

Public Value Creation through Digital Service Delivery from a Citizens' Perspective

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ABSTRACT

The use of information technologies for the delivery of government services is core in the mission of government around the world. Although the promise of public value creation through digitizing government services is a recurrent theme in the literature, we still know little about the actual mechanisms of value creation from the citizen's perspective. Understanding public value creation through digital service delivery is a complex and important research problem. Recent attempts to understand the impacts of electronic services value from the citizens' perspective suggest that dividing service delivery in several stages could be a valuable approach to understand the different models of managing public service delivery, as well as the main sources of value to citizens and society. Moreover, the approach provides a model that can be used by public managers in the design, implementation, and evaluation of citizen-centered and value-based government services. We explore the usefulness of the framework through a series of focus groups with citizens in Mexico. As a result, we identified 3 families of services that follow trajectories with similar stages in the citizen government interaction, and we describe citizen's perception of value from these conversations.

CCS CONCEPTS

• **Applied computing** → **E-government**; • **Information systems** → Service discovery and interfaces.

KEYWORDS

Digital Services, Public Value Creation, Focus Groups, Consumer Behavior Model

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1 INTRODUCTION

The concept of public value has become more important both in digital government and public administration research in the last decade [14]. However, in spite of some efforts to clarify the concept and its implications for digital government research [7], [20], there is no agreed-upon definition of the concept among scholars, but it is possible to distinguish two major perspectives [3]. Many academics focus in public value as a way of thinking about strategy or public value management [4], [17]. From this perspective, public value is considered akin to stakeholder value in the private sector. In this sense, public value can be considered as a major outcome of government activity. A second major perspective considers public values from a more ethical and philosophical view and concentrates in the definition of public values and in the understanding of the distinction between the public and the private [12]. From this perspective, the main goal is to understand what constitutes value and how society decides on what is valued. The most accepted catalogue of Public Values was the result of a review of the literature, representing academic perspectives of public values [12].

Important criticisms to the perspectives include the lack of involvement of the public in the definition of values [19], as well as the lack of appropriate guidelines for public managers to harness the concept and apply it in the design of public policy and government programs and services [15]. In this paper, we aim to fill this gap by providing a citizen perspective to public value creation through digital services, and by proposing a model that can be used to think about different stages in the provision of digital services and their relationship to public value. The model is an adaptation from consumer behavior models developed in the field of marketing, and used in electronic commerce applications [9], [14], [22]. We explore the usefulness of the framework through a series of focus groups in Mexico. As a result, we identified three different

models of citizen-government interaction, and describe citizen's perception of individual and public value created through these process models. Consumer behavior model provides a practical tool that can be used by public managers in the design of citizen-centric and value-oriented services. The value of the tool resides in the operational way of thinking about the service, making easier to connect specific technology-supported processes with the creation of values to the public.

The paper is organized in five sections including this introduction. The second section includes a brief review of the literature and the preliminary process model of consumer behavior. Section three includes a description of the protocols and procedures followed for data collection and analysis. In section four of the paper, we introduce the main findings from the focus groups. Finally, the last section of the paper includes our current thinking about the linkages of the processes and value creation at the individual and public level

2 A FRAMEWORK TO UNDERSTAND DIGITAL SERVICE DELIVERY AND PUBLIC VALUE CREATION

We introduce in this section of the paper the main concepts and frameworks that guide our research. We start the section with a brief description of approaches to public value in digital government and continue with a description of a process-based model to understand digital government services.

2.1 Public Value Creation in Digital Government

Information technologies in government have played an important role in government modernization agendas [14], [18]. The use of technology has always been associated with value creation. In the early days of information technology use in government, efficiencies and cost savings were the most important sources of value [8]. The New Public Management and collaborative governance approaches have emphasized on applications looking beyond the organizational boundaries of government, adding focus on program effectiveness, citizen participation and improved democracy [5], [8].

