The Transformation of Public Sector into the Digitalization Era

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Abstract

Rapid technological advancements, such as the spread of digital government and the capacity to gather and analyze large amounts of data, promise to make the public sector leaner, more efficient, and more responsive to people's demands. It tries to address the following question: how can the problems of information system (IS) innovation in public organizations be explained and solved in the light of the interactions between IT and public bureaucracy? The article is empirical research that employs an interpretative philosophy to guide the collection of qualitative evidence. Advanced computer technologies are increasing, not eradicating, bureaucratic tendencies in the public sector. The public bureaucracy's variable aspects should be de-institutionalized, including uniform and centralized personnel functions and information. Adjusting information technology requires constraining commitments and expectations inside public organizations. While technological advancements have the potential to revolutionize the way public sector organizations work, they may also serve to bolster bureaucracy's primary mission.

Keywords: Digital technologies, Bureaucratic transformation, Innovation, E-government, Indonesia

INTRODUCTION

Information technology (IT) development has increased public organizations' requests to use them to complete information systems (IS) innovation initiatives. As an example, advanced computerized data processing has been used in Brazil to control tax evasion [1], in the United States to guide whether to hold or release a defendant before the holding of a criminal trial [2] and in Singapore to assist in contact tracing as part of the COVID-19 pandemic response ([3]. IS innovation is described as an organization's use of information technology to improve the efficiency and effectiveness of its operations [4] They save time, lower human capital expenses, free up staff to focus on other duties, decrease prejudice and discrimination and allow for the examination of issues that would be too complicated for human analysts to handle. However, IS innovation in public organizations faces IT integration issues [5], as shown by the high failure rate of government IT initiatives globally [6]. These issues have lately piqued the interest of information systems (IS) and e-government academics.

In some studies, researchers only pay attention to how the public organization interacts with the public, ignoring the internal workings of the public agency itself [7-10]. As a result, information management, an essential precursor to the organization's

public interface, is left unexplored. The second problem is that even if internal organizational processes are examined, researchers tend to adopt too situated viewpoints that result in a micro- or organizational-level study at the cost of institutional or macro-level analysis [11-13]. As a result, the historical institutional antecedents of IT integration inside public organizations are left out of the equation. Third, many people approach IT integration with a lot of IT optimism and determinism, which is a bad thing [14, 15].

Others have lately proposed that technology would enable a transition to a new kind of flexible, responsive government that operates in a "radically less complicated institutional and policy environment, built for simplicity" [16]. Explanations for IT-related organizational transformation almost often include IT as a constant. Due to these constraints, existing models restrict descriptions of how the institutional link between IT and public bureaucracy shapes information systems (IS) innovation in government organizations.

As a result, this paper aims to address these limitations by providing an answer to the question: how can the challenges of information systems innovation in public organizations, as presented by the interactions between information technology and public bureaucracy, be explained and addressed? Consideration of information technology as an institution enables the development of theories for how it has an independent causal impact. As a result, although the study offers an institutional viewpoint, it also focuses on the processes that take place inside the organization. This is critical because "only through efficient internal processing of information can the citizen and business be effectively served," according to the report [17, 18]. It is argued in this paper, based on an examination of the information management issues encountered by a local government authority in Indonesia, that the basic premise of information systems innovation should be institutional modifications of public bureaucracy and information technology.

LITERATURE REVIEW

Bureaucracy

The term bureaucracy has long been associated with negative connotations. Academics of bureaucracies accuse them of being inflexible, budget-maximizing wasteful, unnecessary rules and processes, lack of transparency and accountability, and objectifying human needs. From Ronald Reagan to Tony Blair to Joko Widodo, all political actors have made reducing red tape a key feature of their election campaigns." Bureaucracy's negative elements have been regularly mentioned in public opinion polls by individuals and business leaders in various countries [19]. There is an implied argument that government and bureaucracy can never perform anything successfully and should be substituted by something else, overall. Despite a long history of administrative reform, the most recent reforms have been the most drastic. This position is bolstered by manifestos condemning "nonmarket failure" [20], "government failure" [21], and the need of "reinventing government" [22].

