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TO STUDY THE PURPOSE OF ICT AND THE GOVERNMENT SYSTEM IN THE PUBLIC SECTOR

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ABSTRACT

Information and communication technology (ICT) is discussed extensively in the literature on e-government as a tool for decreasing the administrative function in government organisations. There will be a critical assessment of the research, as well as a counterargument supporting the use of ICTs in government to help bureaucratic organisations, in this article. An Italian case study of the Venice Municipality found that ICT might be utilised to help rather than decrease bureaucracy. Using the ideas of e-bureaucracy, functional simplification, and closure, the essay provides evidence and support for the idea that bureaucracy should be maintained and enhanced when it comes to e-government policies. This method should be possible because of the principles of functional simplification and closure.

Keywords: E-bureaucracy E-government ICT enabled public sector reforms

Introduction

Many reform efforts aimed at decreasing bureaucratic inefficiency have been linked to the use of information and communication technologies (ICTs) by public sector organisations. [1]. Organizational changes aimed at improving efficiency and policy effectiveness are commonly connected with government investments in public sector information systems[2]. Public sector ICTs are used to explore a set of concepts and practises that recommend employing private sector and commercial techniques to improve organisational efficiency and effectiveness and hence decrease bureaucratic load in the public sector. According to New Public Management (NPM) ideology, public sector ICTs should be seen as solutions primarily aimed at reducing the length of public bureaucracy. This article contradicts that view. A new study shows that information and communication technologies (ICTs) can allow creative organisational solutions that improve the efficiency and effectiveness of government agencies by enhancing bureaucratic cooperation. Alternative options can be found in the e-bureaucratic form's organisational structures[3]. According to the results of the Municipality of Venice, the article will propose that e-government efforts may offer better services by creating a new inter-organizational layer of bureaucratic cooperation. These ideas, together with [4] taxonomy of bureaucratic organisations – machinery and professional bureaucracy – and [5] technical theories of functional simplification and closure, offer one explanation for this finding:

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2. ICT reforms and bureaucracy

For a long time, bureaucracies were thought of as structures created to help organisations better their internal operations and procedures. In accordance with [6,] bureaucracy provides organisational efficiency by following procedures and coordination mechanisms that combine standards and administrative efficiency rationalising systems. For Weber, bureaucratic organisations must have a specific set of characteristics in order to function properly Many bureaucracies have been effective in structuring the operation of the state's administrative machinery and ensuring the higher aims of justice and impartiality in public service delivery for a long period via struggle. As the welfare state has grown, so has the necessity for integration within public departments. This has necessitated a rise in public sector integration. In order to provide public services, there is an increased demand for information to be produced and exchanged between people, citizens and the public administration, and between different parts of the public administration. Thus, an ever-expanding welfare state has created a surplus of bureaucratic information that must be processed in order to offer services. It is clear that the increased complexity of administrative processes has had a major impact on bureaucracy's ability to deliver services consistently and adapt to the unforeseen difficulties that arise in times of greater environmental uncertainty, thus reducing its effectiveness. Because of these shortcomings, the public sector bureaucracies have come under fire for their inability to offer high-quality services in a time-sensitive manner.

Instead of questioning whether ICTs can improve government administrations' ability to provide efficient and effective services by leveraging bureaucracies' ability to carry out their mandate in accordance with efficient and effective organisational arrangements fulfilling the superior goals of objectivity and equality, the public sector's adoption of ICTs is often driven by an uncritical preference for non-bureaucratic organisational arrangements. Re-evaluating the role of ICT as a support for public sector reforms rather than a tool to eliminate bureaucratic structures is recommended[3]. For him, implementing ICT to automate current administrative operations may boost administration's efficiency and effectiveness without altering the system's underlying philosophy [7] which is to treat all citizens who deal with bureaucratic organisations equally, impartially and fairly. However, the ability of ICTs to assist and therefore improve the efficiency and effectiveness of governmental agencies is not new. It's a well-known fact in the history of government use of information and communications technology. Since the 1980s, information and communication technologies (ICTs) have been created and implemented to provide people with the tools they need. We will explain how information and communication technologies may integrate bureaucratic rationality and operationalize associated goals and principles using a theoretical framework of information technology as functional simplification and closure. In the following section, we'll go through the structure in more depth. This will serve as a counter-argument to the commonly held notion in e-government research that information and communications technology (ICT) is a panacea for eliminating bureaucracy.

