**Antecedent dimensions in the brazilian public administration: an analysis
of the innovation contest in the public sector**

**Dimensões antecedentes da inovação na administração pública brasileira:
uma análise no concurso inovação no setor público**

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Abstract

The analysis of innovation contests and/or awards represents a promotion to the production of this topic in public administration. This research aimed at mapping the main antecedent innovation dimensions which are present in the initiatives awarded by the Innovation Contest in Public Administration. This is a qualitative and descriptive work based on documental research whose data characterization/classification was done according to the model by De Vries, Beckkers and Tummers (2016). A theme analysis was used with the support of the QSR NVivo® software. The results pointed that, from 2008 to 2016, innovation in the initiatives awarded happened predominantly in the federal domain and it is the process-type. The main dimensions that contributed to innovation in the public administration were: Social Participation (Environmental antecedent); Client/beneficiary and market knowledge, Strategic information management/Standardization of data and processes, Strategic planning and Transforming leadership/Managers' pro-innovation attitudes (Organizational antecedents); Strategic intention to innovate and Project management (Innovation Characteristics antecedents); and Commitment (Individual antecedents). The managerial contribution of this

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research lies on the identification of the main antecedent dimensions, such as the good practices that contribute to innovation in the public administration, since they can control plans, programs and innovation policies, especially on subnational levels. The dimensions that were mapped could also favor the development of an innovation culture that has society satisfaction with public services as a result.

Keywords: Antecedents. Innovation. Public Administration. Contest.

Resumo

A análise de concursos e/ou prêmios de inovação constitui incentivo à produção dessa temática na administração pública. Esta pesquisa objetivou mapear as principais dimensões antecedentes da inovação presentes nas iniciativas premiadas no Concurso Inovação na Administração Pública. Trata-se de uma pesquisa qualitativa e descritiva, fundamentada em pesquisa documental, cuja caracterização/classificação dos dados foi feita com base no modelo de De Vries, Beckkers e Tummers (2016), utilizou-se análise temática com suporte do *software* QSR NVivo®. Os resultados identificaram que, no período de 2008-2016, a inovação nas iniciativas premiadas ocorreu, predominantemente, na esfera federal e é do tipo de processos. As principais dimensões que contribuíram para a inovação na administração pública foram: Participação Social (antecedente Ambiental); Conhecimento do cliente/beneficiário e do mercado, Gestão estratégica de informações/Padronização de dados e processos, Planejamento estratégico e Liderança transformadora/Atitudes pró-inovação de dirigentes (antecedentes Organizacionais); Intenção estratégica de inovar e Gestão de projetos (antecedentes Características da Inovação); e Comprometimento (antecedentes Individuais). A contribuição gerencial da pesquisa está na identificação das principais dimensões antecedentes como boas práticas que contribuem para a inovação na administração pública, pois estas poderão nortear planos, programas e políticas de inovação, principalmente nos níveis subnacionais. As dimensões mapeadas poderão ainda favorecer o desenvolvimento de uma cultura de inovação que tenha como resultado a satisfação da sociedade com os serviços públicos.

Palavras-chave: Antecedentes. Inovação. Administração Pública. Concurso.

Introduction

Public administration lies within an environment of continuous transformations, of crucial social challenges, of demands for service deliveries that add more value to society, and of social pressure. This context made governments worldwide adopt innovation as a management strategy more and more, which has boosted an increase in the scientific production about the topic in the area.

Although scientific production about the nature of innovation in the public sector is growing, Santos, Sano and Souza (2019), Souza, Ferreira, Najberg and Medeiros (2015), Potts and Kastle (2010) and Walker (2007) state that this field is still limited, and it is necessary to increase the knowledge of the researchers in the area. One way to promote the production and the advertisement of good practices about innovation in the public administration is through the analysis of innovation contests and/or awards (Brito, Castro, Bezerra, Silva & Silva, 2020; Machado, Sousa, Rocha & Isidro, 2018; Adamczyk, Bullinger & Möslin, 2012), which have been efficient to create problem solutions, besides avoiding the accidental and episodic character of innovation in the public administration (Sørensen & Torfing, 2012).

In this sense, the following stand out on a global scale: the Innovations in American Government Awards, created to acknowledge and promote excellence and creativity in the American public sector; Empowering Change: Fostering Innovation in the Australian Public Service, in Australia; the Annual Award for Institutional Excellence, in Chile; the Innovation and Excellence in China's Local Governance Program, in China, and the Government and Local Management Award, in Mexico, among others.

In Brazil, there is the Innovation Contest in the Public Sector (ICPS), which is promoted by the National School of Public Administration (NSPA) and by the Ministry of Economy, Planning, Development and Management (MEPDM), whose objectives include: i) encourage the implementation of innovative initiatives in the public administration that contribute to service improvement; ii) propagate innovative solutions in order to inspire other initiatives and strengthen governmental capability; and iii) acknowledge and value the public services which, through creativity and proactivity, develop actions to produce benefits for society (Enap, 2018).

Therefore, by considering the ICPS context, here is the question: what are the main antecedent dimensions that come from the initiatives awarded by the Innovation Contest in the Public Sector?

