Planning and Implementing IT Governance in Brazilian Public Organizations

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Abstract
This study proposes a method to plan and implement IT governance in the public sector. The proposed method takes into account the theories of participative management, IT strategic planning, IT governance and public management. By applying the method in five Brazilian public organizations, it was possible to realize that the proposed method enabled IT governance to be planned and applied in alignment with the demands and particularities of the public sector. Moreover, identification was made of some of the leading organizational factors which drive the implementation of IT governance in Brazilian public organizations.

1. Introduction
Public sector attention to IT governance has increased as reforms to modernize public management are put into effect [1], [2], [7].

This scenario is nowhere different for Brazilian public organizations. As regards IT governance as a catalyzing or supporting agent to modernize management, the Brazilian government has performed actions towards best practices and standardization. Examples include the creation of the IT Auditing Office (SEFTI) and Normative Rule No. 4 [18]. These initiatives have outlined actions implementing IT governance in the Brazilian public sector, and are driven by factors such as the strategic dimension of IT, the increase in public expenditures in IT and the increase in the number of complaints and representatives as regards IT acquisitions.

Implementing IT governance, however, poses a considerable challenge to organizations in the Brazilian public sector. A report issued by the Brazilian Court of Audit (TCU) on an audit conducted in 255 Brazilian public organizations reveals that although they have developed IT governance to some extent, its implementation has not reached ideal levels yet [5]. This has caused the Brazilian Court of Audit to make the implementation of IT governance compulsory in public organizations and demand IT strategic planning is performed for the acquisition of IT services and resources.

Given the recommendations of the Brazilian government through the Brazilian Court of Audit to develop IT governance, and the difficulty faced by public organizations while developing it, the scenario of IT governance in the Brazilian public sector requires the following: (i) an investigation of practices to implement IT governance and their relationship with the particularities of the public sector; (ii) application and verification of IT governance practices in the public sector. Such demands should increase the knowledge of the particularities of the Brazilian public sector and of suitable ways to implement IT governance.

Previous studies on IT governance such as those by Van Grembergen and De Haes [21] and [22], Weill and Ross [23], ITGI [10], Fernandes and Abreu [9] and Xiao-Wen et al [24], as well as the studies on IT strategic planning by Amaral and Varajão [2], Bour [4], Lederer and Salmela [14], Lutchen [15] and Mingail [16] have offered solutions for IT governance and IT strategic planning, respectively. However, no customized proposal was found in these studies to plan and implement IT governance while taking public management practices into account. For this reason, the particularities and demands from the public sector are assumed to be met more adequately by a proposal to plan and implement IT governance which is specific to such a sector.

Thus, this study proposes a method to plan and implement IT governance in the public sector by considering the application of theories regarding IT strategic planning (ITSP), participative management and public management, as well as principles and practices of IT governance. The proposed method was then applied in five Brazilian public organizations.

For so doing, the design and application of the proposed method associates IT governance theory with ITSP [14] and participative management [9] theories,
as well as with the value framework aimed at public organizations, developed by Mark Moore [23].

The association of the abovementioned theories to plan and implement IT governance in Brazilian public organizations aims to offer a structured approach that takes the reality of such organizations into account. The objective of considering IT strategic planning theory is to provide the method with a structured approach for process planning, as described by Lederer and Salmela [14], as well as to comply with demands of Brazilian Court Audit to plan strategically the acquisition of IT services and resources.

The use of the participative management theory - according to the Situational Strategic Planning method designed by Carlos Matus [9] - aims to gather and harmonize perspectives from different departments and hierarchical levels in public organizations. The reason for using this approach is the intent to align the method with trends for administrative reform which are experienced by the public sector, as stated by Souza [20]. In this context, participative management is the basis of the building process of a new public management paradigm, oriented to citizens by the whole of civil servants in a participative manner [20].

Similarly, the use of concepts from public management theory, by means of the value framework by Maik Moore, aims to surface strategies that are relevant to the public sector. According to Weill and Ross [23], many management models conceived in the literature are aimed at profit private companies and prioritize indicators and strategies focusing on financial performance. Thus, a method to implement IT governance in public organizations should use management models geared towards public administration, where public value plays a key role - in detriment of revenue and profit indicators.

2. The proposed method

The proposed method was developed from a review of the literature on IT strategic planning, IT governance, participative management and public management.