3. Functional simplification and closure

Many studies have focused on ICT artefacts as a simple means of transforming public sector organisations and structures [8] but we believe there are a number of more subtle approaches that might help us better understand the role of ICT in e-government reform. ICTs aren't only a set of tools

for increasing efficiency in a company. ICTs have features that make it possible to frame the causal relationship between organisational practises, events, and processes. As a novel approach to enframe and pair pre-define logical sequences of actions mirroring the organisational processes and practises, ICTs offer more than just neutral support for current organisational operations. A new set of regulated organisational procedures and processes is built using ICTs as a result of the new set of structured sequences and interdependencies that are created. Consequently, ICTs are endowed with regulative qualities that shape social and organisational orders by offering standardised and stable ways of social interaction that are built into the system's technological functionality. When it comes to information technology, one of the most important goals is to reduce the complexity of causal or instrumental relationships by standardising and stabilising scripts. When designing a system, keep in mind that technical scripts specify relational causalities, but exclude other possible causalities by omitting relational interdependences from the same scripts themselves. Functional simplicity and closure, functioning together, are two of ICT's most important characteristics, according to [9]. These two ideas are powerful analytical tools when used in the context of social systems to determine what the fundamental value of information technology is and where it belongs within them.

In the technology's material substrate, automation is constructed via processes such as functional simplification and closure. For this reason, the terms functional simplicity and closure may be used to illustrate the per formative logic contained in a technology as well as how standardisation and automation procedures are modelled to let technology carry out the duties for which it was created. By embedding tasks in the artefact, ICTs clear up any confusion about the causal chain linking certain organisational activities and operationalization. The basic nature of technology is explained by functional simplicity and closure, which need the isolation and black-boxing of sequential processes in order to safeguard their execution from outside influence. This implies the building around selected causal sequences or processes of a type of protective cocoon to secure them from unwanted interfering factors and assure their repeatability and reliability of operation. This includes anything from fencing to social rituals. When using information technology, regular processes may be carried out on demand in an automated way. Because information technology automates processes, the operations themselves remain autonomous. Information technology interacts with users, but computations continue until a result is produced in isolation as a consequence of human engagement. Only at certain moments in the work flow does information technology often react to human interaction (i.e. data input, command confirmations, etc.). It's not the user's business what happens in between these two points of contact. Because of this, developing technology may be likened to creating a simple, robust world[10] that is clear in its self-referential functioning and only interacts with the external environment when it reaches one of the few crucial moments (or outcomes). The dyad of functional simplification and closure best describes the core of an information technology, rather than each term alone, because each concept focuses on a separate and restricted element of the information technology's functional operationalization. Only by combining these two ideas do we have a working information technology. The process of building technology by simplifying and closing functional loops has wide-ranging effects on organisational structures. This separation between the technological system's functioning

and organisational and social activity, procedures, and practises is what functional simplicity and closure are all about. Because of the abstraction created by functional simplification, organisational processes and protocols are no longer tied to their original context once they've been assigned to technology automation. Furthermore, the technological foundation for the implementation of processes and protocols is highly controlled through prescriptions, the defining of skill profiles and prerequisites and role creation opens for change. Stabilizing and structuring social interaction through the use of information technology as a regulatory regime.