This research aimed at mapping the main antecedent dimensions of innovations which are present in the initiatives awarded by the Innovation Contest in the Public Sector. The specific objectives were: i) identify the main dimensions (capabilities) of innovation in the public administration from reference literature and according to the classification of the model by De Vries, Beckkers and Tummers (2016), and ii) analyze how the main dimensions are part of the innovation process in the initiatives awarded by ICPS. This research has a basic qualitative approach and was done through a theme analysis (Braun & Clarke, 2006) with the support of the QSR NVivo® software.

This work is backed up by the assertion that the scientific knowledge developed and disseminated in the academy is used for the benefit of society and, thus, the market. From the economic and social point of view, the studies about innovation in the public sector are relevant due to the importance of their services for economies and societies (Grugulis & Haynes, 2014; Vargas, Bohrer, Ferreira & Moreira, 2013; Lima & Vargas, 2012) and also for the improvement, the delivery and the social effectiveness of public services. Moreover, from the academic point of view, this study tried to contribute to the expansion and maturity of the topic in the Brazilian public administration context.

From the institutional point of view, on the other hand, the reality of public administration tends to promote a more incremental type of innovation due to its non-competitive nature and bureaucratic culture (Bekkers, Edelenbos & Steijn, 2011). However, with the objective to minimize treasury expenses and satisfy social needs, investigating the antecedent dimensions of innovation in the public sector becomes crucial, for they can promote the innovation that is more focused on destruction than on creation (Potts, 2010).

Innovation in Public Administration

To De Vries *et al.* (2016), one of the main interests in investigating innovation in the public sector, besides establishing how much it can contribute to improving the quality of the services offered, is the idea that the innovative process can intensify the governmental organizations' capacity to solve problems. Thus, through innovative managerial and organizational ways, it is possible to optimize the resources available, with more benefits to society, which is the user of its services.

However, in view of a more conservative culture, the public service acts much more from learning about exploitation of its acquired knowledge than from the exploration of new methods or concepts (Kallio & Lappalainen, 2015), since it has the obligation to follow rules

and interact in a political-nature environment. In this sense, Potts (2010) states that innovation in the public sector is seen from the creation side, and not from the destruction side, for it refers to the act of creating new and better things by keeping what already exists instead of removing programs and policies that don't work.

However, Matheus and Janssen (2016) reinforce the need that governmental institutions have to balance the two ways of learning by becoming "ambidextrous" based on the combination of small exploitation improvements with more radical innovations that can be generated by exploration.

Thus, according to Farah (2006), two innovation branches from the Brazilian public service were developed in literature. The first one is represented by (internal) managerial efficiency and reorganizations, which are materialized by the establishment of policies and laws (Carrijo & Botelho, 2013), with a national emphasis to the Industrial, Technological and Foreign Commerce Policy – ITFCP: 2003, the Innovation Law: 2004, the Good Law: 2005, the Growth Acceleration Program in Science, Technology and Innovation - Science Growth Acceleration Program: 2007, the Policy of Productive Development: 2008, and the Greater Brazil Plan: 2001.

The second branch, on the other hand, suggested by Farah (2006), is represented by the democracy and the expansion of social participation and decentralization in the development of (external) public policies. As an example, there is the private investment, which stimulates public service with the State being responsible for showing society its vision, defining its social role, formulating and carrying out a consistent plan (Costa, Mendonça, & Campos, 2015) in order to overcome obstacles and develop innovation facilitators/capabilities. To Brandão and Bruno-Faria (2013), the following are seen as obstacles against innovation in public administration: inter-sectoral articulation difficulty, legal restrictions, vertical organizational structure, innovation resistance and risk aversion. The latter one was also mentioned by Koch and Hauknes (2005).

Overtime, other authors also identified the following as innovation obstacles: (i) conflict of interests between technology, organizational culture and unrealistic expectations (Barnett, Vasileiou, Djemil, Brooks & Young, 2011; Rosendaal, 2009; Rego, Pinho, Pedrosa, Pina & Cunha, 2009; Riege, 2005; Armbrrecht *et al.*, 2001); (ii) data and systems, whether due to the lack of integration, diversity or incompatibility (Parolin, Vasconcellos, Volpato & Laurindo, 2013; Rego *et al.*, 2009; Riege, 2005); (iii) scarce routines and processes to share, reflect on and create knowledge (Parolin *et al.*, 2013; Rego *et al.*, 2009; Riege, 2005; Leonard-Barton; 1998); (iv) infrastructure, material resources and technological limitations

(Parolin *et al.*, 2013; Paghaleh, Shafieezadeh & Mohammadi, 2011; Rego *et al.*, 2009; Riege, 2005); (v) deadline limitation to interact with and share knowledge, meet deadlines and carry out tasks (Rego *et al.*, 2009; Riege, 2005); (vi) limitation of human resources concerning communication, interpersonal skills, motivation, leadership and training (Li, Bhutto, Nasiri, Shaikh & Samo, 2017; Schwella, 2014; Rego *et al.*, 2009; Lin & Lee, 2006; Riege, 2005; Mulgan & Albury, 2003); (vii) financial and budget limitation (Rego *et al.*, 2009; Mulgan & Albury, 2003; Armbrrecht *et al.*, 2001); and, (viii) resistance, which causes property and knowledge control loss (Barnett *et al.*, 2011; Rego *et al.*, 2009; Vigoda-Gadot, Shoam, Schwabsky & Ruvio, 2005; Riege, 2005).

