indicators for PV - PVC1 0.51, PVC2 0.38, PVC3 0.37, PVC4 0.38, PVC5 0.510, PVC6 0.23, PVC7 0.22, and PVC8 0.24 - loadings were below the threshold of 0.70, and therefore were removed to improve the convergent validity (Hair et al. 2014). This reduced the PV construct indicators from 12 to only four that are related to the fairness dimension. The eight indicators that belong to the trust and commitment dimensions were removed. For the government sample, all the loadings were above the threshold of 0.70, thus this confirmed convergent validity.

Finally, CFA was also used to test for discriminant validity (Campbell and Fiske 1959; Hair et al. 2014). Discriminant validity of the construct indicators was examined by (1) analysing the loading of each indicator on their intended factor rather than on other factors, and (2) the square root of each factor's AVE should be higher than its correlations with other factors (Straub et al. 2004). The factor analysis results indicate that both sets of conditions are met, thus demonstrating discriminant validity (Hair et al. 2014). Construct reliability was assessed using CA, and CR. Both were greater than 0.7 (Hair et al. 2014), supporting the reliability of the constructs and indicating that the results based on this scale are consistent (See Tables 5.34 and 5.35).

5.6.3 Common method bias

Common method bias arises from respondents' tendency to use similar responses for some or all measures (Edwards 2008). Two statistical techniques were used to assess for common method bias: (1) Harman's single-factor test; and (2) the Common Latent Factor (CLF) zero constrained latent factor technique (Podsakoff et al. 2003; 2012). First, Harman's single-factor test was conducted by running factor analysis of the 58 indicators of the citizen model and the 46 indicators of the government model. As mentioned in section 5.5.1 The final factor analysis of the citizen sample (n=756) resulted in 11 factors with eigenvalues N1 and 52 indicators, with the first factor accounting for 45% of the total variance, suggesting that common method variance due to single-source bias was not an issue (< 50%) (Podsakoff and Organ 1986). The final factor analysis of the government sample (n=327) resulted in 10 factors with eigenvalues N1 and 42 indicators, with the first factor accounting for 65% of the total variance, suggesting that common method variance due to single-source bias was an issue(< 50%) (Podsakoff and Organ 1986). Therefore, it was necessary to assess for common method variance with the second technique, CLF. The CLF zero-constrained latent factor technique was conducted by using the chi-square (X^2) difference test between the unconstrained model and a model where all paths from the CLF were constrained to zero. For the citizen sample the unconstrained model X^2 were (2565.5) with a Df (800), and the

constrained model X^2 were (2933.1) with a Df (844). The comparison results were significant meaning that there was shared variance, thus retaining the unconstrained CLF when imputing factors (Table 5. 36).

Table 5. 36. Citizen sample CLF

Overall model	chi-square	Df	p-Value	Invariant
Unconstrained	2565.5	800		
Fully constrained	2933.1	844		
Number of groups		2		
Difference	367.6	44	0.000	No

For the government sample, the unconstrained model did not run properly the first time. After inspecting the estimates, the standard errors for SNG5 and SNG6 were above the 1 (one) threshold. Thus, SNG5 and SNG6 were deleted and the model was run again with successful iteration this time. The X^2 were (1088.2) with a Df (655), and the constrained model X^2 were (1338.0) with a Df (774) (Table. 37).

Table 5. 37. Government sample CLF

Overall model	chi-square	Df	p-Value	Invariant
Unconstrained	1088.2	655		
Fully constrained	1338	774		
Number of groups		2		
Difference	249.8	119	0.000	No

The comparison results were also significant, meaning that there was shared variance; thus, it was necessary to retain the unconstrained CLF when imputing factors. The results for both samples were significant, indicating that they were affected by common method bias (Podsakoff et al. 2003). Thus, to compensate for the common method bias, the CLF was accounted for when imputing factors and in subsequent analysis (Podsakoff et al. 2012). The final measurement models for both samples are shown in Figure 5.21 and 5.22.

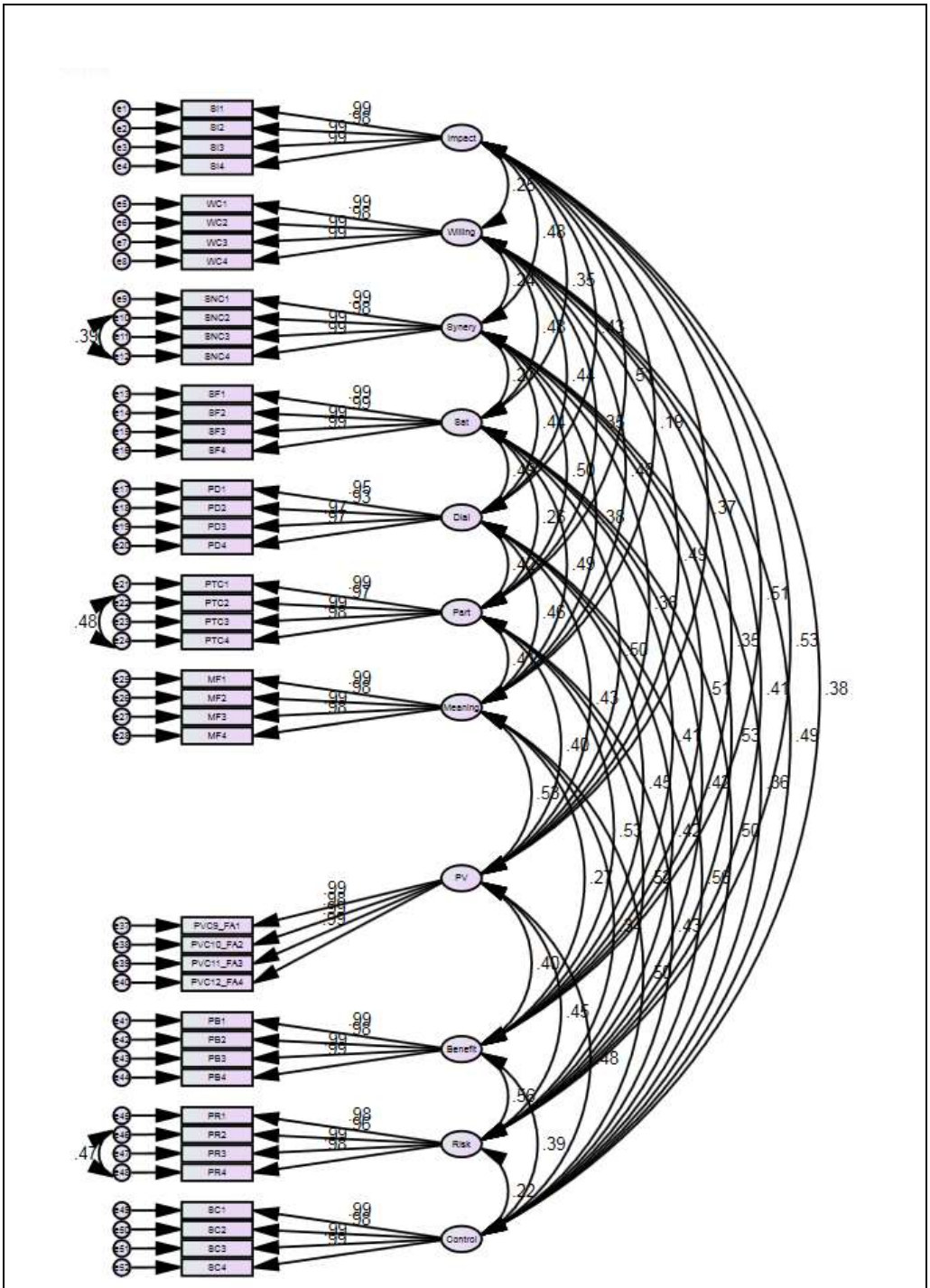

Figure 5. 21. Citizens sample CFA

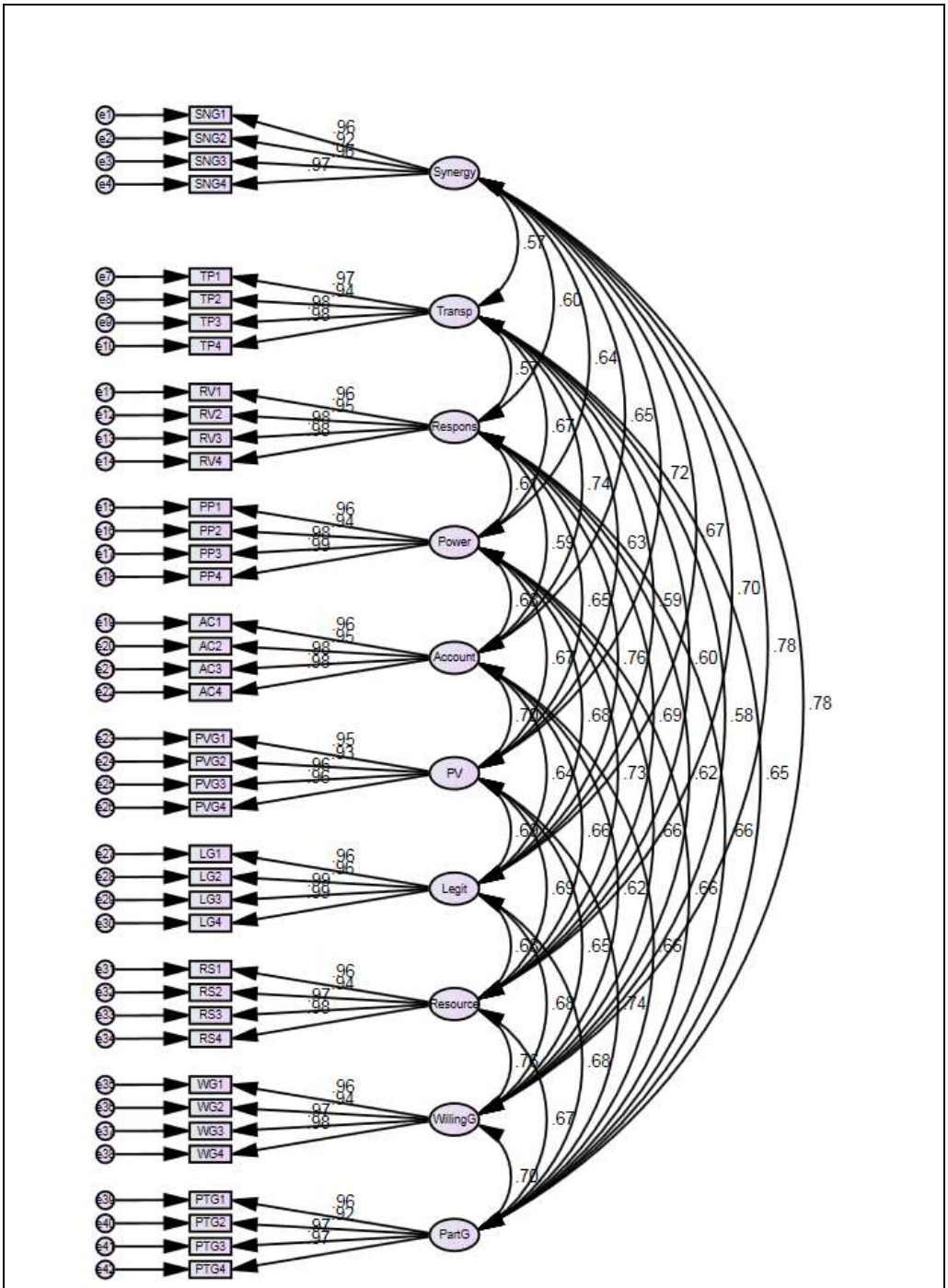

Figure 5. 22. Government sample CFA

In summary, EFA and CFA with many statistical measures were employed to rigorously test the data quality and the model validity. Both results enhance the confidence in the instrument as a reliable means of generating quality data; thus, there was sufficient evidence of both reliability and validity, and the GPVM was ready for the hypotheses testing.

5.7 Full Model Testing with Structural Equation Modelling (SEM)

After assessing the measurement model and demonstrating acceptable model-fit and validity throughout EFA and CFA, the next step involves testing the full structural model and its relationships. This section presents the results from the hypotheses testing and the mediation analysis of the structural model.

5.7.1 Results of hypotheses testing

The structural model was tested using AMOS. The SEM path model (Figures 5.23 and 5.24) includes all hypothesized direct effects. The path coefficients indicate the magnitude of the direct effects. The magnitude of the indirect effects is obtained by multiplying the coefficients of the paths in the mediational chain (Taylor et al. 2008). The citizen model has six main hypotheses (*H1a, H2a, H3a, H4a, H5a, H6a*), with H1a comprising six minor hypotheses (*H1a1, H1a2, H1a3, H1a4, H1a5, H1a6*). The results support *H1a1, H1a4, H1a6, H2a, H3a, H4a, H5a* and *H6a*, but not *H1a2, H1a3* and *H1a5* as shown in Table 5.38 and Figure 5.23.

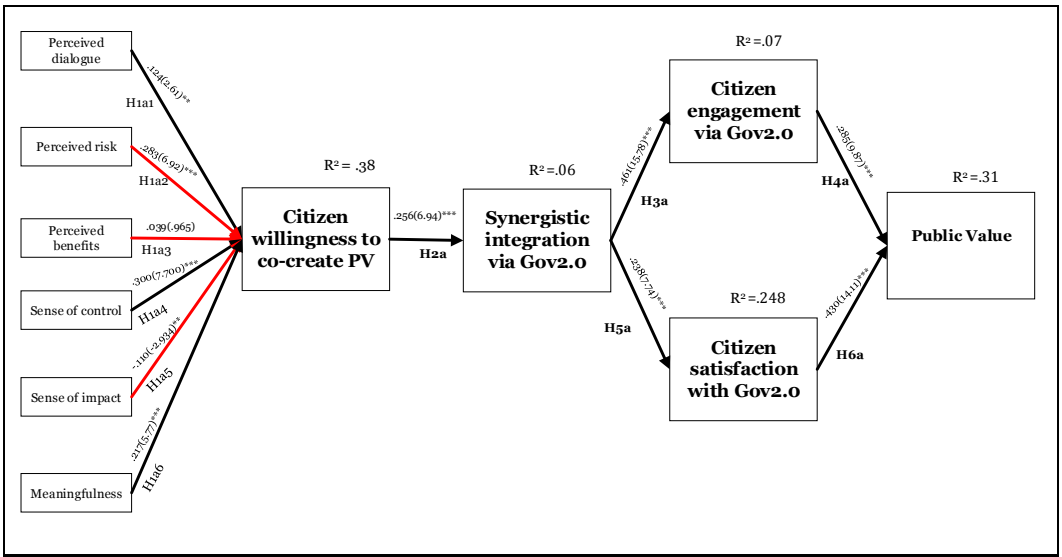

Figure 5. 23. Citizen sample: Empirical results of the path model

The results in Table 5.38 revealed that perceived dialogue, sense of control, and meaningfulness have a major influence on citizen willingness to co-create PV via Gov2.0. According to Cohen's (1960) criteria for interpreting the R2 values: (i.e., small = 0.02; medium = 0.15, and large = 0.35), the proportions of variance explained by the citizen model are: large percentage of the variance of citizen willingness R2 = 0.38; small percentage of the variance of synergistic integration R2 = 0.060; small percentage of the variance of citizen engagement R2 = 0.074; and medium percentage

of the variance of citizen satisfaction R2 = 0.24 and PV R2 = 0.31. In summary, the effect size of the citizen model is moderate (Table 5.39).

Table 5. 38. Citizen sample results of direct effects

Hypothesis	Estimate	t-value (C.R.)	*p*-value	Empirical support
H1a1: PD → WC	.102	2.619	.009	Supported
H1a2: PR → WC	.269	6.925	***	*Not supported due to positive effect*
H1a3: PB → WC	.036	.965	.334	*Not supported due to insignificant effect*
H1a4: SC → WC	.298	7.700	***	Supported
H1a5: SI→ WC	-.109	-2.934	.003	*Not supported due to negative effect*
H1a6: MF→ WC	.204	5.772	***	Supported
H2a: WC→ SNC	.245	6.945	***	Supported
H3a: SNC → PTC	.498	15.782	***	Supported
H4a: PTC → PVC	.301	9.872	***	Supported
H5a: SNC → SF	.271	7.748	***	Supported
H6a: SF→ PVC	.430	14.111	***	Supported

Table 5. 39. Citizen sample: R^2 Values for the endogenous constructs

Construct	Estimate	Effect size
WC	.387	Large
SNC	.060	Small
PTC	.074	Small
SF	.248	Medium
PVC	.311	Medium

The Government model has four main hypotheses (*H1b, H2b, H3b, H4b*), with *H1b* comprising six minor hypotheses (*H1b1, H1b2, H1b3, H1b4, H1b5, H1b6*). The results support *H1b2, H1b5, H2b, H3b*, and *H4b*, but not *H1b1, H1b3, H1b4,* and *H1b6* as shown in Table 5.40 and Figure 5.24.

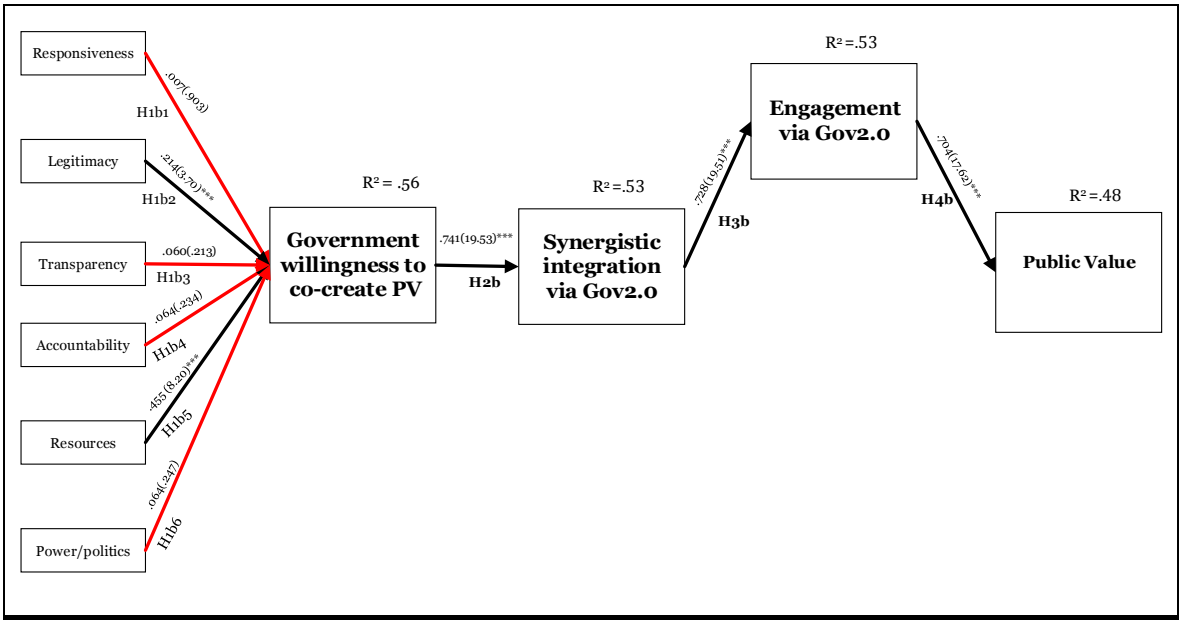

Figure 5. 24. Government sample: Empirical results of the path model

Table 5. 40. Government sample results of direct effects

Hypothesis	Estimate	t-value (C.R.)	*p*-value	Empirical support
H1b1: RV → WG	.007	.122	.903	*Not supported due to insignificant effect*
H1b2: LG → WG	.214	3.706	***	Supported
H1b3: TP → WG	.068	1.245	.213	*Not supported due to insignificant effect*
H1b4: AC → WG	.067	1.190	.234	*Not supported due to insignificant effect*
H1b5: RS→ WG	.454	8.203	***	Supported
H1b6: PP→ WG	.066	1.158	.247	*Not supported due to insignificant effect*
H2b: WG→ SNG	.734	19.530	***	Supported
H3b: SNG → PTG	.734	19.519	***	Supported
H4b: PTG → PVG	.698	17.622	***	Supported

The results above revealed that ***legitimacy*** and ***resources*** have a major influence on government willingness to co-create PV via Gov2.0. Also, the proportions of variance explained by the government model are: large percentage of the variance of government willingness $R^2 = 0.56$; large percentage of the variance of synergistic integration $R^2 = 0.53$; large percentage of the variance of engagement $R^2 = 0.53$; and large percentage of the variance of PV $R^2 = 0.48$. In summary, the effect of the size of the government model is large (Table 5.41).

Table 5. 41. Government sample: R^2 Values for the endogenous constructs

Construct	Estimate	Effect size
WG	.562	Large
SNG	.539	Large
PTG	.539	Large
PVG	.488	Large

5.7.2 Mediation analysis

In order to test the effects of synergy on PV, the mediation (indirect) effects of synergy on PV were tested. The citizen model (Figure 5.23) indicates a total of two such mediations (i.e. indirect effects). The significance of each effect is determined by using the bias-corrected percentile bootstrapping method (MacKinnon et al. 2012; Preacher and Hayes 2008). As reported in Table 5.42, the two indirect effects of synergy on PV were significant. Citizen willingness is indirectly but positively associated with PV through both mediation chains: (1) via synergistic integration and citizen engagement (β = .034, *p*.001); and (2) via synergistic integration and citizen satisfaction (β = .026, *p* .001).

Table 5. 42. Citizen sample results of indirect effects

Indirect effects	Estimate	*p*-value	Mediation support
Willingness →PV			
WC→ **SNC**→PTC →PVC	.034	.001	Weak support
WC→ **SNC**→SF→PVC	.026	.001	Weak support

Similar to the citizen model, the government model was tested for the synergy mediation (indirect) effects on PV. The government model (Figure 5.24) indicates one mediation (i.e. indirect effects). As reported in Table 5.43, the indirect effects of synergy on PV were significant. Government willingness is indirectly but positively associated with PV via synergistic integration and citizen engagement (β = .379, *p* .009). In response to the third RQ, the results above revealed that synergy via Gov2.0, to an extent, enhances PV.

Table 5. 43. Government sample results of indirect effects

Indirect effects	Estimate	*p*-value	Mediation support
Willingness →PV			
WG→ **SNG**→PTG →PVG	.379	.009	Supported

5.8 Summary

This chapter has presented the findings of the online questionnaire and the results of various statistical tests. It started with the data preparation process for the statistical analysis, followed by EFA and CFA. Finally, hypotheses testing and mediation analysis of the GVPM for both samples, citizens and government were conducted. Table 5.44 summarizes the objectives and outcomes of the main steps of the quantitative data analysis.

Table 5. 44. Objectives and outcomes of the quantitative data analysis

Step	Objective	Outcome Citizen sample	Government sample
Data preparation	To ensure the data reliability and normal distribution	▪ Removal of 10 responses due to missing data	▪ Removal of 3 responses due to missing data and 2 due to low score
Exploratory Factors Analysis (EFA)	To establish the correlation between the constructs and its indicators	▪ Removal of Competence constructs and its indicators due to cross-loading (CC; CC1, CC2, CC3, CC4). ▪ Removal of 2 indicators of PV (PVC13, PVC14) due low loading score.	▪ Removal of Competence constructs and its indicators due to cross-loading (CG; CG1, CG2, CG3, CG4).
Confirmatory Factor Analysis (CFA)	To confirm the outputs of the EFA	▪ Accounting for the CLF when imputing the constructs ▪ Removal of 8 indicators of PVC (PVC1, PVC2, PVC3, PVC4, PVC5, PVC6, PVC7, PVC8) due to convergent validity.	▪ Accounting for the CLF when imputing the constructs ▪ Removal of 2 indicators of SNG (SNG5, SNG6) due to common method bias.
Structural Equation Modelling (SEM)	To test the research hypotheses	11 hypotheses: 8 Supported; 3 Not supported	9 hypotheses : 5 Supported; 4 Not supported

It can be concluded that the results of the hypotheses testing reveal that perceived dialogue, sense of control, and meaningfulness from the citizen's perspective, and legitimacy, and resources from the government official's perspective were significant for PV co-creation via Gov2.0. Furthermore, synergy was an important element in PV co-creation via Gov2.0 from both perspectives. These observations were further investigated in stage 2 of the data collection process. The next chapter (Chapter Six) discusses the analysis of the qualitative data obtained by this research.