4. Methodology

We looked at the IRIS information system, which is a key component of the Venice government's Amministrazione 2.0 initiative web-based system that makes use of Internet to solicit monitoring of municipal territory and reporting of maintenance and management issues from a distributed public of individuals. The gathering of data was based on a variety of methods. Open-ended qualitative interviews, questionnaires, system observation and data mining, as well as secondary data sources, were used to gather our data. Legal and government records, technical documentation, and news announcements were all used as secondary sources. We wanted to know how the 'Amministrazione 2.0' idea was put into action through various ICT projects, and what role technology had in making these projects successful or failing.

As a starting point for our inquiry, we spoke with four of the project's top executives for in-depth interviews. The interviews were initially created with a flexible goal in mind. At first, we talked about a number of various initiatives that were all a part of the larger 'Amministrazione 2.0' plan. According to our findings from these interviews, we decided to focus our attention on the investigation of IRIS because of the system's interesting results in relation to the background of a dominant critique of bureaucracy in the NPM literature and our curiosity about the role of technology in bureaucracy. The actors interviewed are summarised in Table 1 below. A semi-structured interview method was used, with interview guidelines prepared for each subject and a balance between passivity and over-direction maintained[10]. The conversations were recorded for posterity's sake. For the sake of accuracy, all interviews were transcribed verbatim into text.

A variety of important papers regarding IRIS, some supplied by the administration and others acquired from publicly available sources, helped us gain a better knowledge of the system. To name a few: the normative agreement in all four iterations, records of software upgrades pushed out to IRIS throughout the years, summaries of employee training, a ministerial award application for public sector innovatory thinking, letters to citizens, and internal statistics Using all of these different kinds of information allowed us to triangulate[11] the case study findings. After a preliminary examination of the data we had, we sent a brief qualitative questionnaire to the offices taking part in IRIS in order to integrate and defend an impartial view of the project. We received 17 replies from the 38 people who received the survey. Last but not least, we used the IRIS portal's database of requests to bolster our case

Position	Involvement
Vice-mayor of Venice	Creator and political sponsor of the "Amministrazione 2.0" project and its children projects
Head of the Information Systems and Digital Citizenship Office of the Local Government	Public administrator and institutional administrator of the IRIS project
Chief executive of Venis Spa	Software development of IRIS
Supervisor of the IRIS project at the Information Systems and Digital Citizenship Office	Head of the IRIS rooms

Table 1: Interviews

5. The IRIS platform

5.1. System routine

Any person who wishes to see something done about a problem with the city's public domain, such as floating garbage or road holes or unlawful mooring, can submit a maintenance request using the IRIS digital platform (Internet Reporting Information System). This is an ICT solution for the public sector aimed at resolving frequent maintenance issues in Venice more quickly and effectively. IRIS was first implemented in one of the council of Venice's six municipalities in late May 2008 as part of the large Amministrazione 2.0 project, and was then made available to the entire city in December 2009. Since the beginning of the year (in January 2015), the system has received more than 23,000 inquiries from a population of 270,000 prospective users (plus 8.5 million tourists per year). In order to streamline an already existing process, the system was built to digitise it. Citizen intervention requests may now be submitted electronically to the appropriate Venice government agency using the IRIS platform. In Figure 1, submission procedures are compared before and after IRIS are implemented.

