Is it possible to find managerial innovation and people management practices focused on innovation in federal universities?

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Abstract

This article aimed to investigate managerial innovation and people management practices focused on innovation at two federal universities. The study was quantitative and descriptive and included field research. The main results showed that the people management practices focused on innovation with more prominence were delegation and training. In addition, 55.7% of respondents perceived managerial innovation in the researched context, notably in the area of people management. Contributions to scientific knowledge were evidenced, in the investigation of managerial innovation and practices aimed at innovation in the public sector, a theme that is still little explored in the literature; for people management, when investigating practices in the area; and for the practice of managers, when investigating such phenomena in different areas and functional categories.

Keywords: Managerial innovation. People management practices focused on innovation. Public sector.

É possível encontrar inovação gerencial e práticas de gestão de pessoas voltadas à inovação em universidades federais?

Resumo

Este artigo objetiva investigar a inovação gerencial e as práticas de gestão de pessoas voltadas à inovação em 2 universidades federais. Trata-se de uma pesquisa quantitativa, descritiva e de campo. Os principais resultados apontam que as práticas de gestão de pessoas voltadas à inovação com mais destaque foram "delegação" e "treinamento". Ademais, 55,7% dos respondentes perceberam a inovação gerencial no contexto pesquisado, notadamente na área de gestão de pessoas. Evidenciaram-se contribuições para o conhecimento científico, ao investigar a inovação gerencial e de práticas voltadas à inovação no setor público, tema ainda pouco explorado na literatura; para a gestão de pessoas, ao investigar práticas da área; e para a prática de gestores, ao investigar tais fenômenos em áreas e categorias funcionais distintas.

Palavras-chave: Inovação gerencial. Práticas de gestão de pessoas voltadas à inovação. Setor público.

¿Es posible encontrar prácticas de innovación gerencial y gestión de personas enfocadas a la innovación en las universidades federales?

Resumen

Este artículo tuvo como objetivo investigar la innovación gerencial y las prácticas de gestión de personas centradas en la innovación en dos universidades federales. Fue una investigación cuantitativa, descriptiva y de campo. Los principales resultados mostraron que las prácticas de gestión de personas enfocadas a la innovación con mayor protagonismo fueron delegación y formación. Además, el 55,7% de los encuestados percibió la innovación gerencial en el contexto investigado, especialmente en el área de gestión de personas. Los aportes al conocimiento científico se evidenciaron en la investigación de la innovación y prácticas gerenciales orientadas a la innovación en el sector público, tema que aún está poco explorado en la literatura; para la gestión de personas, al investigar prácticas del área; y para la práctica de los gestores, al investigar tales fenómenos en diferentes áreas y categorías funcionales.

Palabras clave: Innovación gerencial. Prácticas de gestión de personas enfocadas a la innovación. Sector público.

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INTRODUCTION

Issues related to management practices are present in the organizational scenario and are related to the search for competitiveness, efficiency, efficacy, and effectiveness of actions, practices, and processes in organizations. Such practices can be understood as a set of characteristics and actions performed in the context of the organization, and which are associated with several aspects, such as people management (PM), leadership styles, and organizational structure. Managerial innovation (MI), equally relevant in this scenario, involves technologies of a social character in the organizational context and are connected to dimensions such as managerial activities and practices, management processes, and organizational structures (Lopes, 2017).

Analyzing the literature in this field, few studies deal with MI and PM practices aimed at innovation in the Brazilian scenario, especially in public organizations (Pinho, M. R. R. Silva & Evangelista, 2020; M. R. R. Silva, 2019). It is also noteworthy that many of the studies favor the manager's view of such processes instead of other workers who do not hold management positions.

Another noteworthy gap is the lack of systematization of research models for such constructs in public and private organizations of different segments and configurations. Important initiatives in the Brazilian scenario can be identified, for example, by Janissek, Aguiar, Mello, Ferreira and Campos (2017), who analyze innovative management practices, and by Lopes (2017), who investigates MI and PM practices aimed at innovation.

PM practices involve recruitment, selection, training, performance management, and rewards, with the challenge of playing a strategic role in organizations, which implies the involvement of the area in change and innovation processes (Armstrong, 2014; Dessler, 2002; Silvestre & Araújo, 2013).

Becker and Huselid (2006) point out that MI occurs in an organizational context with a certain complexity and that it concerns both organizational strategy and PM practices. Those practices, according to the authors, can also favor managerial innovations.

In the context of public Higher Education Institutions (HEIs), PM practices focused on innovation and MI face challenges in their full implementation due to cultural issues – traditionalism, excessive bureaucracy, paternalism and hierarchization – and normative – the agency's regulations – of the sector (Ribeiro, 2017).

In the context of the HEIs, some studies deal with certain management and MI practices focused on innovation, but without such a clear systematization, and often without an in-depth discussion of the innovation component in such contexts (Burigo & Tosta, 2017; Genari, C. V. D. Ibrahim & G. F. Ibrahim, 2017; Leal, A. C. F. Silva & Dalmau, 2017; Reis, Freitas, Martins & Oliveira, 2015; Tomazzoni, Costa, Santos, Espich & Posser, 2017).