Digital government creates value by applying information technologies in support of core government tasks and public service delivery. Public value management has been recently identified as an approach to public administration that is still being defined [3]. Although there are competing definitions, in this paper we are understanding public value creation as a strategic approach to public management [2]. This concept of public value was coined by Moore [17] as a tool to assess performance of public organizations and services, and to think about strategic planning. The term denotes the flow in which managers in the public sector cope with their constraints and responsibilities to create public value for citizens and society [1]. The public value perspective is intended to build the basis of a more proactive and entrepreneurial approach to assess government's performance [23]. At the heart of this perspective, there is the strategic triangle, within which public managers operate in a context of constraints in order to facilitate the accomplishment of public value [17], [23]. The first edge of this triangle

relates to the substantive goals of public programs and services against performance and impact is intended to influence (public value-strategic goals). The second edge relates to the context in which public managers and organizations operate (it may include external stakeholders) to achieve the established goals (the authorizing environment). The last edge relates to resources, finance, personnel, skills and technology, will be allocated, organized and operated to achieve the declared objectives (operational capability). In this framework, public managers set their strategic aims by engaging in ongoing dialogue and searching the necessary organizational support and practical management of resources to pursue their strategic goals. The public value creation perspective is still in ongoing development and presents unclear empirical and theoretical grounds [23].

In spite of this working process of the framework, several applications and extensions have been developed in the field of digital government [7], [13]. Picazo et al. [20], for example, understand public value creation represented in the traditional values of public administrations of creation of efficiencies and effective use of resources, and also public administration values related to the development of a democratic and fair society. Similarly, Karunasena and Deng [13], on the other hand, explained public value of digital government by characteristics of service delivery –including quality of information and user-orientation– and efficiency of public organizations -including indicators such as organizational efficiency, openness, responsiveness, and environmental sustainability. Following a different approach, Harrison et al. [11] have emphasized the role of the operational arena of the public value perspective into several “public value” generating mechanisms: efficiency, effectiveness, intrinsic enhancements, transparency, participation, and collaboration. These value generators create different types of public value into two groups: substantive values (e.g. financial, political, social, strategic) and intrinsic values (e.g. ideological and stewardship).

Some have discussed the impact of digital government at the context of subnational organizations and institutions [10], [20]. However, the proposal of the framework in this paper is that the process of value creation operates at the level of the basic interaction between governments and citizens: public service delivery. In this arena, public managers make various managerial decisions and conduct different operational actions involving digital government tools and projects. Eventually, these decisions and actions transform resources, including technology, skills and knowledge into public value in a context of a regulated and authorized environment [16].

2.2 A Process Model for Government Electronic Services Delivery

In an effort to better understand consumers buying decision process, marketers have developed process models that start with identifying a need or problem, and continue with acquiring information about potential solutions, assessing the alternatives, buying, and finally, assessing the results of the product acquired [6], [9], [14], [22]. This type of models have been evolving by recognizing that consumers use traditional and on-line channels in different steps of the buying decision process [21]. These models have been useful in the design of e-commerce websites and defining conversion goals,

which involve developing strategies to promote consumers to move from one step to the next in the buying process, such as requesting for a quote, moving a product to a shopping cart or buying it.

We argue that the use of an adaptation of this type of process models can help to understand information technology value creation through electronic services in government. The idea was derived from our efforts on understanding electronic services public value creation from the citizen perspective. Preliminary focus groups with citizens revealed the difficulty on eliciting the public value creation from their perspective. Our initial adaptation of consumer behavior models includes six stages: Information search, form preparation, submitting forms, payment, follow-up, and getting results (see Figure 1). Information search involves citizen's search for information related to government services. Form completion includes the preparation of the necessary paperwork to complete the service. Submitting forms involves the effort of using the mail or commuting to the government office to apply for the service. The payment stage involves the transfer of funds associated with government service fees. The last two stages involve any necessary follow-up and acquiring the service.

As an illustration of the application of the model, Table 1 describes the main tasks related to each of the stages in our process model as they relate to the application for a copy of a birth certificate in Mexico. Recently, one of the authors of the paper had to obtain copies of his birth certificate. He started, as the model suggest, by searching for information about requirements and places to apply for a copy of his birth certificate. Given that he is not living in the place where he was registered, he started by looking in the website of the Civil Registry of the State where he was born. In that particular State, the website only provided limited information and a phone number to ask for the birth certificate. Using the phone, he provided some basic personal information, including name, city of birth, date of birth, date of registration, and he got in exchange a number associated with the registry in the national population registry. Using this number, he could go to the Civil Registry in the city where he lives now and obtain a copy of his birth certificate. He came in person to the office of the Civil Registry in his current home town and got a copy of the birth certificate in the same day of the application. The payment of the fee was made on site, using his credit card. In this specific example, there is no follow-up. Some other services in Mexico provide a temporary receipt, and the citizen needs to wait some time before obtaining the final product of the service. The Table 1 also includes potential ways in which technology can be used to generate value.