CHAPTER SIX
INTERVIEWS ANALYSIS

6.1 Overview

This chapter reports the analysis of and findings from the qualitative data collected for three case studies through a series of interviews with citizens and government officials regarding Gov2.0. Section 6.2 presents the data collection procedures including the targeting of interviewees, the design of the interview questions, the interview process and the characteristics of the informants. Then, following the preparation of data for analysis (section 6.3), the interview data is analysed based on the three main themes of this research: empowerment, co-creation, and PV as well as any emerging and unsupported themes (section 6.4). Section 6.5 summarises the chapter findings.

6.2 Data Collection Procedures

The interview is one of the most widely-used techniques for qualitative data collection (Yin 2009). In Stage 2, the interview questions were designed for the purpose of conducting semi-structured interviews. The interview procedures are discussed in the following sub-sections.

6.2.1 Targeting potential interviewees

As mentioned in section 4.5.2, the target population for the interview stage were government agencies that are using Gov2.0. The case studies were selected based on the criteria discussed in *Criteria for Case Selection* (section 4.5. 2), which relate to citizen engagement, the temporal dimension of Gov2.0, the existence of co-creation activities, and PV- driven mission. After choosing three case studies that met the criteria, it was crucial to reduce the risk of obtaining invalid information by targeting specific informants who would make a valuable contribution to this research (Coyne 1997). In order to achieve the objective of the interview stage (Rubin and Rubin 2011), it was essential to interview citizens who use Gov2.0, and to avoid any selection bias when recruiting informants. Furthermore, according to Flick (2006), interviewees need to have a sound knowledge of the topic under study. This knowledge includes assumptions that are explicit and immediate and which the interviewees can express spontaneously in answering questions. Rubin and Rubin (2011) confirmed that in order to enhance the credibility of the findings, the interviewees should be experienced and knowledgeable in the area. This should allow the interviewees to present a

variety of perspectives with sufficiently different backgrounds to provide evidence for extending the findings beyond the immediate research setting and test any emerging theory.

Several steps were taken to ensure the reliability of the results derived from the interview process. Regarding the citizen informants, Stage 1 respondents were invited to participate further in Stage 2 interviews, thus ensuring that some of the citizen informants in the second stage had also participated in the earlier quantitative stage. Also, the use of the three government agencies (case studies) Gov2.0 platforms to encourage participation in Stage 2 of this the research ensured that the citizen informants had used Gov2.0 or at least were considering it. The only criterion used to identify potential interviewees, was their usage of a specific Gov2.0 application (i.e. Ma3an, Kamnapp, @eMoroor). A total of 23 expressed their interest, although only eight agreed to participate; thus, eight interviews were conducted.

Regarding the government employee informants, the interviewees were selected based on their knowledge of e-government strategies, policies, and procedures. All of them had been involved in the Gov2.0 planning and implementation process in their respective government agencies. Thus, they were most likely to provide the richest and most accurate responses. Furthermore, it was important to target participants who held different and relevant positions within the selected government agencies (Mason 2002). Data collected from diverse levels contributes to more informed findings. A total of nine interviews were conducted with government officials holding different positions (executive, managerial, and operational or technical) and who were involved in Gov2.0 implementation and operation.

A review of the guidelines for sample size of interviews shows no agreement among scholars. Marshall (1996) suggested using the purpose of the qualitative approach as an indicator. As this research employed a mixed-methods approach, where the qualitative approach complements the quantitative approach, the number of interviews was deemed acceptable (Hesse-Biber and Leavy 2010).

6.2.2 Designing interview questions

Following the Kvale and Brinkmann (2009) and Jacob and Furgerson (2012) guidelines on designing the interview protocol, the questions related to the GPVM main themes pertaining to the case studies. The interviews started with questions designed to elicit demographic information from the informants. The interview protocol included introductory questions, follow-up questions, and probing questions as s described in section 4.5.2.

The interview protocol was designed to include questions about the main themes of this research that comprise the GPVM namely: Gov2.0, empowerment, engagement, satisfaction, co-creation, and PV. However, as Gov2.0 was considered the platform, while engagement and satisfaction were considered as by-products of the co-creation process, the qualitative analysis focused on the three main themes of ***empowerment***, ***co-creation***, and ***PV***. The views of citizens and government officials in relation to these themes are presented in three sub-sections: 6.4.1, 6.4.2, 6.4.3. The semi-structured interviews were conducted with a total of 17 informants (eight citizens and nine government officials). Generally, the procedure used for the data collection was effective as it resulted in a substantial amount of new data from citizens and government officials about their Gov2.0 experience. The data collected in this stage was analysed following the analysis procedures discuss in section 4.5.2.

6.2.3 Gaining access to interviewees

After obtaining the MUHREC approval for Stage 2 (See Appendix 3), citizen respondents from Stage 1 who had expressed their willingness to participate further in this research, were contacted using the contact details they provided when answering the questionnaire. A total of 23 respondents expressed their interest in participating further. However, only eight agreed to be interviewed; thus eight interviews were conducted. Government agencies who agreed to participate in stage 2 were reached via each agency's contact person. As mentioned in Chapter Four, a total of seven cases met the criteria for selection of case studies. However, only four cases agreed to participate with one opting out, leaving three cases: Ma3an, kamnapp, @eMorror. From the three cases, a total of nine interviews were conducted with government officials holding different roles (managerial, technical). Informants were invited to the interview via e-mail invitation that included the explanatory statement and consent forms. The interview process was conducted according to the MUHREC clearance requirements.

6.2.4 Conducting interviews

The semi-structured interview was adopted for this research as it offers informants the opportunity to describe their experiences, provide illustrations, and elaborate on their responses to questions (Mason 2002). According to Kvale and Brinkmann (2009), the number of subjects necessary for qualitative interviews depends on the purpose of the study. For example, if the purpose is to understand the world as experienced by one specific person, then one subject is sufficient. If the purpose is to understand and explore a new phenomenon or confirm findings, interviews might be conducted until a saturation point is reached, that is, when further interviews are unlikely to

elicit new information. A review of the literature on interview studies, shows that the recommended number tends to be between 10-15 interviews. This number might be due to limited time and resources, and the law of diminishing returns (after a point adding more participants will yield less and less new knowledge). Kvale and Brinkmann (2009) added that many current interview-based studies would have benefitted from having fewer interviews, and instead spending more time on the preparation and analysis of data.

All interviews were conducted in Arabic and lasted between 35 to 115 minutes, allowing the acquisition of as rich a set of information as possible from the informants without losing concentration. These amounted to around 17 hours of recording, and 75 pages of transcripts. All the interviews were face-to-face, except for one via Skype software. The interview data were transcribed verbatim for data analysis and translated into English when they are quoted in the thesis and other publications. Data was collected during two periods: July-August 2016 and November-December 2016. In order to establish a friendly atmosphere and ensure positive experiences for the interviewees, at the beginning of the interview I introduced myself and briefly explained the purpose of the research and the use of the voice recorder. Further, the interviewees were advised of their right to stop the recorder at any time, and were personally assured of confidentiality and anonymity.

All, except two informants agreed to be audio recorded. One of the government official informant asked that the recording be stopped for around five minutes when answering a question, and then allowed the recording to be continued. When asked about it, he said *"I don't want to be recorded criticizing my government agency, we know what it's like, I don't want to get into trouble."*. His request was accepted and again he was assured of confidentiality. During the interviews, note-taking was conducted to supplement the audio recording. Before the interviews commenced, all informants were again assured that their personal information would remain strictly confidential. It was hoped that this reassurance would encourage the informants to reflect freely on their knowledge and experience of Gov2.0. Once the interview process began, a positive rapport was established by showing respect for and interest in their answers and by actively listening to their experiences.

In some cases, where the informants struggled to understand a question or their answers were too short or incomplete, the question was repeated and other probing questions were asked to help participants recall ideas in order to obtain clear answers that would give a more comprehensive picture of the issue in question (Rubin and Rubin 2011). I kept listening attentively to the interviewees without interrupting them, and when needed, I asked for clarification on certain issues

by requesting examples. I also asked informants to elaborate on their opinions and give reasons for the conclusions that they had drawn. Furthermore, when the informants' answers were not clear, their responses were repeated back to them, and they were asked to confirm whether they had been correctly interpreted. At the end of the interview, when no further questions from the interview protocol needed to be discussed, the informants were asked if they wanted to add anything or discuss further points before finishing. Before switching off the recorder, the debriefing was done and some of the respondents continued to discuss some issues relating to this research. Thus, they were asked for permission to report on points that emerged from these informal conversations. The details of the interview informants are summarized in Table 6.1. The sequence of coding the informants refers to the interview occurrence and the letter refers to the group to which they belong (C refers to citizen, and G refers to government official). Interviews were scripted and manually analysed. Analysis of these interviews is categorised and discussed below according to the themes of this research. One limitation regarding the informants' profiles is that all participants, but one, are men, since there is a lack of female government officials in the chosen case studies. As mentioned in section 5.4.2, Saudi Arabia has a huge gender gap in employment rates (OECD 2016), specifically in the public sector (Parker 2017; Redvers 2015). Saudi women work mostly in the fields of education and health services (Allam 2013). On the other hand, it was difficult to recruit females from the citizen side due to sensitive cultural barriers (e.g. gender segregation). Saudi females usually delegate a male member of the family to deal with government agencies on their behalf. Due to the constraints of time and resources, the diversity of informant's characteristics (e.g. age and gender) was neither sought nor required as the difference between these two groups is irrelevant to this research.

Table 6. 1. List of interviewees

N	Case	Interviewee code	Gender	Age	Education	Date	Mode/location	Position/employment	Length*	Note/voice**
1	Ma3an	G1(Government)	Female	42	Postgraduate	13 July 2016	Face to face Riyadh/ work	Executive level	1:12	Note+Voice
2		G2(Government)	Male	47	Undergraduate	14 July 2016	Face to face Riyadh/ café	Managerial level	0:43	Note+Voice
3		C1 (Citizen)	Male	32	Undergraduate	14 July 2016	Face to face Riyadh/ café	Student	1:37	Note+Voice
4		C2(Citizen)	Male	51	Undergraduate	17 July 2016	Face to face Riyadh/ hotel	Private sector	1:55	Note+Voice
5	@eMorror	G3(Government)	Male	37	Undergraduate	18 July 2016	Skype Jeddah	Managerial level	0.36	Note
6		G4(Government)	Male	34	Postgraduate	25 July 2016	Face to face Riyadh/ work	Technical level	1:40	Note
7		G5(Government)	Male	27	Diploma	26 July 2016	Face to face Riyadh/ work	Technical level	1:25	Note+Voice
8		C3(Citizen)	Male	24	Undergraduate	26 July 2016	Face to face Riyadh/ home	Private sector	0:48	Note+Voice
9		C4(Citizen)	Male	29	Postgraduate	27 July 2016	Face to face Riyadh/ home	Private sector	1:08	Note+Voice
10	Kamnapp	G6(Government)	Male	31	Undergraduate	4 August 2016	Face to face Riyadh/ work	Technical level	1:23	Note+Voice
11		G7(Government)	Male	28	Diploma	4 August 2016	Face to face Riyadh/ work	Technical level	1:07	Note+Voice
12		G8(Government)	Male	48	Undergraduate	7 August 2016	Face to face Riyadh/ work	Executive level	0:47	Note+Voice
13		G9(Government)	Male	41	Postgraduate	11 August 2016	Face to face Dammam/ work	Managerial level	1:07	Note+Voice
14		C5(Citizen)	Male	27	Undergraduate	16 November2016	Face to face Melbourne/ Library	Student	0:35	Note+Voice
15		C6(Citizen)	Male	35	Postgraduate	23 November2016	Face to face Melbourne/ Library	Lecturer	1:12	Note+Voice
16		C7(Citizen)	Male	24	Diploma	1 December 2016	Face to face Melbourne /Library	Student	1:24	Note+Voice
17		C8(Citizen)	Male	28	Undergraduate	7 December 2016	Face to face Melbourne/ Library	Student	0:56	Note+Voice

*Length: duration of the interview **Note/voice: Note taking /voice recording

6.3 Data Preparation for Analysis

Interviews were transcribed immediately after each session had been conducted. This process allows the researcher to recall the ideas and the interview details while they are still fresh in the mind, without needing to rely on memory. The initial data analysis began with a review of the interview transcripts to ensure familiarity with the data. Also, the notes taken during the interviews were read many times after each interview. All interviews notes and audio recordings were transcribed into raw data with no changes. Following Bernard and Ryan's (2009) recommendations, initial coding and categorisation were conducted as data were transcribed. The interview data were coded for common themes and compared with findings in the literature.

A thematic analysis using two cycles of coding was applied (Saldaña 2016). The first cycle of coding was conducted using descriptive coding, followed by the second coding cycle using pattern coding. In the descriptive cycle, each interview transcript was read line-by-line which resulted in descriptive summaries of the topic of the data passages. The pattern cycle led to the segmentation of the data based on their relevance to the research themes. This coding technique is commonly used to derive patterns by grouping first-cycle codes into a smaller number of themes (Miles and Huberman 1994). It is worth noting that as the qualitative approach was used to follow up on some issues or results that needed more in-depth understanding, the analysis was informed by the main theoretical themes of this research. If emerging themes were found to be significant, they were considered and used to modify or extend the GPVM. The key theoretical themes of this research (empowerment, co-creation, and PV) were tracked, highlighted, and labelled in the interview transcripts.

Important statements were extracted and translated into the English language. The statements were classified into two main categories: a pre-defined category based on the GPVM and an emergent category. Both categories were used for sorting the themes and writing the analyses. The key theoretical themes and their suggested relationship in the GPVM were very helpful in the coding process. Further, the emergent themes were investigated, grouped, categorised and incorporated into the GPVM. The next section presents the analysis of the interview data.

6.4 Thematic Discussion

This section discusses the results from the analysis of the interview data, in order to address the main research question. The main themes extracted from the data analysis for this research are: ***Empowerment***, ***Co-creation***, and ***PV.***

As mentioned previously, the purpose of stage 2 of the data collection, the qualitative approach, is to complement the quantitative approach findings or tease out contradictory ones (Hesse-Biber and Leavy 2010). The qualitative approach is used to complement the quantitative approach and follow up on issues or results so as to acquire an in-depth understanding of the phenomenon of interest. Thus, the three themes of the research were used as nodes for extracting codes, categories, and subthemes. If emerging themes were found to be significant, they were considered and used to modify or extend the GPVM. Each of these themes was substantiated by relevant, selectively chosen, responses from the informants.

6.4.1 Empowerment

The notion of empowerment is based on studies in the realms of psychology and management (Spreitzer 1995; Ugboro and Obeng 2000). Perkins and Zimmerman (1995) argued that empowerment implies more than the traditional psychological constructs which include, for example, self-esteem, self-efficacy, competency, and locus of control. It should broadly cover an ongoing process involving mutual respect, critical reflection, and participation, which results in greater access to equal share of valued resources (Rappaport 1987), and an understanding of their environment (Zimmerman et al. 1992). Generally speaking, theories of empowerment include both processes and outcomes, suggesting that actions or activities can be empowering, and that empowerment is the outcome of such processes (Swift and Levin1987). To clearly articulate empowerment theory, a distinction between empowering processes and outcomes is critical. Empowering processes for citizens might include participation in crowdsourcing and collective action to access government resources (e.g. open data). Empowered outcomes are those which are the consequences of empowering processes (e.g. satisfaction). In IS and e-government studies, empowerment is an emerging concept (Li and Gregor 2011). In this research, it refers to the ways in which the use of Gov2.0 can enable citizen engagement and enhance citizen satisfaction, which in turn should lead to realising PV.

Sense of control

Many informants reported that feeling a sense of responsibility, which stems from autonomy (Hackman and Oldham 1980) was a reason to use Gov2.0 for PV co-creation. The sense of having control showed that citizens' experience of two-way participation and empowerment via Gov2.0 is crucial.

"When we [citizen] see our behaviour uncontrolled and the responsibility for our actions depends on us, definitely you will see more citizens active on Gov2.0." (C3)

The experience of having choice and autonomy imparts a sense of control of one's destiny (Thomas and Velthouse 1990). One user of Kamnapp stated:

"If, and only if, I'm certain that Gov2.0 and the government agency enable me to have choice in how, what, and when to engage, then I will use it more. That would be great!" (C6)

What these informants are actually describing is the process or the possibility rather than the actuality of control. This sense of control is also reported in other activities such as multi-channel communication offered by government agencies (e.g. face-to-face, phone, and website etc.):

"I think the government should open up more channels for communications without closing old ones [previous], this way we have more control in which means we use, my grandpa [grandfather] still prefer face-to-face communication, though he's a frequent user of Twitter."(C7)

Meaningfulness

One important finding from the interviews with both citizens and government officials is that meaningfulness and purpose have different effects on PV co-creation. Dictionaries define meaningfulness as having full meaning, significance, and purpose. However, some psychologists view purpose as being restricted to one's gratifying emotions, things just for themselves (Baumeister et al. 2013). Meaningfulness, on the other hand, is a broader concept that implies a connection to the outside world that is important for one reason or another. It has a larger meaning, in that it is something that matters to people other than oneself (Duckworth 2016). One distinction between purpose and meaningfulness is self vs. others orientation. In general, people motivated by self-goals derive joy from receiving from others. Conversely, people motivated by the higher purpose of wanting to help others, experience joy from giving to others. Meaningfulness transcends the self, whereas purpose focuses on the self. The distinction between self and other orientations is crucial because many of the PV co-creation activities could be associated with a high degree of meaningfulness, but it is not always pleasurable or self-orientated when performing activities such as reviewing draft policies:

"It's not always fun, it takes time you know, it takes energy, and sometime I'm not directly affected by it. I prefer to hang out with my buddies, but I like to think I am contributing something for the greater good." (C1)

Or reporting a traffic violation:

"Many of my friends criticise me for reporting hoon driving, they say there are just having fun, they are teens, we were like them one day or they are not directly causing you any harm, but I do it because this way I'm helping to create a safer community." (C3)

Thus, meaningfulness is a broader concept than purpose and it should focus more on increasing citizens' willingness to co-create PV.

Some of the informants were particularly goal-oriented:

"The only reason for following @eMorror is to be aware of the new rules and regulations, and to be up-dated about the traffic such as live feed of travel times, traffic alerts, roadworks, road closures, etc." (C4)

Others had a higher purpose that related to other people. Sometimes, it was very particular:

"I want better life for my children and grand-children and my family." (C2)

Sometimes it was quite abstract such as "country":

"I do it for my country, we all have to serve this country. I remember someone [J.F. Kennedy] once said: ask not what your country can do for you - ask what you can do for your country." (C8)

Or "patriotism":

"We felt no-one was listening, we felt worried, and we felt somebody must take action. And that's why Saudi citizens are so much now supporting these new initiatives [Ma3an], and the government in general. We are proud that our government made that stand." (C1)

And "religion":

"Protecting the society from vandalism is a religious duty, it's stated in the holy Quran [religious text of Islam]." (G7)

The purpose of the activity was an important factor in engaging citizens to co-create PV. However, the meaningfulness of the activity had a far-reaching effect. According to Li and Gorger (2011), the higher the degree of citizens feeling the relevance of their interaction with government agencies, the more they are willing to contribute their time and energy.

6.4.2 Co-creation

Alford (2002) distinguished between the different roles that citizens may play in co-creation, such as clients, volunteers, and members of a community. As a client, one receives private value from the service provided by the government agency i.e. public services that are individually consumed (Moore 1995) unlike PV, which is jointly consumed. Volunteering differs from being a client, as it involves being actively engaged in the provision of the public services for others. This might results in volunteers acquiring private benefits. As a member of a larger group (i.e. citizen), one contributes to the community and the public sphere by being more active in public services co-creation. What a citizen receives is PV, whereas a client and a volunteer (to a lesser degree) receive private value (Moore 1994). A citizen is part of a collective "we" who express their voice through working together (Hirschman 1970).

The findings also indicated that some of the informants believed that the shift to the co-creation of PV is not only necessary, but also needs to be recognised and improved. In the words of informant C6:

"Involving us [citizens] is a necessity, there is no other alternative. Social media opened a whole new world of possibilities… Now they [government agencies] can't say we're unable to reach out." (C6)

Four factors suggest that the change to co-creation is inevitable: the new ICT capabilities, namely Web2.0 applications; the social revolution in the way people communicate; the economic revolution that comes with a new division of labour; and the demographic revolution as the "digital natives" populate the market (Mergel 2012).

Furthermore, allowing citizens to co-create PV may fulfil their desire to signal competence to themselves and fellow citizens (Mochon et al. 2012). By being involved in the process, citizens can control and shape the outcome, thus demonstrating their competence to themselves before others. Self-affirmation theory asserts one's attempt to keep a positive view of the self (Sherman and Cohen 2006). Dahl and Moreau (2007) have found that the need to feel competent is the most common reason for engaging in co-creation activities.

In the private sector, co-creation is based on two directions. First, companies are challenged to produce goods more efficiently. Thus, customers act as possible co-producers to take over some activities in the production process (Prahalad and Ramaswamy 2000). Second, customers' knowledge and skills with products or services can add value for a company, thereby making them co-creators (Vargo and Lusch 2004). Previous research has shown that co-creation increases customer satisfaction and loyalty, and at the same time also helps companies to achieve competitive advantage (Grissemann and Stokburger-Sauer 2012). However, in the public sector, many of the types, objectives, and outcomes of co-creation have not been systematically investigated (Voorberg et al. 2015). According to a report by the EU (2014), co-creation mobilizes citizens to become an active part of the process, which is necessary for innovation in the public sector.

Informants have provided different and sometimes contradictory perceptions about the co-creation process and outcomes via Gov2.0 initiatives. These vary from positive to negative to in-between perceptions. For example, informant C4 expressed a positive view:

"There are many smart people out there, and the government can't do everything like a black box, we [citizens] need to be involved, we know what we need, so ask us. I think the government is realizing this fact, and I am optimistic about these new apps that allow for citizen input, it's the way to go." (C4)

On the other hand, a negative view was expressed by C7:

"Well they just want to put the onus on the citizens, and look for someone to blame when things go south." (C7)

Informant C1 expressed a similar view:

"Many would argued that it's placebo, just a deliberate ploy to let people blow off steam." (C1)

A stronger negative view was voiced by C2:

"I think because of the ongoing pressure from citizens and civic society groups, they (government officials) don't want to take responsibility and be accountable, they want to shift it to us (citizens), which I believe is an act of cowardness. It's their job; they get paid to do it." (C2)

As mentioned in section 2.4, of the three co-creation modes, the synergistic integration is the most relevant to this research context, as indicated by the earlier findings of e-government research (Weerakkody et al. 2006). The citizen willingness to co-create PV via Gov2.0 was reported to result in a more synergistic integration in the process.