Computerized automation is beginning to make its way into the administration of the public sector and the delivery of public services, which is a positive development. In the future, advanced computer technologies such as information technology will have the ability to abolish many aspects of public sector management that are today considered inefficient or obstructive. As information systems and other digital technologies become more widely adopted throughout the public sector, the public sector's operation may be drastically altered. However, as will be discussed further below, this does not necessarily imply a fundamental shift in bureaucracy's role in modern democratic governance.

Digital technologies

Some argue that the public sector must investigate new technologies, invest in research and development, and drive the growth of new sectors [23]. Advances in information and computer technology have already altered public administration, as they have in other areas. Information system innovation is defined [24] as an organization's use of information technology to improve efficiency and effectiveness. Without examining the history of social circumstances that have created them, information system innovation should not be confined to exposing how people and technology interact under power relations that happen to be thus, that is, without considering the history of social conditions that shape them" [25]. The external socio-technical context mainly pertains to IT and bureaucracy, as well as to politics.

The term "e-government" has been used to describe shifting government services to electronic forms wherever practicable in various nations throughout the globe [26]. Citizens can now register and receive assistance from the comfort of their own homes, using their personal computers or mobile devices. Mobile phones with high-resolution cameras have made costly scanning and printing equipment redundant; identity papers may be photographed by a phone or computer and submitted immediately with just a few taps or clicks. Technical assistance is usually offered by telephone in most areas.

For example, IT is now mainstream because of its widespread usage on the internet, in local area networks (LANs), on various computer models, and in the rising use of software to solve human issues and activities. According to epistemology, IT is a central issue in discussions of international development [27], post-modernism[28-30] and organizational change [29], as well as control ([31], in the information and post-industrial society and globalization [32]. As separate entities, IT, and bureaucracy each follow their own rules. Bureaucratic order has a different base than the technical order. The link between IT and bureaucracy may lead to a wide range of players in a complex network influenced by the two orders' interrelationships in IS innovation. Theorization of IS innovation becomes crucial when organizations use IT innovation products to explore new management possibilities and exploit current ones, requiring an explanation of the associated change. However, "although corporate innovation today increasingly relies on IS innovation, the nature and impact of the latter remain underexplored" [33]. On the other hand, [34] highlights the significance of digital era, i.e., mobile learning at public and private sectors gains a significant attention around the globe to cop up the current issues. This one is supposed as a best out of digital revolution. Because people, information, public bureaucracy, and IT have been overlooked in IS research, this issue is especially apparent in the context of public organizations. To highlight the digitalization, [21] reported that how advertising is important to for the public and private sectors. The researcher introduced the transit advertisement as global trend to highlight the significance of digitalization .

METHODOLOGY

Interpretive epistemology [35] and critical realism ontology were used in the empirical investigation [36]. Qualitative evidence was impacted by interpretivism, whereas the materiality of IT was clarified by critical realism. Public workers have a wide range of beliefs and interpretations; hence, an interpretative epistemology was developed. The goal of this study was to get an understanding of how the permit offices of a local government agency perceived, conceptualized, and comprehended their work in terms of their information management practices [37]. Qualitative evidence would indeed be produced if the issue was immersed in the local government environment and a subjective grasp of reality was necessary. Contextualism [38] comes in handy when looking at the information management procedures of a local government. To be contextual, one must consider the organization's internal environment and external institutional settings. To understand contextualism, it is

essential to look at the dynamic interconnections between different elements or components in a specific scope across time.

Research approach

A case study approach [39, 40] was used to understand the issue of information system innovation challenges presented by the public sector context. This issue was conceptualized through an exploration of its manifestation in 2018 at South Sulawesi Province One-Stop Service (OSS). To this end, particular attention was paid to the permit office information management processes in the face of IT and public bureaucracy.

In consequence, the illustration highlights the dynamic behaviours of the main elements of information management – people and information – in response to the institutions of IT and public bureaucracy. The case strategy does not limit altogether the generality of the proposed perspective because "generality is a property of the necessary relations in real structures" [41]exemplified by IT.

