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Gov2.0: A Service Science Perspective

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Abstract

Recent e-Government literature has highlighted Government 2.0 (Gov 2.0) as a vehicle for greater citizen engagement. Despite previous high expectations, citizens' involvement in Gov 2.0 has been relatively low. Theoretical lens from service science and value co-creation are adapted from the literature and integrated with findings from prior e-Government research to develop a conceptual framework for Gov 2.0 citizens' participation. The framework suggests that citizens' participation in Gov 2.0 is boosted by their satisfaction with the engagement process of public value co-creation. We propose that service science and value co-creation approaches are more relevant to Gov 2.0 research as a two-way interaction between citizens and governments rather than the current one-way focus. The benefit of this service science framework is that it enables understanding of citizens' participation in Gov 2.0. Equally, this framework will benefit policymakers by informing them of the factors that influence and promote interaction with citizens. This paper aims to (1) formulate an initial framework that engage citizens to co-create public value in Gov 2.0 via the theoretical lens of service science; and (2) improve our understanding of Gov 2.0 tools and applications.

Keywords: Gov 2.0, E-Government, Service Science, Public Value co-creation, Citizens participation.

1 INTRODUCTION

The private sector of the service industry has raised the bar for service quality through the use of innovative channels such as Web 2.0 tools to make services more customer-centric. Citizens today expect similar, if not better, service levels from their government. For example, already doing online banking, citizens expect to be able to lodge their tax return online. Government services was previously the only choice, but Web 2.0 tools have begun to empower citizens with enhanced capabilities for self-organizing and value creating activities (Benkler & Nissenbaum 2006). The concept of many users adding value to content through their use of government agencies' Web 2.0 tools (hereafter Gov 2.0) is similar to the concept of interactivity and user-generated content that involve people in the context of music, shopping and social networking. The user-centric nature of Gov 2.0 activities offers important opportunities to increase the creation of public value for citizens (Ferro & Molinari 2010). Gov 2.0 allows citizens to move from being passive and to be more active in public sector activities, by supporting the co-creation of public value between citizens and government.

Furthermore, the United Nations (2008) prompted the concept of Connected or Networked Governance as: "the governmental promotion of collective actions to advance the public good, by engaging the creative efforts of the whole society" (p.5), which is similar to the concept of value co-creation. The trend of participatory government will go forward by engaging and empowering citizens to co-design, and co-deliver value. Involving citizens to help obtain better services at a lower cost not only in design, but also in delivery, should allow high-quality delivery of services in a complex environment of constrained resources. By doing this, governments will not only meet citizens' needs, but they will also shift some of the accountability from the governance to the governed. Dayal and Johnson (2000) observed that citizens experienced confusion, uncertainty and vulnerability with the government's determinative processes. These authors claimed that Gov 2.0 could provide benefits to the citizens as well as increasing their levels of participation. Schrage (1995) identified the need to design tools for co-creation, and in the context of e-Government, Lindgren and Jansson (2013) highlighted the need for theoretical approaches that help identify best practices.

Gov 2.0 can be viewed as the latest wave of e-Government evolution, which is often centered on Web 2.0 platforms (such as Twitter and Facebook) that enable the inclusion of a greater number of multiple stakeholders including citizens, businesses, and non-governmental organizations (NGO). Gov 2.0 recognized the trend of decentralization aimed at empowering citizens. Governments need to make the shift, from simply administrating services, to engaging and empowering the citizens. Involving citizens in the creation (design) stage, and sometimes in the delivery stage, will increase government productivity, and the citizens' choice and well-being.

Recent e-Government literature has highlighted Gov 2.0 as a vehicle for greater citizen engagement. Despite previous higher anticipation, citizens' involvement levels in Gov 2.0 have been relatively low. Many studies worldwide investigated the government agency use of Gov 2.0 activities. Mossberger et al. (2013) examined the use of Gov 2.0 in major U.S. cities between 2009 and 2011, and found that one-way "push" strategy prevails. This is despite the fact that U.S. federal government agencies are required to become more transparent, and increase participation and collaboration with citizens. Likewise, Meijer and Thaens (2013) found that Gov 2.0 activities in some police departments in the U.S. and Canada are also mainly employing the 'push strategy'. Hofmann et al. (2013) explored local governments' utilization of Web 2.0 tools for communication with citizens in Germany. Like other studies, it is used mainly for information dissemination. Cho and Park (2012) in South Korea analyzed Gov 2.0 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 Gov 2.0 and concluded that they were used primarily to post information, with very limited interaction between citizens and government. While these studies analyzed the government agencies' limited use of Gov 2.0, the full capabilities of these tools is largely uncharted. For instance, besides information dissemination, a two-way communication with citizens providing feedback to governments can be beneficial for both parties.