According to Kanter (2006), upon considering a process of overcoming obstacles, the inductors or capabilities that favor innovation, such as strategy, processes, structures and skills, lead to a better chance of new ideas to turn into future benefits, also depending on the context analyzed (Calantone, Harmancioglu, & Drodge, 2010), since the innovations that bring in results either go through established channels or combine existing elements of capability in new ways.

Upon dealing with the antecedent or capacitating variables that precede innovation, Panizzon, Milan & De Toni (2013) and Vigoda-Gadot *et al.* (2005) investigated innovation in the public sector by analyzing the citizen's perspective. Their results show that: (i) the antecedents that have higher influence over innovation results are response capability, leadership and vision; (ii) innovation either positively or negatively impacts the user's reliability and satisfaction about Public Administration; and (iii) the way the users see the organization influences its image by affecting their reliability and satisfaction with the delivery of public service.

On the other hand, Menelau, Vieira & Fernandes (2016) studied this same correlation from the perspective of the strategic core of management of a public organ and saw that the political context, the impact of innovation and the capability of (re)combining service sometimes act as promoters, sometimes as adoption and innovation implementation inhibitors.

Then, the antecedent dimensions that are used to minimize the effects of the obstacles against public administration were addressed.

Innovation dimensions in the public administration

Some research reports by state agencies about innovation in the public sector were published in different countries along 2011. The project "Measuring innovation in the public

sector in the Nordic countries: toward a common statistical approach” (Mepin), which started in 2008 and ended in 2011, aimed at developing a measuring model to collect data about innovation in the public sector that are internationally comparable (Bloch, 2011). Another governmental agency is the National Endowment for Science, Technology and the Arts (Nesta), in the United Kingdom, which has also been carrying out studies since 2008, with the objective to create indexes that are able to catch innovation particularities in public organizations. In 2011, the final report of the pilot research was published. It tested the innovation measurement model in the public sector based on innovation capabilities, innovation activities, performance impact and sectorial conditions for innovation (Hughes, Moore & Katarina, 2011).

To Moussa, McMurray & Muenjohn (2018); Torvatn & Boer (2017); Yeow & Edler (2012), innovation antecedents are in the state of developing organizational, individual and managerial competencies through inspiring leaderships (Li *et al.*, 2017; Potts & Kastle, 2010), whether through the action of informal leaders, politicians or heads of governmental agencies, or through senior management (Acker & Bouckaert, 2018) that promote a suitable environment to innovation through a bottom-up relationship (Borins, 2001), pro-innovation attitude and political guidance (Damanpour & Schneider, 2008; Koch & Hauknes, 2005). According to Acker & Bouckaert (2018), senior management can be a catalyzer for the learning process, the taking of participative decisions and free communication by integrating activities and transforming the individual goals of all the actors involved – whether in companies, governmental institutions or universities – into mutual objectives (Li *et al.*, 2017).

Besides the importance of leaderships, Borins (2001; 2002) raises the need that the public administration should have organizational objectives that are well defined. The research in this area has also been adopting the opening of governmental structures for the external environment and the effect of intensive use of information and communication technology (ICT) that is of public domain (Schmidhuber & Hilgers, 2018; Matheus & Janssen, 2016; Koch & Hauknes, 2005). Thus, it would enable a new way of “open government”, both in administrative terms and in the strong interactions with resources (Matheus & Janssen, 2016; Kallio & Lappalainen, 2015), the participation of external actors – citizens, voters, tax-payers, universities and companies – which are encouraged to get involved in co-creation tasks and to find solutions for problems in the public sector on behalf of common good (Tönurist, Kattel & Lember, 2017; Schmidhuber & Hilgers, 2018) and of the development of national systems of innovation (Carrijo & Botelho, 2013).

One of the strategies that have been used in the public sector are innovation laboratories (i-labs) (Tönurist, Kattel & Lember, 2017), which has enabled the ambidexterity exercise (Matheus & Janssen, 2016) of innovation in the public administration, according to what was discussed by Farah (2006). I-labs act as agents of change for the creation of innovative organizations, which result in new types of routines and regulatory marks by replacing old ones and bringing in a new type of expertise (Tönurist, Kattel & Lember, 2017). These authors emphasize that i-labs are still not an organic part of the public sector, for their survival depends on political and/or administrative support of top level.

Studies developed by Acker & Bouckaert (2018) showed that feedback culture (Eggers & Singh, 2009), accountability (Acker & Bouckaert, 2018; Schillemans, Twist & Vanhommerig, 2013) and organizational learning are also relevant aspects for the survival of innovation in the public sector, and they are a structure turned to the management and improvement of innovation after its beginning. Feedback information enables an organization to correct its mistakes, set its goals, restore its performance levels and align to its environment, and it is the basis for constantly improving innovations and for a long and sustainable life of the public sector (Acker & Bouckaert, 2018).

To Santos *et al.* (2019), on the other hand, from the study on the Brazilian public rural sector, the following are seen as innovation antecedents: social participation, regulatory aspects, partnerships, resources availability, accountability, appropriate methodologies, teamwork, trained professionals, favorable organizational culture, innovation use convenience, innovation experiment/testing, people's commitment and creativity.

