IT RESOURCES, ORGANIZATIONAL CAPABILITIES, AND VALUE CREATION IN THE PUBLIC SECTOR ORGANIZATIONS – PUBLIC VALUE MANAGEMENT PERSPECTIVE

Completed Research Paper

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Abstract

In this study, we offer a conceptual model on the mechanism in which IT resources contribute to the generation of public value in the public sector domain. Specifically, this paper aims to identify the processes through which IT resources in the public sector organizations contribute to value creation. We follow a process-level approach, suggesting that the relationship between IT resources and organizational performance in governments is mediated by organizational capabilities. We develop a theoretical model that delineates the paths from IT resources to organizational performance in governments, drawing upon public value management theory. This perspective asserts that public managers, on behalf of the public, should strive to generate greater public value, as managers in the private sector seek to achieve greater private business value, which in most cases represents monetary returns to shareholders. Based on the review of public value management literature, we suggest the four key organizational capabilities that may reside in the linkage between IT resources and public value - public service delivery capability, public engagement capability, co-production capability, and public service innovation capability. We argue that IT resources in public organizations enable public managers to pursue greater public value by cultivating these four organizational capabilities.

Keywords: IT Resources, Public Sector Organizations, Government, Public Value Management

Introduction

How can the public sector organizations utilize information technologies (IT) resources for greater public value? In the management information systems (MIS) discipline, a large body of the literature has attempted to examine how IT resources can help the private sector organizations generate greater value for shareholders, customers, and other stakeholders. However, to the best of our knowledge, neither the MIS nor the public administration literature has paid much attention to identifying value creation mechanisms from IT resources in the public sector domain. Although governments now spend as considerable an amount of expenditures in IT as for-profit firms do (Pang 2011) and e-Government is among the key organizational resources for any public service provision such as public welfare and law enforcement (Moon 2002, West 2004), we do not have a good understanding of how IT resources contribute to value creation for governments and citizens. Without it, some would argue that in the absence of profit motives and competitive pressures, IT will hardly contribute to value creation in the public sector organizations. This study attempts to fill this gap with the public value management perspective. Taking an interdisciplinary approach combining the public administration and the MIS literature, we develop a conceptual framework that delineates a theoretical link from IT resources to public value.

It has been one of the primary research focuses in information systems (IS) literature for the last couple of decades to find *whether* information technology (IT) investments can lead an organization to generate greater value and achieve sustainable competitive advantages (Brynjolfsson 1993, Melville et al. 2004). To provide an answer to such a question, numerous IS researchers have presented a broad range of empirical evidence showing that information technology investments are positively associated with firm performance in terms of productivity, profitability, and market value (Hitt and Brynjolfsson 1996, Brynjolfsson and Hitt 1996, Bharadwaj et al. 1999, Kohli and Devaraj 2003, Anderson et al. 2006). A subsequent question raised by both scholars and practitioners is *how* investments in IT lead to greater organizational performance. This question leads IS researchers to shift their attention from the direct impact of IT on firm performance to mechanisms by which IT contribute to firm performance (Piccoli and Ives 2005). In other words, they take an opening-the-black-box approach (Barua et al. 1995, Ray et al. 2005).

Unlike many firm-level studies which examine the association between IT resources and firm performance, a number of relatively recent studies take a process-level approach. This approach argues that IT resources, which consist of IT assets and capabilities (Wade and Hilland 2004), do not directly lead to greater organizational performance, but they do so through intermediate organizational processes such as manufacturing, marketing, customer service, and supply chain management (Barua et al. 1995, Ray et al. 2005, Rai et al. 2006, Banker et al. 2006). The effective use, management, and leverage of IT resources by managers in developing actual organizational processes and capabilities can lead to value creation (Pavlou and El Sawy 2006).

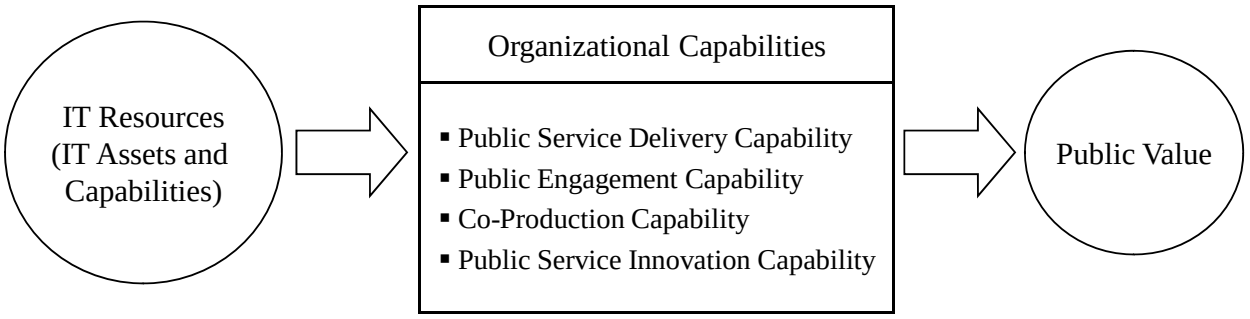
Based on this process-level approach, the present study aims to identify through which process IT resources in the public sector organizations contribute to value creation. We here follow the notion that the relationship between IT resources and organizational performance is mediated by organizational capabilities. In other words, we argue that effective use and deployment of IT resources foster organizational capabilities in the public sector organizations, which in turn create greater value for organizations and the public.