Although we are aware of the importance and potential value of citizens' involvement in Gov 2.0, our understanding of its potential is somewhat limited. Systematic research focusing on citizens' involvement in Gov 2.0 is few and far between. Previous theories such as the Technology Acceptance Model (TAM) (Davis 1989) and the Technology enactment framework (Fountain 2001) were found to be useful in the context of the first wave of e-Government. However, when applied to Gov 2.0, the latest wave of e-Government, the outcomes have been less encouraging (Bryer & Zavattaro 2011; Joseph 2013). This shows that it is difficult to develop a uniform, one-size-fits-all theory of Gov 2.0. Thus, theories and frameworks, both old and new, will need to be tailored to the type and context of Gov 2.0.

This leads to the objectives of this paper: to view Gov 2.0 through different theoretical lenses such as service science and to consider Gov 2.0 as a service system for co-creating public value with citizens. Based on a comprehensive literature review, this paper proposes a conceptual framework to enrich the understanding of citizens' involvement in Gov 2.0. Furthermore, this paper applies a trans-disciplinary approach by integrating theories of service science to Gov 2.0. We further argue that the value co-creation process can increase citizens' engagement in Gov 2.0. This paper is organised as follows: section 2 synthesizes and discusses the relevant literature on systems theory, service science (SS), and public value co-creation in the context of Gov 2.0 from a trans-disciplinary perspective. The proposed conceptual framework is presented and described in section 3. Finally, the paper concludes with discussions on the paper's contributions, and future research directions.

2 LITERATURE REVIEW

The e-Government field covers many domains including (Information Systems, Political Science, and Public Administration) as shown in Figure 1. A few attempts have been made to balance these domains on citizens' participation, thereby demonstrating an interactionism perspective (Reddick 2011). Frameworks based on many perspectives usually provide better explanatory power than frameworks that depend mainly on only one or two views.

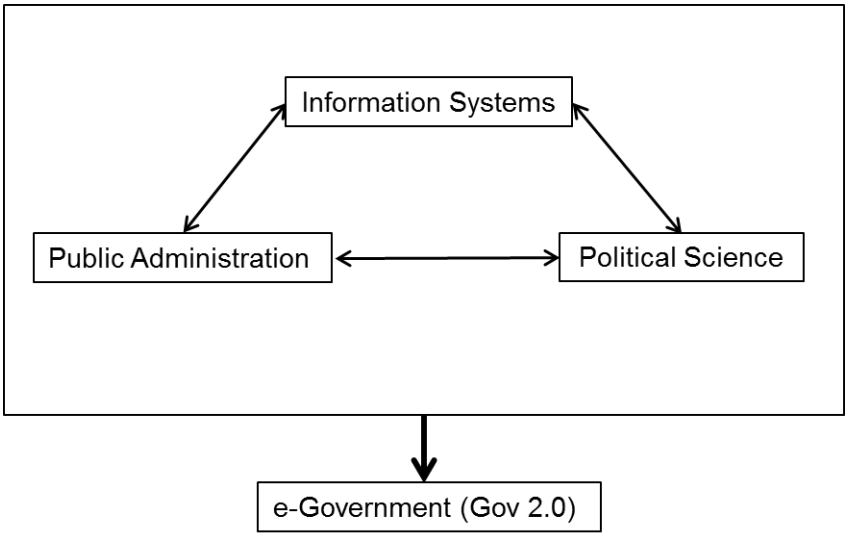

Figure 1. e-Government reference disciplines

This paper argues that the trans-disciplinary approach will integrate these reference disciplines and contribute to e-Government research through the emergence of new ideas for theory and application. Science has traditionally 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 process of scientific activity into more or less separate disciplines has also led to the rise of specialists. Disciplinary knowledge is mainly driven 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 the multi-disciplinary thinking (dialectic

logic), the aim is to combine theoretical models from different disciplines. The idea is not to take into consideration the whole model, but only the relevant parts of each model. In order 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) noted, 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).