In the field of PM in the public sector, the need to invest in more research related to practices of the area is also evidenced, as well as the need to improve measures of investigation of such practices (Demo, 2012; Demo, Fogaça & Costa, 2018) and to implement a model of strategic people management in the public sector, given its specificities (Bergue, 2020; Carmo, Assis, Martins, Saldanha & Gomes, 2018).

Still considering the context of public HEIs, there is a need in the literature to investigate and analyze whether the management practices adopted in such contexts are adequate and meet organizational objectives. Characteristics such as excess of normalization, functional rigidity, difficulty to be affected by external pressures and resistance to change can limit innovative aspects in practices followed in such environments (Ribeiro, 2017).

Considering the aforementioned discussions and gaps in the literature, this paper aims to investigate MI and PM practices focused on innovation in 2 federal universities. It also considers 3 occupational categories active in public HEIs: technical servers, managers, and outsourced workers.

MANAGEMENT INNOVATION AND PEOPLE MANAGEMENT PRACTICES FOCUSED ON INNOVATION

In the field of innovation, there is a multiplicity of concepts and a variety of approaches to a phenomenon. The Oslo Manual defines innovation as a new product or an improved process (or a combination) that differs significantly from previous products and processes, and such product or process has been made available to potential users or put into use (Organization for Economic Co-operation and Development [OECD], 2018).

Studies on innovation in different types and segments of organizations are evident and can occur in any environment, but the possibilities of development are subject to several variables in the organizational context (Fernandes et al., 2016).

Queiroz, Albuquerque and Malik (2013) and Rodrigues and Veloso (2013) highlight that there seems to be a great relationship between PM and innovation. Queiroz et al. (2013) present a set of characteristics that exist in "innovative companies" and refer to processes related to management, such as decentralization, reduction of the number of hierarchical levels, reduction of the role of corporate staff, internal communication systems, and use of groups ad hoc. Pinho and Janissek (2019), more recently, point out some research results about managerial cognitions, highlighting an innovative organization scheme built by managers inserted in a context considered to be very innovative and attesting to characteristics such as strategic thinking, emphasis on people, internal processes and leadership.

In addition to those discussions, it is essential to consider that innovation can be thought of mainly based on what is new for a given environment, organization, or context. Thus, an action can be a pioneer in an environment and already be fully consolidated in a different context (Queiroz et al., 2013; Spink, 2003).

When MI is specifically discussed, it is possible to highlight heterogeneity and conceptual imprecision. Ven, Angle and Poole (2000) highlight that the innovation process, from a managerial perspective, consists of the coordination and engagement of people to develop new ideas, to achieve certain results. The concept of MI should not be limited, therefore, to technological innovation, but related to processes and activities that have to do with organization and management. Despite this differentiation, it is possible to have an association between technological and managerial innovations with important consequences on organizational performance (Damanpour, 2014).

Other studies follow a similar path. Birkinshaw, Hamel and Mol (2008) point out when defining MI as the "implementation of a management practice, process, structure or technique that is new in the state of the art and intended to foment organizational goals". Volberda, Bosch and Mihalache (2014) point to the systematization of distinctive features of management innovation, indicating its potential to increase performance and organizational competitiveness. Cerne, Kase and Skerlavaj (2016), when investigating the literature on non-technological innovations, present as one of the conclusions the need to further study innovation in management.

More recently, Lopes points out that the referred concept can be understood as "the introduction of something new for the firm in the following dimensions: activities and management practices, management processes and organizational structures" (Lopes, 2017, p. 29). Management activities and practices correspond to the nature of the activities and how they are carried out, in particular, by the managers of an organization. Management processes, in turn, concern routines, processes, and procedures related to the activities developed by managers, such as strategic planning, internal communication, and knowledge management. Organizational structures can be understood as the organization and the distribution of hierarchical levels, command lines, and accountability.

Similarly to the "innovation" and "managerial innovation", there is no consensus on the definition of "PM practices focused on innovation", thus being understood as actions supported by management models, relating to several organizational aspects, such as strategic planning and decision-making, and having the potential to favor innovation processes in the organizational context (Becker & Huselid, 2006). Despite that inaccuracy, important initiatives are identified in the literature, such as those proposed by Janissek et al. (2017) and Lopes (2017) in the Brazilian scenario.

Janissek et al. (2017) propose certain innovative management practices and divide them into 3 domains: people management, organizational management, and process modernization. Lopes (2017), in turn, based on Laursen and Foss (2014), points out 5 groups of PM practices focused on innovation mentioned next. "Delegation" can be understood based on aspects such as promoting autonomy and decentralizing decisions. "Recruitment and retention" points to aspects related to both recruitment

and selection and the retention mechanisms of workers. "Incentives" refer to individual and collective rewards associated with performance. "Training" refers to the different types and formats of formal, internal, and external training and qualification. Finally, "Communication" concerns information flows at different levels and directions, as well as information sharing. The model adopted by Lopes (2017, 2020), in addition to considering PM practices for innovation, addresses the adoption of MI.

In the context of the public sector, MI takes on specific shapes. Castro, Isidro-filho, Menelau and Fernandes (2017) point to facilitators in innovation in public organizations, such as teamwork, people and skills development, as well as barriers – for example, resistance, conflict of interest, and limitations of human resources. Isidro (2018) presents the Integrated Model of Innovative Public Management for Brazil (Gespublin), a multilevel model with 4 dimensions: innovation environment – contextual or organizational variables –, innovation capabilities – organizational competencies to mobilize resources in favor of innovation –, innovation activities – innovation process cycle – and innovation results – consequences of innovation. Montezano and Isidro-Filho (2020) present a proposal for a multilevel model of competencies for innovative public management, pointing out the public sector, organizational, team, and individual competencies, resuming the model of Isidro (2018).