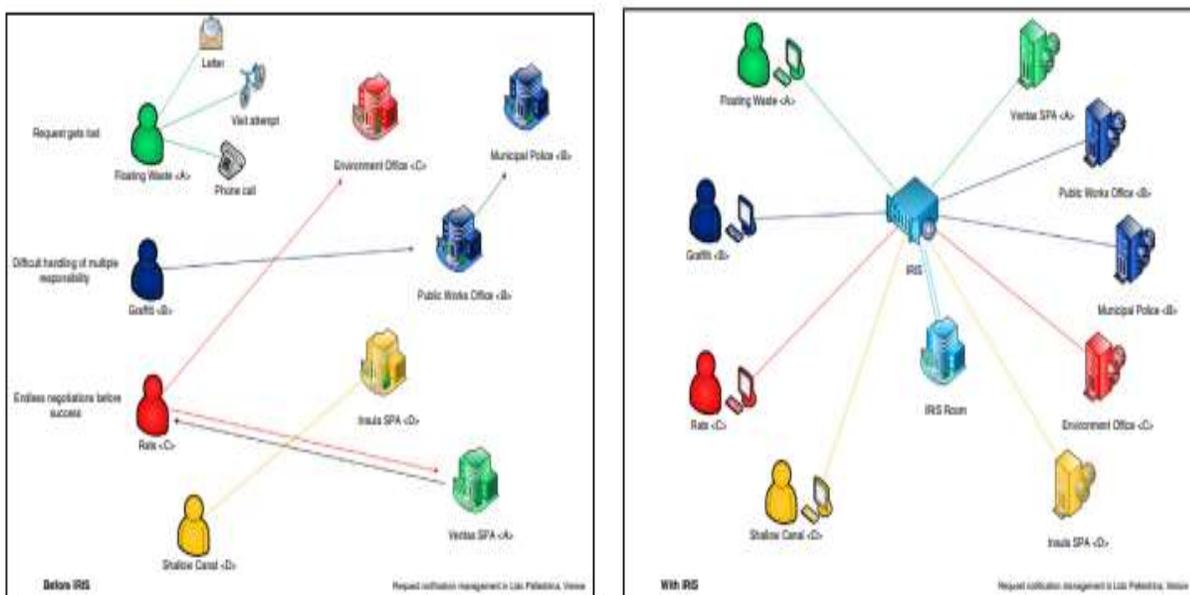


Figure 1: Maintenance Report before and after[1]

5.2. IRIS rooms

The IRIS rooms are the brains of the IRIS system. The IRIS rooms are in charge of keeping tabs on and coordinating all of the IRIS system's activities. Every time a request is made in the system, they are notified through email and may keep tabs on the progress. In particular, they handle events that are entered in the 'Unclassified' area and cannot be forwarded to the appropriate organisation by the system automatically. IRIS room operators are in charge of allocating cases to the appropriate departments when this occurs. In a similar vein, the operators of IRIS rooms are required to deal with situations when a submission has been rejected by a company because it was placed in the wrong class when it was submitted. Controversial materials are assigned to the appropriate group by the IRIS staff. Operators in IRIS rooms are also in charge of removing requests that include objectionable content. Finally, the IRIS rooms are tasked with resolving any issues that cannot be handled by a single municipality-based agency. There are a total of seven IRIS chambers at the facility. In each IRIS room, a team monitors all requests pertaining to its authority.

5.3. Normative agreement

The local government had to come up with a normative agreement to allow collaboration between entities that are rigorously regulated by bureaucratic structures. The document's goal was to make it easier for the IRIS system's coordination mechanisms, such as the IRIS rooms, to function. As a result of this agreement, all 39 participating organisations in IRIS must coordinate their activities: five independently managed organisations (3 of which are controlled by the Municipality, 1 is a minority member, and 1 is owned by an independent third party). As part of the agreement, the organisations acknowledge that IRIS is being deployed to help them better collaborate in order to carry out their service responsibilities, and they pledge to work together to do so better. For the most part, the agreement formalises the IRIS rooms' newfound position of authority. As a result of this agreement, rooms will get alerts about all requests and a central IRIS room will be formed to support and manage the entire system and carry out the locational assignment of MMS requests. Reasons for refusing requests made by rooms will also be specified.