In this study, drawing upon public value management theory, we develop a theoretical model that delineates the paths from IT resources to organizational performance in the public sector organizations. Public value management theory asserts that public managers, on behalf of the public, should strive to generate greater *public value*, as managers in the private sector, entrusted by shareholders, seek to achieve greater *private value*, which in most cases represents monetary returns to shareholders (Moore 1995). Thus, in the public-sector context, organizational performance is gauged by how the organization creates public value for the citizens it serves (Alford and O'Flynn 2009, Moore and Benington 2011). Our review of public value management literature, which is presented in detail in Section 3, suggests the four key organizational capabilities that are paramount to public value creation – public service delivery capability, public engagement capability, co-production capability, and public service innovation capability (Moore 1995, Stoker 2006, Alford and Hughes 2008, Alford and O'Flynn 2009). Subsequently, in Section 4, we explain the linkages between IT resources, the four organizational capabilities, and public value. We argue that IT resources in public organizations enable public managers to pursue greater public value by cultivating these four organizational capabilities, as described in Figure 1.

The remainder of this paper is organized as follows. The next section reviews the previous literature on IT resources and organizational capabilities in the private sector. Section 3 summarizes the literature on public value management

literature and compares it to prior public management paradigms (traditional public management and new public management). Section 4 provides a detailed discussion of the relationship between IT resources, organizational capabilities, and public value creation. Section 5 concludes the discussion.

Figure 1. The Theoretical Framework



IT Resources, Organizational Capabilities, and Organizational Performance

There are varying definitions and categorizations in the IS literature concerning organizational IT assets, resources, and capabilities (e.g. Ross et al. 1996, Feeny and Willcocks 1998). Among them, we draw on the definition proposed by Wade and Hulland (2004), who define IT resources as IT assets and IT capabilities. IT assets refer to anything tangible or intangible related to IT that can be used in organizational processes for creating, producing, and offering products and services. IT assets may include hardware, software, network infrastructure, information assets, or human resources in IT functions. IT capabilities refer to repeatable patterns of actions in the use of IT assets. In a similar vein, Bharadwaj (2000) define IT capability as a firm's "ability to mobilize and deploy IT-based resources in combination or copresent with other resources and capabilities" (p. 171). Pavlou and El Sawy (2006) explain that IT capabilities have three key dimensions – the acquisition of IT assets, deployment of IT assets through tight IT-business relationships, and leveraging of IT assets in formulating business strategies.

The literature on IT resources consistently emphasizes that not all IT resources matter to business value creation. Some IT resources such as IT infrastructure and technical skills can be relatively easily acquired from the market, imitated by competitors, and substitutable with similar resources. Hence, such capabilities are rarely considered a source of business success (Wade and Hulland 2004). Only IT resources that are inimitable, non-substitutable, and imperfectly immobile can be a lever for competitive advantages. Such IT resources may include IT management skills or the alignment of IT and business processes.

The literature on IT resources has three related, but distinct views on the relationship between IT resources, organizational capabilities, and performance – the complementarity view, the process view, and the configuration view. In the first view, IT assets and capabilities contribute to organizational performance *in conjunction with* other organizational capabilities. A major argument of this perspective is that IT assets and capabilities are complement to organizational processes such as human resource management and customer service. To put it differently, when accompanying with development in organizational capabilities, IT resources are associated with firm performance to a greater extent. For example, Bresnahan et al. (2002) demonstrate that IT assets lead a firm to achieve a greater level of productivity when it has a more decentralized workplace organization and a higher level of employees' skills. Bharadwaj et al. (2007) demonstrate that integrated IS capability, which is defined as the degree to which a firm's information systems provide integrated data and process integration, moderates the impact of coordination capabilities in manufacturing, marketing, and supply chain on manufacturing performance.

The second perspective – the process view – stresses that IT resources are associated with organizational performance indirectly via organizational capabilities. Barua et al. (1995) and Mukhopadhyay et al. (1997) are two of the early studies that develop this view. The major thrust of this view is that IT resources facilitate the development of superior organizational capabilities such as ones in marketing, operation, or supply chain management. These capabilities in turn positively affect firm performance and become a source of sustained competitive advantages. Ray et al. (2005) argue that a process level of analysis (as opposed to a firm level) is the

most appropriate level of observing the strategic effects of IT (Pavlou and El Sawy 2006). Among many studies with this view, Rai et al. (2006) show that IT infrastructure integration with suppliers and customers drives supply chain integration (organizational capability), which subsequently contributes to greater firm performance with respect to operational excellence, customer relationships, and revenue growth. Banker et al. (2006) find that the adoption of plant information systems such as resource planning systems (RPS), and electronic data interchange (EDI) applications contribute to firm performance by improving manufacturing capabilities in terms of just-in-time manufacturing and customer/supplier participation programs.