The condition of innovation in the Brazilian public sector shows characteristics such as limited and little-explored scientific production, besides appropriation of market practices (Brandão & Bruno-Faria, 2013). Innovation in public organizations is also related to the evolution and transformation of management practices in this field. Despite all the challenges involved, it is possible to identify useful aspects for the public organization that adopts innovative practices such as cost reduction, more agility in carrying out activities, and greater satisfaction of the target users of the services (Matos & Nunes, 2016).

Considering this scenario, in 1996, the Innovation Competition in Federal Public Management was launched by the National School of Public Administration (Enap), which represented an important initiative for mapping practices of an innovative nature in several organizations. Those practices were analyzed by Janissek et al. (2017), who categorized them into organizational management, people management, and process management, identifying practices such as competency management, performance evaluation, continuous learning, systems computerization, process redesign, and strategic planning.

Within the broad spectrum of public organizations, there are HEIs that play a relevant role in society and are influenced by political-institutional, economic, and cultural factors, in addition to presenting management characteristics such as bureaucratic compulsion, excess of normalization, corporatism, functional rigidity, difficulty to be affected by external pressures and resistance to change. Such aspects often limit the potential for innovation in these institutions, favoring the preservation of traditional characteristics related to the bureaucratic management model. Ribeiro (2017) mentions that universities and other HEIs distance themselves from the structure and dynamics of a traditional patterns company and that its objectives cannot always be accurately translated and/or delimited. In addition, the author also points out a constant challenge faced mainly by public universities: the continuous impasse between "adopting newness and conserving the old" (Ribeiro, 2017, p. 365). Such institutions have a certain level of complexity, often with hybrid characteristics in management models, combining traditional and other aspects of a more modern touch (Seeber et al., 2014; Vieira, Bellen & Fialho, 2006). There is also complexity in the performance by managers at HEIs, which requires different skills, such as cognitive, functional, behavioral, and political skills (Pereira & A. L. C. Silva, 2011).

Concerning public institutions of higher education, both MI and PM practices focused on innovation show certain characteristics that are related to a scenario of the evolution of actions in the public sector. As for MI in public HEIs, there are specific nuances of its implementation in those places, for they are associated with issues related to the management and role of HEIs concerning educational activity, and there is a need for improvement in the development of MI projects (Kalimullin, Youngblood & Khodyreva, 2016).

Some international studies demonstrate the relationships of MI in public HEIs with knowledge management, organizational learning, and quality management practices (Aminbeidokhtia, Jamshidia & Hoseinib, 2016; Ngoc-Tan & Gregar, 2018; Sciarelli, Gheith & Tani, 2020).

When analyzing the literature on PM practices in public institutions of higher education, some studies that do not address these practices from a perspective focused on innovation are evidenced, which indicates gaps in the area. Such studies, in the national scenario, address traditional PM practices, as well as others, signal the aforementioned gaps (Burigo & Tosta, 2017; Genari et al., 2017; Leal et al., 2017; Montezano, N. B. Silva, Marques & Isidro- Filho, 2019; Reis et al., 2015; Tomazzoni et al., 2017).

Other studies also address PM practices with effects on different relevant constructs – organizational commitment, productivity, well-being, and knowledge management – in public institutions of higher education in several countries (Aboramadan, Albashiti, Alharazin & Dahleez, 2020; Franco-Santos & Doherty, 2017; Govender, Perumal & Perumal, 2018; Nuryanto & Pambukob, 2019; Szelagowska-Rudzka, 2018).

Despite preserving traditional and bureaucratic characteristics, there are signs, in the literature, of adopting managerial practices in public higher education institutions, which is evidenced by studies that address various PM actions in such institutions (Burigo & Tosta, 2017; Genari et al., 2017; Leal et al., 2017; Reis et al., 2015; Tomazzoni et al., 2017).

Among the addressed PM practices focused on innovation (Lopes, 2017), those of delegation, incentives, and training are more prominent in the public context, while those of communication and incentives may be less prominent, considering rigid aspects related to legislation – as in recruitment and retention – and traditional organizational aspects in communication flows – in the case of communication. Based on those reflections, the following hypothesis was formulated: *Workers from different occupational categories perceive managerial innovation, especially in the area of people management, and the most prominent practices are delegation, incentives, and training.*

METHOD

This is quantitative, descriptive, and field research. The analysis area consists of 2 federal universities located in 2 states of the Northeast, chosen by the following criteria: geographic accessibility of the research team, and performance of servers and outsourced staff in the administrative staff.

As for the institutional profile, the first university, with the most expressive number of respondents, was created in the 1950s, has operations throughout the territorial region of the state in which it is located, and has 7 campuses. The second was created in the 1960s, it also operates throughout the state where it is located and has 9 *campuses*. Both have a similar organizational structure in terms of pro-rectories and other administrative units.