3 RESEARCH DESIGN AND METHODS

The research presented here is part of a two-stage project with the purpose of understanding value creation through the provision of digital services from the perspectives of the citizens. We report here results from the first stage of the project, which included a series of focus groups in four major cities in Mexico (see Table 2).

The focus group protocol was developed in two stages. We initially developed an interview protocol that included 12 open-ended questions organized around the stages of the process model. We tested the protocol with two pilot focus groups, which resulted on a revised version that included an initial exploration of common

government services used by participants in the focus group, followed by the exploration of one of them in the context of the stages in the process model, and finishing with general comments about the value of the model as a framework to understand government-citizen interactions and value produced by government services.

The protocol was used in thirteen focus group discussions that took place from February to July 2017. Three focus groups took place in Toluca, three in Puebla, five in Aguascalientes, and two in Cancun. As an integral part of the design of the sample, we organized focus groups including different categories of citizens: students, seniors, heads of family, businesspersons, and members of organizations that interact with government such as NGOs. We also included a group of public servants.

All sessions were recorded and transcribed. Authors read all transcriptions and followed a three-step process for organizing and analyzing the information obtained in the focus group sessions. First, a coding sheet was developed to organize the information. Second, all mentions regarding to barriers/problems, enablers, individual and public value, and improvements for the services provided by public administration were identified. Third, we assessed the value of the process model by identifying its value in describing citizen's interactions with government. We identified four categories of government services that showed variations on steps and sequence of the steps from the perspective of the citizens. We report in this paper three of these 4 categories. The fourth one is perceived more like a black box from the citizen perspective. It is important to note that we are reporting in the paper stages above the line of visibility. We are reporting processes as they are visible and perceived by the citizen. We are not reporting on back-office components that citizens cannot see.

4 PRELIMINARY RESULTS

In this section of the paper, we include preliminary findings from the focus groups. First, we briefly explain the context of digital government in Mexico. Next, we introduce some general findings from the conversations with citizens. We continue the section by introducing the three categories or families of processes identified in the focus group sessions. Finally, we describe our findings regarding individual and public value.

4.1 Context

In Mexico, evolution of the use of information technology at the federal, state and local levels has been different and has depended on the specific priorities of political appointees and high-level public officials. The duration of government terms of office at the federal and at the state level is six years, and at the local level is three years. At the federal level is where the most development has been achieved in the use of information technologies. The state governments follow federal government in the use of IT, all states have been developing applications to provide services to citizens; however, the evolution has been different from state to state, as a result, some states offer more IT-based services than others. Finally, at the local level we find the less use of IT.

This problem evolves from different factors, such as the length of government terms of office, the access to economical resources, and the geographic location. The duration of government periods

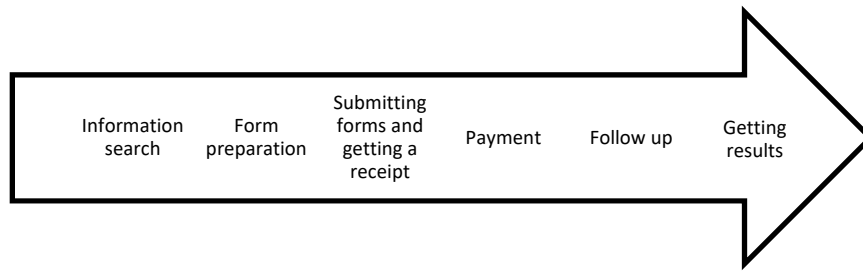


Figure 1: Citizen Behavior Model. Source: Adapted from [6].

Table 1: Stages in applying for a copy of a birth certificate in Mexico. Source: Authors’ own preparation.