The literature on ITSP has offered contributions from the ITSP theory developed by Lederer and Salmela [14] and from current ITSP methods, including Boar [4], Lutchen [15], Mingail [16] and Amaral and Varajão [2]. Those methods provided input to conceive a planning process for the proposed method.

Particularly, the literature on IT governance has contributed information from the following studies:

- Nine orientations for better IT governance by Van Grembergen and De Haes [21];
- Guidelines for the implementation of Enterprise Governance of IT by Van Grembergen and De Haes [22];
- Process maturity model and hands-on approach to define processes, business objectives and IT objectives [10];
- Decision-making structures [18], [21] [23] and [22], processes [10], [21], [22] and relational mechanisms [21], [22] as components of IT governance;
- Approaches for IT strategic management and performance measurement with Balanced Scorecard [6], [12] and [13].
- Planning approach for IT governance implementation by Xiao-wen et al [24].

In addition to considering participative management, the method was also based on the Situational Strategic Planning theory, developed by Carlos Matus [9].

As regards public administration theory, the method considered the value framework for public administration by Mark Moore [23]. This framework incorporated to the method the concept of alignment between (i) public value – identified from the assets and services offered to citizens, public assets belonging to and managed by the organization and equity; (ii) internal capabilities – in terms of the resources available to deliver public value – and authorized environment – comprised of all the taxpayers and the public authority holders that empower the operations in the organizations.

The contributions from the IT governance literature were used to guide the planning process towards implementing IT governance.

The method was initially conceived from a planning process, in accordance with ITSP theory, and provides a phased approach – as shown in Figure 1 – in order to produce a top-down approach, departing from the organizational context and organizational objectives towards defining IT objectives. Considering current capabilities, all the above information sets the context required to define processes, structures and relational mechanisms that are able to meet the strategic demands of the organizations.

In order to drive alignment tailored to the public sector, the method gathered concepts from the value framework for the management of public organizations, as defined by Mark Moore [23] and a participative approach, in accordance with the Situational Strategic Planning theory by Carlos Matus [9]. Next, the phases of the method will be explained in detail, with a focus on the respective activities and the application of the concepts from value framework for public administration.
Phase 1 explains the organizational context which influences IT governance by (i) defining the proposition for organizational objectives and environment and; (ii) defining IT objectives aligned with the proposition for value, environment and organizational objectives. IT objectives are then defined in order to establish the basis for information technology to be strategically aligned with the business.

The objective of phase 2 is to verify whether the current capabilities of IT governance can satisfy value proposition, organizational and IT objectives by (i) identifying and assessing the maturity of the set of critical processes of IT governance to be managed and controlled towards reaching IT objectives; (ii) analyzing the maturity level of critical IT processes as they help reach IT objectives; (iii) performing a SWOT analysis of IT resources applied to the critical processes; (iv) analyzing decision-making structures in IT. The outcomes are shown as gaps between the current status and the desired status, the latter being represented by business and IT objectives.

Respectively, phases 3 and 4 define the strategic and the tactic plans to implement IT governance. The strategic plans are structured through balanced scorecards containing strategic actions in order to develop structures, processes and relational mechanisms of IT governance, as well as performance indicators to create the basis of IT performance management. In their turn, the tactic plans are comprised of projects to be executed in order to implement the strategic actions defined in phase 3. In compliance with the proposed value framework for public organizations by Mark Moore [23], the strategic and tactic plans specify actions and projects, respectively, aimed at aligning the proposed value, the organizational objectives and IT objectives (verified in phase 1) with the current capabilities (verified in phase 2).

The projects developed in the tactic plan in phase 5 are executed to implement IT governance. In phase 6, project execution parallels monitoring and control actions that aim to identify weaknesses and deviations, whereas in phase 7 corrective actions and new demands are identified - whereas phase 1 is restarted whenever needed. This enables review and feedback for IT governance actions.

In addition to addressing concepts related to value framework for public organizations, the method also takes the participative focus into account. In this context, the participation and commitment of IT leaders, department managers and directors is crucial as they can provide the information required to align IT governance actions with the public guidelines defined for the organizations. Participation from senior management aims to: (i) complement information on public value proposition, organizational objectives and environment found in the strategic plans; (ii) validate the alignment of business objectives and organizational environment with IT objectives in phase 1; (iii) support - during phase 3 - the specification of strategic actions and performance indicators aligned to the organization’s global directions. The involvement of managers and collaborators aims to: (i) observe – during phase 2 – the perspective of IT clients – business units – as regards the deployed IT resources; (ii) specify - in phase 4 - projects aligned with the particularities and demands from the organization’s departments.