As for the sample, there were 371 respondents from one of the universities and 99 from the other, totaling 470, divided into 3 occupational categories: technical servers, managers, and outsourced, working in administrative areas. The sample obtained represented about 8.5% of civil servants (technicians and managers) and 34.6% of outsourced workers from the 2 universities. The disparity in representativeness was expected, considering the expressive number of servers, in comparison with outsourced ones. 10 campuses from the 2 universities were represented. Given the purpose of this article, the number of participants is relatively sufficient for an initial stage of data collection. Considering the analyzes done, the one with the greatest demand concerning the sample size is the exploratory factorial. There is no consensus in the literature about the minimum sample size for conducting an exploratory factor examination. In general, a proportion of 10 respondents per item of the scale is suggested, as well as the presence of 100 respondents or sample sizes related to factor loads (Beavers et al., 2013; Damásio, 2012; Hair, Black, Babin, Anderson & Tatham, 2009).

In any case, the analyzes described here are in line with such indications, considering that there is, in the present research, a greater proportion of participants per item and factor. Furthermore, recognizing the complexity of the field here studied and the implications for obtaining a representative sample for these institutions, it is believed that the total number of respondents is sufficient to achieve the objective.

Outsourced workers were included to explore the perception of different actors in the same organizational scenario. The positions held by the respondents and the stocking sectors followed a heterogeneous distribution, having in its composition several sectors of the universities.

The study protected the confidentiality of the respondents, having been submitted to the Research Ethics Committee of the Federal University of Ceará (CEP-UFC), which issued a favorable opinion number 24747119.4.0000.5954.

The research instrument was composed of: questions for the investigation of sociodemographic and occupational data; the scale of PM practices focused on innovation, proposed by Lopes (2017), based on Laursen and Foss (2011); and issues related to MI adoption and adoption complexity, based on Lopes' proposal (2017), with adaptations. The scales were of the 6-point *Likert* type, ranging from "totally disagree" to "totally agree". Adaptations were made concerning each occupational

category investigated and to public organizations, such as names of areas in which the MI is perceived – adapting them to the reality of a public HEI – and exclusion of items referring to product and process innovation, more related to the private sphere.

Thus, outsourced workers did not answer questions related to recruitment and retention practices and tangible and intangible incentives, because the aspects addressed in such practices refer to the hiring company, and not to the university where they work.

The treatment of sociodemographic and occupational data was carried out through descriptive and comparative analysis of statistical information. As for the scale, Cronbach's alpha was used. For the grouping of items on the same scale, exploratory factor analysis was performed, observing values of the Kaiser-Meyer-Olkin (KMO) measure, Bartlett's sphericity test and the variance explained by the factor. Finally, for the analysis of the perception of the constructs, descriptive and comparative tests of the obtained statistical results were made, in addition to the similarity exam, using the Iramuteq software.

RESULTS

This section is divided into sample profile, data reliability, the grouping of items through exploratory factor analysis of the PM practices scale aimed at innovation, and results related to the perception of PM practices aimed at innovation and MI.

Sample Profile

Regarding the sample, 470 workers from 2 federal public universities participated, in the average age of 39 years old, most of them female (58.03%), single (44.30%) or married (41.50%), with children (52.60%), with 2 dependents on average, with an income between 2 thousand and 5 thousand reais (34%) or between 5 thousand and 8 thousand reais (30.60%). Most work 40 hours a week (70.20%), and the average length of service is 9 years and 6 months in the organization. Of the 470 respondents, there were 301 technical servers, 65 managers, and 104 outsourced workers.

Data Reliability

To verify the homogeneity of the instrument, a corrected item-total correlation was performed. The amplitude of the correlation values varies from 0.45 to 0.70, satisfying the cutoff point established by the literature ([ir <0.30]) (Pasquali, 2009). Given these results, it was possible to conclude that the items on the PM practices scale aimed at innovation are homogeneous, that is, they talk about the same construct. In addition, the results related to Cronbach's alpha values were verified, which can be seen in Table 1, without the inclusion of the "communication" practice, since the results from the factor analysis are described in the next section.

Table 1
Reliability of the covered dimensions

Construct	Dimensions	Cronbach's alpha
PM practices aimed at innovation	Delegation	0,87
	Recruitment and retention	0,78
	Tangible and intangible incentives	0,79
	Training	0,88

Source: Elaborated based on research data.

The adequacy of the data matrix to perform a factor analysis was also verified, which was considered adequate ([χ^2 (190) = 3,883.05; p <0.001; KMO = 0.91]) (Pasquali, 2009).

Grouping of Items through Exploratory Factor Analysis

In light of the previous results, the analyzes continued. To understand the factorial structure of the scale, an exploratory factorial study was carried out, using the principal component extraction method, without rotation and with a fixed number of factors. To establish the number of factors, the Kaiser, Cattell (*scree-plot*), and Horn (parallel analysis) criteria were used. According to the first, 4 factors are identified, corroborated by the last, since the fifth value of this criterion (1.18) is higher than the fifth of the Kaiser criterion (0.81).

Considering the previous results, exploratory factor analysis was carried out, using the principal component method, with oblique rotation, this time fixing the number of factors at 4, as indicated by the criteria described above, taking into account |0.40| as a minimum factor load to belong to a factor. In Table 2, these results can be seen.