"When I am motivate to use Gov2.0, I am excited to learn about the government agency initiatives. Many of them {government agency initiatives} are on the right track, just need to include our views. In this scenario I will join forces with government officials to achieve better outcome." (C8)

To realise the co-creation potential is relatively easy. All it requires is the willingness to explore one or more previously ignored dimensions; however, it is difficult to achieve synergistic integration unless the two sides work together in harmony.

6.4.3 Public Value

PV has been attracting interest from both researchers and practitioners (Williams and Shearer 2011) since its introduction by Mark Moore in his book "*Creating Public Value*" (Moore 1995). Moore's (1995) approach to public management was a response to the over-emphasis of the narrow concepts of cost-efficiencies in the public sector (O'Flynn 2007). Williams and Shearer (2011) concluded that it is a somewhat fuzzy concept that means different things to different people. Indeed, there is no consensual definition of PV (Rutgers 2015). However, there is an agreement that PV has different value dimensions: the tangible values aimed at improving public services efficacy, and the intangible values concerned with engagement and trust (Jørgensen and Bozeman 2007). It offers a new way of evaluating government activities as well as combining efficiency and effectiveness with social value (Bryson et al. 2014).

Along these lines, Meynhardt (2009) outlined four basic dimensions of PV derived from the theory of basic needs (Epstein 2003). They are: moral-ethical, hedonistic-aesthetical, utilitarian-instrumental, and political-social. Moral-ethical is about positive self-evaluation and maintaining a consistent relationship between self and environment. According to one informant:

"To achieve the common good, it is necessary for everyone to work together. If we don't, few may profit, but at the end of the day, we'll fail as a group. I'm a strong believer in the motto: Together we stand; divided we fall." (C1)

Another informant highlighted the same point:

"We need to be communicative, it is not about what you gain as an individual but the community as a whole. We need to give priority to society goals over individual goals." (C6)

Hedonistic-aesthetical is about maximizing pleasure and avoiding pain, and promoting positive emotions and avoiding negative feelings. Utilitarian-instrumental is about understanding and controlling the environment, and the ability to control expectations in order to produce desired outcomes. Political-social is about relatedness and belongingness, and attachment to group identity. The "value" that one attaches to an experience is based on how well that experience fulfils one's basic needs against these dimensions. Meynhardt (2009) argued that PV is enhanced when these dimensions are met. A government official shared the same view:

"PV is not just the resources and the outcomes, but also includes what will the government agency deliver and the criteria that it will be judged for. Nowadays the standards are high, citizens are impatience, they want everything now and there, or you will be Hashtaged [10] as they say."(G2)

Denhardt and Denhardt (2007) extended the definition of PV to encompass the relationships of trust between governments and empowered citizens that involve the creation of shared interests and responsibilities through engagement efforts and collaborative processes. Citizens thus move beyond their basic roles as voters, constituents, or poll responders to become actively engaged problem solvers, and co-creators of what is valued by and good for the public (Briggs 2008). Contrary to Herbert Simon's (1997) formal rationalities of the "administrative man" vs. "economic man", the above approaches to PV promote a pragmatic type of rationality where citizens are seen to be competent at solving problems, which allows them to develop a public spiritedness (Bryson et al. 2014). Alford and O'Flynn (2009) distinguished between PV on one hand and other terms such as "public goods", "public interest" or "public benefit". They concluded that PV focuses on a wider range of values; it is not just outputs, rather it is also about what citizens deem to be meaningful from their perspectives. In this research, the term PV has been used to mean the collectively expressed, politically mediated preferences consumed by citizens, created not only through outcomes but also through a process of achieving trust, commitment, and fairness (O'Flynn 2007).

One executive government official echoed this point:

[10] [#] symbol used in Twitter to make it easy to find message based on a specific theme.

"We are using public resources, so we need to utilize it in the best possible way, the government honored us with this privilege to serve the country, therefore, we must be up to the trust. If you ask me how do I see PV? I see it as a chain, or a process, you have an input, activity, output and outcome. Our job is to integrate all this process to achieve the desired social outcomes."(G8)

Benington (2009) proposed a broader definition of PV that encompasses ecological, political, economic, and social and cultural dimensions that add value to the public sphere. Ecological value is about adding value by promoting sustainable development and reducing the negative effects of pollution, waste, and global warming.

"Ecosystems are essential to the economic prosperity and other aspects of our welfare. The government needs to regulate policies that helps to support our environment such as generation and renewal of power. I think we are lagging behind in this dimension, you lived here [Riyadh][11] right? There is not any waste and recycling services, we just dump everything together. I heard that some municipalities in Jeddah[12] have started to offer such services, but you need a country-wide initiative, not a few here and there. The benefits of these services will manifest themselves at a larger scale." (C4)

Political value is about adding value by encouraging and supporting dialogue and active public engagement. One informant stated:

"Twitter is our parliament, virtual one, because we don't have a physical parliament like the one that exists in other countries…It's a true analogy, people from all political, social, and cultural backgrounds meet and discuss issues of concern." (C2)

Economic value is about adding value by means of economic activity and employment.

"They say that Gov2.0 is saving money, here is a question to you, how come the fees for some government service such as drivers licences haven't gone down yet?" (C8)

"In some countries technologies cut costs by replacing expensive labour with cheap technology. However, in other places [countries] the technology is more expensive than labour. The government need to see the pros and cons before employing the technology and its impact on the employment."(C3)

Finally, social and cultural value is about adding value by building social capital, social cohesion, and shared cultural identity.

[11] Capital city of Saudi Arabia.
[12] Second largest city in Saudi Arabia.

"We're a nation of culture, with long lived traditions. Each region has a distinct identity and dialect with different cuisines… of course there is Al- Jenadriyah[13], but we need more...we should embrace who we were and who we are now." (C7)

The interviews revealed that government officials had different sets of values when asked about PV. Some described PV as:

"an obligation of governments to act for the benefit of society at large and the environment. Every government agency has to perform ethically to maintain the earth ecosystems. We [government officials] need to balance the trade-off between economic development and the society and environment welfare." (G2)

And to some, PV is*:*

"…an explicit and measureable accountability tool that should be pursued by a government agency and reflected in its operations."(G4)

Or:

"effectively achieving optimum utilisation of available public resources, while operating in an environment with high level of variability and complexity." (G7)

To others, PV meant:

"a fit between what government agencies can do and what citizens need. We hear about the government investment in some strategic initiatives, but not all government sectors are involved… in our department we are asked to be active via our Twitter account but we can't cover all the regions in the same way, and some of our followers [citizens] might only be interested in specific info [information]about their region." (G5)

Most research on PV has focused on identifying the key value dimensions (Bryson et al. 2014). As mentioned in section (3.3.3), Jørgensen and Bozeman (2007) proposed a PV inventory with 72 dimensions including Trust, commitment, and Fairness. These three dimensions have been used in this research to present the PV construct because of their relevance in the Gov2.0 context; however, the statistical analysis presented in Chapter Five supports only the fairness dimension.

In the Middle East, and the Arab culture more specifically, there are old traditions and a solid foundation for considering the country and the government as the same, which is rooted in social norms that highlight power and relationships (Hofstede 2001). Over time, PV has been closely linked with the country and authority. Based on this view, many consider the public good as equivalent to the private value of the monarch. Thus, one's contribution to PV is determined by his/her interest in politics in general and compliance with the government. This cultural difference between the Arab world and the

[13] Al- Jenadriyah is an annual cultural and heritage festival held near Riyadh.

Western world, for example, leads to diverse PV realisation. For example, in the West, the norm is to take care of public property such as public playgrounds and this is seen as a public good, because it is usually funded through taxpayers' money. On the other hand, in the Arab context, it is common to destroy public property and have no concern for any public place outside of one's own property:

"This is the government money, why should I care, or contribute my time and energy to something that is not directly beneficial to me." (C7)

From this perspective, governments are responsible for PV creation, whereas citizens become co-creators of PV if they are empowered to engage with governments.

Besides the three main themes of the GPVM (empowerment, co-creation, and PV), active dialogue and the availability of resources where supported from the interviews findings. Gov2.0 was seen as moving from passive to active dialogue as explained by one informants:

"for me active dialogue is a prerequisite for engagement, it's necessary to convey a message of understanding concerns and perceptions accurately."(C5)

As expressed by many government officials, if Gov2.0 is to be used for citizen engagement, then the necessary resources should be available to government agencies. For example, one government official from a managerial level said:

"…it's impossible to pursue engagement via Gov2.0 with inadequate resources…without the availability and utilization of ICTs resources we can't build the capacity to meet the engagement goals."(G3)

6.4.4 Emerging themes

The interview findings have offered emerging themes regarding the GPVM as follows.

Pride of creation, ownership and recognition

The interviews revealed that pride in creation and ownership is important in the co-creation process. This sentiment regarding the use of Ma3n was expressed by C2 as follows:

"I am proud of my contribution in the unemployment policy that the ministry of labour posted and asked for our feedback, it feels like it's ours. I have a share sense of ownership and I will fully support it." (C2).

Co-creation fulfils a psychological and social need to signal competence to one's self and to others (Mochon et al. 2012), and this feeling of competence leads to increased appraisal.

According to C8, when using Kamnapp:

"I think my input in the process of reporting a traffic violation makes me feel I am an active citizen, a good citizen of this great country doing my obligation, you know the quote by the late ministry of interior – Prince Na'if- (the citizen is the first policeman), so it is something that we all have to do to protect the society." (C8)

Involvement in the process and one's efforts can create higher levels of commitment (Ritter and Walter 2003). The same thing applies to ideas and suggestions that are self-proposed: there is often a tendency to feel that they are more useful and important than others (Ariely 2010).

Indeed, similar views were reported by many informants; for instance, C1 reported that his efforts via Gov2.0 made him support the outcomes:

"When I first participated by providing my feedback on the Saudization Nitaqat program draft through Ma3an, it consumed a lot of energy and time from me, but in retrospect, I could say confidently that I am happy with the final policy." (C1)

Another informant, C3, commented on responding to @eMorror:

"When we were asked about ideas to provide better services via Absher[14], I would argue that being part of the process, changed my perspective. They took me on board and got the buy-in from me." (C3)

The investment of time and energy in ideas or projects is likely to result in greater commitment and interest in the task at hand.

Also, recognition of one's input and effort is likely to increase citizen commitment and achieve better outcomes. This point was expressed by two of the government officials:

"Governments agencies need to give some credit to the active citizens, I mean those who participate via Gov2.0. You would not image how this is well-received! Let me tell you a true story, once we thanked one active participant by mentioning him, you know how to @mention someone right? By putting his/her @username anywhere in the tweet other than the start so all our followers will see it. This was massive to him, since then he has been an ongoing committed user, liking, retweeting, replying, you name it, all of our posts." (G3)

"After two years of starting to crowd-source inputs, we decided to honour the people with the wining ideas or most relevant ones in one of our conferences. Some might claim that many people will be motivated only by monetary rewards, I can tell you that I have experienced this at first hand that recognition of people efforts is rewarding enough for them and results in their dedication." (G2)

[14] Saudi Arabian Ministry of Interior e-services portal.

When citizens are clear about their contributions to the process and see their imprint on the outcomes, they are more likely to participate further.

Learning, embeddedness and influence

The interview findings revealed that learning is crucial to the synergistic integration and should be considered in PV co-creation. These findings are consistent with previous research on synergy within organisation alliances. According to Venkatesh and Bala (2012), in order to develop synergistic integration, three components must be present: learning, embeddedness and influence.

The learning mechanism comprises information gathering, processing, and understanding. This tends to lead to information-construction and interpretation, which is critical to the success of integration. This argument has its roots in the social information processing theory (Salancik and Pfeffer 1978). This viewpoint was expressed by C4 as follows:

"When I started following the @eMorror Twitter account, I understood their perspective. I was able to learn about their processes, the volume of things they had to deal with, Also, I am now aware that they need to have balance between the agency internal priorities and the public concern with particular issues."(C4).

Sarker et al. (2012) argued that relational embeddedness is based on familiarity, trust, and commitment. According to one participant who used Kamnapp:

"Using Kamnapp made me feel that I am an integral part of the whole society, you could share your expertise, time and effort to contribute to the greater good and make a broader impact for the people. That's great, I'll do it again and again." (C5).

Another informant shared a similar view, albeit with a condition:

"Commitment and trust is a two-way street, you need be trusted first by the government agency, and then you will trust that agency and be committed to contribute to the workings of it [government agency]… for me, I need to know that my input will be valuable and be examined, not just window dressing." (C2).

Influence implies that the two parties are trying to understand each other's perspective in order to reach a win-win scenario. These views were articulated by many government officials such as G1who said:

"Having the citizen engaged in the process usually results in a better decisions, they present an alternative viewpoint on the issues at hand, highlight questions that may need to be clarified, and act as a watchdog to ensure efficient and effective outcomes." (G1).

When citizens become part of a synergistic integration with government, they are able to understand the government perspective, become familiar with their capabilities, and have the opportunity to influence their policies and decision-making. Thus, these activities have potentially positive influence on PV.

Consuming, participating and producing

In addition to the current classification of engagement in e-government (i.e. one-way interaction, two-way interaction initiated by government, and two-way interaction directed from citizens to government and vice versa), the interviews revealed different ways of engaging via Gov2.0. Citizen engagement can be divided into consuming, participating and producing. The consumers are those individuals who only read, view or watch but never participate. This was expressed by a government official (G4) and a citizen (C4):

"We know that not all our Twitter account (@eMorror) followers are active, active in terms of likes, retweets, and replies. Majority are lurkers who only read, watch or listen." (G4)

"Frankly I follow @eMorror to be updated about their new campaigns, any new info [information] they have, and current issues they are dealing with, I never commented on their account." (C4)

Participating includes both user-to-user interaction and user-to-content interaction (e.g. ranking the content, posting comments, etc.). It does not include one's actual production.

This was highlighted by many informants such as G1:

"The percentage of the intermittent contributors among our registered users have expanded, it use to be around 10% when we started, but now I would said it's around 30- 40%, when I say contributors I mean users who comment, not create content." (G1)

And G6 expressed this view:

"Often we have users who comment on other users post, they respond to their queries or provide their experience when dealing with Kamnapp. It is good to build this community by providing a platform for this kind of interactions, although not main purpose of our app, but something that we like and encourage." (G6)

Producing involves the creation of one's personal contents by writing or posting text, images, audio, and/or video.

According to one government official:

"Even though in our Twitter account there are limited options for users' creation, many times we found users creating Hashtags # about something that relate back to us and from there we start a conversation with the user."(G5)

Similarly, two citizens commented:

"I am more interested to use Kamnapp because I like to do things, I am a doer, I like to be heard. When I see something wrong or someone has violate the law, I'll use the system and follow it up. Also, using the system makes me feel that I am helping the government, and the society in general, but when I had to call 999[Saudi emergency number] or other numbers, it made me feel like I am complaining without doing something about it." (C6).

"Kamnapp lower the barrier to participate, for example, taking a pic [picture] or a video is much easier than writing what happened, we know one pic [picture] is worth a thousand words." (C7).

These findings indicate that a new classification of citizen engagement that includes consuming, participating and producing is necessary and important to the success of Gov2.0.

Respect, trustworthiness, and fairness

The interviews revealed that people need to feel that their voice is being heard and respected:

"I want to know that I am listened to, my voice matters, even if they did not do the things that I want, just giving me a say in the process will show some respect and make me more acceptable of the outcomes as consequences." (C5).

Furthermore, Gov2.0 can enable government policies and regulations to be consistent, explicit, and transparent. This in turn will increase citizen trust in the government and in the platform (i.e. Gov2.0). As one citizen said:

"There are always means that the government can use technologies to foster trust." (C7).

Moreover, involving citizen in decision-making will demonstrate that the government agencies are operating in a transparent and accountable manner, which should increase citizen trust and confidence in government workings.

"I would rather to involve the citizen, even though if this results in delaying the process of developing and implementing our [the government agency] policies and procedures. Citizen's trust is key to our legitimacy." (G1)

Not surprisingly, Gov2.0 was perceived as a tool to achieve fairness. Government agencies can give access to information and reach out to various groups equitably.

"It's [@eMorror] a great outlet to seek info. Before I started following their Twitter account, I used to call a friend of mine to ask about certain things…Like what are the car regos [vehicle's registration or plate numbers] offered in this week's auction? Or other things and it seems like he is doing me a favour or I owe him. Now I can ask the account with a click of a button." (C4)

The public sector is supposed to work in a cost-effective manner (do things right), but is also expected to achieve legitimacy (do the right things). This point was expressed by a government official:

"We have to keep reaching out to all of our clients or citizens, this is fairness of service provision, whether is operationally efficient or not we have to offer our service. As the use of Kamnapp or Gov2.0 more generally becomes more widespread, fairness is likely to be enhanced." (G6)

What these findings mean is that respect, trustworthiness, and fairness are crucial to achieving legitimacy via Gov2.0.

Sense of community

Sense of community was also mentioned in the interviews. It was related to empowerment, with many saying that they experience this feeling when using Gov2.0 frequently. The advance of technology has given ordinary citizens a greater voice in many of today's social arenas. Online communities have shifted the focus from people to ideas, where relationships may follow the interaction rather than precede it. One of the main advantages of virtual communities is their effective filtering mechanism that enables its members to cope with information overload (Rheingold 2008). The members help each other to sift all material for key and useful information and share this among the group.

"Our participants [citizens] are our biggest assets, we wouldn't believe what's the impact of their input on our processes. Sometime it's an eye-opener, always a fresh pair of eyes is helpful. With too much information out there, you need to be selective and the so-called 'crowd-sourcing' is just doing this exactly." (G2)

Gusfield (1978) distinguished between two types of communities: territorial and relational. The notion of territorial community refers to geographical location such neighbourhood, town, or city. On the other hand, the notion of relational community refers to the quality of people's relationships, such as professional or spiritual. The two types are not mutually exclusive, although modern society develops community around interests and skills more than around locality (Durheim 1964). For the purpose of this research, community is considered as relational groups and communities of interest. As one of the informants puts it:

"I think of fellow followers [Citizen] as a group, a team, an interest group trying to influence public policy in the interest of the whole society. You can't high five by yourself, it takes at least two, and both have to do it to make it happen." (C3)

The feeling associated with being part of a community creates some sort of boundaries that define who is in and who is out. Berger and Neuhaus (1977) see this as social distance that separates "us" from "them".

This feeling was expressed repeatedly during the interviews, by both sides – citizens and government officials. For instance:

"When the app [Kamnapp] provides tangible benefits to ***them*** *[citizens], things they can see and feel everyday such as making their daily commuting smooth and less stressful if they reported someone who did not the follow the traffic rules, which in turn makes* ***us*** *[traffic officers] more responsive." (G8)*

"The process should start with ***us*** *[government officials] we need to be clear with our objectives from the Gov2.0 initiatives, we must be really upfront with whether we want to consult or inform* ***them*** *[citizens] because frankly they are poles apart. To consult means that we are willing to listen and incorporate their input, if applicable. On the other hand, inform is just about letting them know what we're up to and why. The key is to manage the expectations, if they think they are consulted when they are actually informed or the other way around, they will not be happy." (G1)*

"I don't care about ***them*** *[government officials], about what they say, I only care about actions. When they say: we are using Twitter for listening to our citizens and to meet their needs, but they don't engage* ***us*** *[citizens], that is completely rubbish." (C4)*

"I think the main issue here is that we have different understanding of what Gov2.0 can and should do for ***us*** *[citizens], it's not about what it [Gov2.0] can do for* ***them*** *[government officials], we have different points of view and this is what the conversation should be about, not just following the trend on which platform or app to use." (C7)*

Influence is described as a sense of taking ownership of the community, which can be achieved through engagement and satisfaction. It can be seen as one's feeling that he/she is able to influence the group, and vice versa.

"I'm always happy to participate in the Ministers' [Minister of labour and social development] policy development cycle. They started this process a couple of years ago, where they [government officials] post a draft policy to get feedback and comments from interest groups or individuals, and then redrafts the policy as appropriate. Many of us [citizens] complain about the new policies regarding the Saudization program but never bother to comment on its draft policies. We need be proactive not reactive, we need to take the initiative and work with it, affect it, which should results in a policy that meets our needs." (C1)

Integration and fulfilment of needs leads to a feeling of support and the ability to maintain a sense of togetherness. Furthermore, emotional connectedness refers to the beliefs and commitment about having a shared and common experience. Both -fulfilment of needs and emotional connection- are captured in the following quote:

"We [citizens] are in this together, we need to complete each other, I mean complementary not contradictory. We all face the same experience and need to understand each other's strength and weakness and that's the way forward." (C5)

Pelling and White (2009) suggested that a sense of belongingness to a group promotes increased use of Web2.0 platforms.

"I think as a frequent users on Gov2.0, it makes me feel being part of something bigger, ….like we all belong to the same team and our job is to make sure it's the greatest country on the plant.. I'm sure this is what keeps me motivated to use Gov2.0." (C6)

Bennis and Nanus (1985) investigated workers' empowerment and found that a sense of community increases workers satisfaction. Indeed, the interviews revealed that when informants experience a sense of community, they will be motivated to engage in the co-creation process and will be more satisfied with the outcomes. For example:

"Of course I'm contented with the app [Kamnapp], I feel I'm a part of a community that look after its members, not a formal community but informal because we interact with each other on an ad-hoc basis." (C8)

A government official highlighted the same point but from a different angle:

"Twitter followers are unpredictable and fluid as the speed of light, one Hashtag can change things, one Minister was forced to resign because of a Twitter Hashtag [#sue_The_Minister; #محاكمة_الوزير], we need to manage our followers, be responsive, close to them, make them happy." (G3)

These findings suggest that the feeling of being part of a larger community empowers citizens to take part in PV co-creation.

Coolness factor

While government agencies are rarely described as "cool", especially by younger generations, Gov2.0 has made this possible. The interviews revealed that many government agencies are using Gov2.0 in order to appear sociable and put a human face on their agency, thus enhancing their public image.

According to one government official:

"Our public perceptions have changed big time since we launched the app at the beginning of this year [Feb 2016], we are perceived as being tech-savvy and relevant to the new generation." (G9)

The importance of reacting quickly to emerging technologies was pointed out by one government official:

"We [government agency] first opened [created] a Facebook account, and then with the trend towards Twitter we [government agency] opened a Twitter account. Now we are testing Snapchat. In this technology era you need to be agile and follow the crowd." (G4)

The same point was echoed by a young citizen:

"I think it's cool for many government agencies to reach out citizen where they are, I like using apps and with Kamnapp it's so convenient to report anything, before I had to call the 999 [Saudi emergency number] and that would put me off." (C8)

Bolton et al. (2013) and Kuriyan et al. (2010) discussed coolness in the context of Web2.0 applications as a set of subjective perceptions that makes an application attractive. Neale and Russell-Bennett (2009) examined what it is that drives the appeal of social networking applications such as Facebook. One important feature contributing to the success of these applications was the "cool factor". Given the reliance of Web2.0 applications on the network effect (i.e. how many people use the network), it is likely that "cool" applications will spread more rapidly. In order to understand why some Web2.0 applications are so popular, it is important to determine what makes an application "cool". Government agencies should consider these features that make Gov2.0 more appealing.