Purposive sampling [39] was utilized to choose the permit offices from whose data were gathered in this technique. A sampling strategy was purposive because certain staff members possessed more relevant and accurate information than others. In other cases, these permit offices had to be recognized as key informants based on prior replies from others. A representative sample of potential informants was selected based on their experiences with information systems (IS) issues in the public sector. According to a critical realism ontology and case study technique, the paper's contributions may be easily transferred.

Data collection methods

In line with [40]) proposal, data were gathered via meetings, interviews, papers, the internet, and the permit office intranet. To verify the data's reliability and trustworthiness, the researcher used a variety of sources, including primary and secondary sources.

Meetings. During the first phase of the research, two meetings were conducted with the head department and an IT Strategy and e-government team member. The study question and interview guidelines were formed from these two sessions, worked a week apart. The head department organized this series of meetings, but the information is provided on the permit office's other significant sources was invaluable. Additional meetings with permit personnel were not arranged to gather data since data from other sources was enough for analysis.

Interviews. To acquire a better understanding of the context and inter-subjective judgments of prior information-related choices and the importance put on information management, we experimented. An open-ended interviewing approach was used, in which the heads of the division were given a series of open-ended questions on the importance of information management and their level of appreciation for it. Because "interviewees elaborate, their language exposes attitudes, values, ideas, views, and sentiments," the open-ended method was critical [42]. The following procedure was followed in the investigation of information communication and use. First, a chief division – representing the chief department and as a customer who uses the permit office information – was interviewed. Second, based on some responses in the first interview, a chief department and a member of the employee permit office were interviewed. These interviews sought their views on current information related problems, chief division views on IT and current e-government practice. Third, two members of the IT department were interviewed one after the other, with the aim of obtaining IT-based information particularly those concerning electronic presentation of information to the public. Then, a lengthy and detailed questionnaire was sent through WhatsApp message to the permission's IT head. The purpose of the WhatsApp questionnaire was to gather information about IT infrastructure and practices. Each interview was tape-recorded and lasted around 30 minutes. Each transcript was

returned to the appropriate responder for comments and changes. These were utilized to create a verified case description and evaluation of information management for e-government from many viewpoints [43].

Documents. Existing recorded resources, such as the permit office's continuing permission Improvement Strategy (from 2014 to 2018), micro-plans created by the permit office's different functional divisions, and other internet-published reports, were used. In terms of the information acquired from the interviews, these sources functioned as benchmarks, guidelines, and comparable. They also served as the framework for an e-local government information management strategy.

Analysis of the internet and intranet. This research looked at document search and the security mechanisms used to distinguish between internet and intranet material. The internet and intranet sites of the permit office were also investigated. The aim was to gain a personal insight into the seriousness of the search problem reported by interviewees.

Data analysis

Deductive reasoning was used to approach data analysis [44]. The theoretical assumption "IT as an institution" was utilized to analyze South Sulawesi Province One-Stop Service and Investment Service, a particular component of the case embedded in it, by deduction. The deduction was used to show why the social and technical obstacles of IS innovation cannot be fully grasped until situated occurrences are linked to institutional settings. The case recognized the primary themes of information management (information, people) and utilized them to divide the permit office's current information management experiences into two matching categories.

The public bureaucracy and information technology were also employed to connect the information and people themes. This was critical for the data to be processed systematically into ideas. The linkages generated a structure – existing experiences with public bureaucracy in the absence of information technology and a group of anticipated experiences with the advent of information technology. The real human and information qualities derived from the institution of public bureaucracy were contrasted to the predicted attributes drawn from the institution of information technology in this theme analysis [39]. Comparing the qualities highlighted conceptual conflicts institutions and allowed for a systematic comprehension of the case's genuine difficulties.

RESULT

OSS's information management environment

This study's empirical component, done in 2018, focuses on OSS as a practical instance. South Sulawesi Province's local government authority is the OSS. The core purpose of OSS, which is to provide licensing services, offers a significant issue. With the introduction of the internet and the World Wide Web, OSS faces even more considerable hurdles. On the other hand, OSS has created comprehensive information and knowledge management strategy to guide its informed choices and operations at the time of this research. OSS aims to expedite progress toward these e-government goals by offering online information and consultation. In addition to providing information, interviewees suggest that locating permission paperwork online is simple.