Table 2
Factors of the scale of PM practices aimed at innovation

Dimension	Items		Factors		
		1	2	3	4
Delegation	1. In my organization, employees are allowed to make decisions.	**-0.86**	0.02	-0.04	-0.05
	2. Employees are authorized to suggest improvements in their activities.	**-0.79**	0.08	-0.15	0.19
	3. Employees' opinions are valued by the organization.	**-0.82**	0.09	0.00	0.07
	4. Employees are involved in teams with a high degree of autonomy.	**-0.88**	0.02	0.08	-0.13
Recruitment and retention	1. Hiring is done in with criteria.	-0.07	**0.80**	-0.17	0.11
	2. Employees are selected based on the knowledge and skills necessary to carry out the activities.	0.08	**0.85**	0.05	0.04
	3. Employees have clear career paths within the organization.	-0.13	**0.70**	0.09	-0.02
	4. The organization prioritizes the internal promotion of current employees.	-0.24	**0.41**	0.34	-0.05
Tangible and intangible incentives	1. There is a clear link between performance and reward.	-0.27	0.00	**0.64**	0.00
	2. Remuneration is associated with sharing knowledge and/or suggesting improvements.	0.10	-0.01	**0.87**	0.00
	3. Remuneration is associated with improving skills and/or updating knowledge.	0.16	0.22	**0.73**	-0.04
	4. There is an exchange of information between employees from different areas.	-0.38	-0.04	**0.42**	0.17
	5. Employees have the possibility to work in other areas through job rotation.	-0.18	-0.14	**0.62**	0.18
Training	1. Employees participate in formal training.	-0.04	-0.08	-0.05	**0.88**
	2. Training policies and programs are comprehensive.	-0.04	0.08	-0.01	**0.80**
	3. There is training for new people hired.	0.09	0.03	-0.02	**0.88**
	4. There are trainings aimed at solving problem.	0.01	0.16	0.08	**0.73**

Principal component method, with oblique rotation.

Source: Elaborated based on research data.

Based on the factor analysis, it is observed that factor 1 includes items from the "delegation" practice, factor 2 includes items from the "recruitment and retention" practice, and factor 4 includes items from the "training" practice. As for factor 3, the only one with 5 items, grouped objects of 2 factors present in the original version of the scale: incentives and communication. The items from the "incentives" factor were: there is a clear link between performance and reward, remuneration is associated with knowledge sharing and/or the suggestion of improvements, and remuneration is associated with skill improvement and/or updating knowledge.

As for the items originating from the "communication" factor: there is an exchange of information between employees from different areas and employees can work in other areas through job rotation. These items, although originally referring to communication processes, also involve the possibility of acquiring skills, through teamwork and exchanging positions in the work context, configuring themselves as intangible rewards/incentives. Considering that the new factor included aspects related to tangible rewards – in this case, remuneration – and intangible – in this case, the possibility of job rotation and exchange of knowledge with co-workers –, it was agreed to call it "tangible and intangible incentives".

Despite the divergence from the original structure, the scale presented acceptable psychometric properties for the research context. The exclusion of the "communication" factor in the context of this research can be explained by some aspects. The first is that the original scale was previously validated in a different context, composed mostly of private organizations. The second concerns the specific context of this research, public HEIs, a field that has challenging and limiting aspects in communication processes, such as structural and hierarchical issues that are still close to bureaucratic and formal aspects, a fact corroborated by Tomazzoni et al. (2017), who, in a study carried out at federal universities, showed the need for training in communication for civil servants in probationary stages, and by Genari et al. (2017), who identified communication deficiencies in the process of socializing new employees.

Perception of People Management Practices for Innovation and Managerial Innovation

After investigating the psychometric aspects of the scale used, the level of perception of PM practices aimed at innovation and MI was verified. Table 3 shows the scores, which range from 1 to 5, related to the perception of each practice, considering the total sample and the 3 occupational categories.

Table 3
PM practices aimed at innovation

	Total Sample (n = 470)	Technician (n = 301)	Manager (n = 65)	Outsorced (n = 104)
Dimension	Média (DP)	Média (DP)	Média (DP)	Média (DP)
Delegation	3.23 (1.07)	3.19 (1.04)	3.65 (1.07)	3.11 (1.09)
Tangible and intangible incentives	2.36 (0.91)	2.31 (0.89)	2.56 (0.98)	–
Training	3.22 (1.13)	3.17 (1.06)	3.55 (1.06)	3.16 (1.34)
Recruitment and retention	3.14 (1.03)	3.07 (1.00)	3.44 (1.09)	–

Source: Elaborated based on research data.

With the data presented in Table 3, it is evident, for the total sample of the research, that the most prominent practice is delegation, while the least prominent is related to tangible and intangible incentives. This result was the same for technical servers and managers. As for outsourced workers, who answered only questions related to delegation and training practices, the most prominent was the latter. In addition, "training" occupied the second position of prominence for technical servants and managers.

Regarding the perception of MI, the results of the total sample and occupational categories are shown in Table 4.