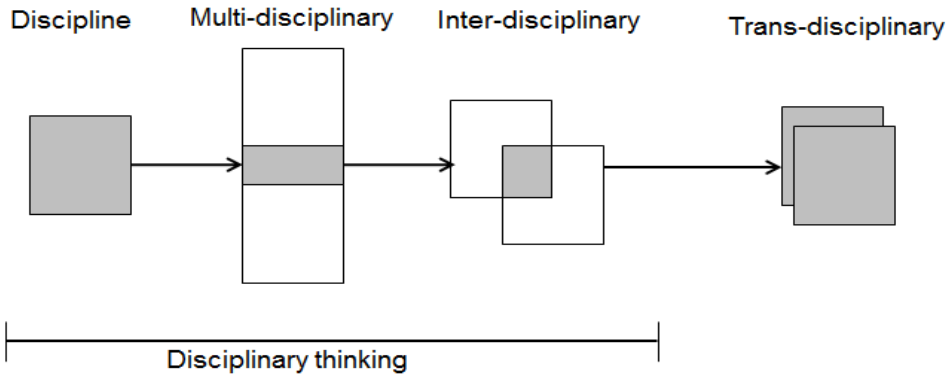

Figure 2. Disciplinary to trans-disciplinary Continuum (Adapted from Ramadier 2004)

Morin (1997 as cited in 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. The trans-disciplinary approach simultaneously investigates between the disciplines, across the different disciplines, and beyond all disciplines (Nicolescu 1996). 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 levels 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). Moreover, the trans-disciplinary approach offers abundant results, sound understanding, and greater relevance to practice, which is needed in order to understand citizens' engagement in Gov 2.0.

There is a call in the e-Government literature to apply trans-disciplinary research (Chen et al. 2007), and the need to learn from other disciplines. However, some have argued that reliance on other disciplines for theory should be limited, and see this as hindering knowledge-building (Benbasat & Weber 1996). Nonetheless, the field of e-Government is still in its infancy and should benefit from this diversity to enhance knowledge and academic legitimacy (Heeks & Bailur 2007). As e-Government involves complexity issues beyond the scope of a single theory (Heeks & Bailur 2007; Yildiz 2007), researchers allude to the use of theories from disciplines other than information systems (IS), such as management, organisational behaviour and marketing theories to boost the knowledge and understanding of the e-Government field. Scholars have enhanced e-Government from diverse theoretical perspectives such as new institutionalism and policy networks (Hudson 1999). We argue that Gov 2.0 is a complex, open service system that enables public value co-creation with its participants. Theoretical lens that are relevant to the development of the proposed conceptual framework are discuss next.

2.1 Systems Theory

The historical development of understanding systems and their dynamic relationships with parts, has led to the so-called "systems theory" (von Bertalanffy 1968). Systems theory is concerned with investigating phenomena from a holistic perspective (Capra 1997). Systems theory can be view as a framework for understanding any system found in nature, in society and in many scientific fields (Cilliers & Spurrett 1999). Systems thinking shifts the focus from the part to the whole (Checkland 1981; Jackson 2003), considering reality as an integrated and interacting phenomenon. The relationship between the parts and their interactions becomes more important than the parts themselves (Golinelli et al. 2002). The system's perspective claims that in order to fully understand a phenomenon, we need to observe it from a higher level instead of simply breaking it up into simple parts and then restructuring it. However, the analysis of the basic components of a phenomenon can be a good start (von Bertalanffy 1968).

Systems theory incorporates a wide range of fields with different focuses (e.g. biology, sociology, and mechanics). The systems concept has been commonly used in management (e.g. Johnson et al. 1964), marketing (e.g. Reidenbach & Oliva 1981), sociology (e.g. Parsons 1975), and social science (e.g. Richardson 1999). Generally, systems theory proposed the concept of complex interacting components (von Bertalanffy 1962). Subsequently, this 'general system theory' (GST) developed into: (a) 'open system theory' (OST), which focused on the separation between the system and its environment; and (b) the 'viable systems approach' (VSA), which applies a behavioural approach to business and its interactions with its environment (Beer 1984). Thus, it is reasonable to say that the term 'systems theory' can be considered as a specialization of systems thinking, and a generalization of systems science. The word 'system' refers to self-regulating systems, i.e. through feedback. Examples of self-regulating systems can be found in nature, including the human body, local and global ecosystems, and climate. Therefore, systems theory provides a holistic view of the phenomenon of citizens' participation in Gov 2.0 by focusing on the relationships and interactions between the e-Government reference disciplines.

Recent developments in systems theory and service theory have led to the identification of common features between the two. Similarities and differences between the two have been investigated, with specific attention given to the common features of the service systems. Furthermore, Maglio et al. (2006) called for the establishment of a new academic discipline, Services Sciences, Management and Engineering (SSME). They argued that in this way, science will create knowledge, engineering will use that knowledge to create value, and management will invest to optimise the process of value co-creation. According to Maglio and Spohrer (2008), service systems is the process of value-co-creation configurations of people, technology, value propositions connecting internal and external service systems, and shared information such as language, laws, measures, and methods. In particular, service science (SS) and service-dominant logic (S-D logic) have been proposed. This has provided in-depth understanding into the design, implementation and management of service systems, especially with regard to systems governance, and the value co-creation process.