Due to many documents available on its website (over 2,000), OSS has implemented a big data search program to make finding online documents more convenient for its clients. Aside from that, the tagging document information is a nice feature. The capacity of the OSS website to facilitate the seamless search of documents by the public is critical in terms of accountability, information retrieval and search time, and the empowerment of people with information resources, among other considerations. The Freedom of Information (FoI) Act 2018 recognized the right of

people to access records on the OSS website and established a framework to support that right.

Processes in organizations

OSS procedures mirrored general and political power dynamics. The political processes flourished in harmony within the information handling procedures and to varying degrees of dominance. According to an MSME member:

There is, in fact, a - structured - [process] because decision-making methods have mirrored crisis management and fast remedies. I believe that the political type is a general quality that permeates everything.

"Structured" processes are reflected in the chief department's attitude to IT as a valuable tool in the OSS operations, especially e-governance. It was evident that IT had been integrated into service delivery operations. As a result, a lot of head divisions were believed about the prospects of IT:

[Chief Department] regards IT as a necessary expense. They have a short way to go after they realize the worth and potential of what is available on their employees' desks. There are numerous instances where process management and automation have been used to improve service delivery and cost – OSS Head.

We have effective processes that could be readily automated. There are a few paper-based systems in use. Most of the job today is to ensure that the functions work effectively before we can automate – a division.

The OSS intended to combine information systems strategy and business strategy. The aims of the multiple OSS review report provided ample proof of attempts towards alignment. Furthermore, its information systems were integrated and impliedly supported collaboration of efforts from several OSS divisions:

[There is] too little duplication, too much cohesiveness between departments – Head of OSS.

We had a history of managers collecting their pay, and they frequently did their thing while thinking about what the person sitting next to them would be doing and what the department next to them – a division – would be doing.

Culture and information management

There appear to be any structured systems in place at OSS to enable organizational learning:

My observations on organizational learning are pretty good on things like learning from previous strategic experience through controlled experiments and executive seminars. We are a data-driven organization — Technical Director.

Because of the OSS's organizational culture, organizational learning was in such good shape. For example, it was strictly expected that every section of the OSS would play a leading role in the systematic and integrated utilization of information. The e-government wind was blowing across the OSS, presumably because the central government enforced it. Some division and lower-level employees showed a high level of commitment, and the roles of many players appeared to be intertwined. This was an immense challenge in terms of culture change. Even at the management level, it was evident that the new mindset required to ignite the change process within the OSS was available:

I believe there is a genuine historical legacy at play here. Chief has had to make judgments with having all the knowledge required. Because of the information systems in place, they have typically taken decisions based on inspiration and consultation with many people. They have been highly influential in doing so - Administration Section.

In addition, lower-level staff self-confidence had a favourable impact on their dedication to the OSS's information handling modifications. In addition, there was an actual general grasp of what is possible through the application of information technology in the OSS. Even though many of the employees were aware that computers and information technology could accomplish a great deal, many were already aware of how computers and information technology might be used to better

their activities. As a result, there was extensive usage of information technology in the OSS. It was discovered that practically all desks were equipped with workstations:

In terms of internal processes, I believe that we, as a group, are adept at utilizing and exchanging information among ourselves. The fact that e-mail is available is highly beneficial, but it also means that every management relies on e-mail. It is possible to access shared drives and post messages on bulletin boards or other similar sites - members of MSME.

IT operations were created to assist business objectives. However, despite the department's goals being well defined, the Head of OSS stated that clear strategies were in place to promote efficient and effective synchronization of information technology and business innovation.

The public sector and the challenges of information system innovation

Examples of the difficulties faced by public sector information technology innovation are provided by OSS efforts to integrate information technology. According to the instance, attempts to incorporate information and knowledge management technology with public administration face significant challenges. An organization's information management strategy should not be viewed as a stand-alone endeavour without consideration of the larger context in which it operates. The following section will examine how information management and human resources are interrelated. These components are further explored in terms of information technology and public bureaucracy institutions to highlight the obstacles that face information system innovation and how they might be addressed (see Figure 1).