3. Scope of study

The proposed method was applied in five Brazilian public organizations whose activities are developed in different areas and spheres of public administration.

The method was implemented by five teams comprised of the authors of this article and students from the MBA program in IT Governance at the Federal University of Lavras, in the state of Minas Gerais, southeastern Brazil. All the teams were trained and empowered by the authors of this article and also while attending their regular courses.

Simple random sampling was chosen [11], and the criterion used to select the sample was based on the interest of the organization in providing the required conditions for the case study to be conducted. Particularly, these criteria considered the full application of the proposed method and the direct participation of senior and middle managers from the investigated organizations, who provided the information required to put ITSP into effect.

In order to keep confidentiality, the organizations are identified by letters of the alphabet.
Organization A operates within the federal judicial system and primarily aims to file criminal lawsuits, conduct investigations, and initiate inquiries.

Organization E operates at the federal level to exert sanitary control over production and marketing of products and services subject to sanitary surveillance.

Organization H is a federal university which conducts teaching, research and extended learning activities.

Organization Z belongs to the judicial system and operates at the state level by conducting and judging lawsuits.

4. Results

This section describes some of the main results obtained by applying the method in the five organizations under study. Excerpts of the results will be mentioned for each organization to clarify the features and contributions of the method.

4.1. Case study – Organization E

Figures 2 and 3 illustrate some of the results obtained after phases 1 and 2 were applied in Organization E.

By articulating organizational factors and business objectives (Figure 2), it was possible to define – during phase 1 – a set of IT objectives to drive the actions that will implement IT governance in Organization E. Critical processes were identified in Organization E based on IT objectives and information related to organizational context, IT objectives and desired behaviors, as shown in Figure 3. The organizational factors of Organization E define public value proposition as the leverage of citizen’s health by ensuring the compliance of Brazilian and foreign products and services with sanitary regulations. Given the circumstances above, it was possible to establish a set of critical processes of IT governance, using Cobit [10] as a reference, which enabled the organization's IT activities to be conducted in alignment with the organizational objectives and corporate guidelines.

4.2. Case study – Organization H

Typical features of the organizational context of Organization H are fast-growing infrastructure and the pursuit of excellence in teaching, research and extended learning activities, as well as pedagogical renovation in higher education.

The context above defines a public value proposition associated with more opportunities to pursue higher education, outreach of scientific knowledge within the community and contributions to Brazil's scientific progress. Following the application of the method, the IT objectives were aligned to the organizational context and the organizational objectives, as Figure 4 shows.

During phase 2, a participative situational analysis was made to diagnose IT governance structures. This
The analysis involved representatives of educational and scientific departments and pro-rectories, totaling 25 participants. The results of the participative situational analysis revealed the lack of alignment with the organizational context and the objectives defined in phase 1. In other words, because most IT decision-making structures were in the hands of senior management, particularly in the Pro-Rectory of Administration, they did not help meet the organizational objectives and IT objectives or put the public value proposition into effect. An analysis of IT decision-making structures revealed: (i) the non-participation of IT teams as the cause for decisions to be made without awareness of technical feasibility; as a result, there was no integration between new decisions and previous technically-driven decisions; (ii) the occurrence of delays and inappropriate budgets; (iii) that the lack of involvement of representatives from educational and scientific departments discourages the development of technological solutions which are innovative and suitable for specific types of teaching, research and extended learning activities.

4.3. Case study – Organization K

In Organization K, considering an organizational context that encapsulates the value proposition and the interests of the authorizing environment, and a set of business objectives aimed at facing the challenge of public safety and crime suppression, the IT strategic planning developed during phase 3 to implement IT governance was structured from a strategy map containing four perspectives – contribution to business, stakeholders, internal processes and learning and growth – and cause-and-effect relationships among the defined IT objectives, as Figure 5 shows.