2.2 Service Science

Service science is the study of service systems, aiming to create a basis for systematic service innovation. Within the area of service, complexity has influenced a revolution to a wider view, which seems to be applicable to different disciplinary areas (Barile & Saviano 2010). Generally, service can be defined as the performance of competences for the benefit of others (Vargo & Lusch 2004). Service applications used to be done face-to-face with a client; however, recent technological developments weakened this contact. Currently, the more knowledge-based and customized the service, the more it depends on customers' participation through organizational or technological value chains (Sampson & Froehle 2006). Today, services account for about 70% of aggregate production and employment in OECD economies (OECD 2014). Public administrations are considered to be the largest service industry worldwide (Peristeras et al. 2009). Accordingly, the new emerging discipline of service science, as defined by Maglio and Spohrer (2008): the combination of management, engineering, finance and operations for the purpose of value co-creation with customers, seems

appealing as a foundation for studying the means of increasing citizens' participation in Gov 2.0 activities. Service science (SS) is based on ten principles (Spohrer et al. 2008; Spohrer & Kwan 2009) as depicted in Table 1.

Principle number	**Principles**	**Underlying focus**
P1	Resources	Beneficial instruments
P2	Entities	Openness
P3	Access rights	Norms and regulations
P4	Value co-creation interactions	Collective process
P5	Governance interactions	Mutually benefits
P6	Outcomes	Consonant actions
P7	Stakeholders	Productive relationship
P8	Measures	Relationships viability
P9	Networks	Embeddedness
P10	Ecology	Service ecosystems

Table 1. Service science principles (Adapted from Spohrer et al. 2008)

Of these ten principles, resources (P1), access rights (P3), and value co-creation interactions (P4) are most relevant to this research paper. Resources refer to people, technology, organisations, and shared information that are involved in the process of creating and delivering value between the provider and the customer through service (Spohrer et al. 2008). Thus, all actors and tools are considered to be resources for business activities (Mele & Polese 2010). Access rights refers to the social norms and legal regulations that control access and use of resources (Barile & Polese 2010). Access starts by providing citizens with information, tools, value propositions, and allowing them to co-create their own value from various offerings. Gov 2.0 can facilitate citizens' access to its information and draws on the collective intelligence to co-create value. However, it is important to make the information available in a readable format to maintain consistency of access for both government agencies and citizens. As Gov 2.0 facilitates these activities, it is highly likely to attract more citizens to participate when given access. Value co-creation interactions among resources represent an important facet of any service system (Algarni et al. 2012). Service systems are collections of service events in a provider–client relationship, where actors exchange knowledge that generates value. Having said that, the service system is not the sum of its parts; instead, the interactions within the relationship become the driver of value (Lusch et al. 2010). These principles and their underlying focus as seen in Table 1 are related to concepts such as Connected or Networked Governance as indicated by earlier reports of the UN (2008).

Accordingly, Ng et al. (2009) argued that everything should be tackled from the service perspective. Within such a domain, Gov 2.0 provides value propositions to the citizens, who co-create the value for themselves. Vargo and Lusch (2008) proposed technology as operant resources in the context of service science. Nevertheless, e-Government research has generally adopted the view of technology in its widest sense and technology is essentially time-specific (Pfaffenberger 1992). What is advanced today might not exist in the future. This paper suggests a harmony between service science and Gov 2.0 since service industry characteristics are predominant in both. For instance, service science endorses the shift from the products to the service and argues that the value of products are embedded within the service. On the other hand, Gov 2.0 provides value propositions to the citizens, who co-create the value for themselves. Furthermore, service science emphasizes the customer as the active co-creator of value. Indeed, there is growing e-Government literature investigating the citizen-centric approach (Aladwani 2013; Bertot et al. 2008), similar to service science research. Moreover, Salleh et al. (2010) identified several connections between the two and proposed a model that incorporates the critical success factors (CSFs) of both and calls for more research in this area. Thus, the application of service science to the context of Gov 2.0 is an appropriate approach.

Service science focuses on resources, access, and interactions to co- create value, however, when applying to e-Government with such a wide range of reference disciplines, there is a need for mutual sharing of perspectives. We think that the trans-disciplinary offers just the right approach, and the underlying assumptions on which to integrate the theory of service science. Service science provides

the explanation of service systems types and their interactions and evolution towards value co-creation. The aim is to apply theoretical grounding to enhance the capability of designing, integrating and improving Gov 2.0 service systems for governance purposes e.g., efficiency, effectiveness, and sustainability.