Another reason reported for the government use of Gov2.0 is to reach out to the younger generation:

"Everyone uses social media ... Did you see that video of a baby who was holding a paper magazine and was trying to scroll with her finger on the cover thinking it's an iPad...some things are impossible to understand for digital natives…You need to speak their language."(G8)

On the contrary, many government officials expressed their concerns about the use of Gov2.0 as a public relations tool. Some informants had difficulty seeing the potential PV of Gov2.0:

"Honestly, it's just a time waster…nothing gets done, we have to manage the account and do our other duties. Just for the sake of being social!" (G5)

Others had issues with the potential damage that Gov2.0 could cause such as data leaks or being seen as wasting resources on frivolous quests:

"The risk is too high, especially in our case with huge sensitive citizens' data. Last year, I've attended a conference for cyberattacks [1st Annual International Cyber Security Conference (ICSC) in Riyadh, Saudi Arabia], and a lot of speakers were talking about the data risk of using social networking." (G9)

Another main concern was that Gov2.0 opens up an avenue for negative feedback:

"what are we supposed to do when we get negative comments or feedback in a Twitter thread. It's just bad publicity and the users trigger each other." (G5)

6.4.5 Unsupported themes

The interviews findings have also offered possible justification for some of the unsupported themes from the quantitative analysis of the GPVM as follows.

Sense of impact

Sense of impact was not supported by the quantitative analysis, thus it was compulsive to capture the interviewees' views regarding sense of impact. Sense of impact has been defined as the degree to which an individual can influence the outcome of an activity (Thomas and Velthouse1990). One reason for the insignificant results regarding sense of impact may be the lack of direct knowledge of the actual impact citizens have on the outcomes. This is consistent with Hackman and Oldham's (1980) interpretation of impact as knowledge of results. As one informant puts it:

"I'm sceptical about the influence we [citizens] have over issues of concern, I've been an advocate for giving drivers warning of SAHER[15], and also to audit the mobile speed camera locations every year to guarantee they are located in blind spots only. There are many people who share these views and took Gov2.0 to spread their message. Even Prince Muqrin [previous crown prince] said it once on Channel one. But nothing has happened." (C4)

Another reason could be the citizens' perception of the extent of their influence, via Gov2.0, on the outcome. Rotters' (1966) theory of locus of control is similar to sense of impact. Locus of control refers to one's perception about whether events in life are controlled by oneself or by external forces. Thus, locus of control is conceptualised as a continuum, ranging from external to internal locus of control. Simply put, someone with an internal locus of control believes that he or she can influence events and their outcomes, while someone with an external locus of control blames outside forces for everything.

"We can't do anything about the government workings, as they say the government knows best." (C8)

Perceived risk and Perceived benefits

Risk is commonly defined in terms of the likelihood of gains and losses (Mayer et al. 1995). As risk is in the eye of the beholder, it is seen as a complicated construct to measure objectively, and thus the literature focuses on risk perceptions. Perceived risk is defined as the citizen's subjective expectation of potential loss incurred in order to achieve a desired outcome (Warkentin et al. 2002). In other words, risk is associated with a lack of control whether it be economic risk or exposure of personal information. Perceived risk includes behavioural and environmental uncertainty. Behavioural uncertainty results from the Gov2.0 provider (i.e. government) behaving opportunistically by taking advantage of the virtual infrastructure, which offers distant and impersonal interaction. Environmental uncertainty exists due to the unpredictable nature of Gov2.0 technology that is beyond the control of the consumer (i.e. citizen) (Belanger and Carter 2008). Pavlou (2003) found that perceived risk significantly reduces users' exchange

[15] SAHER is a fixed and mobile speed cameras system in Saudi Arabia.

of information and transactions when using e-commerce. Warkentin et al. (2002) proposed that perceived risk will have a similar effect on e-government. However, according to one informant that was not the case:

"I can't think of any risks from using Gov2.0. It's hard to look at it from this perspective, I use social media all the time. I guess it's something normal to me, we or at least me don't think about what are the risks involved each time I use Gov2.0. It's like cars, we know there are risks, but don't factor it each time we use cars. It's an everyday thing now!." (C5)

Perceived benefits, on the other hand, refers to the degree to which using Gov2.0 is perceived as being better than using the previous method (Moore and Benbasat 1991).

"I think one of this era's greatest challenges is social media, we are addicted to it. Of course there are benefits of Gov2.0, but is it any benefit approach? Everything in life has a benefit, but the question is it worth it, does it justify the time and energy. If the positive impact outweighs its negative impacts, I'm all for it." (C2)

Interestingly, higher levels of benefits did not increase citizens' willingness to co-create PV, nor did risk perceptions decrease citizens' willingness to co-create PV. These findings are inconsistent with those in the e-business literature. However, the settings of businesses and government agencies differ in terms of their raison d'être (profit vs. service) and coverage (target customers vs. population at-large) (Bélanger and Carter 2008). Thus, citizens perceive businesses differently from the way they are perceived by government. Perhaps the perception of risk and benefits is more prevalent in e-business than in e-government. In addition, the economics literature (Sunstein 2000) suggests that perceived risk and benefits are compared simultaneously during risk-benefit analysis.

Steijn et al. (2016) concluded that the difference in perceived risk and benefit mediates the relationship between the users and the non-users of Facebook and their concerns regarding privacy issues. To assess the risk-benefit trade-off, they created a *"Risk-benefit balance"* construct based on the number of risks and benefits that respondents considered were likely to occur (or not). Although Gov2.0 initiatives are increasing in popularity, Gov2.0 is still in its infancy. Citizens are just starting to evaluate the risks, benefits, and consequences of using Gov2.0. Hence, one's tendency to engage in risk-benefit analysis will have an impact on future Gov2.0 usage when it reaches maturity.

Responsiveness

Government agencies usually aim to provide high quality services and promote best practice as a way of being responsive to their citizen's needs. However, many government officials have different perceptions of responsiveness and efficiency (Andrews and Van de Walle 2013). To be responsive is to be consistent with citizens' interests, while efficiency means maximising results at lower cost, and sometimes there is a conflict between the two.

"[There are] a mix of way to look at it! Actually, responsiveness can be hampering to efficiency…but if you asked citizens, they would say the opposite because they only see and measure a small area of a large and complex bureaucracy operation…there needs to be another way to reach agreement because a lot of the time, decision-making processes mainly reflects efficiency. But I would say that responsiveness is a generally an important feature of public service, though not in our case." (G2)

Three of the four government officials from the Kamnapp case study gave similar responses. None of them drew a sharp distinction between responsiveness and efficiency, although all mentioned trust as the main source of legitimacy and none would want to commit to responsiveness if given a chance. Moreover, some government officials thought that this was a costly means of interaction and difficult to sustain given the available resources. Perhaps government agencies could allocate more resources to Gov2.0 to guarantee faster response in order to develop citizen's trust in Gov2.0 which, in turn, may increase Gov2.0 legitimacy in the future.

Transparency

Transparency is a measure of the extent to which government agencies and their process are visible to citizens; that is, how well citizens understand what is going on. However, the government view on transparency might be different, since many government agencies are using Gov2.0 for outreach rather than for transparency (Felten 2009). Outreach refers to the government choosing what to make visible; transparency, on the other hand, refers to giving citizens access to the information they want. According to many government officials interviewees, transparency is not the only important focus of their agencies. What is even more significant is that they are simply using Gov2.0 as a new platform for public relations (PR) (Sobaci and Karkin 2013) and government propaganda (Smith and Rainie 2008). As a young government official informant explained:

"[Gov2.0] is not the right vehicle for transparency, we can't… it will open a can of worms. We're trying to make up for the poor coverage of our service in the mainstream media. " (G7)

Another senior government official informant stated:

"…our goal is to reach our citizens in a convenient way, my opinion regarding transparency via Gov2.0, I don't think it's designed for that purpose."(G8)

One citizen expanded on the same theme:

"Twitter and other applications are making governments seem more accessible, but are they [Government agencies]? I think they need to change their attitude and behavior first." (C1)

Another citizen made a similar observation:

"it's similar to the way my dad use to communicate with government in the olden days, they use to send a telegraph, nowadays we use Twitter with no more than 140 characters[16]. It looks much easier, but trust me it's the same. It's not about the medium, the response must change." (C4)

In order to provide access to the information and data, transparency must include all facets of information access: physical, intellectual and social. Physical access means being able to reach the content; intellectual access means being able to understand the content; and social access means being able to share the content (Burnett et al. 2008; Jaeger and Bertot 2010; Jaeger and Burnett 2005).

Accountability

Similar to previous ICTs (Meijer 2009), Gov2.0 was seen as a tool that encourages transparency and accountability and promotes citizen engagement in public affairs (Bertot et al. 2012). However, many have argued that the use of ICTs in the public sector often simply improves their technical efficiency without leading to significant changes (Heintze and Bretschneider 2000). Instead of transforming the nature of government agencies, Gov2.0 often just reinforces existing practices (Wong and Welch 2004).

"[There is] too much duplication in our responsibility, too little coordinating between departments. I'm not really sure who's accountable when using Gov2.0." (G9)

"We had a history of lack of accountability, many managers would start initiatives [IT projects] as they wanted and do their own thing without thinking about being accountable or not." (G3)

Above all, some citizens see that Gov2.0 dilutes accountability regarding the expected outcomes of government policies. According to one informant:

"Certainly, governments are using Gov2.0 to shift blame and responsibility… they no longer take sole accountability for policy failures."(C2)

The most likely explanation for this unusual finding seems to be that the government official's informants reporting less accountability via Gov2.0 were not using it for the purposes of transparency and engagement. This in turn suggests that citizens who are not engaged via Gov2.0 may have other expectations of government performance.

16 In Nov7, 2017 Twitter announced that it is expanding the character limit to 280 (https://blog.twitter.com/official/en_us/topics/product/2017/tweetingmadeeasier.html.)

Perceived power relationship

Perceived power relationship depends on the ability of government agencies to influence citizens. A priori, some citizens will be more sceptical about Gov2.0 than others. Therefore, government agencies should try to focus on this group of uncertain citizens in order to maximise their influence over the relationship. However, many government officials did not see Gov2.0 as a way of influencing the citizen-government power relationship. For example:

"many people thought that the new technology will change the world.. it's like when websites where first introduced in our government agencies or e-service, many argued that it's a game changer…but I don't think it changes the nature of the relationship." (G4)

"we have the upper hand…citizens have to obey to our decisions.. once a decision is made, it's unlikely for citizens to question it. I don't think they have the capacity or the resources to do so."(G5)

There are several possible explanations, but one conclusion seems inevitable: government officials did not see Gov2.0 as a platform that can increase the power relationship between them and the citizens. It could be argued that if government agencies were utilising Gov2.0 for PV co-creation, the perceived power relationship would have an impact on both citizens and governments.

6.5 Summary

This chapter suggests that empowerment dimensions are important for PV co-creation. Further, of the three co-creation modes, synergy was found to be the most relevant to the Gov2.0 context. The interview findings shed some light on emerging themes as well as offering justification for the unsupported themes from Stage 1 of the data collection. Further discussion on the findings from the two stages of data collection is presented in the next chapter.

CHAPTER SEVEN
DISCUSSION

7.1 Overview

This chapter links the research findings to the existing literature, discusses their significance and implications, and concludes with a description of the refined GPVM. It is structured as follows. Section 7.2 integrates the findings from the quantitative and qualitative analysis. In section 7.3, the revised and improved GPVM that incorporates the findings is presented. The refined GPVM explains this research's main concepts and the relationships between them. The chapter then concludes with a discussion of the key findings (section 7.4) and the chapter summary (section 7.5).

7.2 Integration of Findings

By and large, the GPVM was statistically validated for the two units of analysis, i.e. citizens and government officials. From the GPVM citizen sample, eight out of 11 hypotheses (H1a7 was omitted from factor analysis) were supported:

Hypothesis (H1a1+) -***Perceived dialogue*** *influences citizens' willingness to co-create PV via Gov2.0*- was supported, and confirmed that when citizens perceive that the government agency is using Gov2.0 to establish a two-way dialogue as opposed to a monologue, citizens will be more willing to engage in the PV co-creation process.

Hypothesis (H1a4+) -***Perceived sense of control*** *influences citizens' willingness to co-create PV via Gov2.0*- was also supported, and affirmed that having a sense of control over Gov2.0 is an important element of the interactions when co-creating PV.

Hypothesis (H1a6+): -***Perceived meaningfulness*** *influences citizens' willingness to co-create PV via Gov2.0*- was supported and confirmed that the meaningfulness of the task is essential to increase citizens' willingness to co-create PV.

Hypothesis (H2a+): -***Citizens' willingness*** *to co-create PV influences the synergistic integration via Gov2.0*- was supported, and explained that citizens' willingness is a prerequisite for synergistic integration via Gov2.0.

Hypothesis (H3a+) and (H5a+): -***Citizen synergistic integration*** *influences citizen engagement and satisfaction via Gov2.0*- were both supported, and established a link between the synergistic integration and higher

citizen engagement and satisfaction with Gov2.0. Synergistic integration is the highest level of co-creation and collaboration between citizen and government and is expected to result in an increase in citizen engagement via Gov2.0 and satisfaction with Gov2.0.

Hypothesis (H4a+): -***Citizen engagement*** *via Gov2.0 influences PV*- was supported and showed the causal relationship between the increase in citizen engagement and enhancing PV. When citizens participate via Gov2.0, they can voice their needs and values to government agencies, which is expected to enhance PV.

Hypothesis (H6a+) -***Citizen satisfaction*** *with Gov2.0 influence on PV*- was also supported and confirmed that increase in citizen satisfaction leads to enhanced PV. Citizen satisfaction with Gov2.0 is likely to result in the realisation of higher levels of what they value.

The following three hypotheses were not supported:

Hypothesis (H1a2-) -***Perceived risk*** *effect on citizens' willingness to co-create PV via Gov2.0* — was not supported; this may be due to the ubiquity of Web2.0 and Gov2.0 in today's everyday activities. Thus, Gov2.0 is not seen as a technology with specific features, but as a practical means to an end in everyday practice (Riemer and Johnston 2014). This means that users do not notice the technology; it does not draw attention when being used.

Hypothesis (H1a3+) -***Perceived benefit*** *effect on citizens' willingness to co-create PV via Gov2.0*-was not supported; this is similar to the previous hypothesis about risk; hence, the user might not be engaged in evaluating the benefits as it is an everyday practice. Perhaps a combined construct such as risk-benefit balance may have an impact on Gov2.0. Future research should address these potential modifications.

Hypothesis (H1a5+) -***Sense of impact*** *effect on citizens' willingness to co-create PV via Gov2.0*- was not supported; one reason may be the lack of direct knowledge of the actual impact of their activities, and the extent of their influence, via Gov2.0, on the outcome.

From the GPVM government sample, five of the nine hypotheses (H1b7 was omitted from factor analysis) were supported.

Hypothesis (H1b2+): -***Legitimacy*** *influences government agencies' willingness to co-create PV via Gov2.0*- was supported. This means that the more Gov2.0 reinforces legitimacy, the greater is the likelihood that government agencies will promote PV co-creation. This seems to suggest that the basis of legitimacy involves the way in which citizens judge the government agency, since it reflects citizens' experience of government performance (Lindgren and Jansson 2013).

Hypothesis (H1b5+): -***Resources*** *influence government agencies' willingness to co-create PV via Gov2.0*- was supported, and confirmed that the availability of and access to resources are vital. Resources refer to

people, technology, organisations, and shared information that are involved in the process of creating and delivering value between a provider and a customer through service (Spohrer et al. 2008). Vargo and Lusch (2004) called for a move from a goods- dominant logic of resources (G-D logic) towards a service-dominant logic of resources (S-D logic). G-D logic proposes value as something captured at the point of exchange, or 'value-in-exchange' (i.e. price). S-D logic, however, views value as being created with and determined by the user, referred to as 'value-in-use'. Vargo and Lusch (2004) in the context of service-dominant logic (S-D logic) classified resources as either operand resources (those that an act or operation is performed on such as goods) or operant resources (those that act upon other resources such as knowledge and skills). Furthermore, Vargo and Lusch (2008) proposed technology as operant resources. Thus, the availability of the necessary resources (e.g. information, knowledge, and skills) determines the government agency's willingness to co-create PV via Gov2.0.

Hypothesis (H2b+): -***Government agencies' willingness*** *to co-create PV influences the synergistic integration via Gov2.0*- was supported. Unsurprisingly, the willingness of government agencies to facilitate the process of PV co-creation via Gov2.0 by providing citizens with the platform was a significant factor in synergistic integration. Unlike other ICTs, Gov2.0 supports many collaboration models such as crowdsourcing or citizen-sourcing (Citizen-to-Government) (Lukensmeyer and Torres 2008), government as a platform (Government-to- Citizen), and do-it-yourself government (Citizen-to-Citizen) (Linders 2012). This research focused on the first two, i.e. citizen-sourcing (Citizen-to-Government) "user-driven content" in terms of consultation and ideation, and "Government as a Platform" (Government to Citizen) "government-initiated" in terms of informing and nudging (Linders 2012), which required the government's willingness to support the platform.

Hypothesis (H3b+): -***Government agencies' synergistic integration*** *via Gov2.0 has a positive influence on citizen engagement via Gov2.0*- was supported. As mentioned previously, the synergistic integration between government and citizens is likely to result in increased citizen participation via Gov2.0. Synergistic integration requires that both parties work collaboratively. As a consequence, this harmony should have a positive impact on increasing the level of citizen participation via Gov2.0. The synergistic integration is expected to offer substantially more advantages than what each party can create separately, thus resulting in higher levels of participation via Gov2.0.

Hypothesis (H4b+): -***Engagement*** *via Gov2.0 has a positive influence on PV*- was supported. Governments can provide their citizens with access to information and tools via Gov2.0 that will allow them to co-create according to their own preferences. This results in the added value that will influence the success of the desired PV. It includes: citizen wants and needs and assure it is relevant to them (Moore 1995); what the public values (Cordella and Willcocks 2010); what impacts on values about the 'public'

(Meynhardt 2009) created not only through outcomes but also through processes (O'Flynn 2007). Thus, citizen participation via Gov2.0 will realise and enhance PV.

The following four hypotheses were not supported:

Hypothesis (H1b1+): -***Responsiveness*** *influences government agencies' willingness to co-create PV via Gov2.0*- was not supported. Responsiveness (H1b1+) is similar to accountability (H1b4+). However, whereas accountability relates to reliability, responsiveness refers to listening, and reacting quickly. Responsiveness and accountability are very vague concepts, with many instantiations. It is possible to classify them in a number of different ways because one can be both reliable and reactive at the same time. The influence of the lack of responsiveness on the willingness of government agencies may be due to unintentional negligence or lack of training.

Hypothesis (H1b3+): -***Transparency*** *influences government agencies' willingness to co-create PV via Gov2.0*- was not supported; this is in line with Meijer and Thaens' (2010) differentiation of internal and external transparency in the Gov2.0 context. Internal transparency refers to sharing the relevant information about policies and procedures via Gov2.0 within government agencies such as a wiki page for civil servants or with other government agencies. On the other hand, external transparency refers to making the government processes and decision-making more transparent via Gov2.0, which can be done with an interactive design. The lack of transparency did not appear to influence government willingness to engage in PV co-creation. This might be explained by the informants' current government agencies' use of Gov2.0 that includes only third-party applications such as Facebook and Twitter, which may not support the two types of transparency. Technology is essentially time-specific (Pfaffenberger 1992); what is introduced today might not exist in the future. Likewise, today's users expect personal computers (PC) to be reliable, but twenty years ago that was not the case. PC crashes were frequent but today it is taken for granted that operating systems are stable. Similarly to the way expectations about reliability change, citizens today expect information to be easily available at their fingertips in a way that their ancestors could not have imagined, and this affects their current attitudes regarding transparency.

Hypothesis (H1b4+): -**Accountability** influences government agencies' willingness to co-create PV via Gov2.0- was not supported.

Accountability, as mentioned above, is a difficult concept. Unlike objectivity or honesty, accountability cannot be described as behaviour similar to being objective or being honest. Being accountable is not something one controls; accountability generally comes from an outside influence, not from within the individual or the organisation (Bannister and Connolly 2014). Moreover, to whom is a public servant accountable? Chapman and O'Toole (1995) suggested that accountability is one of the main principles

governing government officials. In a similar vein, Jørgensen and Bozeman (2007) considered accountability to be an essential personal attribute of civil servants. Accountability includes professionalism, honesty and integrity. Whilst accountability is probably better regarded as a job description for the public servant, it is not entirely clear as a feature of a public service via Gov2.0. Furthermore, it is one of those words with no equivalent in many other languages (Dubnick 2003) including Arabic (the data collection language). Thus, this might offer some explanation of why accountability had no effect on government willingness to co-create PV via Gov2.0. However, testing accountability in other settings might yield different results.

Hypothesis (H1b6+): -***Perceived power relationship*** *influence on government agencies' willingness to co-create PV via Gov2.0*- was not supported. Political processes, such as public hearings and other methods of citizen consultation that extend beyond elections, were believed to increase the responsiveness and legitimacy of government action (Fung and Wright 2003). Individual citizens will have political views about the overall shape of what a good and just society should be. This, in turn, is followed by some kind of collective civic opinion in which citizens decide individually and collectively what they should do for others as a matter of civic virtue. This should provide a political-power balance that pressures the government to act accordingly. However, many scholars have argued that Gov2.0 has never been a tool for achieving political-power balance (Gladwell and Shirky 2011). These criticisms result from the ease of using these platforms (i.e. click of a button known as clicktivism), which give the illusion that one is taking action, but is never a real form of activism (Morozov 2012).

The interview findings discussed in Chapter Six provided insights and important implications for the GPVM:

- the emergence of the "Ikea effect"
- the expansion of synergistic integration
- rethinking citizen engagement
- the role of legitimacy
- the inclusion of sense of community
- the rise of the 'coolness' factor
- the revision of PV

The emergence of the "Ikea effect"

The interview analysis revealed that pride of creation, ownership and recognition are important factors in the co-creation process. Pride of creation satisfies psychological and social needs, and this leads to the

task being valued more highly. Recent research has shown that people like and overvalue self-created objects more than objects that were created by others because of the efforts they have invested in the creation. For example, in one study (Norton et al. 2012), participants who were required to assemble IKEA boxes themselves were willing to pay much more for the box than others who just inspected an already-built one. Other experiments with building Legos (Mochon et al. 2012), designing T-shirts (Franke et al. 2010), designing scarves (Franke and Schreier 2010) and preparing food (Shapiro 2004) have confirmed the same findings: that effort increases the positive appraisal of self-created objects. This phenomenon has been dubbed the "IKEA effect" (Norton et al. 2012) or the "I designed it myself" effect (Franke et al. 2010), and might be best described as effort justification (Norton et al. 2012). For example, some instant cake mixes require the addition of fresh eggs or milk to tap into this feeling of ownership that is a by-product of the extra effort (Shapiro 2004). Furthermore, research has confirmed that the same phenomenon applies well beyond the scope of physical objects (Beatty et al. 1998). It includes efforts that involve intangible things such as ideas.

Understanding the sense of ownership and pride that comes from investing time and energy in ideas or projects can increase the commitment and interest in the task at hand. Citizens who are involved in the co-creation process via Gov2.0 might be more committed to the outcomes. Furthermore, recognition of one's input and effort is likely to increase commitment and achieve better outcomes. For example, the open-source community encourages programmers to put their names on pieces of code they write to ensure better quality work and allow them to take pride in their work. When citizens are familiar with their contributions and can see the impact on the outcomes, they are likely to be further engaged.