However, the study by De Vries *et al.* (2016) provided literature with a heuristic model of innovation for the public sector by showing that the four model components that predict the innovation types and results in the public sector are: a) environmental antecedents, which refer to environmental pressures and regulatory aspects; b) organizational antecedents, which are associated to the lack of resources, leadership styles, risk aversion level, learning site, benefits and rewards, conflicts and organizational structures; c) innovation characteristics, which are related to the convenience of using innovation, relative advantage and compatibility; d) individual antecedents, which are related to the employees' autonomy, organizational role, professional knowledge and competency, creativity, demographic aspects and innovation acceptance.

Innovation capability comes from the skills and aptitudes that enable the allocation of resources in an organization in a process of continuous improvement and knowledge transfer in order to explore the development opportunities of new products, processes and systems for

the organizational benefit of the organization and its actors (Lawson & Samson, 2001). In the study by Valladares, Vasconcellos & Serio (2014), the definition about innovation capability was the same by Peng, Schroeder & Shah (2008), and it means the driving force or the preference over a set of organizational practices for the development of new products/processes. The authors ranked the following capabilities: transforming leadership, strategic intention to innovate, personnel management for innovation, client/beneficiary and market knowledge, technology strategic management, organizational structure's organicity and project management.

From this collection, the main antecedent dimensions in public administration innovation were mapped. The list was prepared according to literature reference and its characterization/classification was done according to the model by De Vries *et al.* (2016) (Table 1).

Table 1
Innovation dimensions in public administration

Characterization (De Vries <i>et al.</i> , 2016)	Dimensions	Description	Authors
Environmental	Social participation	Participation of beneficiaries and different social actors (stakeholders) so that public service has an innovative nature.	Santos <i>et al.</i> (2019).
Organizational	Beneficiary and market knowledge	Skills to perceive beneficiaries and market's events, needs, expectations, meaningful changes and trends, so as to anticipate the needs of society.	Valladares <i>et al.</i> (2014).
	Transforming leadership/ Managers' pro-innovation attitudes	Management perception about their role as an agent of changes positively affects the adoption of innovations. Managers and leaders' support is crucial for the innovation success. An institutional environment that is favorable to the institution is associated to the leadership style.	Damanpour & Schneider (2008); Valladares <i>et al.</i> (2014); Hughes <i>et al.</i> (2011); Peng, Schroeder & Shah (2008); Vigoda-Gadot <i>et al.</i> (2005); Borins (2002; 2001).
	Strategic planning	The adoption of strategic planning practices and management enable organizational innovation initiatives to last overtime; the use of planning systems. Adding flexibility to planning and to control systems through especial reserve funds for unexpected events.	Rego <i>et al.</i> (2009); Kanter (2006); Armbrrecht <i>et al.</i> (2001).
	Institutional	Smooth and open organizational structures that are	Barnett <i>et al.</i>

	communication	even and decentralized improve communication and inter-functional flow, and combine knowledge and innovation with the organization's vision and mission.	(2011); Rego <i>et al.</i> (2009).
	Strategic information management/ Standardization of data and processes	Interface between school subjects, Technologies, business units, roles and companies, information repository centralization, use of systems for the taking of decisions, connection between systems and information that enable the implementation of innovation.	Hughes <i>et al.</i> (2011); Rego <i>et al.</i> (2009); Armbrrecht <i>et al.</i> (2001).
	Competency management/ Diversified team profile/ Personnel management/ teamwork for innovation	Training of human resources, promotion of a learning culture, incentives and reward mechanisms in order to favor knowledge and creativity sharing, enable communication, teamwork encouragement, confidence atmosphere, discussion and support to leaderships to spread out new knowledge that enables innovation implementation. Recruitment of innovation leaders with strong inter-personal skills that will keep the innovation process, help innovation teams to embrace collective objectives and will share tacit knowledge by building the culture of collaboration.	Santos <i>et al.</i> (2019); Valladares <i>et al.</i> (2014); Parolin <i>et al.</i> (2013); Li <i>et al.</i> (2011); Hughes <i>et al.</i> (2011); Rego <i>et al.</i> (2009); Kanter (2006); Mulgan & Albury (2003).
Innovation characteristic	Strategic intention to innovate	The level at which the institution is willing to take on risks in order to promote change, technological development and innovation, and create a portfolio of promising little ideas and incremental innovations that may increase the potential of "great ideas".	Valladares <i>et al.</i> (2014); Kanter (2006).
	Technology strategic management	Process management of technology creation and development aiming at creating value. It comprehends five steps: identification, recruitment, acquisition, exploration and protection.	Valladares <i>et al.</i> (2014); Koch & Hauknes (2005).
	Organizational structure's organicity	The level at which the structure is organized by autonomy grant, flexible controls, free horizontal communication, knowledge and experience appreciation and informality in personal relations. The so-called organic structures provide changes to the external environment that are swifter than those called mechanists, and benefit collective learning and innovation maximization that become new deals.	Valladares <i>et al.</i> (2014); Kanter (2006); Mulgan and Albury (2003).
	Project management	Planning, resource provision, innovation process control and execution. It includes a careful evaluation of projects, analysis and planning with the objective to reach comprehension, commitment and support, especially, both of the corporation and of the personnel that will be involved in the project.	Valladares <i>et al.</i> (2014).
	Innovation management	Organization quality and planning of innovation activities, such as, for example, innovation governance, professional engagement and risk management.	Hughes <i>et al.</i> (2011).
Individual	Commitment	Involvement of social actors with public service	Santos <i>et al.</i>

		achievement.	(2019).