Step in the behavior model	Activity in the context of obtaining a Birth Certificate	Potential support by information technologies
Information search	The citizen looks for information about the requirements, fees, forms, times and places to apply for and get a birth certificate.	Information technology can be used to ask for or distribute the information via telephone, email, social media, or a web page. Citizens usually combine more than one of these technologies in their process of search.
Form preparation	Birth certificates require filling a form with basic information of the person that is applying for a copy, including his/her name, place of birth and date of birth. Additionally, citizens can provide information to ease the search such as their Unique Registry Identifier (CURP) or currently, a code associated directly to the birth registry.	Information technology can be used to distribute the form (such a pdf) through email or a web page. The form itself can be filled online by the citizen and submitted via the web page. In some places in Mexico, the Civil Registry Office has a self-service kiosk where the citizens input the required data to obtain the birth certificate.
Submitting forms and getting a receipt	Submitting the form to apply for a copy of the birth certificate.	The same electronic media used to distribute the form can be used to submit the form (email, web pages, kiosks, etc.).
Payment	There is a fee associated to the service.	Again, credit cards, ATMs and Internet-based electronic payments are ways in which technology can be used to facilitate the transaction. Several Mexican States also use networks of convenience stores to collect payments for government fees.
Getting results	Obtaining a copy of the birth certificate	In its most basic form, printers facilitate the copying process. Moreover, self-service kiosks have the potential of being also dispensers of documents. In the cases of states with a regulation for electronic signatures, the Internet can also be used to issue an electronic document.

Table 2: Focus groups details. Source: Authors’ own preparation.

City	# Focus Groups	Type of Groups
Aguascalientes	5	Students, Women, Business people, Government employees.
Puebla	3	NGO, Students, Seniors
Cancún	2	Women, Businessmen
Toluca	3	Students, Heads of households, and government employees
Total	13	

in local government is three years. In this period, it is not always possible to develop complex IT applications. Besides, if we consider that new governments tend to discard what was done in the past and try to develop applications that fit their priorities to help them show citizenship that they are getting results, we can expect that the development of applications with the use of IT will be very slow and fragmented. Mexico is highly centralized, and the federal government has most of the economic and political resources.

The rest are sent to the states and local governments, but their overall resources are always much more limited. As a result, local governments get few resources that in general are only enough to support operations, and they need to apply to federal programs to obtain resources for other purposes. In terms of geographic location, there are several local governments located at places without access to phone and Internet services. These local governments have

fewer opportunities to develop solutions supported by information technology.

4.2 General Findings

As we described in the methods section, focus groups were organized to collect a diversity of perspectives on government services and perceptions of value creation. In this way, we held 2 focus groups with businesspeople, 3 more with students, 1 with heads of households, 1 with older adults, 3 with NGOs, 1 with women and 2 with public servants at the municipal and state level. As it could be expected, participants in all focus groups spoke about government services describing their experiences as interactions with government without making any distinction among federal, state or local services. In the same way, participants in the focus groups referred consistently to government web pages and government offices without referring to any distinction among these three levels of government.

Conversations with participants in the focus groups suggest that citizen interactions and access to government services is a multi-channel process. They describe visiting government offices as well as using traditional electronic media such as the phone, new media such as Internet pages, service kiosks, government automatic teller machines and private organizations that collaborate with governments to create alternative channels for payments such as banks and convenience stores. NGO managers and businesspeople in our focus groups tend to rely on intermediaries inside and outside of government to get access to government services, given that these were the groups that have the more complex interactions with government, sometimes involving several agencies. These type of government services are in many senses like a black box for the citizen and require an expert to mediate and coordinate the whole effort.

Although focus group participants did not make any distinction between federal, state and local government services, their descriptions of their experiences with government were much consistent when they were describing federal services such as obtaining a passport, paying federal taxes or obtaining their voting card, and much less consistent when they were describing state and local services. Particularly, there is much variability in the ways in which different municipalities and towns interact with citizens, and there are more standardized processes in federal offices across the country. State level services tend to be in a midpoint between federal and local services in terms of standardization.

4.3 Processes

Participants in the focus groups identified 51 electronic services that were classified in seven categories: knowledge acquisition, information requests, payments, getting licenses and permits, getting IDs and certificates, access to government programs, and petitions. From the analysis of the different services that the participants in the focus groups described, it was evident that not all services follow all the stages of the process model; moreover, the model is not followed in a linear fashion as originally proposed. Through further comparison of the initial seven categories, we created a set of three families of services in which we can locate each of the 51

services described in the focus groups. Following, we describe each of these families.

4.3.1 Payments, fees and transactional services. In this first family are grouped the services that require most of the stages of the process model. However, participants point out that the process is not linear (see Figure 2). For example, after searching the information of the requirements to carry out a procedure of this family, a citizen must check if the forms are complete and correctly filled out. In case of errors or omissions, citizens must return to review the requirements to complete the process or simply re-fill the form. Some services of this family require a payment. In this case, the payment must be made, either electronically or using one of the alternatives offered by each of the governments (for example, payment in a bank, convenience store, payment at an agency window, etc.). In some cases of this family, the services sought are not obtained immediately, so the process must be followed up, generally using a control number.