Figure 4. Alignment of IT with Organization H’s business

Given the abovementioned results, proposals were put forward during phase 3 to create an IT Managing Committee. Comprised of the IT director and representatives of 5 educational and scientific departments, this structure aims to spur greater synergy to support and influence IT decisions made by the Pro-Rectory of Administration. Thus, the IT Managing Committee was assigned the following tasks:

- Conduct technical research to serve as a basis for IT investment decisions;
- Support the use of funds for IT investments;
- Investigate, assess and suggest the use of new technologies to support teaching, research and extended learning activities in the educational and scientific departments;
- Survey and analyze the IT demands of educational and scientific departments;
- Write technical reports on acquisition plans for IT resources;
- Reassign, develop and expand hardware and software resources;
- Write technical reports on service agreements and technical cooperation agreements in the field of IT;
- Propose that the Rectory should set priorities to implement IT shared services.

Figure 5. IT Strategy Map of Organization K

Figure 6 shows the order defined to execute strategic actions to implement IT governance in Organization K. The actions were associated to
encourage the gradual evolution of relational mechanisms until proper synergy is achieved among IT teams, senior management and business areas. Thus, IT governance can help achieve the IT objectives proposed for the organization as regards relational mechanisms.

**Figure 6. Strategic actions to implement IT governance in Organization K.**

### 4.4. Case study – Organization A

The following critical processes were defined for IT governance in Organization A, considering the results of phase 1: IT strategic planning, IT investment planning, and IT service continuity management.

Considering the abovementioned critical processes, maturity was assessed according to models defined by Cobit [10]. The general results for the assessment of maturity of critical processes had the following outcome: IT Strategic Planning – Level 3 (Defined); IT Investment Management – Level 3 (Defined); Service Continuity Management – Level 1 (Initial/Adhoc).

Considering the business demands – organizational context and business objectives - and IT objectives, it was established that the three critical processes should reach level of maturity 4 – managed and measured. Figure 8 illustrates the path to be followed to develop the continuity management process until level 4 is reached.

The gradual approach to develop IT governance can be observed in the development cycles of the management process, which are shown in Figure 7. Three cycles were required, and each cycle has a set of actions and an implementation deadline ranging between two and four months.

**Figure 7. Specification of strategic actions for critical process in Organization A.**

### 4.5. Case study – Organization Z

The context of Organization Z is characterized by an increasing number of processes and related activities and their slow execution. This context requires faster judicial lawsuits so as to provide citizens with agile justice. For this reason, after phase 1 of the proposed method was applied, the following IT objectives were defined: (i) Offer and maintain integrated and standardized technological solutions and IT infrastructure to increase the speed of judicial lawsuits and; (ii) develop innovative technological solutions to speed up judicial lawsuits.

Considering the abovementioned objectives, a participative situational analysis was made during the application of phase 2 of the method, according to the theory of Situational Strategic Planning by Carlos Matus [9], in order to perform a SWOT analysis of IT resources. The participative situational analysis had the participation of members of the IT department, department managers and collaborators who are key users of technological solutions in Organization Z. A total of 30 informants with the profiles previously mentioned participated in the analysis.

Table 1 summarizes the main points collected during the participative situational analysis. Coupled with the results of phase 1, the weaknesses, threats and opportunities identified in the participative situational analysis helped put forward a set of strategic actions in terms of structures, processes and relational mechanisms to implement IT governance.
Table 1. Summary of the results of the participative situational analysis in Organization Z.

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Threats</th>
<th>Opportunities</th>
<th>Opportunities</th>
</tr>
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<tbody>
<tr>
<td>Deficient negotiation of levels of service with clients – lack of formal procedures and troubled mutual understanding between IT and departments.</td>
<td>Uncontrolled growth of IT</td>
<td>Greater synergy among IT, department and senior management teams.</td>
<td>Participation of IT leaders in strategic planning decisions.</td>
</tr>
</tbody>
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Figure 8 shows the alignment of strategic actions to implement IT governance. Considering the existing gap between objectives and current capabilities – observed in the participative situational analysis – actions were defined to develop critical processes, IT decision-making structures and relational mechanisms.

5. Discussion

Considering the proposal and application of the method, the findings of this paper presents three perspectives: (1) Essential features of IT; (2) Essential features of IT Governance and; (3) Essential features of the proposed method. The first perspective reports the main desirable characteristics and demands for IT in the organizations under study. The second perspective reports the main demands of IT Governance in the organizations under study. Finally, the third perspective reports the applicability of theories of strategic planning, participatory management theory and concepts of public value for implementation of IT governance.