S-D logic can be considered as the philosophical foundation of service science, and the service system can be considered as the theoretical construct (Maglio & Spohrer 2008). Recent developments in service science have renewed interest in the study of service systems. According to Vargo and Akaka (2009), to fully understand service systems, there is a need to move from goods-dominant logic (G-D logic) towards service-dominant logic (S-D logic). G- D logic proposes value as something captured at the point of exchange, i.e. value-in-exchange (i.e. price). S-D logic, however, views value as having to be created with and determined by the user, which is referred to as value-in-use (Vargo & Lusch 2004).

S-D logic is presented in ten foundational premises (FPs; (Lusch & Vargo 2006; Vargo & Lusch 2004, 2008) as shown in Table 2. The most central FP (FP1) shows that service (rather than goods) is the essential basis of exchange. "Service", in S-D logic, is defined as the application of competencies (knowledge and skills) for the benefit of another entity or the entity itself. Hence, S-D logic moves the focus from operand resources (where an act or operation is performed on such things as goods) to operant resources (those that act upon other resources such as knowledge and skills) (Vargo & Lusch 2004).

While G-D logic views the "producer" as the creator of value and the "consumer" as a user (and destroyer) of value, S-D logic views both as "resource integrators" (FP9) that co-create value (FP6). The customer is an operant resource, rather than an operand resource. S-D logic acknowledges that value is always uniquely determined by the beneficiary (FP10) (Vargo & Lusch 2008). This implies that exchange is relational (FP8) and that firms cannot deliver value, but only make value propositions (FP7). All together, these FPs imply that value must be understood in the context of complex networks that are part of dynamic service systems, comprising not only firms and customers, but other stakeholders.

Premise number	Foundational premise	Underlying focus
FP1	Service is the fundamental basis of exchange	Resources exchange
FP2	Indirect exchange masks the fundamental basis of exchange	Services as a service
FP3	Goods are distribution mechanisms for service provision	Instruments provision
FP4	Operant resources are the fundamental source of competitive advantage	Embeddedness
FP5	All economies are service economies	Service economy
FP6	The customer is always a co-creator of value	Collective process
FP7	The enterprise cannot deliver value, but only offer value propositions	Potential value
FP8	A service-centred view is inherently customer-oriented and relational	Mutually benefits
FP9	All economic and social actors are resource integrators	Beneficial participation
FP10	Value is always uniquely and phenomenologically determined by the beneficiary	Value culture driven

Table 2. S-D logic foundational premises (Adapted from Vargo & Lusch 2008)

In the public sector context, citizens are at the centre of the exchange, and public value is best achieved when co-creation is by all the stakeholders. The challenge is to ensure the optimal mechanism takes place and this is where service science (Maglio & Spohrer 2008) and Gov 2.0 comes to the forefront. Service science provides a holistic view of the exchange enabling the experiences, whilst Gov 2.0 provides the platform. As can be seen in the underlying foci in Tables 1 and 2 above, both S-D logic and SS promote the integration of resources, information, and objectives between providers and clients motivate the value co-creation processes that have dominated world economies (Qiu 2009).

Therefore, trans-disciplinary knowledge can help explain the low levels of participation in Gov 2.0 and explain why some citizens may have not participated. Gov 2.0 was expected to solve previous e-Government problems by allowing citizens participation in the process; however, the lack of alignment towards value creation for citizens remains a problem. Specifically, knowledge from value co-creation and public value is proposed to investigate the phenomenon in order to create an understanding of the interaction between citizens and government. Transdisciplinary approach makes it possible to improve the implication of the relationship to achieve a common view.

2.3 Public value co-creation

The notion of value has been investigated since Plato's 'Republic' over 2000 years ago (Cross & 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 for 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 (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).

Moore (1995) introduced the concept of 'public value' in relation to public services. The Institute for Public Service Value (IPSV) built on that and added that the value of public services is not limited to the quality or efficiency of those services, but also pertains to the actual social and economic improvements they create for the public (Accenture 2008). 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 & Jansson 2013). Governments have the upper hand on 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 & Le Grand 1993). Governments' practices can be enhanced through citizens' positive interventions (Korkman et al. 2010).

The value co-creation concept has been emerging and evolving in marketing (Vargo & Lusch 2004), branding (Merz et al. 2009), and eMarketplaces (Aladalah et al. 2014). This paper argues that value co–creation theory is also applicable to the Gov 2.0 context, which emphasizes the interaction between citizens and governments. Bendapudi and Leone (2003) reviewed the literature pertaining to co-production and co-creation of value, and concluded that there were several similarities and differences. Others (Fang 2008; Ng et al. 2009) have defined co-production from the supplier dimension when providing value proposition and value co-creation in contrast, from the customer dimension when realizing the value proposition to gain benefits. Nonetheless, this paper adopts Vargo and Lusch's (2008) view that co-production is associated with G-D logic and co-creation is associated with S-D logic; therefore, the term 'co-creation' is more appropriate.