Table 4
Adoption of IM: total sample and occupational categories

Variable	Levels	Total Sample (n = 470)	Category		
			Technician (n = 301)	Manager (n = 65)	Outsourced (n = 104)
Has there been an MI in your organization in the past 3 years?	Yes.	262	161	41	60
	No.	208	140	24	44
At what level was MI adopted?	Institution-wide.	131	88	14	29
	Dean's Office/Board of Directors/Management.	65	40	15	10
	Department/Sector.	52	25	9	18
	Project/Team.	14	8	3	3
What is your involvement with MI?	None, and my work *was not* affected.	43	14	1	28
	None, but my work *was* affected.	127	92	16	19
	I was a member of the team that implemented it.	66	40	16	10
	I was responsible for its implementation.	26	15	8	3
In general terms, has the adoption of MI been beneficial to the organization?	Yes.	247	154	41	52
	No.	15	7	0	8

Source: Elaborated based on research data.

In terms of those questions in Table 4, the 3 categories answered equally: 55.7% (n = 262) of the respondents noticed some process of MI in the universities surveyed in the last 3 years. Of those, half (n = 131) perceived MI institution-wide, while 48% (n = 127) reported not having been involved in the process, but their work was affected by its implementation, demonstrating that it is not perceived in an isolated and sporadic way, but it impacts the way of doing activities, even among those who did not idealize it or formally participated in an implementation team.

When asked about the perceived effect of MI for the organization, 94.2% of workers stated that it was beneficial, which demonstrates its importance, in addition to being a possible indicator that processes, activities, and methods were satisfactorily affected, perhaps concerning effectiveness, efficiency and/or effectiveness.

Considering each occupational category, the following was evidenced for the technical servers: 86.9% (n = 161) perceived some MI in the last 3 years. Among them, 54.6% (n = 88) noticed it institution-wide; 57.1% (n = 92) reported not having been involved with MI, but their work was affected by its implementation, and 95.6% (n = 154) realized that MI was beneficial to the organization.

Among outsourced workers, 57.6% (n = 60) noticed some MI in the last 3 years. Among them, 48.3% (n = 29) perceived it institution-wide, 46.6% (n = 28) stated that they were not involved with MI and that the work was not affected, and 86.6% (n = 52) recognized that MI had a beneficial effect for the university.

For managers, the following was evidenced: 63% (n = 41) perceived some MI process in the last 3 years. Among them, 36.5% (n = 15) pointed out that the process occurred only at the level of the Dean's Office/Board of Directors/Management; 39% (n = 16) indicated that they had no direct involvement with MI, but their work was affected, and 39% (n = 16) recognized the responsibility for implementing MI. As for the perception about MI, 100% (n = 41) of the managers considered that it was beneficial to the organization.

Finally, all respondents who perceived an MI process at the university in which they have worked in the last 3 years informed the area(s) of the university in which they perceived the process. It was a multiple-choice question, and the respondent could choose 1 or more of the 7 options available, the results of which can be seen in Table 5.

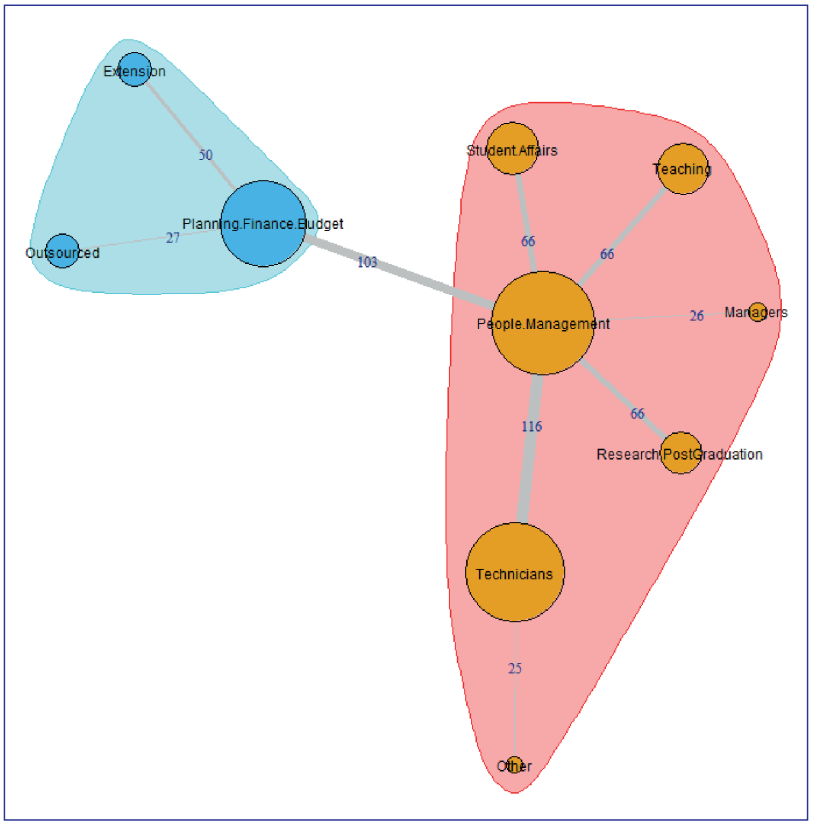
Table 5
Distribution of the frequency of the areas in which the respondents perceived MI: total sample and occupational categories

Areas	Total sample		Category					
			Technician		Manager		Outsorced	
	f	%	*f*	%	*f*	%	*f*	%
People management	168	64,12	116	72,05	26	63,41	26	38,24
Planning, finance/budgeting	143	54,58	94	58,39	22	53,66	27	39,71
Student Affairs	92	35,11	60	37,27	18	43,90	14	20,59
Teaching	89	33,96	58	36,02	17	41,46	14	20,59
Research and graduate studies	75	28,62	55	34,16	9	21,95	11	16,18
Extension	64	24,42	44	27,33	11	26,83	9	13,24
Other	37	14,12	25	15,53	3	7,32	9	13,24

Source: Elaborated based on research data.

