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Managerial competence scale for the public sector

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Abstract

The people management area lacks instruments to carry out valid and accurate diagnoses. Many available tools to measure managerial competencies in the public sector are limited to a public segment or neglect important managerial aspects, or still do not present items in the observable behavior format (verb + object + criterion or condition), making difficult diagnoses and comparisons. In view of this gap, this study aimed to develop a managerial competence scale for the public sector and present evidence of its validity. The scale was developed based on a literature review, content analysis with a posteriori categorization, evaluation made by judges, pre-test, two data collection from 1,376 subjects, from which 724 were civil servants of different bodies and another 652 specifically of the Superior Court of Justice (STJ), besides the validity and trustworthiness verification in three studies: one using exploratory factorial analysis (EFA) and two using confirmatory factorial analysis (CFA). The EFA presented three factors: Processes and Results; Human Relations and Innovation; and Public Interest, with a Total Variance Explained of 83.93%. The CFA, in the general context and in the STJ, had good rates of adjustment after some changes that made the instrument more parsimonious, with 29 items. The reliability analysis showed an average α of 0.953. The factors are backed by the literature and value the singularities of the public sector. From a practical point of view, the study allows diagnoses and research on the competencies of public managers from different Powers, segments, positions, and hierarchical levels, enabling inter-institutional comparisons.

Keywords: Managerial competencies. Public sector. Scale development. Exploratory factorial analysis. Confirmatory factorial analysis.

Escala de competências gerenciais para o setor público

Resumo

A área de gestão de pessoas carece de instrumentos para a realização de diagnósticos válidos e precisos. Para medir competências gerenciais no setor público, muitas ferramentas disponíveis são limitadas a um segmento público, negligenciam aspectos gerenciais importantes ou não apresentam itens no formato de comportamento observável (verbo + objeto + critério ou condição), dificultando diagnósticos e comparações. Diante dessa lacuna, este estudo visa criar e apresentar evidências de validade de uma escala de competências gerenciais para o setor público. O desenvolvimento da escala passou por revisão de literatura, análise de conteúdo com categorias definidas posteriormente, avaliação de juízes, pré-teste, coleta de dados com amostra de 1.376 indivíduos, sendo 724 servidores públicos de órgãos diversos e mais 652 especificamente do Superior Tribunal de Justiça (STJ), incluindo ainda o teste de validade e confiabilidade por meio de 1 análise fatorial exploratória (AFE) e 2 análises fatoriais confirmatórias (AFCs), perfazendo 3 estudos. A AFE revelou 3 fatores: processos e resultados; relações humanas e inovação; interesse público, com variância total explicada de 83,93%. As AFCs, no contexto geral e no STJ, revelaram bons índices de ajustamento após algumas modificações que deixaram o instrumento mais parcimonioso, com 29 itens. A análise de confiabilidade apresentou α médio de 0,953. Os fatores são referendados pela literatura e valorizam as particularidades do setor público. Do ponto de vista prático, o estudo possibilita diagnósticos e pesquisas sobre competências de gestores públicos de diversos poderes, segmentos, cargos e níveis hierárquicos, permitindo, inclusive, comparações interinstitucionais.

Palavras-chave: Competências gerenciais. Setor público. Desenvolvimento de escala. Análise fatorial exploratória. Análise fatorial confirmatória.

Escala de competencias gerenciales para el sector público

Resumen

El área de gestión de personas carece de instrumentos para realizar diagnósticos válidos y precisos. Para medir las competencias gerenciales en el sector público, muchas herramientas disponibles se limitan a un segmento público, o descuidan aspectos gerenciales importantes, o no presentan ítems en el formato de comportamiento observable (verbo + objeto + criterio o condición), dificultando los diagnósticos y comparaciones. Ante esta brecha, este estudio tiene como objetivo desarrollar y presentar evidencias de validez de una escala de competencias gerenciales para el sector público. La escala se desarrolló a partir de revisión de literatura; análisis de contenido con categorización a posteriori; evaluación realizada por jueces; preprueba; recolección de datos con una muestra de 1.376 respondientes – 724 servidores públicos de diferentes organismos y 652 específicamente del Tribunal Superior de Justicia (STJ) –, además de la verificación de validez y confiabilidad mediante tres estudios – un análisis factorial exploratorio (AFE) y dos análisis factoriales confirmatorios (AFC) –. El AFE ha revelado tres factores: Procesos y Resultados; Relaciones Humanas e Innovación; e Interés Público, con varianza total explicada de 83,93%. Los AFC, en el contexto general y en el STJ, revelaron buenos índices de ajuste después de algunas modificaciones que tornaron al instrumento más parsimonioso, con 29 elementos. El análisis de confiabilidad mostró un α promedio de 0,953. Los factores están avalados por la literatura y valoran las particularidades del sector público. Desde un punto de vista práctico, el estudio permite realizar diagnósticos e investigar las competencias de los directivos públicos de diferentes poderes, segmentos, cargos y niveles jerárquicos, posibilitando incluso comparaciones interinstitucionales.