In the next following sections, we report the findings on the perspectives mentioned above.

5.1. Essential features of IT

The application of the method identified essential features of 5 Brazilian public organizations which will guide the IT governance actions to foster strategic alignment.

The application of the method has evidenced, in the 5 organizations investigated, the pursuit of transparency in expenditures, and planned acquisition of resources, in addition to the great demand for integration both at internal and external levels with other institutions of the Brazilian public authority.

The pursuit of transparency in expenditures and in management was evidenced by the legal requirements that public organizations have to comply with. Among these requirements, the Normative Rule No. 4 [19] should be highlighted, as it exerts direct impact over information technology.

In its place, the need for integration was observed both at the internal level – among departments within each organization – and the external level - among organizations of the Brazilian public sector. The search for integration aimed to spur greater agility in the services delivered to the citizens. Examples include Organizations A, K and H.

In addition to the organizational demands abovementioned, the investigated organizations have focused on the intensive use of information technology to achieve their strategic objectives. Examples which are worth of notice are the initiatives of Organization A to develop an IT structure in the judicial system, and the search of Organization H – through IT - for new mechanisms to support research and extended learning as well as renovate teaching pedagogically.

5.2. Essential features of IT Governance

As stated in the previous section, the essential features of IT in five Brazilian Public Organizations have directed efforts for definition and implementation of IT Governance structures, processes and relational mechanisms.

Demands for IT Governance processes were noted to focus essentially on IT service management and IT investment and acquisition. These results are coherent with a previous assessment made by the Brazilian Court of Audit [5] and requirements of Normative Rule No. 4 [19].

However, the results identify demands for decision making structures and relational mechanisms not
addressed in the previous assessment of IT Governance in public organizations as made by the Brazilian Court of Audit [5]. The assessment by TCU was based on Cobit processes and does not cover issues of decision making and relational mechanisms.

Although not covered by the Brazilian Court of Audit, we identify that decision making structures and relational mechanisms are substantial components for IT Governance. In Organization H, the implementation of an IT Management Committee was key to promoting adequate synergy in decisions associated to IT investments, acquisitions, and IT service delivery. The need for synergy in IT function, departments and the board was already found in Organizations K and Z. In these organizations, a structure that ensures participation of IT function, sectors and top management was considered important for IT decisions related to IT architecture and alignment between IT services and business processes.

Relational mechanisms were considered important IT Governance components to support the implementation of decision-making structures as well as to provide knowledge to improve specification and use of technological solutions and IT services. In Organization K, cross-training, awareness campaigns and a corporate portal to communicate directions, policies and rules were regarded as foundations to provide awareness and knowledge for IT and business personnel involved in: (i) IT decision-making; (ii) service delivery and technological solution specification; (iii) utilization of technological solutions and IT services. In Organization Z, cross-training was proposed as a mechanism designed to promote better synergy between IT and business personnel, providing better mutual understanding to underlie: (i) IT decision-making structure based on a representative committee; (ii) a process do manage IT service levels.

5.3. Essential features of the method

By applying the method in the five public organizations under study, it was possible to observe that the use of a structured planning approach from ITSP theory, the participative focus and a collection of concepts specific to public administration enabled the alignment of structures, processes and relational mechanisms of IT governance with organizational features and objectives.

The impact of adopting a structured planning approach could be clearly seen in the five case studies shown in this paper. The method developed requires the study of the context and the organizational objectives so that they can be translated into IT objectives to guide the implementation of IT governance. In all the organizations investigated in this study, the application of the method enabled the specification of structures, processes and relational mechanisms aligned to the organizational demands defined in terms of environment, public value proposition, organizational objectives and IT objectives.

Using a participative approach, according to the Situational Strategic Planning theory [9], enabled to gather and harmonize perspectives and demands of different hierarchical levels and departments of the organizations to develop IT governance components in alignment with the context of the organizations. This contribution became apparent as the method was applied in organizations H, K and Z.