Information Technology	Public Sector
Expected: A part of the environment (digital) Medium-sized (computer) Knowledge (leaky) Activation (high speed) Performing (more efficient) Assistive Technology (innovative) Findings: Good website design Good search	Expected: A part of the environment (digital) Medium-sized (computer) Knowledge (medium) Activation (medium speed) Performing (more efficient) Assistive Technology (flexible) Findings: Good legacy system Good information sharing Manager making decisions with adequate information
Expected: Indicate (entrepreneurial) As a result of one's involvement (highly inclusive) The ability to learn (expanded) In other words, what you do (transparent, measurable) Discretion (expanded) Affect (highly limited) Findings: IT as good A clear grasp of the true worth of information technology (high use of IT)	Expected: Indicate (entrepreneurial) As a result of one's involvement (medium inclusive) The ability to learn (convenient) In other words, what you do (transparent, measurable) Discretion (expanded) Affect (medium limited) Findings: Managers working well together Excellent organizational learning Medium levels of commitment Managers make judgments based on accurate information.

Figure 1. Institutional and information management relationships

Bureaucracy-people relationship

Public bureaucracy as an entity had a significant impact on the actions of the OSS employees. Public bureaucracies have a poor entrepreneurial ethos at their core. In providing services to the public, they adhere to democratic norms such as equality and fairness. As "instruments for democratic nations to implement their political decisions" [45], employees of the OSS were impacted by this ethos.

Employees' decision-making procedures are proactive, reflecting management and reasonable solutions. According to [46], the need for compromise necessitates the design of public organizations that prioritize expediency and efficiency. These processes demonstrated by OSS personnel also represented their enhanced understanding. Expanded knowledge is typically the result of information opportunities that allow for information sharing and awareness creation among personnel. As a result, there was too little information duplication and too much cohesion among the OSS offices. Paper-based information flows quickly, is easy to retrieve, and contributes to data availability. Political processes thrive in open, information-rich workplaces, leaving personnel with an abundance of shared knowledge.

The inclusive terms under which they were involved in the organization can explain the employees' high commitment to the Best Value wind blowing through the OSS. The social basis of bureaucratic order is employees' inclusive involvement in organizations [46]. In formal organizing, only the individual's role (the entire person) is engaged. Inclusion increases specialism, discretion, and a greater propensity to take the initiative. Employees are allowed to exercise control and take the industry under the rules of public bureaucracy. Commitment to the public would imply OSS employees' contingent behaviors, particularly in using digital information and collaborative information systems to make judgments based on data. It would also suggest employees' efforts being recognized, but their plus of confidence in their ability to make any changes.

Another manifestation of the entrepreneurial ethos of public organizations was observed in the decision-making of managers who relied on intuition and enough knowledge to make decisions. When making decisions, efficiency necessitates the application of valuable techniques. People are permitted to compromise on efficiency in the setting of public organizations, where expediency is generally acknowledged as a guiding principle. They are also allowed to act based on intuition [47]. Managers who are confronted with insufficient or difficult-to-find information due to paper-based information systems are more inclined to make judgments based on data. Decisions become accountable due to data collection since they can be measured to any substantial degree of accuracy. This might easily lead to their actions transparently and with the fear of getting sanctioned as a result.

Relationship between IT and people

As an institution, information technology was envisioned to handle all the challenges that employees in public organizations experience due to bureaucracy's effects. IT integration in public organizations strives to instill high levels of entrepreneurship in employees by addressing the fundamental cause of the problem - a lack of entrepreneurial attitude. This type of market-like entrepreneurship in public organizations has been the overall concept of the NPM reform agenda [22, 48]. The NPM plan offers a significant shift in the basic logic of public organizations and the conditions for evaluating their operations. Its core premise is that public bureaucratic organizations that seek effectiveness must be transformed to seek efficiency. [49], for example, characterize the schedule in terms of adopting a more customer-oriented approach, which is common in market organizations to improve efficiency and productivity. This objective had heavily influenced the OSS ideal that the central government was disseminating at the time of this research.