The expansion of synergistic integration

Synergy means that the whole is greater than the sum of its parts (Aristotle's Holism). It means that the relationship between the parts and the emerging properties is the most important element in the process. Synergy opens up new possibilities and opportunities as a result of the creative application of the co-creation process. Synergy produces an ecosystem that values different views, respects them, builds on strengths and compensates for weaknesses. Synergy encourages contribution by enabling an open and more trusting relationship, and involves a shared feeling of harmony and power. Without synergy, much potential remains untapped and becomes completely undeveloped and unused. However, in synergy, potentiality does not mean actuality and quantity does not substitute for quality. The synergistic process is more creative and results in insights and outcomes that no-one had thought possible. New perspectives, new paradigms and new alternatives are revealed and produced upon. In synergy, everything is related to everything else; it is the relationship that creates unity and harmony. It includes genuine involvement and sincere commitment at higher level of trust.

The interview findings confirmed that synergistic integration comprises three dimensions: learning, embeddedness and influence. These findings are in line with those of previous research on synergy (Venkatesh and Bala 2012). The learning dimension means that each side must observe, understand and reflect, which is critical for successful integration. Overall, the learning mechanism will result in understanding each other's situations and viewpoints on matters of mutual interest, which consequently will influence its outcomes (e.g., citizen engagement via Gov2.0 to achieve PV). Embeddedness is about building strong ties based on trust and commitment (Sarker et al. 2012). This will lead to information-sharing (e.g., unpublished policy). A similar argument has been established in the organisational literature which suggests that inter-organisational embeddedness usually influences knowledge-sharing about cultural values and norms (Kim et al. 2006; Venkatesh and Bala 2012). Embeddedness will facilitate understanding of matters of shared interest, and consequently will increase citizen participation via Gov2.0.

Lastly, the influence mechanism suggests the notion of the pressure of two parties on each other in a relationship.Prior research found three forms of influence: coercive, mimetic, and normative (Oliver 1997). These forms force parties to adapt to norms and expectations (Bala and Venkatesh 2007). For example, in the citizen-government relationship, through their interactions and awareness of each other's views, learning and influence mechanisms tend to develop a shared understanding of different matters that are of interest to both sides. This understanding is expected to increase the synergistic integration and consequently citizen engagement via Gov2.0, which leads to enhanced PV. Here it is argued that the coercive and normative pressures are relevant in the citizen-government relationship and will influence each other. For example, in the citizen-government relationship, through their interactions and awareness of each other's views, through their learning and influence mechanisms, the two parties tend to develop a shared understanding of different matters that are of interest to both.

Rethinking citizen engagement

Previous classifications have considered different forms of engagement in e-government ranging from one-way interaction (managerial), two-way interaction directed from government (consultative), and finally, the highest form of participation which is the two-way interaction directed from citizens to government and vice versa (participatory) (OECD 2001; Reddick 2011). Others (e.g. Arnstein (1969); Macintosh (2004) have modelled citizen participation on a ladder or scale, starting with informing, then moving to consulting, then engaging, and ending with empowering. Informing is about guaranteeing the right of citizens to public information and making information accessible. Consulting is concerned with involving a broader audience in government initiatives. Engaging is usually top-down process in terms of access to information and reaction to government-led initiatives. Empowering, from the bottom-up

perspective, is about citizens being producers rather than consumers of policy. This level recognises the need to allow citizens to influence and participate in the policy formulation process.

However, the interviews revealed different ways of using Gov2.0: consuming, participating and producing. Consuming refers to those individuals who only read, view or watch but never participate. Participating includes both user-to-user interaction and user-to-content interaction (e.g. ranking the content, posting comments). It does not include one's actual production. Producing involves the creation of one's personal contents by writing or posting text, images, audio, and/or video. These are similar to the ways in which Web2.0 applications are used in the literature.

Citizens use Gov2.0 for different motives such as: information seeking, social interaction and self-expression. By linking different ways of participation with citizen motives, government agencies can better manage their Gov2.0. For example, citizens consume Gov2.0 content for information-seeking and entertainment purposes, participate for a sense of community and social interaction, and produce content for self-expression and self-actualization. The digital natives' generation has created a culture of sharing without hesitation (Gasser and Palfrey 2008). The co-creation process via Gov2.0 can offer different motivations to different types of citizens (e.g. millennials use it for self-expression, older citizens for sense of community etc.).

The role of legitimacy

The interviews also revealed that a new approach to understanding the interaction amongst stakeholders, with citizens as sources of both legitimacy and evidence, is recommended (Savoldelli et al. 2014). According to Gladwell (2011), legitimacy is based on three principles: respect, trustworthiness, and fairness. Respect refers to citizens feeling that they have a voice in the process and that their views will be acknowledged. Trustworthiness refers to the degree to which citizens think government policies and regulations are consistent and transparent. There has to be a reasonable expectation that the rules are going to be explicit and does not change suddenly. Gov2.0 can be used as a driver of trust in government agencies. Gov2.0 enables citizens to feel a sense of association with government agencies, which is more likely to result in an acceptance of government actions.

Finally, fairness refers to the government treating all citizens equally. Gov2.0 has improved the fairness of service quality and equity. For example, Gov2.0 enables a broader audience to have access to information in a cost-effective manner. Furthermore, citizens are not interested in their own experience only, but also in their fellow citizens, perhaps the less fortunate. According to one study in the UK, the majority of citizens agree that public services should be directed at those with greatest need (Kearns 2004). This suggests that fairness is seen as a universal approach to deciding the degree of legitimacy.

Failure to address fairness when implementing Gov2.0 might lead to legitimacy destruction rather than construction. It is highly likely that by following a fair procedure, fair outcomes and correct decisions will be produced. Gov2.0 can be a token of legitimacy to achieve PV. This is with the key understanding that such capabilities can be fulfilled only by collaboration amongst multiple stakeholders including citizens, businesses, and NGOs (Janssen and Estevez 2013).

The inclusion of sense of community

The theory of community was applied first to the studies of neighbourhood by employing the sense of community scale (SCS) (Doolittle and MacDonald 1978). The purpose of the SCS was to differentiate low, medium and high neighbourhoods according to five dimensions: social interaction, safety, social bonding, commitment and satisfaction. Glynn (1981) found a positive relationship between sense of community and the ability to function competently within the community. Rheingold (2008) coined the term 'virtual community' to describe the online communities that enable the interaction between its members based on a vast range of interests via ICTs. McMillan and Chavis (1986) defined the term 'sense of community' as the socio-psychological feeling experienced by people within a community. They propose that sense of community has four elements: membership, influence, fulfilment of needs, and emotional connection. Membership is the feeling of belonging or of sharing a sense of personal relatedness. Influence is a sense of mattering, and making a difference to a group and vice versa. Fulfilment of needs is the feeling that members' needs will be met by the group's shared resources. Finally, emotional connection is the commitment and belief that members have shared and will continue to share similar experiences.

The interview findings confirm that Gov2.0 facilitates the experience of being part of the community, which is an important factor in citizen engagement. For example, many citizen informants reported that being part of a virtual community increased their feelings of connectedness and fulfilment of their needs. Also, it provides a platform for expressing views and exchanging experience, which has been shown to have positive effects on citizen engagement and satisfaction (Albanesi et al. 2007). The benefits of virtual communities go beyond citizens to include government agencies. Government agencies can use Gov2.0 as a means of acquiring citizen input and knowledge. Furthermore, offering a platform for citizens to find each other and discuss new ideas and issues of concerns will give the government agency the opportunity to measure public perceptions.

The rise of the 'coolness factor'

Interviews with the government officials revealed that their use of Gov2.0 is affected by the 'coolness factor' characterised by responding quickly to emerging technologies and at the same time relating to the

younger generation. Not much academic research has been conducted to examine the notion of 'cool' in the e-government context, and it remains a concept that needs further investigation to understand its importance as a dimension of technology adoption (Neale and Russell-Bennett (2009). The term cool is defined in Oxford dictionary as: "Fashionably attractive or impressive." It has been used interchangeably with 'trendy' or 'popular'. Thus, it is reasonable to infer two components of coolness: temporal and social. Trendy implies the time dimension; what is a trendy now might not be so in three months' time. If something is cool, it is considered to be up-to-date, thereby appealing to many people. The notion of cool has evolved to become a marketing strategy in the U.S. and throughout the world as a symbol of youth. Being cool is important to the younger generation, and drives billions in revenue of consumer purchases worldwide annually. Product diffusion among consumers often depends on the cool factor (Neale and Russell-Bennett 2009). The more cool or trendy an item becomes, the more likely that it will be adopted (O'Cass 2004).

Gomez and Gould (2010) studied how people's perceptions in different types of public access venues (e.g. cybercafé) shape their use of ICTs. Their findings showed that users' perceptions of how "cool" these venues are influenced their usage patterns. In the opinion of these researchers, among other factors such as trust and safety concerns, the 'cool factor' was the most focal point. Their findings offer insight into the social factors that persist over time. According to Parvaz (2003), coolness in social networking applications can be described as "attractive and providing empowerment" to users. This empowerment is related to the value created by the concept of cool. From the government perspective, Nam (2012) argued that government use of Gov2.0 may be perceived as cool (making a cool image of government as an adopter of new technologies). According to Margetts (2005), government agencies are constantly under pressure to keep up with citizen's expectations of the adoption of new technologies. According to a 2009 report published by the University at Albany's Center for Technology in Government (CTG), many government agencies are using Gov2.0 in order to be perceived as being in touch and social, thus improving the public image of the agency and government in general. The time dimension of coolness suggests that government might need to transfer from one technology to the next one when it becomes popular. This strategy may perhaps require additional resources. These findings not only support the trendy use of Gov2.0 from the government side, but also indicate that the perception of Gov2.0 as cool could affect citizen engagement and satisfaction.

The revision of PV

The interview findings suggested a broader perspective of PV that encompasses ecological, political, economic, social and cultural dimensions. Taking inspiration from various definitions of PV, particularly

those of Benington (2009) and Kelly et al. 2002, and based on the findings of this research, it could be concluded that PV is created when:

- Citizen are empowered
- Citizens and government have similar willingness to co-create PV
- Synergistic integration of the co-creation is achieved
- Citizens are involved throughout the process of co-creation from needs identification to assessment and evaluation of the government performance
- Citizens are satisfied with the processes and outcomes
- Ecological, political, economic, and social and cultural desirable outcomes are met
- Trust in government is increased

Another way of thinking about the co-creation process is that it provides government agencies with the best of both worlds: what it looks like from inside and outside an agency. Government officials with expertise and experience in a field may have a specific view on what is important in order to operate the agency efficiently and effectively. The public may have a different set of priorities. The citizen perspective offers government agencies an outside view of what the public genuinely value. Citizens are the arbiters of PV (Moore 2014); thus, it is essential that government agencies strike a balance between their internal priorities and citizens' concerns. Some might argue that public opinion is sometimes ill-informed (recent controversy about the U.S.A. election and Brexit); however, the role of government officials is to listen carefully to citizens' views, sympathetically address their concerns, and offer a platform that tries to include citizens as the process unfolds.

7.3 The Revised GPVM

Findings from the hypotheses testing and the interviews discussed in the previous chapters (are included in the revised and improved GPVM. This model provides a better basis for explanations after incorporating the findings from the interviews, particularly the factors of ownership, recognition, and sense of community on the citizen side and the 'coolness' factor on the government side. In addition, the inclusion of the synergistic integration dimensions further improves the strength of the GPVM. Based on the interviews, engagement should be classified as consuming, participating, or producing. Finally, PV is categorised as having ecological, political, economic, and socio-cultural values. Based on this discussion, the final GPVM is presented in Figure 7.1.

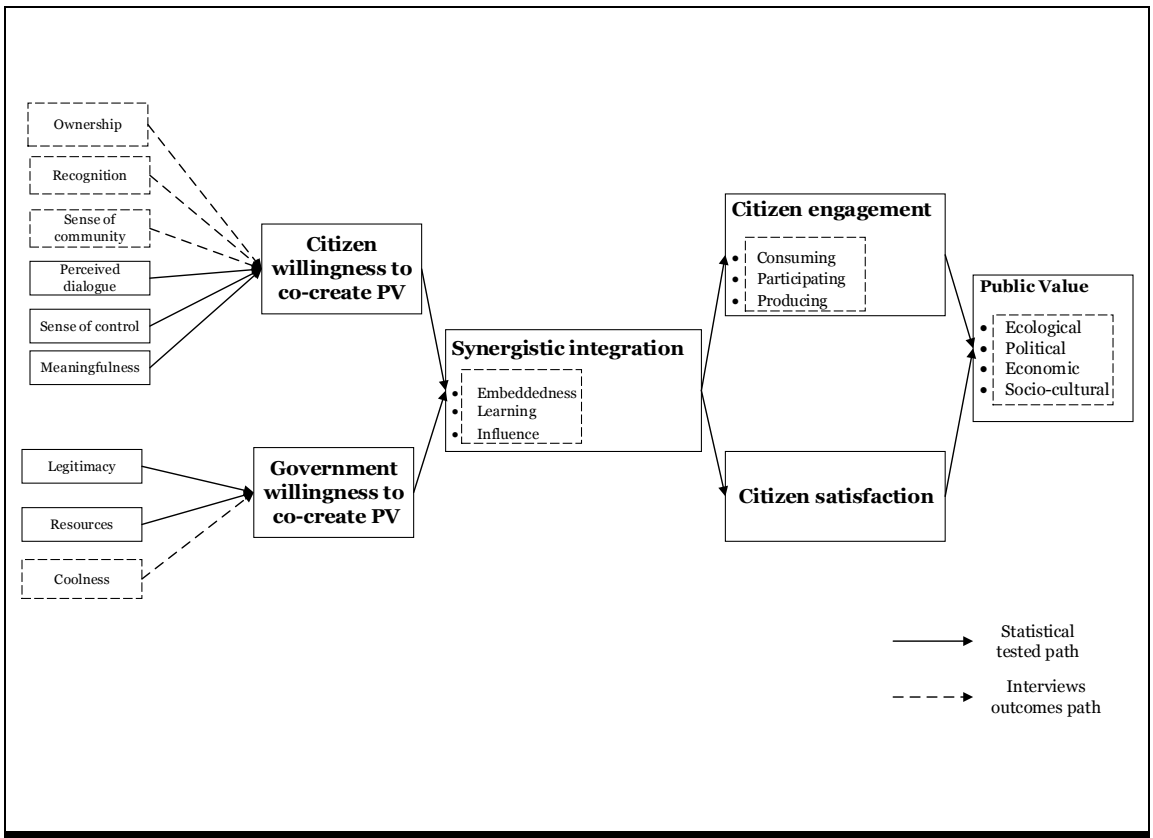

Figure 7. 1. The revised GPVM

7.4 Discussion of the Key Findings

To evaluate the GPVM's utility, it is important to compare, contrast and discuss the findings from the questionnaire and interviews in the light of existing literature to draw conclusions and infer implications. The analysis presented in Chapter Five supported some of the GPVM hypotheses, pointing to the ability of Gov2.0 to foster co-creation and enhance PV. Specifically, the findings suggest the positive effects of dialogue, control and meaningfulness on citizens' willingness to co-create PV, and the positive effect of legitimacy, and the availability of resources on government agencies' willingness to co-create PV. Furthermore, the findings confirm the positive effects of citizens and governments willingness to co-create PV on the synergistic integration via Gov2.0. Moreover, they indicate the positive effects of both citizen engagement via Gov2.0 and satisfaction with Gov2.0, on enhancing PV. In Chapter Six, the analysis explored the main themes of the GPVM, discussed the unsupported hypotheses of the GPVM and revealed some emerging themes. Unsupported hypotheses were investigated and the interviews revealed some possible explanations.

7.4.1 Summary of the key findings

The key findings relating to the three main themes of this research (empowerment, co-creation and PV) are discussed below.

Empowerment

The findings of this research suggest that control, meaningfulness, and sense of community are important dimensions of empowerment. Hence, government agencies need to consider these dimensions when empowering citizens via Gov2.0. By understanding the role of empowerment via Gov2.0 in supporting citizen engagement and PV, this thesis extended e-government literature concerning PV processes. Three dimensions of empowerment (i.e control, meaningfulness, and sense of community) can be effectively leveraged via Gov2.0 to support the citizen engagement. This relationship is important for understanding how Gov2.0 supports the creation and realisation of PV. The GPVM captured both the direct and indirect effects of citizen empowerment on citizen engagement and satisfaction as a means of achieving PV.

Co-creation

Co-creation is developing a new paradigm in the service and management literature (Galvagno and Dalli 2014), and the public administration is following the lead (Uppström and Lönn 2017). Functional fit is one of the main advantages of co-creation (Mochon et al. 2012). When citizens are involved in the process of PV co-creation, it is more likely to meet their needs (Dellaert and Stremersch 2005). Moreover, citizens may gain utility or private value from co-creation, such as personalized service (Åkesson and Skålén 2011). When the co-creation task matches one's skills, the process might be enjoyable (Csikszentmihalyi 1990). Other advantages include mobilising the society's resources otherwise not available to deal with public issues, and improving the efficiency of government workings by building commitment and trust (Verdegem and Verleye 2009). Needham (2008) showed how co-creation can create peer pressure for residents of social housing in the United Kingdom to cooperate and comply with regulations.

Beyond the well-documented components of socioeconomic status -education, income, and occupation- (Almond and Verba 1963), many factors influence citizen participation in public affairs such as time and communications skills, which facilitate effective participation (Brady et at. 1995). As theorized by Alford (2002), the incentives to co-create include tangible benefits such as money and non-tangible benefits such as recognition. However, neither is a sufficient or necessary incentive in the context of more complex co-creation work. Alford (2002) suggests that non-material rewards that focus on the intrinsic, and expressive needs are vital when the value of the co-creation exercise is public in nature. According to Alford (2002), two factors affect whether clients will contribute time and effort to co-create: their willingness to do so, which is prompted by a mix of motivations such as sanctions, material rewards and non-material rewards; and the ability to co-create, which is a function of both the relative complexity of the task and ones' capabilities.

This research made a distinction between ability and willingness, whereby ability refers to the possession of the means or skills to do something, and willingness refers to the state of being prepared or ready to do something. However, only willingness was included and ability was considered to be exogenous to the synergistic integration itself in the Gov2.0 context as many citizens are more active in Web2.0 than in Gov2.0. Thus, citizen willingness is conceptualised as a construct comprising resources, competencies and practices. In this thesis, Gov2.0 is seen as a rich context in which to apply the synergistic integration between the citizen and the government to co-create PV. The new culture of sharing via Web2.0 has redefined the relationship between citizen and the government by creating a platform for PV co-creation. Citizen engagement in the PV co-creation process can take many forms. However, the findings of this research suggest that synergy is the ultimate goal. Synergistic integration occurs when the levels of co-creation and PV are high. This is illustrated in Figure 7.2 below.

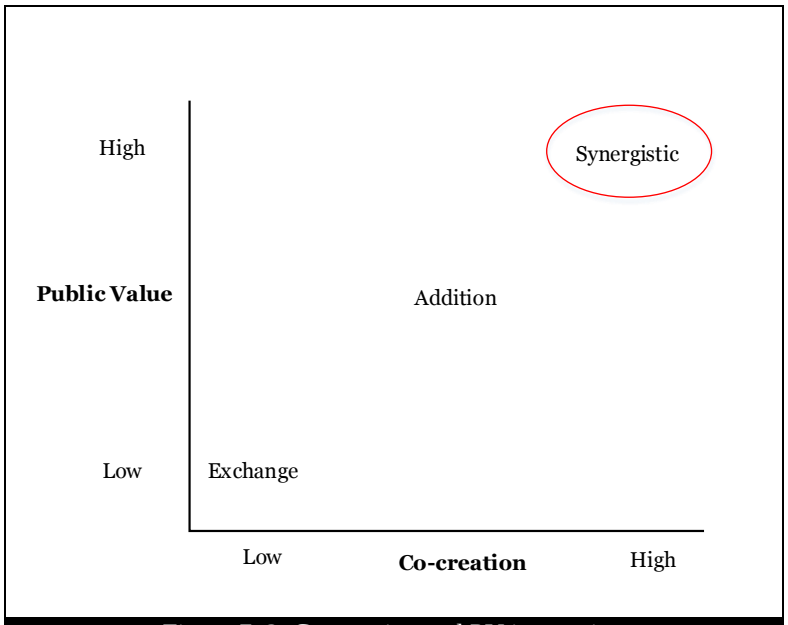

Figure 7. 2. Co-creation and PV interaction

The lowest level of co-creation can be characterized by exchange, which covers a low level of communication and coordination. This interaction produces only low PV and can be described as 'give and take'. The middle position is where co-creation is at a fair level of collaboration and integration. The two parties build on each other's efforts, which results in middle-range PV. The highest level of co-creation is the ideal citizen and government collaboration; it is probably the most challenging to implement but most impactful if successful (Chang and Kannan 2008). It involves government agencies giving up power and control over the content and applications in order to deliver and co-create PV. Furthermore, the potential for superior, efficient, customized PV is enhanced. The synergistic integration results in scenarios where one plus one equals three or more, a win-win situation, and the whole is more

than the sum of the parts. It is an effective strategy in collaborations that can improve one's viewpoint and enlarge one's perspective.

Public value

This thesis focused on a less-discussed aspect of the PV concept: the citizen perspective. Although Moore's (1995) early work on PV focuses on the government perspective, in his recent work, Moore (2014) acknowledged that it was inappropriate to neglect the citizen perspective, that is, the individuals who constituted the society. Along the same lines, Meynhardt (2009) suggested that PV should also include value from the public, when drawn from the experience of the citizen, and refers to input, process, output, and outcome. If, as I argued, citizen engagement via Gov2.0 enhances PV, this leaves us with a challenging question regarding who should be responsible for evaluating the performance of Gov2.0 in delivering PV, and in what settings. Moore (2014) concluded that any measurement of PV must rely on both "utilitarian" and "deontological" values. Utilitarian values focus on the good at individual and collective levels and deontological values focus on what is right, fair and just at individual and collective levels.

To date, IS/PA researchers have taken a narrow, utilitarian view of Gov2.0 with a tendency to substitute economic success for PV (Scott et al. 2016). This is particularly a problem, as the word "public" in PV must serve as a reminder that the proper arbiter of PV is not just governments valuing their perspective, but also individuals valuing themselves, others, and the society in general (Moore 2014). Thus, the GPVM demonstrated that it could be a vehicle for both types of values, i.e. "utilitarian" and "deontological". This is in agreement with Scott et al. (2016) that governments should redress the out-dated economic approach to PV by working to achieve both economic and social success. Gov2.0 has contributed to paradigmatic change to the way citizens interact online with governments (Wattal et al. 2008). For instance, Gov2.0 has provided governments with an unprecedented opportunity to offer personalised citizen-centric services (UN 2012) and unlimited possibilities for citizen engagement (Jaeger and Burnett 2005). Such novel forms of interaction via Gov2.0 further affirm the role of Gov2.0 in enabling PV. However the measurement of Gov2.0 success in delivering PV is not well understood (Heeks 2008) and the development of success measures is necessary to justify investments in Gov2.0 (Yildiz 2007). In addition to asking whether Gov2.0 delivers PV, it is also important to consider why it is used, and how it is used and the outcomes of using Gov2.0 to deliver PV. Exploring PV from the citizens' perspective has led to the development of new research directions. In so doing, this research further advances the theoretical progress being made with regard to Gov2.0 and PV. The findings add to the current IS literature and extends PV theories.