Source: Designed by the authors.

The next section will describe the methodological procedures that enabled the research to be carried out.

Method

Concerning the way the issue was addressed, this is a qualitative research with descriptive objectives (Merriam, 1998) and an investigation method as a documental research (Godoy, 1995) through the analysis of secondary data. The research data processing was done through theme analysis (Braun & Clarke, 2006), which consists of finding cores of meaning that comprehend communication and whose presence or manifestation frequency was meaningful for the research objective (Mozzato & Grzybovski, 2011).

For the definition of the research corpus (Bauer & Gaskell, 2017), the online repository of the Brazilian National School of Public Administration (NSPA) was used (<https://inovacao.enap.gov.br/>) for information about the Innovation Contest in the Public Service – ICPS.

ICPS is promoted by NSPA and MEPDM and started to take place in 1996. Its target audience comprehends teams of working civil servants at the federal, state and district Executive Power and who work in the direct, autarchic and foundational administration, as well as in public companies or mixed-economy societies that have developed innovative initiatives.

The evaluation criteria for taking part in the contest are: innovation, results and/or impacts, the use of efficient resources, partnerships, beneficiary participation, transparency devices and social control, replicability levels, and sustainability levels (ENAP, 2016). ICPS awards the five best proposals and a trophy is given to each institution, along with certificates for the team members and the right to use the “Innovation Seal” in promotional material. The award winners also become part of the Solution Database and the NSPA’s Institutional Repository, and the teams are qualified to take part in events organized by NSPA or its partners, with the objective to value, improve and spread innovation in the public service (ENAP, 2018).

The three first cases awarded in the time period of nine years (2008-2016) were selected, according to Table 2, with a total of 27 experience accounts out of a universe of 90

cases. These experience accounts are presented in books/reports that describe how the proposals were implemented, and they can be found at the NSPA repository. The years 2017 through 2019 were not taken into account, for the experiences awarded were still being systematized when the research was done.

Table 2

An overview of the awards of the Brazilian Innovation Contests in the Public Service

No.	Initiatives Awarded	Place	Contest	Year
1	Partnerships for the productive development of strategic SUS inputs (MS)	1 st	20 th	2016
2	Start-Up Brazil Program (MCTI)	2 nd		
3	Air Transport of Organs, Tissues and Transplant Teams (SAC-PR)	3 rd		
4	Highway Diagnosis Vehicle	1 st	19 th	2015
5	Program for Dispute Reduction and Judicial Defense Improvement of the Union	2 nd		
6	Follow-up System of Transfer Contracts (Siacor)	3 rd		
7	e-SIC – Electronic Service System of Citizen Information	1 st	18 th	2014
8	Enem – From the 2009 crisis to the new process monitoring and risk management model	2 nd		
9	Analytical Monitoring Strategy of the Brazil Without Extreme Poverty MDS Program	3 rd		
10	Network tele-assistance for remote regions: improving population access to Attention	1 st	17 th	2013
11	Virtual Visit and Judicial Videoconference Project	2 nd		
12	Eco University: An environmental plan for a social-environmentally correct university	3 rd		
13	e-Process: Digital Administrative Process	1 st	16 th	2012
14	Brazilian Public Software Portal	2 nd		
15	SPADE-PRO – Prospection System and Analysis of Exam Deviations (Objective Tests)	3 rd		
16	Family Health Strategy	1 st	15 th	2011
17	Agrifriend	2 nd		
18	Conditionality Management and Follow-up of Families in the Bolsa Família Welfare Program	3 rd		
19	Basic Education Development Index (Ideb)	1 st	14 th	2010
20	School attendance follow-up of children and teenagers under vulnerability	2 nd		
21	National Information System of Consumers Defense (Sindec)	3 rd		
22	Integrated System of Planning, Budget and Finances of the Ministry of Education – Simec	1 st	13 th	2009
23	Programed Service of the National Institute of Social Security	2 nd		
24	School Paths Program	3 rd		
25	Data collection by hand-held computers for continental-size census	1 st	12 th	2008
26	Citizen card	2 nd		
27	Our meadow: citizenship and sustainability in the Brazilian Amazon	3 rd		

Source: Enap (2019).

From Braun and Clarke (2006), the operationalization of the theme analysis was done in six stages, which are: 1) data familiarization, which included the reading of the documents and data used as the research corpus, besides the annotation of the initial ideas; 2) the generation of the initial codes, done through a systematic coding of data seen as explanatory of the innovation in the public administration (Table 1). Therefore, relevant data were coded/grouped, which enabled frequency operationalization, mean and standard deviation through the QSR NVivo® software, version 11, for data analysis and discussion, according to the next section; 3) topic search: the implementation of code grouping into prospective topics; 4) topic review: assessment of the topics/dimensions defined in stage 3 in comparison with the set of data raised in the documental analysis; 5) topic definition and designation: the generation of clear definitions and headings for each topic; and 6) report preparation: the implementation of analysis, data selection and the production of the analysis' academic report.

Stages 5 and 6 of the topic analysis allowed the interpretation and the establishment of tables that permitted the presentation of results by condensation, intuition and reflexive or theoretical analysis (Bardin, 2009), aiming at the objectives established by the research, whose validity and reliability lie on the description used to transfer the results and the use of external auditors specialized in the study topic and who revised the research (Mozzato & Grzybovski, 2011; Merriam, 1998). The systematization of the research results and its discussion will be presented in the next section.