The third, emerging perspective – the configuration view – asserts that the relationship among IT resources, organizational capabilities, surrounding environment, and firm performance is not as simple as the complementarity or process view sees. Rather, an organization's competitive advantages and performance are rendered by a dynamic, mutual interdependence among IT systems, dynamic capabilities, and environmental turbulence (El Sawy et al. 2010). According to this perspective, an organization can command strategic advantages when it possesses right configurations of these three components. As a result, the configuration view suggests that organizations should strive to understand the holistic effect of a configuration of resources, capabilities, and environmental conditions rather than aiming at understanding the effect of individual resources or capabilities in isolation.

Our theoretical model follows the process-view perspective, as explained in the subsequent sections, as our focus is on discovering which organizational capabilities are needed for the public sector managers in utilizing IT resources for advancing public value generation.

Public Value Management Perspective

What is Public Value Management?

In explaining the value creation mechanism of IT in the public sector organizations, we adopt the public value management perspective as a theoretical basis. The basic tenet underlying this perspective is that public officials should strive to maximize public value, just as do managers in for-profit firms seek to maximize private business value (Moore 1995). Here, public value broadly refers to the value created by government through services, laws, regulation, and other actions (Kelley et al. 2002). Researchers in this stream emphasize that rather than passively following the dictates of politicians and elected officials and meeting the given responsibilities of public service provisions, public managers need to play an active role in exploring new opportunities in public value creation, engaging in continuous dialogues with various stakeholders including politicians and citizens, and improving capabilities in public service delivery. In other words, to generate more public value, a public manager needs to become not a simple technician or a passive producer, but an entrepreneur with a clear strategic mission and vision, as do many managers in the private sector (Moore 1995, Alford and Hughes 2008).

Entrepreneurship is promoted in this literature, because like for-profit firms, governments are subject to increasingly dynamic and uncertain environments (Moore and Khagram 2004, Swilling 2011). Social, political, and economic circumstances surrounding governments continue to evolve, technological advances change and even sometimes disrupt business and society at large, and new risks and threats to citizens such as terrorisms, outbreaks of pandemic diseases, or global warming keep emerging. Therefore, citizens' needs, goals and expectation for governments are by no means constant. The public value literature, however, argues that existing democratic and political processes and public management systems, which value continuity and preservation of the status quo, are inadequate to deal with such a dynamic environment. It emphasizes that public managers, who may have extensive expertise and knowledge in policy making and public service delivery, need to play a more proactive role in sensing changing environments, in responding to new needs for legitimate government intervention, and in innovating public management for securing public value.

Two Research Strands in Public Value Management

According to the review by Davis and West (2009), there are two major research strands in the public value management literature. In the *institutional perspective*, researchers seek to find out what public value is, how it is defined, and what constitutes public value. In the *generative perspective*, scholars discuss and propose normative frameworks for appropriate behaviors of public managers who would like to secure greater public value.

The literature in the institutional perspective consistently highlights that public value is far more multi-faceted than private value, which in the business context usually refers to monetary profits. Public value not only includes direct

benefits from public services such as education or public welfare that accrue to individual clients (Alford 2002), but also comprises goals or aspirations such as trust to governments, fairness, or national prides that are valued collectively by the public (Moore 1995, Alford and Hughes 2008, Alford and O'Flynn 2009). While for-profit firms may pursue multiple objectives such as sustainability, customer satisfaction, or safety, these objectives usually boil down to the ultimate goal in sustaining economic value creation to shareholders. In this vein, Davis and West (2009) argue that "the public interest cannot be reduced to singular, economic measures. The values that inhere in the public realm in both government processes and outputs are irreducibly plural" (p. 604).

Thus, in the institutional perspective, several studies examine what constitutes public value. For example, Beck Jørgensen and Bozeman (2007) attempt to construct a *constellation* of public values that classifies 72 value concepts identified by their review of public administration literature. This includes not only productivity and effectiveness in public administration but also broader goals concerned with the relationship between governments and society such as sustainability, responsiveness, or accountability. Kelley et al. (2002) argue that public values consist of three components – objective outcomes of public services, service qualities perceived by citizens, and trust in governments. Cresswell et al. (2006) enumerate six categories of public values – financial, political, social, strategic, ideological, and stewardship values. Benington (2009) categorizes public value as ecological value, political value, economic value, and social and cultural value. In an effect to clarify the meaning of public value, Alford and OF'lynn (2009) explain its difference from "public goods" or "public interest." They argue that public value has greater meaning than public goods, which indicate *outputs* that public organizations produce. Public value also encompasses *outcomes*, which refer to the impacts of outputs on those who consume the outputs. Simply put, if outputs are not valuable to the citizens who, unlike those in the private sector, sometimes are compelled to consume them, public value creation is limited.