The potential of PV has resulted in a growing body of theoretical development (Pang et al. 2014; Williams and Shearer 2011) accompanied by calls for the application of PV to specific contexts through empirical research (Benington and Moore 2010). This research responded to the call for an investigation of Gov2.0 using PV frameworks as the underlying approach (Bannister and Connolly 2014). The public sector usually adopts ICTs innovation in order to improve the quality of its services (Kelly et al. 2002). However, the quality of government services is only one of many considerations. PV is not simply about the final delivery of services and policies; rather, it also includes the process of interaction amongst stakeholders that influences the design of these services and policies (Savoldelli et al. 2014).

In the GPVM, PV was operationalised as a complex concept; thus, it was modelled as a multidimensional construct to allow for more thorough measurement and analysis. Three dimensions (i.e. trust, commitment, and fairness) were chosen to present the PV construct because of their relevance to Gov2.0 context. However, upon reflection and seeking further clarification from the research findings, it was decided to model PV as a high level construct with four dimensions: ecological, political, economic, and socio-cultural as discussed in section 6.4.3.

As mentioned in Chapter One, PV is one of those umbrella concepts which are broadly defined in order to encompass a set of various phenomena (Williams and Shearer 2011). For instance, Alford and O'Flynn 2009 argued that PV can be interpreted as: a management paradigm, a government rhetoric strategy, a narrative for public managers, and a performance measurement tool. Others see PV as a concept (Kelly et al. 2002), a model (O'Flynn 2007); a heuristic device, or even a story (Smith 2004); or as Rhodes and Wanna put it: *"it is all things to all people."* (2007, p. 408). Umbrella concepts are predominant in disciplines such as e-government, as they try to encompass a set of diverse topics and theories.

Hirsch and Levin (1999) developed a four-stage life-cycle model for umbrella constructs: (1) emerging excitement, (2) the validity challenge, (3) tidying up with typologies, and (4) construct coherence or collapse. They argued that an umbrella construct goes through each of these stages. In the final stage, the research community may override challenges and make the construct coherent, agrees to disagree over its definition, or calls for its demise (i.e. construct collapse). Based on this process model, this research presents several implications of the PV concept through an evolutionary process as an umbrella construct (see Figure 7.3).

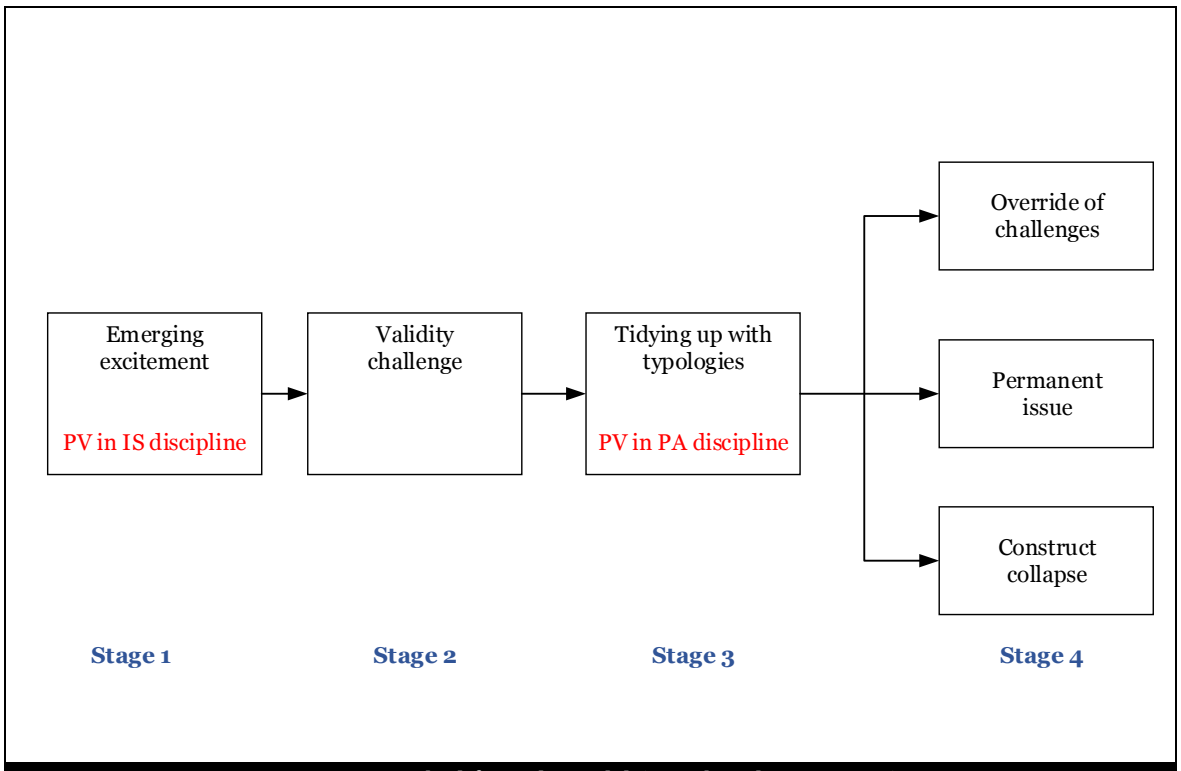

Figure 7. 3. The life-cycle model (Hirsch and Levin 1999)

In the PA literature, two main views of PV can be distinguished: those of 'umbrella advocates' who are the researchers with a broad perspective, and those of the 'validity police', those with a narrower one. The broad (umbrella) perspective is necessary to keep concepts relevant and in touch with the world. On the other hand, the narrower perspective is more methodologically oriented to conform to more rigorous validity and reliability. Tensions between rigor and relevance are by-products of a construct's life cycle. The first camp, the umbrella advocates, was initiated by Moore's 1995 book, *Creating Public Value*. This has resulted in a research agenda on PVM that has been developed and followed by many scholars (e.g. Benington 2009; Benington and Moore 2010; Cole and Parston 2006; Meynhardt 2009; Stoker 2006; Talbot 2009; Talbot 2011). The other camp, the validity police, is more focused on identifying the key value dimensions (Bryson et al. 2014) and has recently come to centre around the Jørgensen and Bozeman (2007) PV inventory with 72 dimensions (e.g. Feeney 2008; Vandenabeele 2008; Van der Wal et al. 2008). Based on the previous discussion, it can be argued that some effort will be made to typologise PV in response to the debate surrounding it. As PV passes stage 3 and eventually moves to stage 4 (See Figure 7.3), it will be interesting to note whether it develops a strong coherence or whether it collapses after more than 20 years since its emergence in the PA literature.

In the IS studies, it is clear that PV is still in stage 1, and both academics and practitioners are becoming increasingly excited about it (Bannister and Connolly 2014). At the moment, it is too early to predict whether PV will continue to attract interest or lose momentum and disappear. This research is an attempt

to add to the debate between the umbrella advocates and the validity police by empirically investigating PV in the Gov2.0 context. Specifically, it has been an attempt to tidy up PV typology and contribute to its coherence in the PA literature. As the main application of this research is in IS literature, its primary aim is to guide the PV journey through stages 2 and 3 by checking and adding to its validity and enabling it to overcome the challenges. However, it is acknowledged that umbrella constructs (such as PV) will arise more often in academic disciplines without stronger theoretical foundations (such as e-government, see section 2.2.3), they will be more susceptible to validity challenges, and are more likely to eventually disappear. Table 7.1 summarises the major findings of this research.

Table 7. 1. The research key findings

Concepts/ themes	Recent Research /Theory	Questionnaire Findings	Interview Findings	Discussion
Empowerment	The theory suggests that empowerment includes: sense of control, sense of impact, meaningfulness, and competence.	Only sense of control and meaningfulness were empirically supported by the quantitative analysis.	The analysis provided partial explanations for the other two dimensions that were not empirically supported (i.e. sense of impact, and competence). Also, the analysis showed that sense of community is a critical dimension of empowerment.	The findings of this research suggest that control, meaningfulness, and sense of community are important dimensions of empowerment. These results suggest that government agencies need to consider these dimensions when empowering citizens via Gov2.0.
Co-creation	The literature suggests three modes of co-creation: exchange, additive, and synergy.	The quantitative analysis confirmed that synergy has a positive impact on engagement and satisfaction, and eventually PV.	The analysis revealed that synergy is indeed important to enhance PV. Furthermore, synergy has three components: learning, embeddedness and influence.	The findings of this research confirmed that synergy leads to higher PV. Therefore, government agencies need to design Gov2.0 to enable synergistic integration.
PV	The theory suggests that (trust, commitment, and fairness) are critical to realising PV.	The quantitative analysis showed that only one dimension of PV (i.e. fairness) was empirically supported.	The analysis revealed that PV is a broad concept and can be categorised into ecological, political, economic, and social values.	The findings of this research study lead to the conclusion that PV is better classified into ecological, political, economic, and socio-cultural.

7.4.2 The GPVM: A Summary

In this research, the GPVM was developed based on a trans-disciplinary approach incorporating factors from relevant literature. It is unique because it departs from the conventional wisdom of looking only at

operational, managerial or institutional factors by incorporating Gov2.0 capabilities and characteristics that enable citizen engagement and enhance PV. The GPVM was systematically developed through a four-step process: (1) identification of the GPVM constructs from the literature; (2) scale development for the GPVM construct; (3) GPVM hypotheses-testing; and (4) confirmation of GPVM relationships through cases studies. For all steps, well-known procedures were used to conduct a Systematic Literature Review (SLR) (Webster and Watson 2002), develop the meanings and relationships of constructs (MacKenzie et al. 2011), design and administer procedures (DeVellis 2003; Yin 2009), and apply techniques to ensure reliability and validity (Lewis et al. 2005; Moore and Benbasat 1991;). The details of the four-step process used to develop the GPVM are presented in several chapters (Step 1: Chapters Two and Three, step 2: Chapter Four, step 3: Chapter Five, and step 4: Chapter Six).

Empirical testing of the GPVM was conducted through a mixed methods approach (i.e. step 3 and step 4). Specifically, a sequential explanatory strategy of enquiry (i.e., quantitative approach followed by qualitative approach to help explain or elaborate results) was considered to be the most appropriate for many reasons. First, the mixed-methods approach helped to develop a deeper understanding of citizens' and government official's perspectives of Gov2.0. Second, the mixed-methods approach can provide stronger inferences than can a single method (Teddlie and Tashakkori 2009). Third, this research utilizes the mixed methods approach to achieve complementarity and obtain a comprehensive view of the phenomenon of interest. Fourth, e-government research is an ideal context for the application of the mixed-methods approach due to the influence of different disciplines (i.e. IS, PA), the diversity of topics (Joseph, 2013), and the impact of technical, political, institutional, economic and behavioural aspects (Janowski 2015) that results in complex system. Furthermore, it has been found that the quantitative approach accounts for the majority of e-government research and there have been calls for greater use of the mixed-methods approach (Cox 2015). Finally, the explanatory mixed-methods approach is recommended when an existing theoretical foundation is applied to a new or novel context (Venkatesh et al. 2013). Furthermore, this strategy is beneficial when unpredicted results emerge from the quantitative phase (Creswell 2013). As stated previously, both areas (Gov2.0 and PV) are relatively new, and the sequential strategies was very helpful for handling results emerging from the first stage of the data collection process. A cross-sectional online questionnaire was developed for Stage 1 of the data collection process (quantitative method), relying partly on established constructs and measurements, and partly on new measurement scales, both of which were necessarily developed and modified to fit the research context, i.e. Gov2.0. Following this, three case studies were chosen for Stage 2 of data collection (qualitative method) and semi-structured interviews were conducted to elicit more information. The analyses of both sets of data (quantitative and qualitative) were conducted separately and then integrated in the final phase of this chapter.

Considering the unique characteristics of Gov2.0, I found it important to reflect on the methodological aspects of this research and particularly the use of mixed methods approach. Such a reflection helps to identify the strengths and limitations of this research and could be beneficial to future research. In applying the quantitative method first, the focus was on respondents' perceptions about the GPVM more broadly. The qualitative method examined specific Gov2.0 applications and yield further insight into this research findings. This helped me both to understand the impact of Gov2.0 as a research setting, and also its impact on enhancing PV. Furthermore, the mixed methods approach provided a more robust basis even for theory development, especially construct identification.

7.5 Summary

This chapter discusses and integrates the quantitative and qualitative findings of this research. The purpose of this chapter is to synthesise and analyse the findings of the research. The previous two chapters presented and analysed the questionnaire and interview data to cover the main components of the GPVM: Gov2.0 (the platform or the context); empowerment (motivation); co-creation (mechanism or the process); and finally, PV (the outcome). Based on the findings, the GPVM was revised. Subsequently, the key findings were discussed in the light of the existing literature to draw conclusions and infer implications.

CHAPTER EIGHT
CONCLUSION

8.1 Overview

This concluding chapter presents a summary of this research including the key findings and their implications in section 8.2. Section 8.3 explains how the research questions have been addressed and section 8.4 reviews how the research objectives were met. Section 8.5 presents the contribution of this thesis to theory and practice. Limitations of this research are acknowledged and future research directions are suggested in section 8.6. The chapter concludes with personal remarks from the researcher in section 8.7.

8.2 Thesis Summary

The aim of this research was to explore and investigate the role of Gov2.0 in the co-creation of PV. In particular, this research intended to identify the factors that contribute to the willingness of citizens and governments to co-create PV via Gov2.0. This research investigated the co-creation process, and in particular the impact of synergistic integration on enabling citizen engagement and satisfaction, which in turn enhances PV. To achieve this aim, this research employed a mixed methods approach, where a pragmatic paradigm informed the collection and analysis of quantitative and qualitative data. A comprehensive examination and review of the literature and multiple rounds of data collection and analysis yielded several key insights. These insights emerged from different data sets and were confirmed by multiple data analysis techniques, which are summarised in the following subsections.

Despite the potential benefits of Gov2.0 and its links with the core themes of this research - empowerment, co-creation, and PV - these have not attracted much academic discussion so far, nor have they been systematically studied in the Gov2.0 context. Although they are strongly interrelated, little research has theorized and empirically tested their influence on Gov2.0. This research has attempted to understand PV and its link to Gov2.0 through the lens of empowerment theory (Zimmerman and Rappaport 1988), and explain how co-creation (i.e. synergistic integration) enables citizen engagement and satisfaction, which in turn influences and enhances PV. These three themes (i.e. empowerment, co-creation, and PV) have been used as the basis for achieving the objectives of this research and answering its questions.

8.2.1 Implications of the key findings

In this research, the findings provide insights into the use of technology (i.e. Gov2.0) as a means of enhancing PV. During the last three decades or so, many waves of new ICTs have been used to support governments. Often, each wave was viewed as revolutionary, and Gov2.0 is no exception. Gov2.0 could be thought of as a totally new phenomenon triggered by the Web2.0 technologies. Alternately, Gov2.0 could also be understood as a new term to represent the use of ICTs in government settings or a new label for an old phenomenon with a long history. This research agrees with the latter and further argues that the use of this latest technology does not, by itself, lead to PV. In order to co-create PV, both citizens and government need to be empowered by Gov2.0. This argument implies that technology is not simply an enabler but rather a determiner of social and institutional arrangements. Even though there is some support for the technological determinist perspective (Yildiz 2007), others have argued that while the new technology presents opportunities to overcome existing challenges, it does not necessarily lead to PV (Bryer and Zavattaro 2011; Heeks and Bailur 2007). The current citizen-government interaction model is seen as a one-way process from government to citizens. Findings from this research suggest that it needs to be synergistic instead of transactional, and only then will the relationship be transformational. The similarities between co-creation and PV are strong; in fact, it makes sense to think of co-creation as a very thoroughly planned PV activity (Rutgers 2015).

To this extent, the findings reported in the thesis and summarised above suggest at least three implications.

First and foremost, the thesis has verified that using Gov2.0 can be a token of PV co-creation; however, it is not a yardstick in itself but can be used as a platform to enable and support many collaboration models such as crowdsourcing or citizen-sourcing (Citizen-to-Government) (Lukensmeyer and Torres 2008), government as a platform (Government-to- Citizen), and do-it-yourself government (Citizen-to-Citizen) (Linders 2012). The use of Gov2.0 is unique because of three key features that make it different from other ICTs: "presence" which is the extent to which a user knows that other users are available for online interaction; "relationship" which is the network of connections that users can tap into; and "sharing" meaning the extent to which users exchange, distribute and receive information through the network (Kietzmann et al. 2011). Furthermore, Gov2.0 enables and helps to realize the objectives of the Open government intitives: transparency, accessibility, responsiveness, participation and collaboration (Obama 2009; OECD 2010). The unlimited possibilities of Gov2.0 have become more evident, and as the boundaries between governments and citizens dissolve, citizens could use their creativity to co-create PV (Bryer and Zavattaro 2011).

Second, the thesis findings indicate that the using Gov2.0 as a tool to enhance PV was achieved through the co-creation process that occurs between citizens and government. Gov2.0 can be used to enable the citizen-government collaboration, which can be classified into one of three types: exchange, additive, synergy. Exchange is where two parties create value by providing resources that the other partner needs. For example, governments regularly post information about policies and regulations via Gov2.0. Additive collaboration occurs when one of the two parties builds on contributions of the other in order to develop value for both. For example, governments offer open data that citizens can use to build apps. Synergy occurs when both parties have to work together in a mutually collaborative manner, using resources harmoniously, which can potentially create more value than what each party would create separately (Sarker et al. 2012). In the synergistic integration, government and citizen mutually solve common issues (i.e. crowdsourcing). In line with previous findings of e-government research (Weerakkody et al. 2006), this thesis confirms that the synergistic integration is the most relevant to Gov2.0. These technologies are seen as platforms enabling co-creation for two main reasons. First, Gov2.0 incorporates the latest technological and behavioural/social developments into the co-creation process that enables simultaneous, media-rich, and extremely interactive collaboration between governments and citizens. Second, Gov2.0 technologies herald open innovation initiatives (e.g. crowdsourcing) that build on a new mode of co-creation where governments can facilitate citizen empowerment and satisfaction. Because crowdsourcing draws input from the collective society, it has the potential to be a useful digital tool to supplement traditional citizen participation (Brabham 2009). Also, as mentioned previously, involving citizens in the process can lead to widely accepted outcomes (Burby 2003).

Finally, the concept of empowerment is useful for demonstrating how citizens perceive and interact with Gov2.0 (Li and Gregor). This thesis findings suggest that when citizens feel and experience empowerment via Gov2.0, they are more likely to engage in and be satisfied with their interaction with the government. These findings imply that government agencies must take into account not only the technical aspects of Gov2.0, but also the social aspects (Benington 2009). To this extent, the thesis has demonstrated that the concept of empowerment (Zimmerman and Rappaport 1988) complements the theoretical understanding of PV co-creation via Gov2.0. It adds a theoretical lens through which PV co-creation by means of Gov2.0 can be explained. However, further theoretical investigations are required in order to understand why some citizens may feel empowered by Gov2.0 while others do not.

The above suggests that PV co-creation via Gov2.0 can and should empower citizens to engage more in Gov2.0 to the same extent that they are attached to their Facebook, Instagram and Snapchat. The evidence does not, however, prove that citizen engagement and satisfaction with Gov2.0 will have immediate effects and therefore enhance PV. As explained in Chapter Seven, the findings could be

explained in terms of learning, embeddedness and influence rather than prompt. The association between Gov2.0, co-creation and PV are clear as a variance model; it will take further research to ascertain the interaction over time as a process model.

Sections 8.3 and 8.4 below discuss how the research questions have been answered and how the research objectives have been met.

8.3 Answering the Research Questions

The thesis began with an explanation of the current situation regarding the use of Gov2.0 and highlighted the fact that its use by citizens is below expectations (Chun et al. 2010). In particular, this thesis challenged the predominant view that Gov2.0 per se is a useful means of realising PV, subscribing to the notion that "If you build it, they will come". Much of the academic research on PV via Gov2.0 has explored the design and execution of these applications (Bovaird 2007; Linders 2012). Despite the rapid growth of e-government research and practice, the enhancement of PV via Gov2.0 has not been systematically studied. Moreover, current studies on PV seem to focus more on institutional factors such as government policies and managerial concerns (Rutgers 2015). Thus, a gap exists in understanding the citizen perspective of PV via Gov2.0 in addition to the government perspective. The research reported in this thesis addresses the above gap by taking a citizen empowerment perspective.

In Chapter One, I explained that the problem motivating this research was the low level of citizen participation via Gov2.0 due to the lack of PV perspective. Guided by this problem, this research focused on the PV co-creation process via Gov2.0. The broad research question is:

How does Gov2.0 enable PV co-creation?

In answering this research question, the findings suggest that citizen empowerment via Gov2.0 indeed plays a major role in enabling citizen engagement and satisfaction which, in turn, lead to enhancing PV.

The empowerment concept has been widely applied in other disciplines, but in IS, and especially in e-government, it is still an emerging concept.

Empowerment theory provides a robust lens allowing the incorporation of the citizen perspective. It facilitates more transparent decision-making and affects citizen engagement and satisfaction with government. The findings of this research have highlighted empowerment enablers (i.e. Gov2.0), processes (i.e. co-creation), and outcomes (i.e. PV).

RQ1: *What are the factors that influence citizen willingness to co-create PV via Gov2.0?*

As described in Chapter Five, the questionnaire findings revealed that perceived dialogue, sense of control, and meaningfulness were significant factors from the citizen's perspective. Similarly from

Chapter Six, sense of community was also an important factor for citizen empowerment to engage via Gov2.0. Further, ownership and recognition or the so-called "IKIA effect" was a significant influence on citizens' decision to co-create PV.

RQ2: *What are the factors that influence government willingness to co-create PV via Gov2.0?*

As described in Chapter Five, the questionnaire findings revealed that legitimacy, and resources were significant factors from the government officials' perspective. In Chapter 6, the coolness factor was shown to be an important driver of government agencies efforts to engage citizen via Gov2.0.

RQ3: *To what extent does the synergistic integration of citizen and government in the process of co-creation via Gov2.0 enhance PV?*

The research found that the synergistic integration of citizen and government in the process of co-creation via Gov2.0 certainly enhances PV. To the best of our knowledge, this thesis is the first to attempt to focus exclusively on the conceptualization of co-creation modes via Gov2.0, especially the synergistic integration for enhancing PV. This research has demonstrated how the synergistic interaction between citizens and governments via Gov2.0 increases citizen engagement and satisfaction using the GPVM. Although there are strong indications that the collaboration of citizens and government leads to PV, the emphasis on the synergistic interaction is important in providing an in-depth explanation. In other words, the GPVM elucidates how the synergistic integration increases citizen engagement and satisfaction via Gov2.0, which in turn enhances PV.

The following section explains how the research objectives have been met.

8.4 Achieving the Research Aim and Objectives

The broad aim of this research was achieved by realising the five specific objectives stated in section 1.4. Figure 8.1 links the research objectives to the thesis chapter where they have been addressed.