As a result, employees had an explicit knowledge of the benefits of IT, which led management to regard IT as standard. The genuine advantage of information technology can elude even private profit-oriented organizations, as evidenced by the "productivity paradox" [50]. The concept works effectively in government organizations because actions involving information technology are transparent and measurable. The envisioned benefit of IT was to make activities more visible, measurable, and efficient, as informed by NPM-based Best Value Practices. The IT institution is endowed with an efficient order birthed of entrepreneurship in its production and consumption. IT production is becoming a dominant part of the global economy [51], as evidenced by the rise of massive internet and software companies and their high-valued technology stocks on international exchange markets. IT consumption is also frequent in organizations' innovation endeavors to obtain a competitive advantage. Metrics are used to approximate the value of IT as a technique of measuring efficiency in both production and consumption. However, public organizations are not rated on efficiency [45], but rather on their efficacy in providing equitably and impartially services. Employees' knowledge of the value of IT was thus reflected in their assessment that it was largely empowered for effectiveness in the public organizational context.

Another possibility was seen in managers' perceptions of IT as a standard. A standard is a property that must be upheld. It is an expense of organizational operations, yet it is commonly regarded as an asset that directly contributes to advantages. This perception arose due to the managers' random decision-making procedures, which are public enactments of political organizations. The general organization shows efficacy in providing public services, particularly when democratic norms of justice and impartiality must be met. When these concepts are kept in mind, as they were in the OSS, IT's Best Value Performance will support traditional public bureaucratic procedures. The growing number of individuals and public organizations and expanding demands, output, and information flow between citizens and public organizations have increased the complexity of administrative operations [45]. To deal with this complexity, managers needed to be successful in their decision-making and efficient operations.

Relationship between government and information

Having a high-entrepreneurial attitude reflects the nature, media, processing, and information systems in public administration. These descriptions of information can thus be used to describe the OSS's good information sharing among its personnel. As a result of online-based media in public organizations, communication is more easily shared. As a result of their low cost of replication and dissemination, these media have gained widespread adoption and support. Information can be moved quickly and easily using this media, resulting in information acceleration.

Aside from the media, the information culture of employees might help to understand the issue of information sharing. Employees will share information if their organization has a group reward scheme but will not share if the organization has an individual reward scheme, according to [52]. Unique compensation programs are standard in public organizations due to the high levels of specialization among personnel. The domain of skills combined with on-the-job training raises the transaction and opportunity costs of leaving government organizations ([53]. Employees are thus driven to defend their responsibilities by open knowledge and sharing it to make them apparent. This results in the "openness" of information [37], with some specializations gaining the upper hand over others.

Another element contributing to rich information sharing is the widespread use of efficient information processing techniques such as file folders and big data in OSS offices. Because these modern technologies have a strong proclivity to generate a labyrinth of information, information processing is quite regular [54]. Such mazes are beneficial to the flow of information between units within an organization. Online media,

persistent knowledge, and efficient procedures explain why OSS managers made decisions with enough knowledge.

Information technology's relationship

Information technology (IT) is often a catalyst for improved data collection, processing, storage, and dissemination. Those who hold this view attribute it to the fact that computer-based data has a digital form, making it much more easily shared, disseminated, and searched for by the public online. For example, the OSS would have suffered from "leakiness of knowledge" [37] had it been made more accessible to share information across specialties via IT.

There was a good use of internet technology to inform citizens of the numerous available services through the well-designed OSS website. The OSS is "pushing" information through the internet, while civilians are "drawing" information from it. Employees' awareness of the true benefit of IT is a significant factor in how well technology is utilized. A good fit between the needs of employing internet technologies to enlighten citizens and employees' answers to them is also a contributing factor to this. Keeping a website's content up to date necessitated frequent updates and the addition of essential metadata following industry best practices. These are subject to the employees' responsiveness and initiative. An enormous problem appears to be the reliance on employees' initiative delivering timely and accurate information to residents via a website. In public organizations, awards and promotions are not always linked to employees' contributions [53]. As a result, it isn't easy to rely solely on staff initiatives for information exchange and knowledge production and synthesis. Because of this, it's improbable they'll be able to keep up with IT's increasing needs.