It should be noted, however, that there is no absolute, universally applicable standard of public value (Alford and Hughes 2008, Alford and O'Flynn 2009). What is publicly valued depends on the needs and desires of the public as well as on social and environmental circumstances with which the public and public managers deal. From this institutional perspective, Stoker (2006) states that "public value is more than a summation of the individual preferences of the users or producers of public services. The judgment of public value is collectively built through deliberation involving elected and appointed government officials and key stakeholders" (p. 42). This literature stresses that two components are essential for true public values to be uncovered – democratic processes and active roles of public managers. Alford and Hughes (2008) state that the mechanism on which public managers rely for ascertaining what citizens want is the democratic political process. Kelley et al. (2002) argue that value is determined by citizens' preferences, which are expressed through a variety of means and reflected through the decisions of elected politicians.

This argument leads to the generative perspective. This literature points out that in increasingly unstable environments, public managers need to play a key role in discovering the desire of the public in devising public service offerings. In contrast to the traditional or new public management models, which draw a clear boundary between politics and public management that public managers are discouraged from crossing, public value management stresses that government officials need to consciously engage in political discussions and actively participate in discourses with politicians, citizens, not-for-profit organizations and businesses to discover how to advance public value (Hui and Hayllar 2010). Against this backdrop, the generative perspective attempts to provide prescriptions or guidelines for public managers. In a seminal work, Moore (1995) suggests that public managers can create greater public value by: (1) increasing the quantity or quality of public activities per resource expended; (2) reducing costs (in terms of money and authority) used to achieve current levels of production; (3) making public organizations better able to identify and respond to citizens' aspirations; (4) enhancing the fairness with which public sector organization operate; and (5) increasing their continuing capacity to respond. Stoker (2006) lists four propositions for the pursuit of public values. First, he argues that government intervention is justified only when public values are delivered. Second, he asserts that the legitimacy of a wide range of stakeholders needs to be recognized. Third, an open-minded, relationship approach to service delivery is necessary. Lastly, public managers need to equip with an adaptable and learning-based approach to the challenge of public service delivery. Smith (2004) states that "public officials must engage political authority, collaborate with each other within and across institutional boundaries, manage efficiently and effectively, and engage with communities and users of services, and reflectively develop their own sense of vocation and public duty" (p. 69-70). The second, third, and fourth requirements in this statement correspond to the co-production, public service delivery, and public engagement capabilities, respectively, which are discussed in the following section.

Comparison to Resource-Based View

Before concluding the review of public value management literature, we compare the literature with the resource-based view (RBV) in the strategic management, which has been a theoretical basis in numerous studies on IT business value and strategic IT management (Sambamurthy et al. 2003, Wade and Hulland 2004, Melville et al. 2004). The public value management has much in common with RBV. Particularly, both RBV and public value management emphasize the importance of organizational capabilities in value creation, even though the two theories consider the different realms of organizations.

Emerged as an alternative theoretical framework to competitive forces theory (Porter 1985), in which competitive advantages are shaped largely by positioning in a competitive industry (the logic of positioning as described by Sambamurthy et al. 2003), RBV stresses that variance in organizational performance can be explained by heterogeneity in resources held by organizations. Thus, firms that are equipped with superior resources and capabilities can achieve supernormal organizational performance (as in the logic of leverage in Sambamurthy et al. 2003). Likewise, as explained above, public value management maintains that value creation by public organizations depends upon the extent to which public managers and organizations foster internal organizational capabilities.

A key difference between the two perspectives, however, is that while the public value literature directly explains which organizational capability is necessary for public value generation, RBV discusses which attribute of organizational capability is important for sustained value creation and competitive advantages. In public value management, for example, such capabilities as delivery capability or public engagement capability matter. In RBV, most representatively, Barney (1991) suggests the four key characteristics of organizational resources that contribute to competitive advantages - value, rarity, inimitability, imperfect mobility. A number of other studies in RBV propose alternative attributes (e.g. Dierickx and Cool 1989, Amit and Schoemaker 1993). Public value management, on the other hand, does not explicitly explain the necessary characteristics of organizational capabilities for value creation.

Another key difference between the two theories is unit of analysis. In RBV, it is an organization that possesses capabilities, but public value management discusses the capabilities that an individual public manager has to own. However, it would not be inappropriate to assume that the capabilities held by members in an organization collectively constitute organizational capabilities. For that matter, I believe that the public value management theory can be applied in the organizational level of research, as in Moore and Khagram (2004), who attempt to analyze corporate strategies in the business context with the lens of public value management.

Even though RBV has been a fertile theoretical framework on the IT business value literature, we find that the public value management literature is a more appropriate theoretical approach in the public sector IT value studies for several reasons. First, the foremost objective of firms in RBV is to attain competitive advantages against competing firms and to prevent them from eroding (Picolii and Ives 2005). In the public sector, however, such an aim is not as salient as in the private sector, even though the literature on competitive federalism argues that there still exist competitive environments between government agencies (Dye 1990, Breton 1991). Second, the resource-based view neither accounts for the plurality and multi-dimensionality of public value nor stresses the importance of the public manager's ability to discover and formulate the desired public value. Third and most importantly, as mentioned above, RBV does not suggest specifically which organizational capability is paramount to the value creation in the public sector organizations. It merely suggests the attributes of resources and capabilities that are essential to effective competition, which is in general not a significant concern in the public sector.