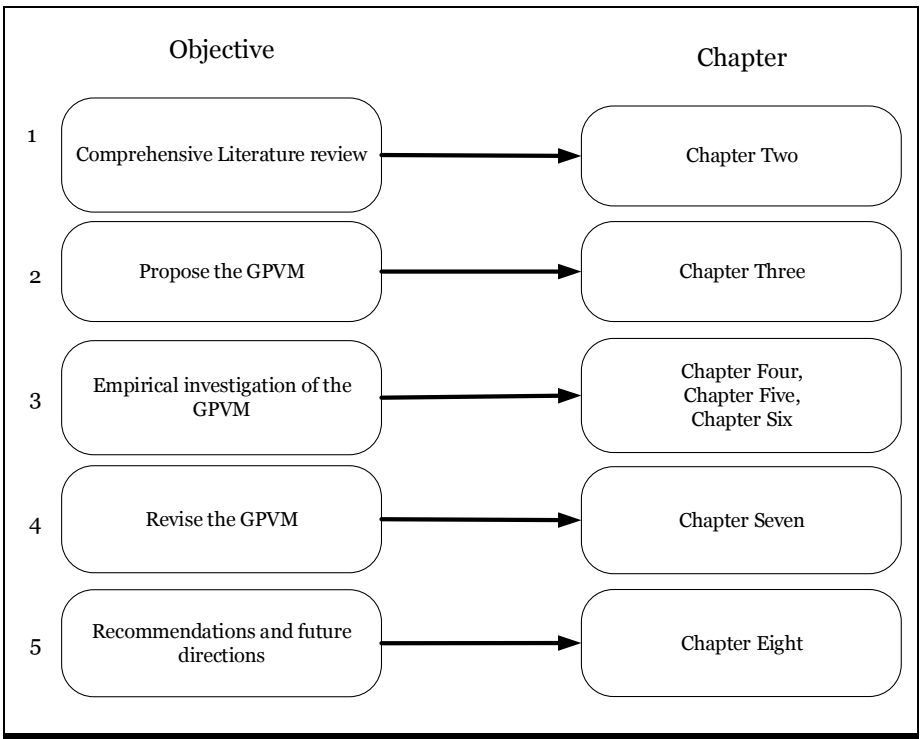

Figure 8. 1. Achieving the research objectives

Objective 1: *Conducting a comprehensive review of the relevant literature including e-government and its reference discipline IS and PA from a trans-disciplinary approach for studying PV co-creation via Gov2.0* was completed in **Chapter Two.** This objective has been achieved through a Systematic Literature Review (SLR) of the relevant fields including e-government, IS, and PA. This objective allowed for a comprehensive view of the phenomenon under investigation and led to the development of the theoretical foundations for studying PV co-creation via Gov2.0 that could be used as a guide for other researchers interested in this area.

Objective 2: *Proposing an operational research model for PV co-creation via Gov2.0 (i.e. GPVM) that incorporates the perspectives of citizens and government officials* was completed in **Chapter Three.** This objective has been achieved by proposing the GPVM. It was developed by focusing on these primary themes: empowerment, co-creation and PV. They are the important building blocks of the GPVM because they provide a basis for addressing the research questions and developing the research hypotheses. The GPVM constructs were conceptually defined based on prior conceptual and empirical studies as well as my interpretation and understanding to fit the PV vis-à-vis Gov2.0, which is the context of this research.

Objective 3: *Empirically validating and testing the GPVM by applying a mixed methods approach to ground the understanding* was completed in **Chapter Four, Five and Six.** In order to ensure the validity and reliability of the GPVM and to reduce any measurement error, it was first empirically validated following the development guidelines in the literature (Lewis et al. 2005; MacKenzie et al. 2011; Moore and Benbasat 1991). In particular, after all the constructs had been defined conceptually, they were operationalized

using validated items from prior related studies, wherever possible, or new items that were developed and modified to fit the research context, i.e. Gov2.0. Next, items were sorted, eliminated and refined through exploratory interviews, informal discussions and two rounds of a Q-sorting exercise. A pre-test and a pilot test were conducted to further refine the final set of items. At the end of the pilot test, it was evident that the GPVM constructs and items had high validity and reliability.

Empirical testing of the GPVM was rigorously conducted in two stages of data collection. In Stage 1 data was collected via an online questionnaire, followed by interviews in Stage 2. In Stage 1, the two units of analysis (i.e. citizens and government) were analysed separately. A total of 766 responses were received from citizens, of which 756 were usable. The citizen sample represented a variety of age groups, education backgrounds, and geographical locations, thereby strengthening the generalisability of the research findings. A total of 332 responses were received from government officials, of which 327 were usable. The government officials sample represents different government roles (i.e. executive, managerial, and technical/operational) with a majority of respondents having had more than five years' experience. In Stage 2, the semi-structured interviews were conducted with a total of 17 participants (Eight citizens and nine government officials). A review of the guidelines for sample size of interviews shows no agreement between scholars. Marshall (1996) suggests using the purpose of the qualitative approach as an indicator. As this research employed a complementary mixed methods approach, where the qualitative approach complements the quantitative approach, the number of interviews was deemed acceptable (Hesse-Biber and Leavy 2010). The empirical findings are discuss in Chapter Five and Chapter Six.

Objective 4: *Evaluating and revising the GPVM for adjustments and iterative modification* was completed in **Chapter Seven**. To ensure the applicability of GPVM, it was important to compare, contrast and discuss the findings from the questionnaire and interviews in the light of the existing literature in order to draw conclusions and infer implications. This was completed by integrating the quantitative and qualitative findings, and evaluating and revising the GPVM. The final GPVM provides a better basis for explanations after incorporating the ownership, recognition, and sense of community factors from the citizen side and the coolness factor from the government side. In addition, the inclusion of the synergistic integration dimensions further improves the strength of the GPVM. Based on the interviews, engagement was classified as consuming, participating, and producing. Finally, PV was categorised as "Ecological", "Polictical", "Economic" and "Socis-cultural" values. The objective was achieved by proposing the final GPVM depicted in Figure 7.1.

Objective 5: *Making recommendations to improve the PV co-creation via Gov2.0 and suggest future research directions* were completed in **Chapter Eight.** This objective was achieved by making theoretical and practical recommendations for improving the PV co-creation via Gov2.0 experience based on the findings of this

research. The theoretical recommendations demonstrate that e-government discipline is an ideal application for the trans-disciplinary approach due to the complexity of issues. The practical recommendations ensure that this research has a real-life application that can be applied by government agencies to enrich citizen-government interaction and enhance PV.

8.5 Research Contributions

The thesis contributes to knowledge and practice in the following ways.

8.5.1 Contribution to knowledge

The application of empowerment theory to Gov2.0 increases our understanding of the importance of purpose (i.e. meaningfulness) and control in routinized behaviour. It responds to Li and Gregor's (2011) call for empirical investigation that illustrates the use of IT artefacts to empower citizens. In particular, this research contributes to the identification of purpose, control, and sense of community as the logic of empowering citizens with the capacity to co-create PV. The empowerment theory suggests the use of both qualitative and quantitative measures to examine the effects of systems designed to empower participants. This research is a pioneering attempt to quantitatively and qualitatively reflect on the empowerment outcomes in the context of Gov2.0.

This research adds to our understanding of the role of Gov2.0 in enabling co-creation and facilitating engagement. Ultimately, it contributes to the identification of co-creation as the core of citizen and government collaboration. This research directly responds to one of the concerns expressed by several scholars, including Luna-Reyes et al. (2012) in regard to investigating the relationships between citizens and government in order to transform e-government and creating value — namely, the optimal interaction model behind their success. Also, the research exemplifies how the co-creation process can drive citizen engagement and satisfaction, which in turn can enhance PV. An understanding of the role of synergistic integration is critical to enhancing PV. Additionally, this research outlines the dimensions of synergy (Sarker et al. 2012) via Gov2.0 that needs to take place within the nexus of citizen-government collaboration.

Extension of PV frameworks and theories into IS discipline is another significant contribution of this research. A key motivation for innovation technologies in IS is to provide better outcomes for stakeholders. Only when recognizing how innovative technology features effect users' experiences of outcomes, can the PV of such systems be fully realized. The GPVM proposed in this research is derived based on a trans-disciplinary approach to Gov2.0 and strives to synthesize the main findings in a coherent and succinct set of variables and dimensions. The empirical testing of the GPVM also provides a strong foundation for the study of PV vis-à-vis Gov2.0. The empirical validation of the GPVM components

(i.e. constructs and items) could be used by other researchers in e-government or IS fields. The data collection process contributes to e-government research because unlike the majority of e-government research, which use secondary data (Joseph 2013), primary data were collected. Furthermore, the majority of e-government studies have been undertaken in Europe, North America, and Asia (Heeks and Bailur 2007). Therefore, validating the GPVM by collecting data from Saudi Arabia, a Middle Eastern nation that is classified as a developing country, will enhance the understanding of this country and other countries in the region and beyond. At the same time this research contributes to the body of knowledge. Although, there is no theoretical reason suggesting that the GPVM is not applicable to other countries.

The mixed methods approach adopted for this research contributes to e-government research methodology by combining qualitative and quantitative approaches in order to overcome the shortcomings of each. The quantitative approach predominates in the e-government literature. Furthermore, the diversity of topics in e-government justifies the use of a mixed methods approach (Joseph 2013). The combination of different methods as a means of understanding the various interrelated topics in e-government, can offer deeper insights into the discipline as a whole. Moreover, e-government consists of both technical and behavioural elements and can therefore be considered as a complex, socio-technical system. For example, Gov2.0 is comprised of many underlying political, institutional, and economic factors that can directly influence it. Therefore, a mixed methods approach can be used in the same study to better understand the complex and dynamic nature of Gov2.0.

8.5.2 Contribution to practice

The thesis provides actionable insights into ways by which Gov2.0 can effectively enable citizen engagement, increase satisfaction, and enhance PV. The thesis also provides opportunities to improve the interactive aspect of Gov2.0 applications. Specifically, the features of Gov2.0 applications discussed in the thesis should serve as a useful guide for practitioners. The findings from this thesis can help government administrators to plan strategies that engage citizens and encourage them to participate via Gov2.0 to enhance PV. Instead of treating all citizens the same, governments could try to empower and engage digital citizens and attract them to Gov2.0. This research distinguishes between the citizens who are "able but unwilling" to participate, because they are not very interested, do not have the time, or do not trust government to make good use of their input, and excludes those citizens who are willing but unable to participate (i.e. digital divide). This may influence how decision-makers target each group when implementing Gov2.0 initiatives. The findings of this thesis could help governments to develop a Gov2.0 platform that has the attributes of empowerment identified in this research to enable citizen engagement and enhance PV. As this research suggested, different perspectives (from different stakeholders) have

different motivations for engaging with government agencies. Therefore, it is necessary to consider these perspectives and characteristics as a starting point when establishing Gov2.0 strategies.

8.6 Limitations and Directions for Future Work

This research has limitations in terms of method and scope. The GPVM measures provided a snapshot at a particular point in time. While this research revealed significant relationships between the GPVM constructs, future research could complement the findings of this research by capturing longitudinal data through case studies or observational studies to measure citizen perceptions of empowerment and PV. However, the strong theoretical foundation of the model relationships provides a level of confidence in the identified effects. The selection of Saudi Arabia as this research setting may impose certain limitations on the generalisability of the findings. Thus, future research should attempt similar studies in other countries to acquire an understanding of the contextual differences and increase the generalizability of the GPVM. Also, the qualitative approach targeted case studies from the national levels of government; investigating other levels (i.e. state and local) could provide further insights into related issues that are specific to the context. As some of the hypotheses were rejected (H1a2, H1a3, H1a5, H1b1, H1b3, H1b4, H1b6), future research could explore these directions and re-examine these hypotheses through quantitative approach. For instance, as the two construct risk and benefits had no effect on citizens' willingness to co-create PV, perhaps a combined construct such as risk-benefit balance may have an impact on Gov2.0. Future research should address these potential modifications.

The improved GPVM included additional relationships that emerged from the interviews. Further empirical evaluation of the entire improved GPVM could enhance the explanatory power of the model, thereby improving the understanding of the phenomenon being investigated. The thesis examined the antecedents of citizens' and government's willingness to co-create PV from a variance perspective. Future work could investigate the process of PV creation via Gov2.0 such as how it evolves when citizens interact with government agencies. Although this research rigorously validated the measures using experts, pre-testing and pilot testing, more objective measures such as citizen engagement metrics and parameters of their actual usage would improve validation and confirm the results. However, the rigorous approach applied to the development of this research should be of use to future researchers. This research was carried out in the context of Gov2.0, however, it is important to investigate the synergistic integration of Gov2.0 with a specific platform (e.g., Twitter and Facebook). This will provide a better understanding of the emergent properties from their interactions, and citizen-government relationship in practice. As Gov2.0 has certain unique characteristics, future work could examine whether the findings apply to other technological innovations such as Artificial Intelligence (AI) and The Internet of things (IoT), and government crowdsourcing contexts. This research tested only the indirect effects of the model through

synergistic integration, which was statistically significant. Future research could investigate the mediation effects of other constructs such as citizen engagement and satisfaction regarding PV. In section 2.2.11, this research proposed the Gov2.0 complexity cube (Figure 2.7) as a new classification for Gov2.0 that encompasses three-dimensional interaction. Although in this research the focus was on citizen-government interactions, future research might explore the three-dimensional interaction and validate the other dimension, i.e. community through case studies or observational studies .

8.7 Final Thoughts

This thesis, as its title implies, has taken cues from Benington (2009), Lindgren and Jansson (2013) and others who suggested putting Gov2.0 at the centre of PV. The relationship between Gov2.0 and PV is a difficult area of study as it is dynamic and complex. However, this thesis has shown that it can be examined through the lens of empowerment and co-creation theories. This thesis is motivated by the unique context of realising PV via Gov2.0, the practical challenges facing Gov2.0 users, as well as the theoretical gaps in the literature. This thesis has empirically investigated PV propositions in the context of a developing country. To understand complex concepts such as PV, a trans-disciplinary approach is needed to provide a richer background for knowledge-sharing. In answer to the main research question, the findings suggest that citizen empowerment via Gov2.0 indeed plays a major role in enabling citizen engagement, and enhancing PV. The theory-driven GPVM offers a novel approach to understanding the citizen perspective of PV in addition to the government's perspectives. This thesis offers both theoretical and practical contributions with regard to an emerging and evolving phenomenon (i.e., Gov2.0 and PV) that is attracting the interest of researchers and practitioners. If we want to enhance PV via Gov2.0, we must take these theories (i.e. empowerment, co-creation) more seriously. Gov2.0 is a tool enabling us to understand the process of PV co-creation and, while it is useful for some endeavours, it does not fully explain how and why PV crystallizes. Other aspects of PV that are not discussed here, such as institutional and environmental factors, should also be considered. Last but not least, current theories should not be treated as dinosaurs, but rather as sources of inspiration.

In Chapter One, it was made clear that a recurring theme in this thesis is that co-creation and PV are one and the same (I argued that PV is a *process* and an *outcome*). They are both based on the premise that the use of collective resources will meet collective needs in a mutually beneficial manner. This is, if we think about it, quite a simple idea. It is anticipated that this thesis will leave the reader with more questions than answers, while offering a plausible interpretation of Gov2.0 as an enabler of PV. However, I acknowledge that the findings of this research are not complete unless they can make a positive real-life impact. Furthermore, the research into Gov2.0 and PV should be an ongoing endeavour. Nonetheless, this research has shed some light on this pivotal well-documented, yet ill-understood phenomenon of

ICT-enabled PV. Hopefully, this thesis has revealed some of the unknowns and paved the way for further research that can improve our understanding of the role of Gov2.0 in enhancing PV.

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Appendix 1 Questionnaire

- **Citizen questionnaire**

Gov2.0: PV ENABLER Survey

The primary aim of this study is to investigate the phenomenon of citizen participation via Gov2.0 (the government agency use of social media tools and application e.g. Twitter and Facebook) through the theoretical lens of co-creation and public value. This project will seek to determine the factors that influence the citizen participation levels via Gov2.0 from citizen perceptions. A direct link to the online questionnaire is included. It includes demographic questions and statements to detriment the factors that influence the citizen participation via Gov2.0.

Section 1- Demographics
Please check the box that gives the best answer for you.

We would like to know a little about you.
A) What is your gender?
☐ Male ☐ Female
B) What is your age?
☐ Under 18 ☐ 18 to 25 ☐ 26 to 35 ☐ 36 to 45 ☐ 46 to 55 ☐ 56 to 65 ☐ Over 65

C) What is your highest education level?

☐ High school ☐ Diploma ☐Undergraduate degree ☐Postgraduate degree
☐ Others, please specify it ……..

D) What is your current employment?

☐Public/Government
☐Private
☐ Non-profit
☐ Self-employed
☐ Retired
☐ Student
☐ Unemployed (e.g stay at home mom, stay at home dad, caretaker for the elderly)
Section 2- Social networking platforms experience
Social networking platforms include Facebook, Twitter, LinkedIn, YouTube and Google+.
A) How often do you use Social networking platforms?

☐Very often (e.g. at least once a day)
☐Often (e.g. a few times a week)
☐Not very often (e.g. a few times a month)
☐Not at all often (e.g. once every few Months)
☐Never

B) Which social networking platforms do you use (Please select all that apply):
☐ Twitter ☐ Facebook ☐YouTube ☐ LinkedIn ☐ Google+ ☐ Instagram ☐ Snapchat
☐ Other (please specify ……..)
☐ Never

-Which one out of these platforms do you mainly use? (One option)
…….

D) How do you access social networking platforms?
☐ Computer
☐ Tablet
☐ Phone
☐ Others, please specify it ……..
☐ Never

E) What are your primary uses of social networking platforms? (One option)
☐ Information seeking
☐ Browsing and/or surfing
☐ Entertainment
☐ Shopping
☐ Socializing
☐ Self-expression
☐ Others (please specify it ……..)

Section 3- Gov2.0 experience
Gov2.0 is the government use of Social networking platforms including Facebook, Twitter, LinkedIn, YouTube and Google+.

Because we are asking you to answer these questions about your Gov2.0 (i.e. government use of Social networking platforms) experience in general, we ask that you kindly think back to your overall experience using Gov2.0 to access information on government services or to receive government services. Since some Gov2.0 platforms are better that others, please answer the following questions based on your average experience.

A) How often do you access Gov2.0, if available? (For example, government departments official pages. i.e. Ministry, not government officials personal, i.e. Minister) on Twitter, Facebook, Youtube etc.)

☐Very often (e.g. at least once a day)
☐Often (e.g. a few times a week)
☐Not very often (e.g. a few times a month)
☐Not at all often (e.g. once every few Months)
☐Never

B) Which Gov2.0 platforms do you access (For example, government department's official pages. i.e. Ministry, not government official's personal, i.e. Minister) (Please select all that apply):
☐ Twitter ☐ Facebook ☐YouTube ☐ LinkedIn ☐ Google+ ☐ Instagram ☐ Snapchat
☐ Other (please specify ……..)
☐ Never

Which one out of these platforms do you mainly use? (One option)
…….

C) Why do you use Gov2.0? (For example, government departments official pages. i.e. Ministry, not government official's personal, i.e. Minister) (Please select all that apply):

☐Search for information
☐ Download forms
☐ Transactions (e.g.Payment)
☐Communication with senior government officials directly
☐ Suggest new ideas or improvements for government services
☐ Give feedback on or evaluation of government services I have used
☐ Complain about government services challenges and problems.
☐Other (please specify)
☐ Never

What is your primary use of Gov2.0? (One option)
…….

D) What do you think are the main obstacles to citizen participation via Gov2.0? (Please select all that apply):

☐Citizens don't have time
☐Citizens promote their own agenda
☐Citizens don't trust government
☐Inadequate government-citizen communication
☐Participation objectives poorly defined
☐Citizens don't have expertise
☐Agencies don't have enough financial resources

☐Government officials want to control agenda
☐Administrators don't have time
☐ Government officials don't trust citizens

E) Of all your interactions with government, what percent are via Gov2.0?
☐<10%
☐11-50%
☐51-75%
☐>75%

Section 4-

Please read the following statements carefully and indicate your level of agreement/disagreement on a scale of 1to 5(1-Strongly agree, 2- Agree, 3-Neutral, 4- Disagree, 5- Strongly agree)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Perceived dialogue (PD) The degree to which an individual believes that the level of discussion and conversation with government agency will increase his/her use of Gov2.0.					
PD1. I would use Gov2.0 when I feel that a government agency is listening to me					
PD2. I would use Gov2.0 when a government agency is more interactive.					
PD3. Gov2.0 allows informal conversation with a government agency.					
PD4. Overall, I believe that using Gov2.0 will enable me to have a conversation with a government agency.					
Perceived risk (PR) The degree to which a person believes that using Gov2.0 to contact a government agency would cause damage greater than the advantage.					
PR1. I believe that there could be negative consequences from using Gov2.0.					
PR2. I feel that the risks outweigh the benefits of using Gov2.0.					
PR3. I Would feel unsecure to interact to a government agency using Gov2.0.					
PR4. Overall, it is risky to interact with a government agency using Gov2.0.					
Sense of control (SC) The degree to which individual is having a choice and autonomy in an activity.					
SC1. I feel that Gov2.0 offers me more choices to interact with a government agency.					
SC2. Using Gov2.0 gives me greater flexibility to interact with a government agency.					
SC3. When using Gov2.0, I fell that I could have influence over the government policy and legislation.					
SC4. Overall, I feel Gov2.0 offers positive perception of power over the relationship with a government agency.					

Competence (CC) Judgment of one's ability to use Gov2.0 to accomplish a particular activity; The belief that one is able to do the relevant behavior competently; self-efficacy or personal mastery; effort performance expectancy.					
CC1. I would feel comfortable using Gov2.0 on my own.					
CC2. I believe that I am able to use Gov2.0 competently.					
CC3. For me, feeling comfortable using a Gov2.0 on my own is important.					
CC4. Overall, I believe that I am confident to use Gov2.0.					
Perceived benefits (PB) The degree to which a person believes that using Gov2.0 to contact a government agency is better than precursor.					
PB1. Using Gov2.0 enables me to accomplish activities more quickly.					
PB2. Using Gov2.0 makes it easier to interact with a government agency.					
PB3. Using Gov2.0 will improve my experiences with a government agency.					
PB4. Overall, I believe that using Gov2.0 is superior.					
Meaningfulness (MF) The value of the task or its purpose, compared to one's standards.					
MF1. Using Gov2.0 was not a relevant experience for me.					
MF2. Using Gov2.0 was a rewarding experience for me.					
MF3. Using Gov2.0, encourage me to participate more than I usually do using other means.					
MF4. Overall, using Gov2.0 made me more open to sharing.					
Sense of impact (SI) The degree to which individual can influences the outcome of an activity; belief that one's behaviour could have an impact; performance-outcome expectancy.					
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.					
SI3. Using Gov2.0 makes me feel that my voice is been heard.					
SI4. Overall, using Gov 2.0 helps me to achieve the desire outcome.					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Citizens willingness to co-create PV (WC) The degree of citizens' readiness to perform an activity to co-create public value.					
WC1. I would be motivated to use Gov2.0 if it was tailored to my needs.					