Palabras clave: Competencias gerenciales. Sector público. Desarrollo de escala. Análisis factorial exploratorio. Análisis factorial confirmatorio.

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INTRODUCTION

The public administration must present social impacts and promote concrete measures for social equality and quality in public services (Liu & Dooren, 2015). It is expected that managers work in favor of greater effectiveness of the State action, matching investments and sustainable rationalization of resources (Propheter, 2016). Furthermore, in a scenario of constant changes, it is demanded that managers perform new competencies, influencing the change in the behavior of their teams and stimulating adaptability and people's motivation (Godoy & Mendonça, 2020).

The competencies of a public manager, however, are challenging as a great part of the public organizations live in a scenario filled with dysfunctions, characterized by the excess of rigidity, routines, and risk aversion (Luk, 2009); because of the high degree of hierarchy in decision making and by the media pressure and public opinion (Lima & Villardi, 2011); by the lack of independence to punishments, grant advantages or hire and dismiss (Slyke & Alexander, 2006); by the impotence in managing employee's careers and salaries (Lima & Villardi, 2011); by the limitations imposed by the principle of legality, which only allows the public manager to act in accordance with what is authorized by law.

In the organizations, measuring, assessing, and following up the managers' competencies has been a challenge for the people management department, especially in the public sector as the measure instruments available present problems, as the items that cannot be observed in behaviors (verb + object) or without the expected standard of performance regarding agility, precision, quality, amount, among other criteria or conditions (Brandão, 2012; Montezano, Abbad, & Freitas, 2016); items with plural centers that compromise the respondents' understanding and assertiveness of replies, bringing damages to data analysis (Brandão, 2012); repetitive items that could be synthesized, converting some exceeding nuclear verbs into criteria and conditions in order to reduce the size of the instrument, favoring data collection; items not extendable to other contexts as they are very peculiar to certain branch or segment of activity; or instruments that neglect one or some of the classic dimensions of the managerial competencies.

Given this gap and considering the development of scales that allow the deepening of empirical investigations, the assumption test, and the construction of new theories (Brandão, Borges-Andrade, Freitas, & Vieira, 2010), this study has the purpose of developing and presenting evidence of the validity of a managerial competencies scale for the public sector.

From the academic point of view, it is expected to fill gaps left by previous instruments and scales. From the practical point of view, the scale shall improve mapping of competencies, diagnosis for development, and managerial learning, in addition to enabling research on the competencies of public managers from different powers, positions, and hierarchical levels, even allowing for inter-institutional comparisons.

THE MANAGERIAL COMPETENCIES IN THE PUBLIC SECTOR

Managerial competencies are behaviors observed in managers that may demonstrate either knowledge, skills, attitudes – cognitive, psychomotor, and affective aspects, respectively – or synergy among them regarding personal attributes, generating values and better results to themselves, other individuals and teams, departments, organizations or networks, in a compatible manner with the context, the available resources and the strategy adopted (Freitas & Odelius, 2018). These competencies, when delivered or applied in a given public context, express underlying attributes of a manager, present particular characteristics, and, at times, present peculiarities different from the private sector.

The literature on managerial competencies has the contribution of several theories, from classification models from practical or prescriptive experiences, qualitative research, and quantitative instruments for data collection.

The study of managerial competencies is influenced by traditional approaches – scientific administration, human relations, bureaucracy, contingency theory, and systems theory – as well as more modern approaches such as resources dependence, institutionalism, dynamic capacities, and agency theory. It is also noteworthy that, in the public environment, the theory of motivation for the public sector should be considered, which advocates the demystification of some labels attributed to the

sector, encouraging the commitment of employees and the preservation of the public interest, as well as the theory of public value, which transcends the ideal of efficiency and starts to aim the sustainable impact, in light of the ideal of the effectiveness of public policies, aiming to provide more public value to *stakeholders*, notably citizens (Moore, 2003).