In the subsequent section, we discuss the theoretical model presented in Figure 2 in detail that combines the IS and public value management literatures

The Link from IT Resources to Public Value

Following Bacharach (1989), the theoretical development in this manuscript aims at proposing a set of constructs and relationships among the constructs that explain the value creation mechanisms from IT resources and, to some extent, predict how future technological developments will advance public value in the public sector organizations. Therefore, the theory in this study is bounded in the context of governments. Figure 1 shows the central constructs in our theoretical development – IT resources, organizational capabilities, and organizational performance. This section outlines the relationships among these constructs, as crystallized into the four propositions below.

Based on our review of public value management literature, we suggest four key capabilities in public organizations that are pivotal in advancing public value generation – public service delivery capability, public engagement capability, co-production capability, and public service innovation capability. We do not maintain that these capabilities represent the entire universe of public value management capabilities. For example, the literature highlights that it is imperative for public managers to equip with political savvy to engage in political processes (Moore 1995, Alford and Hughes 2008). But, such an ability of political involvement is out of the scope of this study. We theorize that as described in Figure 1, it is the four capabilities that play mediating roles between IT resources and pubic value creation.

IT Resources and Public Service Delivery Capability

One of the primary ways to accomplish greater public value is to improve the efficiency and effectiveness of public service production. In other words, public value is enhanced when a government improves its public service delivery capability by increasing the quality or quantity of public services with fewer inputs. As Moore (1995) puts it,

> "It is not enough to say that public managers create results that are valued; they must be able to show that the results are worth the cost of private consumption and unrestrained liberty forgone in producing the desirable results. Only then can we be sure that some public value has been created." (Moore 1995, pp. 57)

By the same token, Alford and Hughes (2008) argue that "although the term public *value* draws our attention to results or outcomes, it does not ignore inputs and processes. … creating public value will mean maximizing within a constraint, that is, seeking the greatest possible benefit to the public within the available monetary or legal resources" (p. 3). This implies that lessening such a resource constraint, i.e. making administrative processes more efficient, also leads to greater public value.

The impact of IT resources on delivery capability can be explained by the three strategic roles that IT resources play in business organizations – *automate*, *informate*, and *transform* (Zuboff 1985, Chatterjee et al. 2001, Dehning and Richardson 2003, Anderson et al. 2006). The most essential and significant role of IT is to *automate* business processes that traditionally have been driven mostly by paper handling and therefore tended to be laborious and error-prone. It is estimated that automating one transaction saves approximately $154 in labor costs (Center for Digital Government 2006). Hence, given the large number of transactions a government agency handles, the value impact of automating business processes can be enormous. Automating processes can take place in the two fronts – internal administration processes and external service delivery to citizens (Moon 2002, Lim and Tang 2008).

Since the early MIS era, information systems have continued to play a key role in the public sector organizations in automating internal processes such as human resource and financial management (Danziger 1979, Kraemer and Dedrick 1997). For instance, the Department of Transportation in the State of North Carolina adopted a tablet PC-based mobile inspection system for state highways and roads (NASCIO 2009). Automating paper-based inspection processes for more than 21,000 bridges, culverts, and signs, the system drastically improves both the efficiency and accuracy of the processes. The system not only brings a cost saving but also enables timely maintenances of state infrastructures, enhancing the safety of statewide transportation systems. This example illustrates how IT resources (the new mobile inspection systems) improve the efficiency and effectiveness of the infrastructure maintenance process.

Moving public service delivery to citizens from a face-to-face basis to the electronic provision via the Internet may benefit both governments and citizens. Now in many jurisdictions, citizens are able to conduct activities on the Internet such as tax filings, license application and renewals, voter registration, and accessing to government records and information (Thomas and Strieb 2005, Norris and Moon 2005). Such online services create public value in two ways – by directly saving citizens time and effort to physically visit government offices and by improving the productivity of transactions (Cresswell et al. 2006). For example, the Motor Fuel Automation Project in the State of Michigan (NASCIO 2005), which includes electronic reporting and processing of fuel tax transactions, generates various benefits for both gas retailers and the state. Gas retailers can integrate their own financial systems with the tax filing systems via Web services, enhancing productivity and accuracy of tax processing. The State of Michigan earns both increased tax revenues and a higher quality of tax data for effective tax auditing.

With respect to the *informate* role, IT resources enable governments to utilize a vast range of information and data in an innovative manner. One of the most prominent uses of information in government administration is found in the public safety area. A number of law enforcement agencies in the federal, state and local level strategically adopt

business intelligence and data-mining systems. Digitized crime data and state-of-art analytic tools bring new intelligence to law enforcement agents, who used to rely mostly on their own insights and experiences in targeting offenders and solving crimes. Analyzing and evaluating incident patterns and histories, the agencies are now able to conduct more proactive, predictive patrols and deployment of law enforcement personnel, specifically targeting on most likely neighborhoods or criminal groups. According to a report by Government Technology, the City of Memphis, Tennessee has achieved a 31% reduction in crimes and a 15.4% reduction in violent crimes since 2006 by institutionalizing data-driven decision makings (Digital Communities 2010), representing an accomplishment of considerable public value.