WC2. I would be ready to use Gov2.0 if it makes me achieve my goals.					
WC3. I would be prepared to use Gov2.0 if it helps me achieve my objectives.					
WC4. Overall, I would be more willing to interact with a government agency using Gov2.0 if it enables me to realize the public values I need.					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Synergistic integration via Gov2.0 (SNC) The degree of co-creation between citizens and government.					
SNC1. Using Gov2.0 makes me collaborate with a government agency.					
SNC2. I believe that Gov2.o offers me with means to pressure a government agency.					
SNC3. I believe that Gov2.0 forms a strong tie with a government agency based on establish standards.					
SNC4. Overall, I feel that Gov2.0 facilitate integrating my views with a government agency.					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Citizen satisfaction with Gov2.0(SF) Positive feeling and pleasurable experience about using Gov2.0					
SF1. I am pleased with my use of Gov2.0.					
SF2. I am contented with my use of Gov2.0.					
SF3. Using Gov2.0 to interact with a government agency meets my expectations.					
SF4. Overall, my experience of Gov2.0 is satisfactory.					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Citizen participation via Gov2.0 (PTC) The level of citizens' activities and behaviors in Gov2.0.					
PTC1. I would spend a lot of time sharing information about my needs and opinions with a government agency using Gov2.0.					
PTC2. I would put a lot of effort into expressing my personal needs to a government agency using Gov2.0.					
PTC3. I would always provide suggestions to a government agency using Gov2.0 to improve the overall experience.					
PTC4. Overall, I would be very much involved in Gov2.0.					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

Public value (PV) Citizens want and need and assure its relevance to stakeholders; what the public values; what impacts on values about the 'public'.					
PV1. I believe that the use of Gov2.0 would maintain trust and legitimacy of the government agency.					
PV2. (CM1) I support the use of Gov2.0 to deliver public services.					
PV3. I think that the use of Gov2.o would help me to achieve my desired social outcomes.					
PV4. Overall, I support the use of Gov2.0 to interact and engage citizens.					
Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(PVa) Commitment (CM) The degree of citizen attachment to and acceptance of the desired outcomes.					
CM2. Gov2.0 provides me with attachment to government outcomes.					
CM3.Gov2.0 enables me to accept the government outcomes.					
CM4. Overall, Gov2.0 make me committed to interact with a government agency.					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(PVb) Fairness (FA) The degree of citizen assessment of the appropriateness and rationality of the equity and compliance processes.					
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					
Trust (TC) (PVc) The degree of citizen trust in the government agency providing Gov2.0 and citizen trust in the technology through which electronic interaction are executed, Gov2.0.					
TC1. Gov2.0 has enough safeguards to make me feel comfortable using it to interact with a government agency.					
TC2. I trust the government agency to keep my best interests in mind.					
TC3. The government agency can be trusted to carry out Gov2.0 interactions faithfully.					
TC4. Overall, Gov2.0 is now a robust and safe environment in which to interact with a government agency.					

Statement	Extreme Change	Strong change	Moderate change	Little change	No change at all
Which of the following would change positively if government improved Gov2.0?					
My confidence and trust in government					
My belief that government is efficient and effective					
My willingness to engage with government					
My overall satisfaction with government					
My belief that government is forward looking					

Citizen participation via Gov2.0

A) How would you describe your Gov2.0 participation?

☐ I have made a full commitment to Gov2.0 because it has become an important part of my public value perception (High).

☐ I have conducted several activities via Gov2.0, but is still evaluating its pros and cons (Medium).

☐ I have registered in a Gov2.0 platform, but has not yet begun to conduct activities (low).

☐ Never

B) Please indicate the number of months below:

☐I intend to use Gov2.0 in the next (……) months.

☐I predict I would use Gov2.0 in the next (…..) months.

☐ I plan to use Gov2.0 in the next (…..) months.

Would you like to add any comments or suggestions for this research?

If you are willing to participate in further interview regarding this research project, please provide your email or phone number	
Name	
Email	
phone number	

Thank you very much for you time and cooperation!

If you have any questions regarding this questionnaire, please send an email to msala4@student.monash.edu

(The End)

- **Government officials' questionnaire**

Gov2.0: PV ENAVLER SURVEY

The primary aim of this study is to investigate the phenomenon of citizen participation via Gov2.0 (the government agency use of social media tools and application e.g. Twitter and Facebook) through the theoretical lens of co-creation and public value. This project will seek to determine the factors that influence the citizen participation levels via Gov2.0 from public servants perspective. A direct link to the online questionnaire is included. It includes demographic questions and statements to detriment the factors that influence the citizen participation via Gov2.0.

Section 1- Demographics
Please check the box that gives the best answer for you.

We would like to know a little about you.

A) What is your gender?
☐ Male ☐ Female

B) What is your age?
☐ Under 18 ☐ 18 to 25 ☐ 26 to 35 ☐ 36 to 45 ☐ 46 to 55 ☐ 56 to 65 ☐ Over 65

C) What is your highest education level?

☐ High school ☐ Diploma ☐Undergraduate degree ☐Postgraduate degree
☐ Others, please specify it ……..

D) What is your current employment?

☐Public/Government
☐Private
☐ Non-profit
☐ Self-employed
☐ Retired
☐ Student
☐ Unemployed (e.g stay at home mom, stay at home dad, caretaker for the elderly)

E) What is your current position/ job title?
☐ Executive level

☐ Managerial level
☐Technical/operational level
☐ Others, Please specify it ……..

F) How many year have you been working as a public servant?
☐ Less than one year
☐ 1-5 years
☐ 6-10 years
☐ 11-15 years
☐ More than 15 years
Section 2- Government agency profile
We would like to know a little about the government agency you work for.

A) Which type of government agency do you work for?

☐Ministries
☐Authorities
☐Departments
☐Directorates
☐Governorates
☐Municipalities
☐Others, please specify it ……..

B) Which sector is your government agency?
☐ICT
☐Economy & business
☐Training, education, and culture
☐Travel & tourism
☐Labor & employment
☐Insurance & pension
☐Social welfare
☐Housing & municipal services
☐Health & environment
☐Utilities
☐Transportation
☐Traffic & safety
☐Defense, interior & security
☐Others, please specify it ……..

C) In which region do you work?
☐Central region
☐Northern region

☐Southern region
☐Eastern region
☐Western region

Section 3- Gov2.0 experience

The following questions are about your government agency Gov2.0 (i.e. Government agencies use of social networking platforms including Facebook, Twitter, LinkedIn, YouTube and Google+),

We are trying to identify the government agency perspective of Gov2.0; therefore, we ask that you kindly think back to your overall experience using Gov2.0 professionally not personally. Gov 2.0 here refers only to government departments official pages i.e. Ministry, not government officials personal, i.e. Minister. Please answer the following questions based on your average experience.

A) If your government agency has a social networking platforms, which one do they mainly use (One option):
☐Twitter ☐ Facebook ☐YouTube ☐LinkedIn ☐ Google+ ☐ Instagram ☐ Snapchat
☐ Other (please specify ……..)
☐Does not have a social networking presence
☐ Social networking presence is still work-in-progress

B) How often does your government agency use its Gov2.0? (For example, government departments official pages. i.e. Ministry, not government officials personal, i.e. Minister) on Twitter, Facebook, YouTube etc.)

☐Very often (e.g. at least once a day)
☐Often (e.g. a few times a week)
☐Not very often (e.g. a few times a month)
☐Not at all often (e.g. once every few Months)
☐Never

C) Why do your government agency use Gov2.0?
(Please select all that apply):

☐ Information dissemination
☐ Crowdsourcing (expertise and feedback)
☐ Transparency
☐ Communication
☐ Service delivery
☐ Community building
☐ Others (please specify it ……..)
☐Does not have a social networking presence
☐ Social networking presence is still work-in-progress

What is the primary use of your government agency Gov2.0?
…….

D) Does your government agency have a dedicated personal responsible for maintaining its Gov2.0 presence by updating information or responding to citizens?
☐ Yes, how many …….(approximate number)
☐ No

Section 4-

Please read the following statements carefully and indicate your level of agreement/disagreement on a scale of 1to 5(1-Strongly agree, 2- Agree, 3-Neutral, 4- Disagree, 5- Strongly agree)

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Responsiveness (RV) The degree to which government agency response to citizen demands.					
RV1. Gov2.0 helps my government agencies to be more active with citizen.					
RV2. Gov2.0 enables my government agencies to be aware of citizen concerns.					
RV3. My government agency use Gov2.0 for faster response to citizen.					
RV4. Overall, Gov2.0 enhance my government agency responsiveness					
Legitimacy (LG) The degree to which government agency act in accordance with established laws be politically and legally sustained.					
LG1. Gov2.0 helps my government agencies to gain more authority.					
LG2. Gov2.0 enables my government agencies to be politically and legally sustained.					
LG3. My government agency use Gov2.0 for gaining citizens' support.					
LG4. Overall, Gov2.0 enhance my government agency legitimacy.					
Competence (CG) The degree of government agencies ability to actively engage citizen successfully.					
CG1. Gov2.0 helps my government agencies to actively engage citizen.					
CG2. Gov2.0 enables my government agencies to interact with citizens successfully.					
CG3. My government agency use Gov2.0 for increasing its capabilities.					
CG4. Overall, Gov2.0 enhance my government agency competence when collaborating with citizen.					

Accountability (AC) The degree to which government agency is behaving in an accountable manner and taking responsibility.					
AC1. Gov2.0 helps my government agency to be accountable.					
AC2. Gov2.0 makes my government agency take responsibility.					
AC3. My government agency use Gov2.0 for reaching out to citizens.					
AC4. Overall, Gov2.0 enhance my government agency accountability and responsibility.					
Transparency (TP) The degree of government agencies openness in the decision-making process and regular information dissemination in a timely manner.					
TP1.Gov2.0 helps my government agencies to be open in the decision-making process.					
TP2. Gov2.0 enables my government agencies to disseminate information.					
TP3. My government agency use Gov2.0 for regular broadcasting of information in a timely manner.					
TP4. Overall, Gov2.0 enhance my government agency openness and transparency.					
Power relationship (PPR) The degree to which government agency considers the moral consequences and the political implications.					
PP1. My government agency use Gov2.0 for gaining power over issues of concern.					
PP2. Gov2.0 helps my government agencies to achieve the desired moral consequences.					
PP3. Gov2.0 enables my government agencies to make the required political implications.					
PP4. Overall, Gov2.0 enhance my government agency political power.					
Resources (RS) The degree to which government agency is operationally and administratively feasible.					
RS1. Involving citizens in Gov2.0 consume too much time of our government agency.					
RS2. Gov2.0 enable our government agency to work efficiently.					
RS3. Gov2.0 enable our government agency to work effectively.					
RS4.Overall, involving citizens in Gov2.0 consume too much resources of our government agency.					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Government willingness to co-create PV (WG) The degree of government readiness to reach citizens and engage them to co-create public value.					

WG1. The government agency would be motivated to use Gov2.0 if it was tailored to its needs.					
WG2. The government agency would be ready to use Gov2.0 if it makes it achieve its goals.					
WG3. The government agency would be prepared to use Gov2.0 if it helps to achieve its objectives.					
WG4. Overall, I think my government agency would be more willing to interact with citizens using Gov2.0 if it enables it to deliver the public values they need.					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Synergistic integration in Gov2.0 (SNG) The degree of co-creation between citizens and government.					
SNG1. Using Gov2.0 makes my government agency collaborate with citizens.					
SNG2. I feel that Gov2.0 will support my government agency understanding of matters of shared interest with citizens.					
SNG3.My government agency would use Gov2.0 if many other government agencies use it.					
SNG4.My government agency would use Gov2.0 if it was popular among staff.					
SNG5.My government agency use Gov2.0 to influence citizens to adapt to its expectations.					
SNG6.Overall, my government agency use Gov2.0 to facilitate integrating its views with citizens.					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Citizen participation levels in Gov2.0 (PTG) The level of citizens' activities and behaviors in Gov2.0 from the Gov view					
PTG1.Because of the specific nature of our work, citizen participation is only window dressing					
PTG2.Citizen involvement should be controlled so as not to impair our work efficiency					
PTG3.It is the executive officials' business, not the administrator job to initiate citizen participation programs via Gov2.0					
PTG4.I think citizen participation should be adopted in all governmental areas and functions.					

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Public value (PV) Citizens want and need and assure its relevance to stakeholders; what the public values; what impacts on values about the 'public'.					

PV1. I believe that the use of Gov2.0 would maintain trust and legitimacy of the government agency.					
PV2.I support the use of Gov2.0 to deliver public services					
PV3. I think that the use of Gov2.o would help to achieve the government agency desired social outcomes					
PV4. Overall, I support the use of Gov2.0 to interact and engage citizens					

Would you like to add any comments or suggestions for this project?

If you are willing to participate in further interview regarding this project, please provide your email or phone number	
Name	
Email	
phone number	

Thank you very much for you time and cooperation!
If you have any questions regarding the questionnaire, please send an email to [redacted]

(The End)

Appendix 2 Interview protocol

- **GOV 2.0: PV enabler interview protocol**

Data Collection	
Place	
Duration/period	
Date	
Targeted sample	Citizen/ public servant are the main focus of this project.

Semi-structured interview questions/themes
Demographics
A) What is your gender? ☐ Male ☐ Female
B) What is your age?☐ 18 to 25 ☐ 26 to 35 ☐ 36 to 45 ☐ 46 to 55 ☐ 56 to 65 ☐ Over 65
C) What is your highest education level?☐ High school ☐ Diploma ☐Undergraduate degree ☐Postgraduate degree ☐ others, please specify it ……..

Theme: Gov2.0	
Description The use of social networking platforms, content creation and sharing tools, blogs, and microblogging tools within government organisations and their interactions with citizens	
Possible Questions	
	What are the external and internal factors affect the adoption and utilization of Gov2.0?
	What are the factors that influence Gov2.0 continuance usage?
	From your government agency perspective what are the best benefits that Gov2.0 brings?
	What are the challenges that face Gov2.0?
	Do you think Gov2.0 is important, Why? How?
	Other comments
Duration	

Theme: Empowerment	
Description *Where people create or are given opportunities to control their own destiny and influence the decisions that affect their lives.*	
Possible Questions	
	What are the factors that influence citizen empowerment via Gov2.0?
	Does Gov2.0 enables your government agency to influence the outcome of an activity? How?
	Does Gov2.0 empower your government agency? How?

	Do you think citizen empowerment via Gov2.0 is important? Why?
	Other comments
Duration	

Theme: Participation	
Description *The level of citizens' activities and behaviours in Gov2.0.*	
Possible Questions	
	What are the factors that influence citizen participation via Gov 2.0?
	Does Gov2.0 enables your government agency to reach, hear and understand citizens when interacting them? How?
	How likely your does your government agency encourage citizen participate via Gov2.0? Why?
	Do you think citizen participation via Gov2.0 is important? Why?
	Other comments
Duration	

Theme: Satisfaction	
Description *Positive feeling and pleasurable experience about using Gov2.0.*	
Possible Questions	
	What are the factors that influence citizen satisfaction via Gov 2.0?
	How satisfied is your government agency with Gov2.0?
	Will your government agency continue to use Gov2.0? Why?
	Will your government agency recommend Gov2.0 to other agencies? Why?
	Overall, is your government agency satisfied with Gov2.0? Why?
	Do you think citizen satisfaction via Gov2.0 is important? Why?
	Other comments
Duration	

Theme: Co-creation	
Description Where citizens take an active role in the process of both defining and creating public value together with the government and incorporating the points of view of citizens in identifying the needs and wants and improving the ways in which these can be met.	
Possible Questions	
	What are the factors that influence co-creation via Gov 2.0?
	Does Gov2.0 enable your government agency to exchange information and resources with others? How?
	Does Gov2.0 enable your government agency to build on the contribution of others? How?
	Does Gov2.0 enable your government agency to work collaborative with others? How?
	Do you think co-creation via Gov2.0 is important? Why?
	Other comments
Duration	

Theme: Public value	
Description *Citizens want and need and assure its relevance to stakeholders; what the public values; what impacts on values about the 'public'.* Reflection of collectively expressed, politically mediated preferences consumed by citizens, created not only through outcomes but also through processes which may generate trust, fairness and commitment.	
Possible Questions	
	What are the factors that influence your government agency willingness to co-create public value via Gov2.0?
	What are the factors that enhance public value via Gov 2.0?
	Does Gov2.0 increase your government agency commitment with citizens? Why?
	Does Gov2.0 increase your government agency trust with citizens? Why?
	Does Gov2.0 increase your government agency fairness? Why?
	Do you think that Gov2.0 can enhance public value? How?
	Other comments
Duration	

(The End)

Appendix 3 Ethics Approval

MONASH University
Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

This is to certify that the project below was considered by the Monash University Human Research Ethics Committee. The Committee was satisfied that the proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research* and has granted approval.

Project Number:	CF15/3097 - 2015001309
Project Title:	GOV 2.0: A VALUE CO-CREATION AND CITIZENS' EMPOWERMENT PERSPECTIVES
Chief Investigator:	Dr Yen Cheung
Approved:	**From:** 19 August 2015 **To:** 19 August 2020

Terms of approval - ***Failure to comply with the terms below is in breach of your approval and the Australian Code for the Responsible Conduct of Research.***

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, before any data collection can occur at the specified organisation.
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must include your project number.
6. **Amendments to the approved project (including changes in personnel):** Require the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

[redacted]
Professor Nip Thomson
Chair, MUHREC

cc: Mr Mohammed Aladalah, Assoc Prof Vincent Lee CS Lee,

Monash University, Room 111, Chancellery Building E
[redacted]

- **MUHREC Amendment**

MONASH University

Mohammed Aladalah [redacted]

MUHREC Amendment: CF15/3097 - 2015001309 - GOV 2.0: A VALUE CO-CREATION AND CITIZENS' EMPOWERMENT PERSPECTIVES

1 message

[redacted] 19 May 2016 at 16:47

PLEASE NOTE: To ensure speedy turnaround time, this correspondence is being sent by email only. MUHREC will endeavour to copy all investigators on correspondence relating to this project, but it is the responsibility of the first-named investigator to ensure that their co-investigators are aware of the content of the correspondence.

Dear Researchers,

Thank you for your request for amendment, submitted on 17/05/2016.

This is to advise that the following amendments have been approved as outlined in your application. A brief summary of the changes is included below:

Changes to Recruitment

- Participants from first phase of research who agreed to participate in second phase will be contacted
- Open invitation for new participants will be posted on multiple websites, social media applications and tools.

Approved Documents

- Possible semi-structured interview questions
- Explanatory Statement
- Consent Form

Thank you for keeping the Committee informed.

Professor Nip Thomson
Chair, MUHREC

Human Ethics

Monash Research Office

New forms are now available, please ensure that you use the most recent version.

[redacted]

Our aim is exceptional service

Monash University

Room 111, Chancellery Building E
24 Sports Walk

Clayton Campus

Wellington Rd

Clayton VIC 3800, Australia

Appendix 4 Explanatory statement and consent forms

EXPLANATORY STATEMENT

(Citizens)

GOV 2.0: PV enabler

Dr Yen Cheung
Faculty of Information Technology,
Clayton
[redacted]

Mr Mohammed Aladalah
Faculty of Information Technology,
Clayton
[redacted]

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researchers via the phone numbers or email addresses listed above.

What does the research involve?

The primary aim of this study is to investigate the phenomenon of citizens' participation through the lens of value co-creation and citizen's empowerment theories in the context of Gov 2.0 (the government agency use of social media tools and application e.g. Twitter and Facebook). This project will seek to determine the factors that influence the citizens' participation levels in Gov 2.0 from citizens' perceptions. The questions includes demographic questions and statements to detriment the factors that influence the citizens' participation in Gov 2.0.

Why were you chosen for this research?

The target population of this study are adult's online users in Saudi Arabia, who are active users of Web 2.0 tool and applications and may or may not use Gov 2.0 (i.e. government use of Web 2.0 tools and application such as twitter and Facebook). Only the researchers will have access to the data.

Consenting to participate in the project and withdrawing from the research

Being in this study is voluntary and you are under no obligation to consent to participation. However, if you do consent to participate, you do not need to answer all the questions and you may withdraw from further participation at any stage before the interview is completed.

Possible benefits and risks to participants

The project does not involve any risks. The only anticipated inconvenience for you would be the time taken in completing the interview. The information collected will be treated as confidential and will be used for research purposes only. The answers that provide information which could lead to the individual or organisational identity will be pseudonyms, thus the anonymity is assured.

Confidentiality

Data provided through interviews will be confidential. No individual person or organisation will be identifiable in the reports and research papers (published in IT /IS journals and conference proceedings) based on the analysis of data, thus protecting privacy of individuals.

Storage of data

Data collected will be stored in accordance with Monash University regulations, kept on 5 years kept on University premises, in Digital format stored and backed up. Only the researcher will have access to the original data.

Use of data for other purposes

A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report, thus protecting privacy of individuals.

Results

If you would like to be informed of the aggregate research finding, please contact the researcher, Mr. [redacted]

Complaints

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the Executive Officer, Monash University Human Research Ethics (MUHREC):

Executive Officer
Monash University Human Research Ethics Committee (MUHREC)
Room 111, Building 3e
Research Office
Monash University VIC 3800

[redacted]

Or for any concerns or complaints about the conduct of the project in Arabic, you are welcome to contact Dr Fayez Alqahtani

Computer Science Department
Community College
King Saud University

[redacted]

Thank you,

Dr Yen Cheung

EXPLANATORY STATEMENT

(Government officials)

GOV 2.0: PV enabler

Dr Yen Cheung

[redacted]

Mr Mohammed Aladalah

[redacted]

You are invited to take part in this study. Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researchers via the phone numbers or email addresses listed above.

What does the research involve?

The primary aim of this study is to investigate the phenomenon of citizens' participation through the lens of value co-creation and citizen's empowerment theories in the context of Gov 2.0(the government agency use of social media tools and application e.g. Twitter and Facebook). This project will seek to determine the factors that influence the citizen participation levels in Gov 2.0 from government personnel's perceptions. The questions and statements to detriment the factors that influence the citizens' participation in Gov 2.0.

Why were you chosen for this research?

The target population of this study are government agencies in Saudi Arabia, who may or may not use Gov 2.0 (i.e. government use of Social media tools and application such as twitter and Facebook), to provide an understanding about citizens' participation in Gov 2.0 from government personnel's perceptions. Only the researchers will have access to the data.

Consenting to participate in the project and withdrawing from the research

Being in this study is voluntary and you are under no obligation to consent to participation. However, if you do consent to participate, you do not need to answer all the questions and you may withdraw from further participation at any stage before the interview is completed.

Possible benefits and risks to participants

The project does not involve any risks. The only anticipated inconvenience for you would be the time taken in completing the interview. The information collected will be treated as confidential and will be used for research purposes only. The answers that provide information which could lead to the individual or organisational identity will be pseudonyms, thus the anonymity is assured.

Confidentiality

Data provided through interviews will be confidential. No individual person or organisation will be identifiable in the reports and research papers (published in IT /IS journals and conference proceedings) based on the analysis of data, thus protecting privacy of individuals.

Storage of data

Data collected will be stored in accordance with Monash University regulations, kept on 5 years kept on University premises, in Digital format stored and backed up. Only the researcher will have access to the original data.

Use of data for other purposes

A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report, thus protecting privacy of individuals.

Results

If you would like to be informed of the aggregate research finding, please contact the researcher, Mr. Mohammed Aladalah [redacted]

Complaints

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the Executive Officer, Monash University Human Research Ethics (MUHREC):

Executive Officer
Monash University Human Research Ethics Committee (MUHREC)
Room 111, Building 3e
Research Office
Monash University VIC 3800
[redacted]

Or for any concerns or complaints about the conduct of the project in Arabic, you are welcome to contact Dr Fayez Alqahtani

Computer Science Department
Community College
King Saud University

[redacted]

Thank you,

Dr Yen Cheung

CONSENT FORM

(Citizens and government officials)

GOV 2.0: PV enabler

Chief Investigator: Dr Yen Cheung

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement explaining the interview involved in this project and I hereby consent to participate in this project.

I consent to the following:	Yes	No
Having read the Explanatory Statement, I agree to the general purpose, methods and demands of the study.	☐	☐
Audio and/or video recording during the interview	☐	☐
Taking part in a focus group of up to ten people.	☐	☐
The data that I provide during this research may be used by the researcher in future research projects.	☐	☐
The data collected during the study may be published, and a report of the project outcomes will provided to MONASH University.	☐	☐
The project is for the purpose of research and/or teaching. It may not be of direct benefit to me.	☐	☐
The security of the research data is assured during and after completion of the study.	☐	☐
Any information which may be used to identify me will not be used unless I have given my permission.	☐	☐

Name of Participant

Participant Signature Date