4.3.2 Information request. In the second family of services, we group knowledge acquisition and information requests. In this type of interaction with government, the citizen first searches to see if the information is available directly on the government's website. If available, the process ends here. Otherwise, the citizen must fill out a form requesting the information they want to know. Sometimes the information is provided directly and sometimes the process requires follow-up to obtain a response to their initial information request (see Figure 3).

4.3.3 Requests and complaints. The third family of services is formed by requests and complaints. In these services, we only find the stages of information search, form preparation, submitting forms and getting a receipt, and obtaining results (see Figure 4). The characteristic that distinguishes this group is the lack of the follow-up step. Generally, once a citizen has made a request or has raised a complaint, must wait patiently for the results to happen at some point in time. Examples of these type of services are reports of potholes or luminaires that do not work.

4.3.4 Multi-agency services. There is a final group or family of services that was described by the focus group participants. This last family is formed by services that generally involve more than one government agency, sometimes at different levels of government, in order to be completed. From the point of view of the citizen, these services are a black box that requires the help of agents or specialists to be carried out. These services were most commonly described by NGO leaders and businesspeople.

4.4 Public Value

In this section we explain our findings related to citizen's value perception both at the individual and public level when using electronic government services. In the case of the individual value, citizens mentioned benefits such as: time savings, convenience, access by different channels, costs savings, and the elimination of intermediaries.

Participants agree that using electronic government services result in time savings. In government offices, citizens have to wait

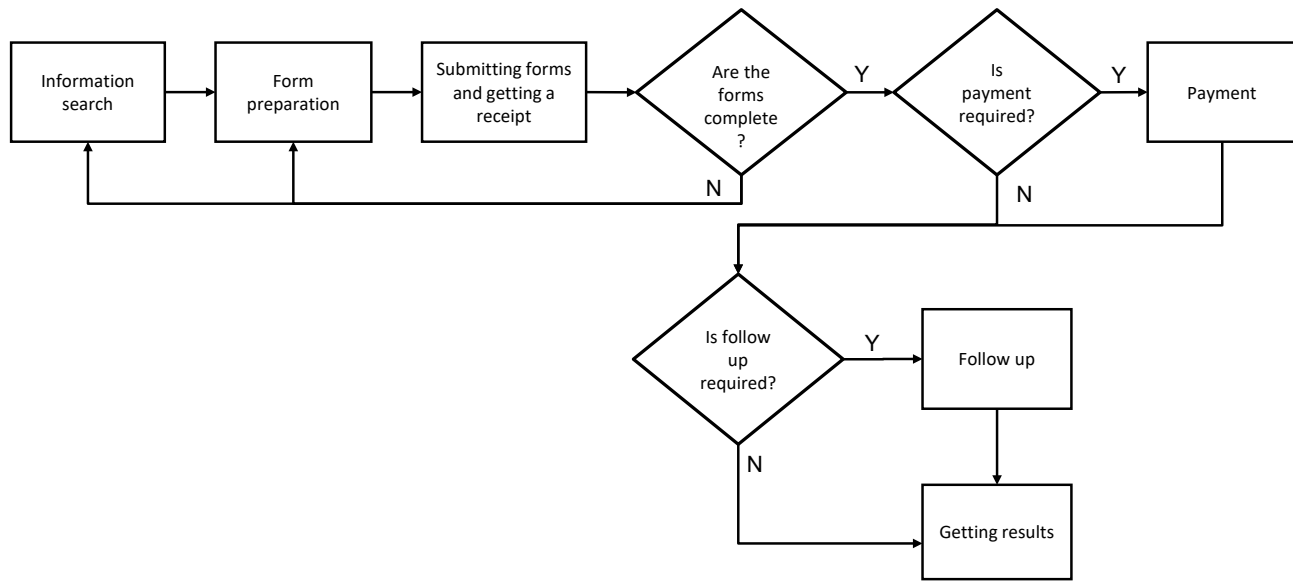


Figure 2: Payments, fees and transactional services model. Source: Authors’ own preparation.