Prahalad and Ramaswamy (2004) developed the DART value co-creation model. They suggested that the process of value co-creation is composed of the building blocks of: dialogue, information access, perceived risk, and transparency (DART). The authors stressed that the chances of value co-creation are better when all these elements are incorporated in the model. By the same token, Payne et al. (2008) proposed a process framework for the design and structure of successful co-creation. 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. It 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.

Gov 2.0 activities provide a foundation to support citizens' contribution to the co-creation of public value. Nevertheless, Gov 2.0 has an impact on public service values because it can be both an enabler and an enhancer (Bannister & Connolly 2014). Therefore, this paper proposes that Gov 2.0 could be appropriate platform of value co-creation in the public sector. Furthermore, when the citizens' contribution is appropriately utilised, it should turn pressure groups to positive value co-creators with government administration. Co-creation can be viewed from different perspectives. This paper focuses on exploring citizens' participation in co-creation motivation and how government agencies attempt to manage the co-creation process.

2.4 Gov 2.0

Gov 2.0 is defined as the use by government agencies of Web 2.0 tools and applications, either on their websites or via third party providers such as Facebook and Twitter (Criado et al., 2013). Tapscott et al. (2007) predicted Gov 2.0 to be the next generation of e-Government after the millennium. Indeed, Gov 2.0, or government's adoption of Web 2.0 (Johannessen 2010), is a new way to describe the current use of these technologies to socialize government services, processes, and data (DiMaio 2009; O'Reilly 2011). While the first generation of e-Government mainly focused on internal and supply-driven technological changes, Gov 2.0 strongly re-shifts the focus to citizens, not only as users but as active contributors. According to Lukensmeyer and Torres (2008), some government agencies are already using Gov 2.0 as a new source of policy advice, enabling policymakers to bring together opposite ideas that would not come from traditional sources. This paper acknowledges that previous waves of e-Government may still suffer from the low level of usage as well; however, Gov 2.0 was chosen because of its participatory nature and earlier prediction that it would increase citizens' participation levels.

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 order to executive departments and agencies to adopt "innovative tools, methods, and systems" that would enhance governmental transparency, public participation, and collaboration as pointing towards this technology. Furthermore, Obama's election campaign had extensively made use of Web 2.0 tools. 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 Gov 2.0, including social networking sites, can be of benefit including improving the government workings (Dunleavy & Margetts 2010; Osimo 2008).

Furthermore, Gov 2.0 does not operate in isolation from other networks and communities. Currently, Web 2.0 tools 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., elance.com). Research has shown that Web 2.0 tools are being used to connect geographically dispersed communities and are changing communal activity (Haythornthwaite & Kendall 2010).

The term 'Gov 2.0' was first put forward 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 reuse and design and then provided it for free to the public and government (O'Reilly 2011). Mergel (2012) defined Gov 2.0 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 paper and will therefore be adopted. Furthermore, governments can benefit from the collaborative technologies at the heart of Web 2.0 that allow a two-way interaction with their citizens. Millard (2010) agreed and added that Gov 2.0 promotes open and user-driven governance. In Gov 2.0, the government is transforming its fundamental values and operations to reflect and serve the evolving needs of the society. Nam (2011) discussed Open Government and Gov 2.0 as a new end and a new means for e-Government. He proposed Open Government as an extension of e-government being equipped with Gov 2.0. Indeed, emerging technologies such as social networking tools could support Open Government. The Open Government concept covers core values of e-Government (i.e.,transparency, participation, and collaboration), and encourages citizens to engage in a participative and empowering relationship with government. The expectations that Gov 2.0 will improve transparency, collaboration, participation and openness are partially realized in some areas, but are non-existent in others (Nam 2011).

Use of Gov 2.0 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 resulting in new social structures related to the use of innovative technologies (Mergel 2012). From the government agencies' perspective, its current use indicates two trends. Some are hesitant to use it and provide only a single online access. Others are jumping in head-first without considering the use of different channels across multiple social networking sites, extending their reach and visibility across the Web. The latter group argue that the use of Gov 2.0 supplements the traditional means of communication, which is an "and also" approach in contrast to an "and/or" approach (Mergel 2012). However, government agencies are acknowledging the popularity of Web 2.0 tools and are gradually beginning to use these tools to create, disseminate and collect information outside the traditional communication mission.