Results analysis and discussion

Table 3 summarizes the dimensions mapped in the 27 ICPS initiatives selected. From the experiences analyzed, 23 comprehend the nation, two comprehend the states of Minas Gerais and Pará, and one other comprehends 17 states and 13 countries. These data show that innovation communication in the public management still takes place in the federal domain mostly, which, in turn, can contribute to spreading its results into subnational organizations and have a positive impact nationwide (Ferreira *et al.*, 2014).

Table 3
Total of the dimensions mapped in the 27 ICPS initiatives

Antecedents	Dimensions	Code Total
Environmental	Social participation	20

Organizational	Client/beneficiary and market knowledge	22
	Transforming leadership/Managers' pro-innovation attitudes	21
	Strategic planning	22
	Institutional communication	12
	Strategic information management/ Standardization of data and process	27
	Competence management/Diversified team profile/Personnel management/Teamwork for innovation	15
Innovation Characteristics	Strategic intention to innovate	25
	Technology strategic management	13
	Organizational structure's organicity	12
	Project management	16
	Innovation management	5
Individual	Commitment	17

Source: Designed by the authors.

Then, the analyses were described according to the characterization/classification by De Vries *et al.* (2016), and the innovation dimensions in the public administration were discussed in literature (Table 1).

5.1 Environmental antecedents

As for the environmental antecedents, the dimension concerning “Social Participation” found its scope in the research. This dimension explains the participation of beneficiaries and different social actors (stakeholders), so that public service has an innovative nature (Santos *et al.*, 2019).

According to Table 4, the dimension concerning “Social Participation” was found in 20 initiatives (74.1%) of the corpus analyzed and was linked, for example, to the support given by society for the establishment of the e-Process – Digital Administrative Process (16th initiative, number 1), to the popular participation and the social control practiced for the establishment of the Family Health Strategy (15th, number 1), the accomplishment of integrated social diagnosis that involved national and sub-national federal agents, besides several ministries and secretariats for the Management of Conditionalities and the Follow-up of Families in the Bolsa Família Welfare Program (15th, number 3), among other initiatives awarded by ICPS.

Table 4
Environmental Antecedents

Antecedents	Dimensions	Code Total	Total % of the Dimensions	Total % of the initiatives
Environmental	Social Participation	20	38.5%	74.1%

Source: Designed by the authors.

Another observation made was that the dimension concerning “Social Participation” was mentioned at first only in the initiative concerning School Path Program (13th ICPS and the 3rd initiative awarded in 2009). It was found scattered in practically all the initiatives only from the year 2011. This finding shows the innovation maturation in the public administration overtime and a more conservative change of culture that is turned to the depiction of social participation and the decentralization of the establishment of public policies (Farah, 2006).

5.2 Organizational antecedents

Concerning the Organizational antecedents, the following dimensions stood out: “Strategic information management/ Standardization of data and process”, “Client/beneficiary and market knowledge”, “Strategic Planning” and “Transforming leadership/Managers’ pro-innovation attitudes”, according to Table 5.

Table 5
Organizational Antecedents

Antecedents	Dimensions	Code Total	Total % of the Dimensions	Total % of the initiatives	Mean	SD
Organizational	Client/beneficiary and market knowledge	22	42.3%	81.5%	19.3	5.41
	Transforming leadership/Managers’ pro-innovation attitudes	21	18.6%	77.8%		
	Strategic planning	22	19.5%	81.5%		
	Institutional communication	12	10.6%	44.4%		
	Strategic information management/ Standardization of data and process	27	23.9%	100.0%		
	Competence management/Diversified team profile/Personnel management/Teamwork for innovation	15	13.3%	55.6%		
	Grand Total	119				

Source: Designed by the authors.

The dimension concerning “Strategic information management/Standardization of data and process” appears in every initiative, which expresses its level of importance. This dimension comprehends an item that is seen as essential in order to lead the organization to innovate in products or services (Hughes *et al.*, 2011; Rego *et al.*, 2009; Armbrrecht *et al.*,

2001). In the word tree of the word “standardization”, for example, the NVivo® software, which was used for data processing, showed a series of concepts it relates to (Figure 1), such as “renovation collaboration, process of specification and standardization of...”, which demonstrates the initiatives’ understanding.

Figure 1. “Standardization” word tree.

Source: Designed by the authors with NVivo® 11 data.

Concerning initiative number 26, for example, the Caixa Econômica Federal bank standardized, improved and incorporated data, information and service and payment processes of social benefits through the Citizen Card.

Another important factor was “Client/beneficiary and market knowledge”, for it deals with the organizational skill to detect the events, the needs, the expectations, the meaningful changes and the beneficiary and market trends in order to anticipate the collective needs of society (Valladares *et al.*, 2014), and it was the second most important factor, present in 22 initiatives (81.5%), covering 42.3% of the total of the dimensions, as shown in Table 5.

According to Valladares *et al.* (2014), beneficiary and market knowledge is the most important factor in the process of concept design of a new product or service, for it shows the skill to identify the society’s collective needs, expectations, changes and trends.