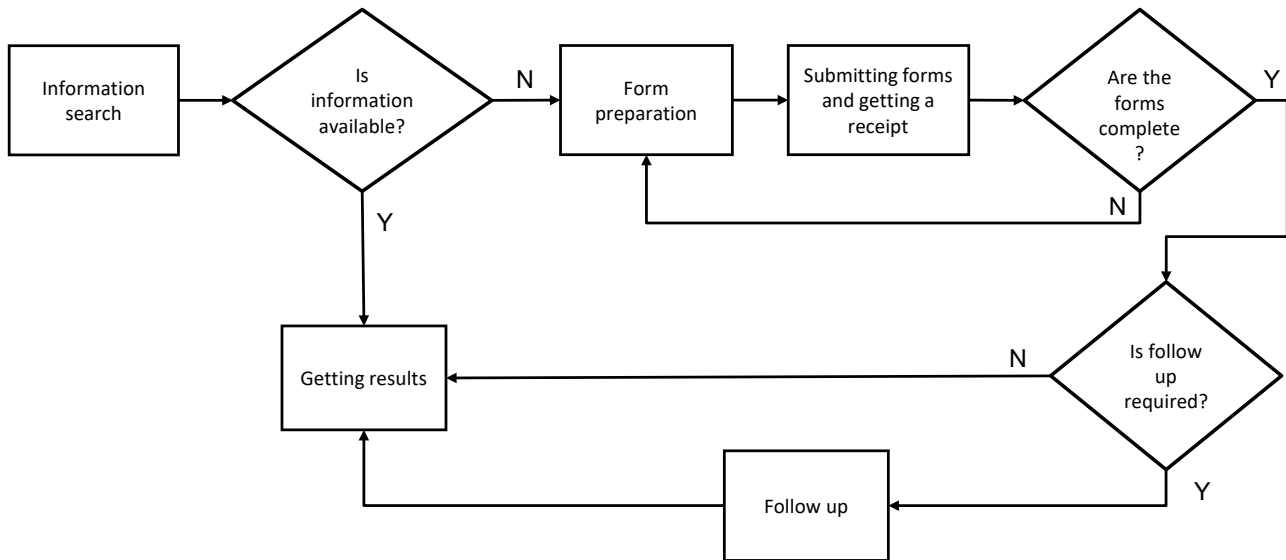


Figure 3: Information request model. Source: Authors’ own preparation

for several minutes to get the attention of a government employee. For example, one of the businesspeople commented

“my strength is not going to government offices, I don’t like the line you have to do, I get very nervous about wasting time, an hour, an hour and a half ...” (Focus group with Businesspeople, July 14, 2017).

Electronic services provide citizens the convenience of completing their services at any time and in any place. Daily citizens’ routine is very saturated so citizens like the opportunity of completing government services when they have finished their activities or while

they are waiting for other services such as medical appointments. The benefit of improved access was described by one participant in other focus group

“It has several benefits such as comfort, because you can do it from anywhere.” (Focus group GEM, June 29, 2017).

Citizens value the possibility of completing their services at different channels, for example, they used to look for information either on the Web or on the phone, about service’ requirements and the specific location to complete the service before going to the

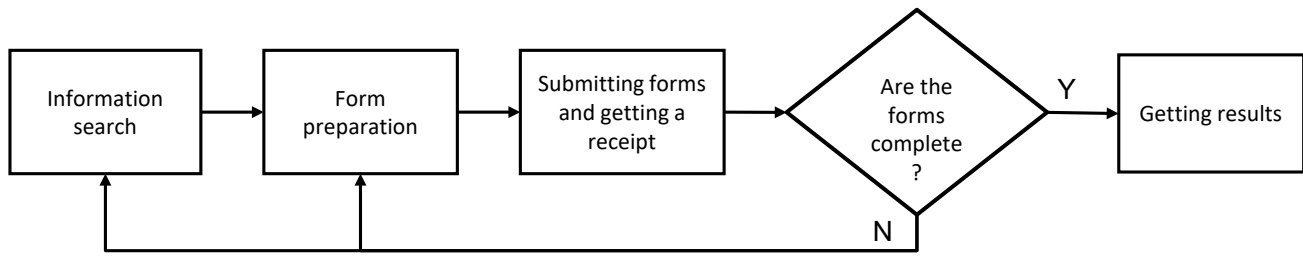


Figure 4: Request and complaints model. Source: Authors' own preparation

government office, they want to reduce the possibility of waiting for a long time and being rejected at the clerk's window for lacking a requirement or for attending to the wrong place. In the case of services that can't be finished at the window, citizens also value that they can track the process by the web.

“When the service includes several steps, it would be helpful to know the step of the process in which you are; for example, you are in step 1, in 2, or in 3. Like Amazon, that when you buy something, the system informs you the step of the process, for example order generated, order sent, etc.” (Focus group heads of household, February 25, 2017).