Regarding the numerous theoretical models from qualitative studies, case studies, or even practical analysis of a prescriptive nature, most consider one of the following criteria for the classification of managerial competencies: a) focused on the flexibility and changes, or stability; b) focused on the internal or external environment; c) focused on essential or procedural skills; d) subject to delegation or not; e) focused on the manager himself or on other individuals; f) relating to knowledge, skills or attitudes, in isolation; g) focused on the technical or behavioral aspects; h) focused on people or results.

Also regarding models, the one by Quinn (1988) deserves to be highlighted, who proposed the coexistence of 4 competing models:

1. Rational goals – In light of classical theory and scientific management, it privileges the control and the external environment and is characterized by the results orientation, strategic vision, rational decision-making, structured planning for the organization, and objective delegation of tasks, with control of goals and deadlines.
2. Internal Processes – In light of the bureaucratic theory, it privileges the control and the internal environment, assuming a people performance-oriented manager, seeking standardization and quality in the processes through meetings, projects, and his critical, logical, and analysis or synthesis skills.
3. Human Relations – In light of the humanist school, it privileges flexibility and the internal environment and it assumes choices oriented by people, teams, and relationships, always with the privilege of the participatory management, collaborative decision-making processes, and demanding from the manager a good level of communication, skills with conflict management, *feedback*, and delegation.
4. Open Systems – In light of the contingency and system theories, it privileges flexibility and the external environment, assuming a change-oriented manager and the presentation of ideas, as well as political skill and work in organizational networks.

Due to its broad use in empirical studies (Freitas & Odelius, 2017) and for considering in a synthetic manner, the accumulated knowledge regarding the management theories, Quinn's model (1988) remains a recurring starting point for the studies of management competencies in the public sector, like Koivuniemi (2019), in the context of police organizations in Finland, and Picchiai and Brito (2020) in the context of public health in São Paulo.

Furthermore, Quinn's model (1988) triggered the creation of a scale, elaborated by Denison, Hooijberg, and Quinn (1995). Subsequently, many other managerial instruments of competencies were developed in several public contexts, such as the areas of education, health, security, justice, public banks, the energy sector, and so on. When analyzing these studies, it is noteworthy that the 4 competing models of Quinn (1988) remain to guide the classifications of managerial competencies in the public sector, as shown in Box 1.

Box 1
Factors/Categories of managerial competencies in the public sector and their preponderant relationship with Quinn's models (1988)

Rational Goals	• Strategy and operations (Brandão et al., 2010). • Guidelines for tasks (Fernandez, Cho, & Perry, 2010). • Strategies and plan/Results (Gimenes, 2009). • Clarification of roles and objectives (Fleck & Pereira, 2011). • Strategic Management (Pillay, 2008). • Planning/Definition of goals (Preston, 2009). • Clarification of strategy/Clarification of the situation (Santos, Caetano, & Jesuíno, 2008). • Time management/Sharing the vision/Productivity and planning (Silveira, Magalhães, Lima, Martins, & Carvalho, 2006). • Strategic Skills (Teixeira, Silva, & Lima, 2011). • Contribution for the strategy (Paz, 2018).
Internal Processes	• Internal Processes (Brandão et al., 2010). • Coordenation of the work (Silva, Laros, & Mourão, 2007). • Information and knowledge (Gimenes, 2009). • Coordination/Resources Management/Monitoring/Performance Assessment/ Organization/People alignment (Preston, 2009). • Information management/Critical analysis of information/Organization/ Project Management (Silveira et al., 2006).
Human Relations	• Self and team development/Leads by example (Avelino, Nunes, & Sarsur, 2016). • Relationship-oriented (Fernandez et al., 2010). • Leadership/People (Gimenes, 2009). • Conflict management/Reward and Recognition (Fleck & Pereira, 2011). • People-related skills (Pillay, 2008). • Information communication and management/Empathy and group empowerment/ Facilitation and conflict management/ Mentorship and personal development (Preston, 2009). • Communication and *feedback*/Interpersonal relationships/ Vision and skills to deal with people (Silva et al., 2007). • Self-understanding and others'/Interpersonal communication/Team building/Leadership/Participatory decision-making (Silveira et al., 2006). • Leadership skills (Teixeira et al., 2011). • Team management (Paz, 2018).
Open Systems	• Incentives and practices innovation (Avelino et al., 2016). • Political behavioral competence (Brito-de-Jesus, Dos-Santos, Souza-Silva, & Rivera-Castro, 2016). • Change-oriented (Fernandez et al., 2010). • Fundraising and people-funding (Odelius & Freitas, 2017). • Innovation and change promotion/Negotiation and use of resources/Representation and expansion of organizational borders (Preston, 2009). • Vision, learning, and innovation (Silva et al., 2007). • Creativity/Change management (Silveira et al., 2006). • Innovation Skills (Teixeira et al., 2011).