DISCUSSION

The institutional approach to the investigation provides knowledge about the collaboration between information technology and public sector organizations. This method has successfully uncovered the distant institutional orders that underpin governmental administration and information technology. It provides insight into the relationship between expectations of information technology and the reality of operations in public organizations.

These findings demonstrate that socio-technical relations of information systems innovation should be understood at the institutional level before being apprehended at the organizational level. With a practice-oriented approach, the mutual molding of information technology and operations and their effects are explored at the executive level [41, 55, 56]. At the micro-level, the functional order of information technology is frequently taken for granted. In contrast, public organizations are thoroughly scrutinized to grasp the challenges of information technology innovation. Public organizations are viewed as the targets of change in information and communications technology innovation, with promises of better transparency, accountability, efficiency, and marketability based on this level of analysis [57, 58]. The advantage of this level of research is that it generates high levels of optimism about information technology innovation as the driving force behind the institutions of information technology and public bureaucracy.

However, when the challenges of information technology innovation are analyzed at the macro-level or institutional level, as this article does, greater caution is exercised in tackling the challenges. The institutional analysis presented in this study concludes that the primary objective of information systems innovation is to comprehend the fundamental forces that drive IT and public bureaucracy and their consequences for information management. This institutional perspective appears to have been directed at the OSS's superiors. They were relying on the organizational perspective, which made them optimistic that IT could be utilized to rationalize parts of their activities, whether intentionally or inadvertently. However, the primary objective of information systems innovation is not to explain bureaucratic or low-entrepreneurial procedures

within public organizations using IT or vice versa. Rather than that, it is to consider facing each institution to modify each to be more aligned with the others.

When it comes to IT, the adage goes something like this: "You can't computerize your way out of a mess; therefore, you end up worse off." A growing body of IS literature asserts that computerization can be utilized to clean up high-entrepreneurial organizations' muck. As a result, this maxim is becoming less popular [59]. Whatever the case, it's important to remember that IT and high-entrepreneurial organizations share the same efficiency principle, making it easier to replace non-computerized organizational operations with computerized ones. As a result, the claims can be accurate in that situation, but the OSS experiences show that substitution can be confirmed in public organizations. Because it is a typical public agency, its philosophy of practice was to ensure that citizens received equal access to public services, making IT substitution a sensible and practical prospect. IS innovation should be viewed from how IT and public organizations are linked to their institutional realities, which lead to high expectations of substitution, transformation, structuration, and reform.

In many ways, the position presented paper is like [45], and [16], who also oppose the efficiency aims NPM agenda. [45] asks for e-government projects to apply information technology to public administration to create the e-bureaucratic form due to their efforts. According to the authors of this research, the e-bureaucratic state recognizes the long-standing importance of public bureaucracy in delivering effective public services. The OSS authorities were also unconcerned about it since they attempted to use information technology to replace bureaucratic procedures that were becoming increasingly problematic. Indeed, the story illustrates how any public organization will most certainly be prone to taking information technology for granted without considering it from an institutional standpoint. On the other hand, this paper critiques both information technology and public bureaucracy and provides a more comprehensive assessment of their relationship.

The demise of NPM, according to Dunleavy and colleagues, is reinforced by a critique of its many inadequacies, which led to their suggestion of a digital-era governance paradigm [16]. Their criticism is consistent with that of this work. However, their proposal focuses on reintegrating various government organizations that were separated or privatized due to NPM. Interactions between public organizations and clients in terms of the latter's needs and the use of digitization as transformative rather than supplementary to organizational processes. Thus, digital-era governance values technological determinism and optimism. The distinction between the philosophies underlying the digital-era governance model and the IS innovation thesis in this study is that the latter takes an institutional perspective, while the former does not. As a result, IT is viewed as a tool for governance change in the digital-era governance model.