Costs savings is another important benefit for citizens, when they complete services by the web, they do not have to pay for gas or public transportation to get to a specific location. Savings are bigger if we consider that some services offered by the government are centralized in specific locations, so citizens have to travel for several hours and sometimes they have to spend the night far away from home. For example, passports can only be obtained in major cities of states. Other types of cost savings include the reduction in the use of paper.

“It would be great if you can get a birth certificate without the need of going to another state to get it” (Focus group businessmen, May 30, 2017).

In the context of our study, it is common to find people at the entrance of the government offices offering their help to complete services in less time and without problems. This result in more costs for citizens but some of them agree to pay for this option because they do not have all the information about the service. When services can be completed by using technology, this type of intermediaries are reduced. Intermediaries still exist but now they have to offer their skills by electronic platforms to better informed citizens who think twice before hiring them.

“It would be nice to have access to services without the need of an intermediary” (Focus group Women, October 10, 2017).

In the case of public value, the offering of electronic services may result in benefits for the society such as: a more transparent, innovative, efficient, and more equitable government.

Participants in the study perceive that having access to information and costs of government services results in a more transparent government.

“If there is more clarity in the procedures - there would be more transparency in the government” (Focus group Seniors, June 16, 2017).

Several electronic services offered by the government can be completed and finished by the web in just few minutes, in the perception of the citizens this is a major benefit for the society as it shows a more efficient government with the capacity of doing more things with the same amount of resources in benefit of the society.

“Technology allows for a more efficient, more competitive, cheaper government with more resources and capacity to do more things” (Focus group public workers, May 30, 2017).

Citizens also think that completing services by using technology results in more equity. Some citizens think that a discretionary support exists at government. For example, they feel that people are assisted better if they know government employees.

“the process is the same for all people, that is, it does not matter if you are from one place or another, you are going to follow the same process, all people have the same opportunity and are assisted in the same way” (Focus group heads of household, February 25, 2017)

It is important to mention that citizens, in general, didn't differentiate individual and public value. The division explained before was suggested by the authors of the study.

5 DISCUSSION AND IMPLICATIONS

The process model was useful in the identification of value both at the individual and at the public level. The process model allowed participants to think in the advantages, disadvantages, benefits and problems in every stage of the model. Participants were able to identify an important set of individual and public values thanks to the detailed discussion in every stage of the model.

The digital services identified in this study correspond to services provided by federal, state, and municipal governments. In the case of services provided by the federal government, participants from different states and different profiles agree in the level of standardization, as was expected, they were able to describe major services offered by federal government and identify problems, benefits and potential areas for improvement. In the case of services provided at the state level, we found differences in the perception of citizens about services provided by their state. In some states, a specific

service included tools for supporting all the stages of the process model, but in other states the same service didn't included tools to support all the stages of the process model. Another difference was that some states requested more requirements than others.

The difference in perceptions was greater in the services provided by municipalities. In this study, we are using a process model used in marketing for understanding customer sale processes, but in the digital government services' context. Although this is not a common practice in public administration, the comments we received from participants in the study helps to support the use of models like this in public administration. Participants tend to compare the services provided by government agencies with services provided by retailers; for example, participants agree that government websites should include tracking tools like the ones used by FedEx, Uber, and Domino's pizza among others. Participants would like to interact with government channels in the same way they interact with retailers, for example, they can buy a product through the internet and return it in the physical store, they can order online in a kiosk located in the physical store. Participants don't perceive these functionalities in government services.

This study has implications for research and practice. For research, this study provides evidence about the need for more research on public value using marketing theories. Moreover, the process model proposed in this paper may become a framework to understand the creation of value through government services, clarifying which steps in the process have the most impact in the generation of value and exploring what technologies are the most appropriate and accepted by the public to create this value. The study also contributes to public value literature by identifying what public value entails from the perspective of citizens.

Finally, from a practical perspective, process models like the one introduced in this paper have the potential of being used as frameworks to design government services and to design information systems and interfaces for service provision. Public managers can use the framework also for the improvement of digital government services that may result in better quality for citizens and also a more efficient government.