Third, studies on public administration put forth that IT resources can *transform* public organizations by alleviating bureaucracy and red tapes. Red tapes, a manifestation of excessive bureaucracy (Welch and Pandey 2007), are defined as rules, regulations, and procedures that remain in force and entail a compliance burden but do not advance the legitimate purposes the rules were intended to serve (Bozeman 2000, Moon and Bretschneider 2002). Researchers in public administration have been interested in studying the relationship between IT resources and red tapes. There are two competing contentions regarding the relationship. On the one hand, the significant presence of red tapes in organizations provokes interests in technology adoption, a theory called the "demand pull" hypothesis (Pandey and Bretschneider 1997, Moon and Bretschneider 2002). On the other hand, the "technology push" hypothesis suggests that technology usages are related to a reduction in red tapes (Welch and Pandey 2007). Both of the hypotheses receive some empirical support. Researchers explain that IT resources make coordination and communications between employees or between groups more seamless and streamlined (Heintze and Bretschneider 2000). In addition, recording every activity and transaction promotes officials' accountability, reducing the incentives of government officials to unnecessarily cause administrative delay. Thus, it is expected that IT can transform public organizations in such a way that decision making and information processing become faster and less deterred by excessive rules and regulations.

The aforementioned roles of IT resources in the public sector organizations thus explain that IT resources can have a substantial impact on the public service delivery capability of public organizations, which contributes to greater public value. Hence, we propose the following proposition.

Proposition 1. *IT resources contribute to creating public value by enhancing the public service delivery capability of public organizations.*

IT Resources and Public Engagement Capability

One of the mantras in public value management is that the engagement of a large number of citizens and stakeholder groups in policy decision and service delivery is crucial. As Stoker (2006) elaborately puts it,

> "Politicians and officials have a particular legitimacy given the government is elected, but there are other valid claims to legitimacy from among others, including business partners, neighborhood leaders, those with knowledge about services as professionals or users, and those in a position of oversight or regulators. … The public value management paradigm relies on a stakeholder conception of legitimacy in its governance arrangements. The fundamental idea is that for a decision to be legitimate or for a judgment to be made, it is necessary to have all the stakeholders involved." (Stoker 2006, p. 47)

Such a claim stressing the involvement of a broad range of actors is also presented by the network governance literature (e.g. Bogason and Musso 2006, Benington 2011). This literature argues that given because of the increasing size and complexity in public administration, decisions on policies and public services needs to be made not by governments alone, but via deliberation and negotiations involving governments, non-governmental organizations (NGO), and individual citizens.

In many cases, however, it is by no means straightforward to lure various stakeholders in engaging in decision making. Ordinary citizens tend to be busy and preoccupied with their own everyday lives. Getting involved in decision markings in such ways as attending meetings, writing formal feedback, and responding to surveys may require significant time commitment (Ho 2002). In this respect, IT resources provide an alternative venue for a broad range of participation and dialogues from as many relevant stakeholders as possible. Stoker (2006) continues to argue that "new information and communication technologies offer a range of further opportunities to get people's participation in ways that are flexible, attractive to them, and not too time-consuming" (p. 48). Such an

advance materializes as e-Government initiatives, which refer to the delivery of government information and services online through the Internet or other digital means (West 2004).

According to the e-Government evolution models proposed by Moon (2002) and West (2004), one of the key features of e-Governments is a two-way communication. Government Web sites can not only unilaterally publish information or execute automated transactions, but also make citizens' voices to be heard, enabling direct access to governments. In this way, governments can actively seek opinions of the public on policy issues (Chadwick and May 2003). Tools for two-way communication include online public forum, online voting, and so on. In addition, studies in public administration present preliminary empirical evidence showing that two-way communications between governments and citizens may improve attitudes and trust to governments (West 2004, Welch et al. 2004, Tolbert and Mossberger 2006), which are among the key public value elements (Kelley et al. 2002).

Recently, governments at all levels are using Web 2.0 technologies and social media tools to solicit citizens' ideas for government administration (Lee and Kwak 2012). In 2008, the Office of the President-Elect Obama set up Citizen's Briefing Book site, collecting policy recommendations from ordinary citizens for the new administration. State and local governments such as the State of California or the City of Manor, Texas (Vander Veen 2010) are also operating similar platforms where residents can submit suggestions and evaluate ones submitted by peer citizens. Thus, Web 2.0 tools offer governments the ability to make sense of what the public wants and concerns and to engage in close, real-time deliberation with citizens (Hui and Hayllar 2010).

Transparency and accountability in government administration, especially budgeting and financial management, are also considered to be part of public value (Beck Jørgensen and Bozeman 2007), and studies on e-Governments regard IT and the Internet as a great tool for creating such values. Accountability in public organizations can be met when the behavior and performance of public managers fulfill or exceed the expectation of citizens and their representatives (Justice et al. 2006). Transparency is considered to be a necessary condition for accountability, as citizens and stakeholders have to be able to assess the performance and compliance of administration. Governments can utilize IT resources and the Internet to ensure the transparency and accountability. Recently, many governments spearheading an open data government initiative make government financial and performance information available to the public (Rodríguez Bolívar et al. 2004, Meijer and Thaens 2009, Lee and Kwak 2012). These practices enrich openness and accessibility of information on government administration by allowing citizens, especially those without expert knowledge on the administration, to evaluate how public managers use public resources in delivering public services.