Source: Elaborated by the authors.

Neither Quinn's (1988) model nor Denison (1995) et al scale, however, brought peculiarities, idiosyncrasies, or own distinct factors of the public sector, although have been elaborated in the American government context. The most recent instruments already bring factors and categories that do not usually present highlight in the private sector such as normative analysis (Pillay, 2008), society (Brandão et al., 2010), diversity orientation (Fernandez et al., 2010), ethical posture skills (Teixeira et al., 2011), leads by example/ protecting the company's image (Avelino et al., 2016) and provision of public services (Paz, 2018). On the other hand, although they present peculiarities of the public sector, many of these instruments bring the above-mentioned problems, which justify this study. Thus, although there is no consensus on the classifications of models or between the factors of managerial competencies in the collection instruments, it can be said that there are some topics more present in managerial competencies studies in the public sector, which deserve to be systematically investigated and deepened.

METHODOLOGICAL PROCEDURE

For the development of a new scale, as there have been many previous instruments available, the items were written based on the analysis of each one of the 608 items of the pre-existing scales. Initially, 70 items were disregarded for being too restricted in the field of manager's activity and/or for not portraying competence as observable behavior, assumptions adopted in the scope of this study.

After the aforementioned exclusion, the 538 remaining items were read again, with greater selective attention to excerpts, words, and expressions that could lead to classes of managerial competencies. Then, the analytical reading of these excerpts was carried out, allowing the suggestion of 40 categories *a posteriori* (Bardin, 2011).

For each of the categories, one item was written in the format of observable behavior, and following Pasquali's (2010) suggestions, the content validity was verified through the evaluation of 5 judges with doctorate degrees, specialists in the area, and with experience in the creation of instruments, and the content validity coefficients were also calculated (CVC) (Cassepp-Borges, Balbinotti, & Teodoro, 2010), highlighting that the 10 items that presented CVC below 0.8 were rewritten, observing the writing suggestions proposed by the judges.

Considering the guidelines of Alban-Metcalfe and Alimo-Metcalfe (2013), for whom the hetero-assessment in the perception of subordinates demonstrates the validity at higher levels when contrasted with the opinion of other *stakeholders*, we opted for hetero-assessment of subordinates in relation to their direct managers. For each item, respondents were invited to express their level of agreement on the statement "My immediate boss expresses the following managerial competencies with excellence", on a scale from "totally disagree" to "totally agree".

Once the preliminary instrument was defined, a pre-test was applied to 15 employees of different functional relationships, which tested all the functionalities of the instrument and suggested slight adaptation in 18 items, proposing the adoption of more common synonyms to the context, the reordering of some sentences and suppression of redundancies (Hair, Black, Babin, Anderson, & Tatham, 2009).

Then, 2 data collections were carried out with different public employees from all over Brazil and employees of the Superior Court of Justice (STJ). Both collections were carried out electronically, accidentally and voluntarily, reaching a total sample of 1376 individuals.

In the first collection, carried out in a broad context, between April 27 and June 12, 2018, the public employees were contacted by email, available on the official websites of public agencies and entities or in search websites. The population considered in the broad context comprises about 10.8 million employees working in the Brazilian public sector, according to the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística [IBGE], 2014). In all, 724 complete responses were received.

The second data collection took place between July 17 and August 21, 2018, in the specific context of the STJ, a public organization of direct management that integrates the Brazilian Judiciary Power and has attributions to standardize the understanding of deferral laws and remedy civil and criminal cases definitely, as long as they do not deal with constitutional, labor, electoral or military matters. With authorization from the agency, the questionnaire was sent to the emails of 2556 employees and obtained a return of 652 complete responses – a return rate of 25.5%. Table 1 summarizes the main characteristics of the samples.