This dimension can be observed, for example, in the initiative number 1, when the Unified Health System (UHS) identified the need to develop and innovate the Brazilian pharmaceutical industrial park and increase the population’s access to the pharmaceutical products produced in the country. It can also be seen in the initiative number 12, since the Ministry of Education (ME) identified the need to follow up on the elementary school students’ quality of education and learning in Brazil; in number 17, when the Federal University of Lavras, state of Minas Gerais, admitted the importance of having environmental management in the institution by better disposing of their solid waste and garbage produced, not polluting nature and making better use of water resources; and in number 23, when the

Brazilian Social Security Institute (BSSI) noticed they needed to improve the service in their branches by reducing their waiting line time and expanding remote service to the population.

With the same number of codes as in the previous dimension (22), there is “Strategic Planning”, which refers to the adoption of planning and management practices that allow the organizational innovation initiatives to survive over time. It deals with planning and control system relaxation of financial resources to promote unexpected opportunities (Rego *et al.*, 2009; Kanter, 2006; Armbrrecht *et al.*, 2001). This dimension was found in 81.5% of the initiatives, as was the case for the 17th initiative, in the second place – Virtual Visit Project and Judicial Videoconference. In this dimension, project planning “[...] started to have a relatively major effect on reducing public expenses” (Brasil, 2013, pp. 3-4). The results of this dimension confirm statements by Costa *et al.* (2015), who said that it is up to the State to carry out a consistent plan to overcome obstacles and develop innovation facilitators/capabilities.

According to Table 5, a fourth relevant index was “Transforming leadership/Managers’ pro-innovation attitudes”, which deals with the impression that public managers have concerning their role as an agent of changes. This impression positively affects the adoption of innovations, since the managers and leaders’ support is crucial for innovation success. Public managers contribute to the development of an institutional environment that is favorable to innovation (Valladares *et al.*, 2014; Hughes *et al.*, 2011). This dimension was found in 77.8% of the initiatives, which confirms studies by Panizzon *et al.* (2013), Moussa, McMurray and Muenjohn (2018), Torvatn and Boer (2017), Yeow and Edler (2012), Borins (2001) and Valladares *et al.* (2014).

The dimension concerning “Transforming leadership/Managers’ pro-innovation attitudes”, for example, was found in the initiative concerning Network tele-assistance for remote regions: improving population access to Special Health Attention (17th, number 1), when health-care teachers were assigned as researchers or tele-consultants to spread the best practices in the area.

Less importantly, there are the dimensions concerning “Institutional communication” (12 codes) and “Competence management/Diversified team profile/Personnel management/Teamwork for innovation” (15 codes). They mean that, in organizational structures, there are still obstacles to communication and to inter-functional knowledge flow and to innovation, which has an impact over social effectiveness in public administration (Barnett *et al.*, 2011; Rego *et al.*, 2009), and that competence and knowledge management for

innovation is still a challenge for the Brazilian public administration before the early markers that lead the topic in public administration.

5.3 Innovation characteristics

As for Innovation Characteristics, the dimension concerning “Strategic intention to innovate” stood out the most and was present in 25 initiatives (92.6%), a quantitative that is higher than the mean (14.2) and the standard deviation (7.26), according to Table 6, which validates its level of importance among the remaining dimensions of this antecedent (Field, 2009).

Table 6

Innovation characteristic antecedents

Antecedents	Dimensions	Code Total	Total % of the Dimensions	Total % of the initiatives	Mean	SD
Innovation characteristics	Strategic intention to innovate	25	29.4%	92.6%	14.2	7.26
	Technology strategic management	13	15.3%	48.1%		
	Organizational structure's organicity	12	14.1%	44.4%		
	Project management	16	18.8%	59.3%		
	Innovation management	5	5.9%	18.5%		
	Grand Total	71				

Source: Designed by the authors.

Valladares *et al.* (2014) mention that the strategic intention to innovate is one of the seven determining factors of the capability to innovate and which result in the innovation performance in the companies' products and processes. The dimension concerning “Strategic intention to innovate” was seen, for example, in initiative number 3, when, upon identifying the problems concerning the free air transportation of organs, tissues and the medical team for transplants all over the country, the Ministry of Health and the Civil Aviation Secretariat of the Presidency of the Republic made a partnership with private airline companies, established judicial security for all those involved and organized a whole logistic, administrative and operational infrastructure, and, as a consequence, the access to domestic flights in the main airline companies increased to 98.6% of the air network, which increased the number of flights used to transport organs, tissues and medical teams from 1,907 (2011) to 6,064 (2013), besides saving almost R\$ 800,000.00 (2014) in the public administration.

Another dimension that stood out was the one concerning “Project management” (16 codes), which deals with planning, resource provision, innovation process execution and control. It encompasses a careful evaluation of projects, analysis and planning with the objective to mainly get the comprehension, the commitment and the support, both corporate and personal, of those who will be involved in the project (Valladares *et al.*, 2014). This dimension is present in 16 initiatives (59.3%) of the corpus and was linked, for example, to project priority to channel human and financial resources for the start, the effective development and the introduction of the system concerning e-Process – Digital Administrative Process (16th, number 1), the development of driving actions in order to structure management and control tools with the objective to define quality parameters for the Brazilian Public Software Portal (16th, number 2), and the mixing of entities to finance the Family Health Strategy program (15th, number 1).