The use of concepts from the value framework for public administration by Mark Moore [23] in the proposed method enabled to focus on the data collected – especially those from phase 1 – towards relevant factors for the context of non-profit public organizations. By adopting an approach which favors the identification of organizational variables associated with public value delivery, IT governance components could be developed in alignment with the improvement of the services provided to Brazil and its citizens. This result can be observed in the case studies conducted in the five organizations investigated, and it is possible to align public value proposition and organizational objectives and interests of the authorized environments with IT governance capabilities.

In Organization H, in turn, the application of the method enabled the alignment of the public value proposition – associated with excellence in teaching, research and extended learning and Brazil’s scientific development – and organizational objectives with IT governance capabilities associated with decision-making structures. As a result, it was possible to develop IT governance capabilities aimed at IT decision-making on behalf of the organization’s public value guidelines.

The application of the method also enabled a structured and gradual process to implement IT governance in the short, medium and long term. Basically, two factors enabled such an approach.

The first factor was evidenced by the case study in Organization K, which used approaches based on strategic planning and balanced scorecard to implement IT governance. The strategic plans were structured in compliance with BSC principles, and
establish a cause-and-effect relationship between objectives and strategic actions, thereby making it easier to define the order and the schedule of actions and projects.

The second factor, evidenced by the case study in Organization A, was the use of a maturity model to assess critical processes, thus defining the current status and the desired status for such processes. Therefore, improvement cycles for these processes could be established until the desired maturity level was achieved.

A gradual approach enabled the implementation of processes and relational mechanisms to be segmented in smaller and less complex cycles, resulting in a gradual evolution of IT governance in the investigated organizations. Moreover, implementing IT governance in Brazilian public organizations – where annual IT budgets are not guaranteed despite their approval – in a gradual manner is a strategy that favors budget alignment and reduces the risks associated with future unavailability of funds for previously planned initiatives. Reduced cycles require fewer resources and favor the alignment with the annual budgets defined for the organizations.

6. Conclusion

This study proposed a method to plan and implement IT governance in public organizations.

To develop the proposed method, relevant contributions were adopted from the fields of IT governance [6], [10], [12], [18], [21] and [23], PETI [4], [14], [15], [16] and [2], public management [23] and participative management [9].

The results revealed that the method could articulate with the particularities of the public sector to plan and implement IT governance. These particularities were mainly associated to the focus on the public value. The use of concepts from the value framework for public administration by Mark Moore [23] enable an IT Governance configuration in order to provide the IT contribution for public value generation.

Participative management and ITSP, although not referred to literature as specific to public management, were respectively valuable to impose a structured planning approach and to promote participation and interaction between different organizational actors for the combination of knowledge and viewpoints relevant to IT governance.

The use of public value concepts, participative management and IT Strategic Planning theories for planning and implementing IT Governance was suitable for the public sector organizations in question, allowing them to align governance components with the value proposition of public organizations.

Additionally, we found that the use of structures and relational mechanisms is important for IT governance in the public organizations studied, although these two components are not addressed in previous surveys done by the Brazilian Court of Audit [5]. Thus, we suggest that future studies about demands for IT Governance in Brazilian public organizations take into account these components.

This study offers a tailored IT governance solution for organizations in the public sector, which could be used to outline the planning and implementation of IT governance, thus allowing such type of organizations to satisfy the regulations of the Brazilian Court of Audit (TCU) and meet the expectations of the population to a greater extent.

Additionally, this study offers important insights into IT desirable behaviors and IT governance demands for public sector organizations, which could be used in future assessments and implementation efforts of IT governance in this sector.

7. Limitations and Future research

This research was conducted within the Brazilian context, specifically taking a sample of five public organizations. Furthermore, because the actions for implementing IT governance are to be put into effect in the short, medium and long term, the activities in the execution, monitoring and control phases are being conducted at the time of the writing of this article. Thus, this research does not address some post-implementation aspects of IT Governance in the organizations.

Given the above mentioned limitations, we suggest the following future research: a) replication of this study in other Brazilian Public organizations in order to gain more insight into the applicability of the theories and concepts used in the proposed method. Recommendations could be added to the proposed method to enable the treatment of occasional particularities in different spheres (municipalities, states and the federation) and types of organizations (for example, ministries, institutes, hospitals, banks, etc.), and b) replication of this study in different nations and cultures (for example, China) to verify whether the method can be adapted to encompass regional particularities, and c) finally, in order to gain more insight into the efficiency of the method, we recommend that future research address post-implementation aspects of IT Governance in public organizations.

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9. References