6. Analysis

The most notable change had a significant impact on the system's performance: the issue classes were fine-tuned. With IRIS, tasks are automatically assigned to the appropriate organisations based on a list of important issue classifications. It was necessary for the classes to clearly and unequivocally classify the issues so that the 'Unclassified' class would be used as little as possible. There will be administrative inefficiencies in managing organisational procedures if a large number of requests are sent to the IRIS rooms for evaluation, as it is the case for all requests in the Unclassified category. The pilot project quickly revealed that certain alterations were required to make the system long-term viable. During the trial project's first six months (May–November 2008), 30.4% of intervention requests were classed as 'Unclassified.' These requests necessitated time-consuming and expensive human assessment in the IRIS room before being passed to a company for a response. 29.9% of the 'Unclassified' requests were with issues that might be traced back to obtrusive animals. Adding a new request category to the IRIS system in 2008 helped lessen the workload. New class Pests (such as rats, mosquitos, and cockroaches) was created by the system developers in December 2008. The new class

relieved the IRIS rooms of some of the demands that had been piling up in the 'Unclassified.' This system modification was examined by comparing the data input from May to November 2008 with the same period in 2009 and 2013 (see Table 2), and we found that it had a significant impact on system performance. Analysis of the data was carried out by examining the problem descriptions supplied by the users. We looked through all of the unclassified case reports to see whether any described pestilent animal concerns. We found a few. According to statistics collected between May and November 2009, the addition of the new class enhanced the automatic processing of requests significantly. Compared to 2008, when 29.9% of 'Unclassified' inquiries dealt with animals, that percentage decreased to only 1.8% in 2009. Part of the process in the IRIS room was successfully transferred to an automated procedure, freeing up some of the room's resources. Between 2008 and 2009, the number of entries in the IRIS system increased by 256%, while the number of unclassified entries only increased by 7%. Unclassified submissions dropped from 30.4 percent to 17.8 percent when the class 'Pestering Animals' was added.

Unclassified entries made up 30.4 percent of all entries the year before. Pet peeves were removed from the 'Unclassified' category, which now accounts for just 0.31 percent of total requests, thanks to the new class. Through 2013, the impact was still felt. Compared to the same period in 2009, overall requests grew by 38%, but the 'Pestering Animals' category increased by 166%, accounting for 6.86% of total requests. Only 0.4% of all requests were for information on animals still listed as 'Unclassified,' down from a high of 0.64%.

	2008 (27th May-27th Nov)			2009 (27th May-27th Nov)			2012 (27th May-27th Sep)		
	n.	% of Tot Reqs	% of Unclassified	n.	% of Tot Reqs	% of Unclassified	n.	% of Tot Reqs	% of Unclass.
Requests	473			1594 (+256%)			2172 (+38%)		
Class Unclassified	144	30.4		284 (+97%)	17.82		157 (-45%)	7.23	
- Animals in Unclassified	43	9.09	29.86	5	0.31	1.76	1	0.04	0.64
Class Pestering Animals	na	na	na	56	3.51		149 (+166%)	6.86	

Table 2: Effect of the creation of the class Pestering Animals on the unclassified class

7. Conclusions

E-government research needs a new theoretical approach, and that's what the current paper proposes. It offers an alternative to the prevalent techniques that place a heavy emphasis on the economic effects of information and communications technology implementations (transactions and services). E-bureaucracy and ideas like functional simplification and closure provide a toolset for developing and studying electronic government solutions. This article's concepts provide a solid basis for future study into how information and communications technology (ICT) may assist support and enable bureaucratic practises in support of government reforms and service delivery improvements. That is why it is an unpredictable and non-deterministic process to match functional simplification logics with

organisational requirements or system goals, much as any effort to influence technology or the outcomes of technical endeavours.

This is despite the fact that the IRIS system has redefined departmental interdependencies. The interconnectedness and functional links between organisations and workers have been strengthened. This result was achieved via the development of a new bureaucratic framework that automates bureaucratic tasks while also supporting the work of professional bureaucrats at participating institutions.

These new bureaucratic structures are made possible because to the brokerage capabilities of the IRIS system. The system was designed to implement new laws and regulations while also acting as a single point of contact for citizens with the government, as stated in the inter-organizational normative agreement.

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