With the analysis of Table 5, it appears that the technical servers and managers perceive MI, mainly in the area of PM, followed by the area of planning, finance/budget, and the area of student affairs. The areas of research and graduate studies and extension are the least significant. On the other hand, outsourced workers perceive MI more in the area of planning/finance/budgeting, followed by PM. To assess the simultaneous occurrence of the areas in which the MI is perceived, a similarity analysis was carried out. The results can be seen in Figure 1.

Figure 1
Similitude analysis of MI perception areas



Source: Based on research data.

It is noteworthy that colors form "communities". Each of those communities represents a frequent or common connection, while the circles are the areas in which respondents could point out. The larger the diameter, the more frequent was the perception of innovation in this area. In addition, the lines connecting the circles indicate how many times these 2 were marked by a respondent in a row, also observing the number of occurrences.

Figure 1, therefore, presents 2 main communities, the first being organized around the PM area, to which the areas of research and graduate studies, teaching, student affairs, and other areas are connected. The occupational categories of technicians and managers are also linked to the community in question, concluding that MI is perceived mainly by technician employees and managers in the PM area. The second community is organized around planning, finance, and budgeting, linking to the category of outsourced workers, concluding that they perceive MI more in the area of planning, finance, and budgeting, in particular.

DISCUSSION

In terms of the practices most perceived by technicians and managers, emphasis was placed on delegation and training. The emphasis on the practice of delegation is in line with the study by Tierney et al. (2019), which demonstrated that practices related to greater promotion of autonomy, decentralization, freedom, and participation are linked to bottom-up innovation in the context of public service. It is also in line with the findings of a study whose results showed that the involvement of teams in the context of university work has positive effects on well-being (Franco-Santos & Doherty, 2017).

Concerning training, the result can be linked with evidence highlighted by Nuryanto and Pambukob (2019), as they point to training actions as central and relevant in PM practices in public universities. Govender et al. (2018) also highlighted knowledge management as an important ally of PM practices in public universities in different countries.

A practice that was also perceived by technicians and managers, after those of delegation and training, was recruitment and retention, which is related to studies that have been focusing on the analysis of job profiles in the context of universities, such as those by Leal et al. (2017), who researched aspects related to the assessment of skills of new civil servants in public universities, for the position of executive secretary, as well as issues related to retention.

The outsourced workers perceived the training practice more than the delegation practice, which can be explained by the fact that most of them have limitations in their performance, due to legal, contractual issues, and to the hiring company. Such aspects can limit issues related to freedom and autonomy (Chambel, 2012).

The least perceived practice by the different occupational categories, in turn, was tangible and intangible incentives. About the former, the result can be explained by the difficulty in the implementation of remuneration regimes based on competencies, skills, and/or aspects related to results, due to limitations of the legislation related to the public sector, as well as the predictability of the career plans, where changes in remuneration are associated with specific periods and requirements, and sometimes unrelated to aspects such as competencies and/or results. As for intangible incentives, opportunities such as job rotation or teams involved in projects are often not present in some universities. It is noteworthy, however, that, in the face of intangible incentives, there is greater scope for interventions by management (Montezano et al., 2019; Montezano & Isidro-Filho, 2020; Pinto & Behr, 2015).

Comparing these results related to the perception of PM practices aimed at innovation, to those found in Lopes' research (2017), carried out in a sample with 76.2% of private organizations, there are similarities and differences. "Training" was also highlighted in the findings by Lopes (2017), obtaining the second-highest average. On the other hand, "recruitment and retention" obtained the highest average – while in the current study it obtained the third largest –, while "delegation" obtained the third-largest – while in the current study it obtained the highest – that is, they were in opposite positions in the 2 studies. This result can be explained by the greater incidence and dynamism of recruitment processes in private organizations, as well as greater flexibility in retention processes linked to variable remuneration, which occurs differently in the public sphere, subject to the legislation.

As for the perception of MI in the present study, even in the face of a scenario in which there are several bureaucratic characteristics, resistance to change, and excessive formalism, it was still possible to verify a high index of MI perception in the surveyed universities (Ribeiro 2017). This result is related to other studies at an international level. In a survey of 30 public

universities, the results showed that the use of knowledge – the dimension of knowledge management – is related to MI (Ngoc-Tan & Gregar, 2018). The study by Aminbeidokhtia et al. (2016) demonstrated a relationship between organizational learning and MI also in public universities. Such findings demonstrate that, despite legal and cultural limitations, public HEIs can experience MI implementation in their work contexts in different countries.