The remaining dimensions, “Technology strategy management” (13 codes), “Organizational structure’s organicity” (12 codes) and “Innovation management” (5 codes) presented a lower level of importance in relation to the others. The two first showed that the Brazilian public administration needs to improve its capability to manage the process of designing and developing technologies to enable innovation. Moreover, the sector needs to strengthen the change from Taylorist-Fordist organizations to organic organizations, for they enable a swifter response to changes in the external environment (Valladares *et al.* (2014).

The dimension concerning “Innovation management”, on the other hand, which deals with the public administration capability to plan, engage professionals and manage risks – innovation governance (Hughes *et al.*, 2011), showed that it is still seen as a paradigm for the sector.

5.4 Individual antecedents

As for the individual antecedents, the dimension concerning “Commitment” stood out the most, being present in 20 initiatives (74.1%), according to Table 7.

Table 7
Individual Antecedents

Antecedents	Dimensions	Code Total	Total % of the Dimensions	Total % of the initiatives
Individual	Commitment	20	85.0%	74.1%

Source: Designed by the authors.

As a critical success factor, as it can be seen in the 20th initiative, number 3, for example, commitment seems to be associated to the involvement of the employees at the Ministry of Health and the Civil Aviation Secretariat of the Presidency of the Republic, employees of airline companies of civil aviation, medical and nurse teams in the hospitals in charge of the transplant of organs and tissues, and of enabling and expanding the free access to air transportation of organs, tissues and teams for transplants (Brasil, 2016). The initiative mentioned, for example, came from the involvement of social actors with the support of public service, as advocated by Santos *et al.* (2019). This dimension was also identified in the 12th ICPS, award number 3, concerning the “servants’ involvement with the Program establishment, which integrates the commitment of agro-extractivist riverside communities, despite work hours adversities” (Brasil, 2008, p. 7).

Conclusions

Through results and their analysis, it was possible to see that innovation in the initiatives awarded by ICPS takes place, mostly, in the federal domain to the detriment of subnational sectors. From the theme analysis of the experiences awarded between 2008 and 2016, the main dimensions that contributed to innovation were: a) Social participation (Environmental antecedents), which confirms studies by Santos *et al.* (2019); Beneficiary and market knowledge and Social Participation, which confirms studies by Santos *et al.* (2019) and Valladares *et al.* (2014); Strategic information management/Data and process standardization, which confirms the findings by Hughes *et al.* (2011), Rego *et al.* (2009) and Armbrrecht *et al.* (2001); Strategic planning (Rego *et al.*, 2009; Kanter, 2006; Armbrrecht *et al.*, 2001) and Transforming leadership/Managers’ pro-innovation attitudes, confirming studies by Damanpour and Schneider (2008), Valladares *et al.* (2014), Hughes *et al.* (2011), Peng, Schroeder and Shah (2008), Vigoda-Gadot *et al.* (2005) and Borins (2002; 2001) (Organizational antecedents); c) Strategic intention to innovate (Valladares *et al.*, 2014; Kanter, 2006) and Project management (Valladares *et al.*, 2014) (Innovation characteristics); and d) Commitment (Individual antecedent), confirming the findings by Santos *et al.* (2019).

Based on these results, it is possible to conclude the dimensions inter-correlate, for the public organ managers have valued social participation and beneficiary and market knowledge (their needs, expectations, changes and trends), create or develop the strategic intention to innovate, standardize data and processes, improve the commitment of all those involved, and establish the strategic management of information and communication for

society. Moreover, it is possible to understand that the gaps in this research were identified and they show the need for integration in the matters that shape up the characteristic analysis of innovation in the public administration and its antecedent correlation. The scarce reference to the dimension concerning “Innovation management” should be mentioned since it comprehends an important element of analysis that considers the academic-scientific path of innovation theory.

Another finding in the research is found in the dimension concerning “Social Participation”, for it showed that public administration is under transformation, from a more conservative type of culture to one turned to representing and extending social participation, one that points to open innovation aspects with characteristics of exploration and Network Governance paradigm, Digital Era Governance, Open Architecture or Citizen-Centered Governance (Hartley, Sørensen & Torfing, 2013; Mergel & Desouza, 2013; Fishenden & Thompson, 2013; Wynen, Verhoest, Ongaro, Van Thiel & in cooperation with the COBRA network, 2014).

The managerial contribution of this research lies in the identification of the main antecedent dimensions, such as the good practices that contribute to innovation in the public administration, addressed by ICPS, since they can lead to plans, programs and innovation policies in the public institutions that are interested in investing the topic nationwide, especially in sub-national levels. Mapping innovation dimensions in the public administration might also promote more efficacy, efficiency, the development of partnerships with other areas, citizen involvement and, consequently, more beneficiaries’ satisfaction with public service (De Vries *et al.*, 2016). The mapped dimensions might also favor the development of an innovation culture aimed at society satisfaction with public services.

The research limitations concern data triangulation. Moreover, new dimensions could be investigated, such as the regulatory aspects by Santos *et al.* (2019), since this dimension needs an innovation process in the Brazilian public administration.

As a suggestion for future studies, comparative researches should be done through multi-method researches and data triangulation between the Brazilian award and global awards, and empiric studies in order to check the status of the innovation dimensions found in this study in practice within the public organizations that are reference of innovation in the country so as to contribute to the growth of a conceptual structure that may lead the studies on innovation in the public context.

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