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REFERENCES

- [1] John Alford and Janine O'flynn. 2012. *Rethinking public service delivery: Managing with external providers*. Macmillan International Higher Education.
- [2] John Benington and Mark H Moore. 2010. *Public value: Theory and practice*. Macmillan International Higher Education.
- [3] John M Bryson, Barbara C Crosby, and Laura Bloomberg. 2014. Public value governance: Moving beyond traditional public administration and the new public management. *Public administration review* 74, 4 (2014), 445–456.
- [4] John M. Bryson, Barbara C. Crosby, and Editors Laura Bloomberg. 2015. *Public value and public administration*. Georgetown University Press.
- [5] Benjamin Y Clark, Jeffrey L Brudney, and Sung-Gheel Jang. 2013. Coproduction of government services and the new information technology: Investigating the distributional biases. *Public Administration Review* 73, 5 (2013), 687–701.
- [6] Charles Comegys, Mika Hannula, and Jaani Väisänen. 2006. Longitudinal comparison of Finnish and US online shopping behaviour among university students: The five-stage buying decision process. *Journal of Targeting, Measurement and Analysis for Marketing* 14, 4 (2006), 336–356.
- [7] Antonio Cordella and Carla M Bonina. 2012. A public value perspective for ICT enabled public sector reforms: A theoretical reflection. *Government information quarterly* 29, 4 (2012), 512–520.
- [8] Sharon S Dawes. 2008. The evolution and continuing challenges of e-governance. *Public Administration Review* 68 (2008), S86–S102.
- [9] James F. Engel, David T. Kollat, and Roger D. Blackwell. 1968. *Consumer Behavior*. Holt, Rinehart and Winston of Canada Ltd.
- [10] Sukumar Ganapati and Christopher G Reddick. 2014. The use of ICT for open government in US municipalities: Perceptions of chief administrative officers. *Public Performance & Management Review* 37, 3 (2014), 365–387.
- [11] Teresa M Harrison, Santiago Guerrero, G Brian Burke, Meghan Cook, Anthony Cresswell, Natalie Helbig, Jana Hrdinova, and Theresa Pardo. 2012. Open government and e-government: Democratic challenges from a public value perspective. *Information Polity* 17, 2 (2012), 83–97.
- [12] Torben Beck Jørgensen and Barry Bozeman. 2007. Public values: An inventory. *Administration & Society* 39, 3 (2007), 354–381.
- [13] Kanishka Karunasena and Hepu Deng. 2012. Critical factors for evaluating the public value of e-government in Sri Lanka. *Government information quarterly* 29, 1 (2012), 76–84.
- [14] Luis F Luna-Reyes, Rodrigo Sandoval-Almazan, Gabriel Puron-Cid, Sergio Picazo-Vela, Dolores E Luna, and J Ramon Gil-Garcia. 2017. Understanding public value creation in the delivery of electronic services. In *International Conference on Electronic Government*. Springer, 378–385.
- [15] Shelley Metzbaum. 2015. A Practitioner's Perspective on Public Value. In *ASPA*. Chicago, Illinois, Mar. 2015.
- [16] Timo Meynhardt. 2009. Public value inside: What is public value creation? *Int'l Journal of Public Administration* 32, 3-4 (2009), 192–219.
- [17] Mark Harrison Moore. 1995. *Creating public value: Strategic management in government*. Harvard university press.
- [18] Forrest V Morgeson III and Sunil Mithas. 2009. Does E-government measure up to E-Business? Comparing end user perceptions of US federal government and E-business web sites. *Public Administration Review* 69, 4 (2009), 740–752.
- [19] Tina Nabatchi. 2012. Putting the "public" back in public values research: Designing participation to identify and respond to values. *Public Administration Review* 72, 5 (2012), 699–708.
- [20] Sergio Picazo-Vela, Isis Gutiérrez-Martínez, François Duhamel, Dolores E Luna, and Luis F Luna-Reyes. 2018. Value of inter-organizational collaboration in digital government projects. *Public Management Review* 20, 5 (2018), 691–708.
- [21] Cindy B Rippé, Suri Weisfeld-Spolder, Yuliya Yurova, and Fiona Sussan. 2015. Is there a global multichannel consumer? *International Marketing Review* 32, 3/4 (2015), 329–349.
- [22] Catarina Sismeiro and Randolph E Bucklin. 2004. Modeling purchase behavior at an e-commerce web site: A task-completion approach. *Journal of marketing research* 41, 3 (2004), 306–323.
- [23] Iestyn Williams and Heather Shearer. 2011. Appraising public value: Past, present and futures. *public administration* 89, 4 (2011), 1367–1384.