As discussed above, IT resources can improve the public engagement capability of public organizations in many ways. Public officials can employ IT resources in facilitating bilateral communications with citizens and other stakeholders. By bilateral communications, it means that a government can deliver messages to broader and targeted audiences; at the same time, it can solicit their opinions and suggestions and attract as many of them as possible to engage in the deliberation for policy formulation and public service delivery. IT resources can enhance the ability of the government to make information more open and accessible to the general public, creating public value in terms of transparency and democratic accountability. In sum, we propose the following proposition.

Proposition 2. *IT resources contribute to creating public value by enhancing the public engagement capability of public organizations.*

IT Resources and Co-Production Capability

Management of public organizations driven by public value necessitates the development of co-production capability with peer government agencies as well as the private-sector organizations. The literature on public value emphasizes that in an increasingly dynamic environment, provision of a certain public service by a single organization may not be enough to fulfill changing needs and aspirations of the public. Broussine (2003) stresses that "in order to solve complex problems, public leaders have to be able to initiate concerted action not only within their own organizations but among a set of stakeholders with different and competing interests" (p. 175). Thus, co-production by multiple government agencies or public-private hybrid production may be necessary. There is also a recently emerging research stream on collaborative public management (Alford and Hughes 2007) or hybrid governance, in which the lines between the public, not-for-profit, and private sectors are being blurred (Klitgaard and Treverton 2004). This literature indicates that collaborative public management has become an emerging and increasingly prominent form of governing, thanks to decentralized power structures in many societies and increased complexity in many public affair issues that a single government organization can hardly handle alone. We argue

that IT resources play a crucial role in enabling such cooperation and co-production that transcend traditional organizational boundaries.

IT resources such as tightly integrated inter-organizational systems (IOS), seamless information sharing, and advanced communication technologies facilitate collaboration and cooperation between government agencies. For example, Waukesha County, Wisconsin established Waukesha County Communication Center (WCC), the county-wide emergency call and dispatch headquarter (Schulz and Tuma 2007). This project was initiated by the county sheriff but driven by the collaboration of several local municipality agencies including police and fire departments. Among the objectives was to improve the quality of public safety services throughout the county, which had been fragmented by municipality boundaries. By consolidating the call centers of small local governments into one entity and coordinating county-wide dispatch functions, WCC could achieve economies of scale in operation and staffing, reduce the burden of local governments, and proactively adopt advanced, yet expensive technologies such as wireless 911 systems or computer-aided dispatch tools. DeMarie (2004) studies the use of communication technologies by geographically disperse teams in the Radioactive Waste Management Project of Nevada Department of Energy. This project is involved by a variety of professions such as scientists, engineers, and community relation managers as well as government officials from several agencies in U.S. Department of Energy and the State of Nevada. Moreover, they are located in six different states including California, Nevada, and Washington, D.C. This case study reports that the use of such collaboration technologies as groupware and video-conferencing improves team performance in both tangible and intangible aspects, including improved productivity, reduced costs, enhanced work quality, and attraction and retention of competent project participants.

As IT resources are a key ingredient in integration and cooperation between suppliers, producers, and customers in the private sector (Barua et al. 2004), can government agencies utilize IT resources in cooperating with private sector organizations, be they not-for-profit or for-profit. Luna-Reyes et al. (2007) chronicle a case of the Bureau of Housing Services (BHS) of the State of New York, which provides homeless support services in a partnership with local governments and not-for-profit organizations such as the Salvation Army and the American Red Cross. Such local organizations manage shelters and assist programs and thus directly interact with the homeless, while the BHS provides funding to the local organizations and oversees their programs and facilities. This partnership emerges as either governments or not-for-profit organizations alone cannot effectively manage the support programs for homeless people. Local organizations, especially small mom-and-pop facilities, lack financial resources and thus need guidance from the authority, while the state government does not have direct, hands-on knowledge on local needs (Agranoff 2004). The case stresses that for the effective management of the program, integration and sharing of information resources that are fragmented and dispersed throughout various state agencies and organizations was imperative. Each state agency and supporting group has its own information repositories on beneficiaries, their medical or criminal histories, facilities, and programs. The case illustrates the integration process of the Homeless Information Management System for effective and successful collaboration in delivering homeless assistance programs. In addition to integrating information, for this type of co-production to succeed, sharing of knowledge and technical expertise among participating organizations is pivotal (McGuire et al. 2011), and inter-organizational knowledge exchange and collaborative tools facilitate such knowledge sharing (Majchrzak et al. 2000).

Like for-profit firms, public organizations are increasingly required to develop the ability to cooperate and collaborate with peer agencies and outside private-sector organizations in public service production. Anecdotal evidence and academic studies consistently point out that to develop such an ability, governments need to make a smart use of IT resources for more seamless information sharing and process integration. This discussion leads us to propose the following proposition.