When comparing the perception of MI with the results found by Lopes (2017), which had a sample more predominant in the private sphere, there was a greater perception of MI in the research carried out by the author (64.2%) – about 8 percentage points more than in the present study. As for the scope, the findings by Lopes (2017) demonstrated that 63.7% of the organizations adopted MI, and in the present study, only 50% of the respondents perceived the reach of MI institution-wide. This result can be explained by traditional characteristics and the bureaucratic model in Brazilian universities. Lopes et al. (2018) point out some determinant factors of MI: contingency (related to the type of the organization, age of the organization), structural configuration (levels of formalization, centralization, communication, etc.), and external and internal interactions (interests, power structures, knowledge about management, etc.). Those factors, within the context of a federal university, permeated by bureaucratic and traditional aspects, may limit the innovative potential, explaining the perception of lower MI, when compared to the perception in the private initiative in the findings by Lopes (2017).

The less significant perception of MI by outsourced workers can be explained by the form of a more fragile contract with the university, which makes full participation in all decisions impossible. It also adds the "double" relationship established with the hiring company and with the organization in which it operates (Chambel, 2012), which can limit access to certain management practices. This means that the PM practices of the company in which they work are not always applied to them, at least not in the same way and scope seen for public servants.

The emphasis given to the PM area, in answer to which area MI is most perceived, is in line with previous studies that show the massive presence of different PM practices in the context of public higher education institutions (Burigo & Tosta, 2017; Moura & Souza, 2016; Tomazzoni et al., 2017). This result, maintaining the differences between the studies, was also repeated in the research by Lopes (2017), in which it was evidenced that the management themes/areas that gained prominence were "strategy and human resources", with 70.4% and 54.3% of the innovations carried out, respectively, reinforcing the importance of the area concerning the adoption of managerial innovations. Furthermore, this result is in line with the findings that demonstrate relationships between MI and the PM area in private organizations (Pinho et al., 2020; Queiroz et al., 2013; M. R. R. Silva, 2019), demonstrating the occurrence of the relationship between the phenomena in different contexts.

Finally, it is possible to point out that the research hypothesis – workers from different occupational categories perceive managerial innovation mainly in the area of people management, and the most prominent practices are those of delegation, incentives, and training – was partially confirmed, in light of the significant perception of MI and the emphasis found on delegation and training practices.

FINAL CONSIDERATIONS

This study aimed to investigate MI and PM practices aimed at innovation in 2 federal universities. Given the expected objective, it was possible to identify the PM practices that were most perceived by the surveyed sample – delegation and training –, as well as the least perceived – tangible and intangible incentives. It was also possible to show that a significant portion of the staff perceives the MI process, in particular, in the PM area of the surveyed universities.

As for theoretical contributions, the discovery of a different factorial structure related to the PM practices aimed at innovation investigated in this study stands out, which enabled the emergence of the factor "tangible and intangible incentives" and excluded the factor "communication", present in the original version. Another contribution, at the theoretical level, was the possibility of investigating aspects related to the adoption of MI, based on the perception of workers inserted in 3 different occupational categories, verifying similarities and differences, especially in specific issues related to outsourced workers. Finally, the results found, when compared with international studies, point to similarities regarding the perception of MI in public HEIs. In comparison with the private sector, the results could be contextualized based on issues related to the challenges faced by universities in the management field, such as resistance to change, difficulty in implementing newness, and strong adherence to traditional and bureaucratic aspects.

Another theoretical contribution focused on the analysis of the result that evidenced the greater perception of MI in the PM area, which may point to a need to discuss the field of innovation, based on contributions from the literature on the strategic management of human resources/strategic people management more effectively.

Concerning the contributions to the surveyed HEIs, it is pointed out first that identifying the most fragile perception of the practice of tangible and intangible incentives can motivate managers to design strategies to reward or recognize the performance of their staff. In light of the normative limitations of the sector (Ribeiro, 2017), perhaps the largest investment should occur within the scope of intangible incentives, seeking, for example, the implementation of consolidation of management by competencies, which still presents itself relevantly challenging in the field of HEIs (Montezano et al., 2019; Montezano & Isidro-Filho, 2020; Pinto & Behr, 2015)

The significant perception of MI in the PM area is an important clue for organizational interventions. This result demonstrates 2 important aspects. One of them is the potential to consider PM as an area that "suffers innovations" or "may suffer innovations", or possible to "innovate" and "reinvent itself". This result has important practical consequences since the PM area can be a fundamental part in the dissemination of innovation processes, as well as in supporting processes for mapping, identifying, and implementing managerial innovations, making it a reference sector in the theme within universities.

As for the public sector, in general, the findings of this study may suggest that MI, possibly, constitutes one of the main manifestations of innovation in public organizations, by overcoming strictly traditional and bureaucratic practices and processes and based on attempts of improvement and modernization of such practices and processes. In addition to seeing the perspective of practices and processes, it is essential to consider that MI must be accompanied by innovations in the public service itself, that is, innovations in the core activity of the service, aimed at the user of the public service. Despite the results of the study pointing to signs of MI implementation in the researched public organizations, it is still necessary to innovate in management principles and philosophy in the public sector context.

Among the limitations of this study, there is the reduced number of surveyed organizations, as well as the non-investigation of qualitative aspects related to the perception of processes and actions linked to innovation. In addition, the difficulty of access to outsourced workers and managers in data collection is highlighted, which was reflected in the sample distribution among occupational categories. It is suggested, for future research, a qualitative approach of such phenomena in the public sector, as well as in public organizations in other segments, with the scale used, aiming at making comparisons between organizations with different characteristics, as well as deepening the capacity of the PM area to innovate.

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