Although government agencies use Web 2.0 tools or Gov 2.0, this comes with many challenges and risks. 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 numbers of government websites exceeded 20 000 sites (Mergel 2012). A related issue is the lack of confidence and trust in government operations which lead to movements such as Occupy Wall Street. Citizens are more likely to trust government when it shares more information about its operations and engages citizens in the decision-making process (Aladalah et al. 2015). A movement to reduce the cost of the decentralized and high numbers of government presences, and to increase the trust in government, is combining to foster Gov 2.0.

According to Millard (2010), many European e-Government systems seem to be trapped in a Government 1.0 paradigm. However, there is an increasing trend towards Gov 2.0 taking more focus on the demand side, which relates to user empowerment and engagement. In Gov 2.0, the government is transforming its fundamental values and operations to reflect and serve the evolving needs of the society. Based upon the previous discussion of several theories, and disciplines, this paper formulates a trans-disciplinary comprehensive conceptual framework for Gov 2.0 as a service system to co-create public value via citizen participation (see Figure 3).

3 PROPOSED CONCEPTUAL FRAMEWORK

Figure 3 shows the conceptual framework developed from the preceding discussions in section 2. We propose a conceptual framework that presents Gov 2.0 as a service system which facilitates public

value co-creation between citizens and governments. The proposed conceptual framework is presented as an interactive relationship between the client (citizens) and the provider (government).

The level of the value co-creation was conceptualised in this paper in terms of the degree to which it was tailored to the clients' and provider's level of expectations. Figure 3 shows the three elements of the service system: People, technology and value proposition (Maglio & Spohrer 2008). In terms of Gov 2.0, 'People' includes citizens and government employees, the technological platform is Gov 2.0, and finally the value proposition could be the principles of Open Government: transparency, participation, and collaboration.

To understand Gov 2.0 as a service system, we need to understand the interactions that result in the 'whole' system. The providers (i.e. government agencies) cannot create the value themselves, but they propose the value proposition. Government agencies propose value to the public in response to the values that are perceived by the public, subject to resources availability. To create value, individuals must act in context so that outcomes can be captured. As shown in Figure 3, the client captures the value and these interactions translate into a collaborative process as indicated by the outer arrows. Therefore, to co-create value, citizens and government agencies enact the practices to transform resources in order to achieve the desired outcomes. For instance, a government agency posts a draft policy via Gov 2.0 and requests public feedback and comments. In turn, citizens provide their feedback and co-create public value. This process allows citizens to achieve their desired needs as well as offering justifications and satisfaction at the end of the consultation process, which is presented in the value co-creation circle in Figure 3.

Furthermore, the effect of engagement on the citizens-government relationship is expected to promote a positive image of the government agency. Knowledge of the possible citizens' needs is the value proposition of the government agency. Knowledge about how these propositions translate into resources is the value capturing and finally identification of the priorities within the value system to produce a win-win situation with citizens is the value co-creation. In a sense, "using collective resources to meet collective needs in a mutually beneficial manner", which is also the definition of governance.