Proposition 3. *IT resources contribute to creating public value by enhancing the co-production capability of public organizations.*

IT Resources and Public Service Innovation Capability

Conventional wisdom may suggest that innovation in the public sector is an oxymoron (Borins 2002). This originates from the absence of competitive pressures and profit motives, the presence of bureaucratic public managers and outdated management structure, and so on. However, recent research in public administration including public value management recognizes the importance of innovation in public management and finds that public managers can play a key role in initiating and leading innovation. For instance, Borins (2002) conducted a quantitative analysis on innovation awards in several countries that are given to agencies that successfully completed

innovation projects. The analysis reveals that the majority of innovation projects were initiated by public organization leaders or middle managers, rather than by politicians or citizens.

The prior public management models (traditional public management and new public management) assume that surrounding environments in which governments operate are stable and unchanging. Thus, the responsibility of public managers is to simply maintain the status quo and follow the predefined rules and procedures suited to existing environments. Public value management model challenges this assumption, and Moore (1995) emphasizes the innovation capability of public organizations for value creation in changing environments. He states that

> "It is not enough that managers simply maintain the continuity of their organizations, or even that the organizations become efficient in current tasks. It is also important that the enterprise be adaptable to new purposes and that it be innovative and experimental." (Moore 1995, p. 55)

Thus, the literature stresses that governments be vigilant over understanding evolving circumstances and sensing changing needs and aspirations of various stakeholders. Governments need to become flexible and agile in coping with emerging challenges (Dunleavy et al. 2006). We argue that IT resources can help develop the innovation capability by enabling public managers to drastically redefine existing public services or to create a whole new sort of public services (Hartley 2011) that governments would not have been able to offer without IT.

A public management model that describes the fundamental redefinition of public services is termed as 'borderless governments' (Miszewski 2007) or 'Government-as-a-Service' (Center for Digital Government 2006), in which public agencies are organized not by functions or jurisdictions but by citizens' needs, and the boundaries between agencies become more invisible to the public. Ho (2002) suggests a 'one-stop service center' model. A one-stop service center is an umbrella organization that operates on top of existing functional departments and is intended to maximize the convenience and satisfaction of users through service integration. The use of IT resources is crucial in this model, in that officials in such a service center needs to seamlessly coordinate several departments for provision of integrated services. Similarly, Dunleavy et al. (2006) suggest 'client-based or need-based reorganization', in which government agencies serving similar purposes are reintegrated.

Michigan Business Portal is a case in point (NASCIO 2006). This system intends to serve the purpose of simulating economic growth within the state in a changing environment represented by the decline in the state's automotive industry. In the system, all services, processes, and information relevant to starting a new business such as registration or tax payment are consolidated into a single Web site, so that processes for business start-ups are drastically simplified. Thus, business owners do not need to contact multiple state agencies individually. Enabled by IT resources, this one-stop service center model can augment citizens' satisfaction and thus generate public value by "preventing bureaucracies from sending the citizen back and forth from pillar to post, which still is one of the main complaints about the functioning of public bureaucracies" (Snellen 2000, p. 220).

IT resources can also play a pivotal role in inventing a new public service model. For example, IT resources are an indispensable component in Illinois National Electronic Disease Surveillance System (I-NEDSS) (NASCIO 2005). This system aims at identifying and tracking an outbreak of infectious diseases that might escalate to a statewide emergency. It interconnects local healthcare providers and state and federal agencies such as Center for Disease Control and Prevention. This initiative is a response to the continuous emergence of new types of pandemic diseases such as H1N1 and the increasing threat of biological terroristic attacks. The real-time detection and response system to outbreaks could not be operated without the state-of-the-art network infrastructure and data analytic systems.

The literature on public value management asserts that innovation should not be a term that only appears in the private sector. Public organizations also need to continuously innovate themselves to navigate a turbulent environment and keep delivering values to the public. The arguments on IT resources and the public service innovation capability in public organizations can be summarized in the following proposition.

Proposition 4. *IT resources contribute to creating public value by enhancing the public service innovation capability of public organizations.*

Conclusion

Taking the process-level approach from the literature on IT resources and value and drawing on the emerging public value management perspective, this study develops a theoretical model that explains how IT resources in governments contribute to organizational performance as measured by public value creation. Based on prior studies in public administration and anecdotal evidence, we explicate that IT resources help public organizations nurture the

four crucial organizational capabilities – public service delivery, public engagement, co-production, and innovation capabilities. In turn, an improvement in these organizational capabilities contributes to greater public value creation.

In future studies, we will investigate the context in which IT resources contribute to greater public value. We will attempt to find key moderating factors on the relationship between IT resources, organizational capabilities, and public value creation. Such factors might be grouped into four categories – (i) leadership of top management (legislatures, elected officials, and high-ranking appointed officials) in IT management, (ii) organizational acceptance and effective use of IT, (iii) citizens' acceptance of IT-driven changes and public services, and (iv) government-business partnerships. Understanding such moderating factors will help us further theorize how IT resources create public value.

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