However, [60, 61] takes an institutional approach to IT integration in public organizations. According to the thesis of this study, efforts to implement e-government will be successful if organizational and social structures stay primarily changed. Indeed, just like this study, she claims that e-government is a technological competence for overcoming entrenched administrative, social, and political institutions through technology. The problem is that her approach doesn't regard technology as an institution but rather as an instrument, which limits her institutional transformation arguments to public bureaucracy only. Rather than taking an institutional approach to technology, she takes a more functional system that focuses on the interpretive freedom available at the organizational level. She also demonstrates how institutional hurdles can be overcome to bring about change through her institutional approach to writing. With an institutional perspective on technology, this study views organizational technology analysis as the main, explaining it primarily through institutional change. The following sections detail how public bureaucracy and technology can change because of this.

Efforts to improve public administration

Approaching IS innovation from the institutional reality of public bureaucracy is like attempting to sort out the "mess" in it without the help of IT. Suppose any public sector processes are regarded as clumsy or troublesome and need to be addressed. In that case, this should be done by modifying the institution itself and relying on IT. For example, if employees' attitudes are regarded as problematic, and this manifests itself in their assessed information management procedures, institutional change activities are launched to remedy this.

One relevant method is to understand the institutional change in public bureaucracy regarding constitutive and variable elements of the bureaucratic order [42]. Variable qualities, such as standardized and centralized operating procedures that allow differentiating contextual differences in bureaucratic forms, can be reassembled, recombined, and reshuffled to comply with emerging situations. [62] offer helpful insights into the causes of these variable features and how they contribute to institutional homogeneity in public organizations. The traits shared by public organizations that make them so similar are referred to as institutional homogeneity. According to their observations, public organizations are classic examples of public bureaucracy influenced by external limitations imposed by the state, employee migrations, and vocations. Surprisingly, these sources are not within the control of public organizations, making it difficult for changes to be made at the organizational level. External influences make relying on the instrumental order of IT to adjust the variable qualities of the bureaucratic order even more challenging. Modifications in these external sources should serve as the foundation for institutional adjustment in public administration, which will hopefully result in changes in operating processes and staff duties. These will result in speedier information gathering, processing, and transmission via public bodies and the rapid conversion of choices into courses of action. The institutional realities should be considered when considering IT adoption if changes are not possible or are sluggish.

Recommendations for tweaking IT

Approaching IS innovation from the institutional realities of IT means thinking about how to alter the institution itself to make it fit for alignment with public bureaucracy. This is a call to move away from ideas of employee appropriation of IT and institutionalization of their procedures. IT institutionalization can be accomplished by limiting IT obligations and expectations about the numerous IT projects now underway or planned in public.

Though surprising given the IT institution's undeniable momentum in e-government projects, limiting IT commitments is wise for public organizations. As part of the NPM agenda, it advises enhancement expectations for IT in terms of efficiency, rationality, and entrepreneurship. It also argues that IT projects should not try to automate all public-sector procedures but rather those that are already adequately rationalized and efficient. This will replace those processes with automated counterparts, limiting the technological, regulatory system to those alone. The institutional reality of IT also implies that they can be programmed to incorporate a comprehensive range of functions that can provide options for varied users in public organizations. This means that the technology can be developed to allow for a great deal of customization. Aiming for technology with this potential emphasizes the paper's institutional adjustment argument since the technology itself becomes the transformation target. Instead of making technology the determinant, institutional IT adaptation tries to make it adaptable to and constructible by public organizations.

Conclusion

This article aims to examine the labyrinths of IS innovation in public organizations from an institutional standpoint. The perception of IT as an institution is a vital part of

this viewpoint. Previous attempts at analyzing IT integration in government organizations examined the topic from angles other than institutional. Although ITs exhibit chronically replicated social patterns in their growth and owed their adoption and use by individuals and organizations to relatively self-activating mechanisms. Institutions are a term used by institutional theorists to describe such processes. The institutional control of IT has left unanswered how the institutional essence of IT connects to the established institution of public bureaucracy. However, the institutional analysis in this research has allowed for applying the history of social conditions that produced the two institutions to the instance of IS innovation at South Sulawesi Province One-Stop Service (OSS). The investigation found that if IT and government bureaucracy are correctly adjusted at their institutional levels, their alignment at the organizational level will be less troublesome. Their interaction in operations will be more effective and valuable for equity and impartiality in delivering public services at the corporate level. Taking an institutional perspective to IS innovation in public organizations is thus critical for analyzing the tensions between IT and government.

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