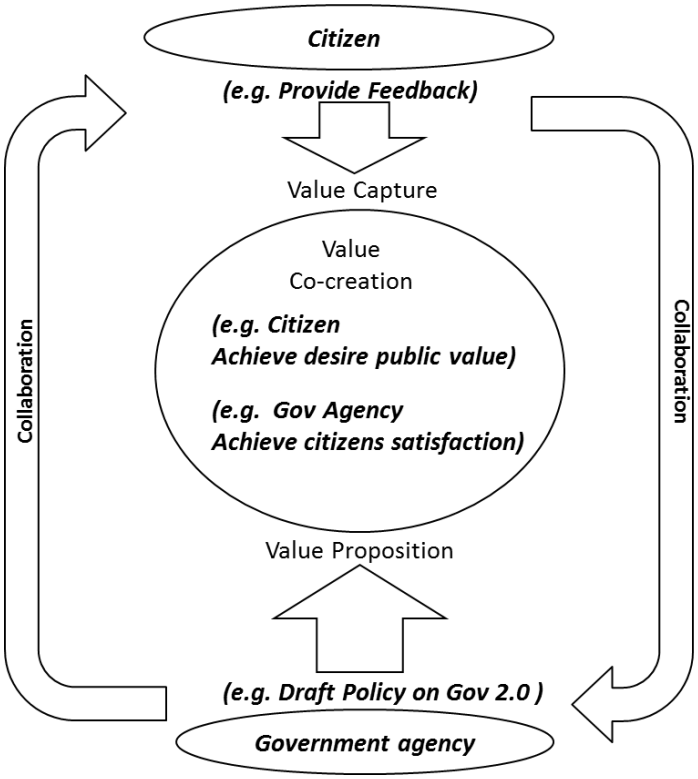

Figure 3. Proposed framework for Gov 2.0 as a service system

The Singapore model is an example of a successful Gov 2.0 as a service system that enables problem solving through co-creation. Singapore has been a remarkable world leader in the e-Government movement (Accenture 2007& 2009; Chan & 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 outstanding success is viewed through its constant reinvention. The Singapore e-Government Masterplan 2011-2015 (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 public value 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 "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 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 a mobile app designed to facilitate citizens reporting problems such as graffiti or broken sidewalk/ potholes they see in the city via their smartphones (cityofboston.gov 2015). According to Bill Oates the CIO of the city of Boston that there was a great response from the citizens and when they were asked about the reason they reported that "When we call, we feel like we're complaining, but when we use the app, we feel like we're helping" (Towns 2013). Another feature of the app is once the problem was fixed; the worker takes a photo and sends it via the app to the citizens who reported the request, and they can respond with a recognition. We argue that this feeling and the feedback loop can foster ties between citizens and government agencies, thus, the governance system become more citizen-oriented.

The City of Honolulu uses an app to get citizens to check on 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 at emergencies, so getting citizens to check its functionality is beneficial to save lives and at the same time cost efficient. These kinds of apps have spread virally and naturally, which show a trend of tackling problems as a collective action. Gov 2.0 provides an efficient and effective platform for such collective actions. As Tim O'Reilly puts it ""What we do together that we can't do alone", when he define Government (2011). That means more open, generative, and collaborative government. The current trend toward participatory government will only prosper by involving and empowering citizens to co-create public services. In so doing, governments will better meet citizens' needs and at the same time shift some of the accountability to the citizens' side.

4 CONCLUSION AND FUTURE DIRECTION

The objective of this paper is to understand how Gov 2.0 influences citizens' participation using the theoretical lens of service science and value co-creation. We conducted an extensive literature review of various disciplines (including management and marketing) and synthesized it with prior e-Government research to develop a trans-disciplinary conceptual framework for Gov 2.0 as a service system. Agarwal and Lucas (2005) argued that IS research needs to extend and enhance theory by focusing more on theoretical issues in order to make a greater contribution to the discipline. 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 ICT. 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 Large Systems Theory) (Yildiz 2007). Theories from both political science and IS have been applied in e-Government with some success (e.g., Institutional theory in Luna-Reyes & Gil-García 2011), but the argument here is that the complexity of the phenomena requires a trans-disciplinary approach. The proposed framework is intended to contribute to further understanding of the complex citizen- government relationship.

Service science and value co-creation research have been found to be key in the success of the private sector. However, the public sector is more complex due to the diverse stakeholders. As we have argued, a trans-disciplinary approach will generate more benefits, whilst simultaneously integrating to the new context, i.e. Gov2.0. The development, implementation, operation, maintenance and management of e-Government systems are multifaceted. Therefore, our view of trans-disciplinary research would hopefully benefit the e-Government discipline in providing insights for the explanation and prediction of the citizens' participation phenomenon in Gov 2.0.

The proposed conceptual framework indicates that citizens' engagement in the public value co-creation process should also meet citizens' needs as it influences their overall satisfaction with the government. Citizens' satisfaction, in turn, is expected to have a significant influence on their participation in Gov 2.0. We propose that the emergence of this view is timely due to advances in technology facilitating greater connectivity between citizens-government relationships than before. This complex relationship is expected to generate more demand, which can be satisfied through value propositions to value capturing to finally value co-creation (Ng et al. 2010). Notable contributions of the paper include drawing attention to service science and value co-creation as new approaches for studying e-Government, theorizing citizens' participation in Gov 2.0, developing a trans-disciplinary conceptual framework for understanding the low citizens' participation in Gov 2.0. Due to limited prior research in this field, more studies are needed for understanding the relationship between citizens and governments in Gov 2.0.

This conceptual framework can serve as a theoretical foundation for investigating citizens' participation in Gov 2.0. Future research could empirically validate this conceptual framework. More studies could address other concepts such as open-closed systems, viable systems model and dynamic systems and their relation with Gov 2.0. This would provide a holistic view of Gov 2.0 and offer additional insights into the field. It is anticipated the validation of this paper's framework will provide evidence to help governments and policymakers to better tailor Gov 2.0 to allow choices and meet the requirements of citizens, which should lead to a higher level of participation as well as reflecting the characteristics of users. Government executives should consider the identified factors when implementing Gov 2.0. Therefore, successful implementation of Gov 2.0 by government agencies needs to go hand-in-hand with citizens' requirements and expectations so their participation levels could be increased.

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