Table 1
Characterization of samples: broad context and STJ

Variable	Category	Broad context		STJ	
		Freq.	%	Freq.	%
Gender	Female	397	54.8%	367	56.3%
	Male	321	44.3%	285	43.7%
	Did not want to answer	6	0.8%	0	0.0%
Age	Under 20 years old	1	0.1%	0	0.0%
	20-29	32	4.4%	41	6.3%
	30-39	215	29.7%	215	33.0%
	40-49	246	34.0%	219	33.6%
	50-59	190	26.2%	170	26.1%
	60-69	38	5.2%	7	1.1%
	70-79	1	0.1%	0	0.0%
	80-89	1	0.1%	0	0.0%
Education Level	Elementary School	0	0.0%	1	0.2%
	High School	30	4.1%	34	5.2%
	Graduate	197	27.2%	145	22.2%
	Specialization	312	43.1%	438	67.2%
	Master's Degree	114	15.7%	32	4.9%
	Doctorate Degree	60	8.3%	2	0.3%
	Post-doctoral	11	1.5%	0	0.0%
Capacity by region	Mid-west	100	13.8%	652	100.0%
	Northeast	123	17.0%	0	0.0%
	North	17	2.4%	0	0.0%
	Southeast	391	54.1%	0	0.0%
	South	92	12.7%	0	0.0%
Power/Autonomous agency	Public Defense	1	0.1%	0	0.0%
	Executive	537	74.2%	0	0.0%
	Judiciary	37	5.1%	652	100.0%
	Legislative	53	7.3%	0	0.0%
	District Attorney	11	1.5%	0	0.0%
	General Accounting Office	1	0.1%	0	0.0%
	Did not know/want to answer	84	11.6%	0	0.0%
Type of agency or institution in which you work	Direct Management	414	57.2%	652	100.0%
	Autonomous Entity	99	13.7%	0	0.0%
	Public Company	101	14.0%	0	0.0%
	Foundation	20	2.8%	0	0.0%
	Mixed private-public company	12	1.7%	0	0.0%
	Did not know/want to answer	78	10.8%	0	0.0%
Region to which the organization in which you work belongs	Federal	206	28.5%	652	100.0%
	State or District	287	39.6%	0	0.0%
	Municipal	228	31.5%	0	0.0%
	Did not know/want to answer	3	0.4%	0	0.0%

Source: Research Data.

The data collected in the broad context was randomly subdivided into 2 samples so that the 724 employees composed 2 groups of 362 individuals. This segmentation enabled carrying out the EFA and the first AFC with different individuals. In addition to the factor phase (exploratory and confirmatory), the collected data was subject to the reliability analysis with Cronbach alpha index, and Kruskal-Wallis Test, which evidences differences between the groups (L. Munck, M. Munck, & Souza, 2011).

For data analysis and processing, electronic spreadsheets were used and the *software* SPSS Statistics (Version 22) and RStudio, packet Lavaan (Version 1.1.383), verifying characteristics of data distribution and statistical assumptions (Brown, 2014; Field, 2009; Hair et al., 2009; Pasquali, 2010).

The multivariate *outliers* were excluded avoiding damages to the factorability and to the magnitude of the factor loadings (Field, 2009), which did not damage the samples that met the minimum requirement of 200 individuals, and 5 observations by an estimated parameter (MacCallum, Widaman, Zhang, & Hong, 1999).

Data distribution was devoid of normality; however, it did not prevent AFE due to the robustness of this technique, especially when there are more than 200 individuals (Pasquali, 2010; Hair et al., 2009).

Finally, as the variables were collected on a Likert scale of 5 points, from "totally disagree" to "totally agree", the Robust Weighted Least estimator was used, which has shown better performances for this type of data, not restricted only to strictly normal data, given the robustness provided by polychoric correlations. Therefore, this technique has become a promising method, especially in the social sciences (Flora & Curran, 2004).

PRESENTATION OF RESULTS

Starting with the EFA with half of the sample randomly obtained in the broad context, the factorability was possible, with a KMO of 0.982, a value considered excellent, as per categorization of Field (2009). Comparing the results of the initial solution and the rotations of Promax (kapa=4) and Oblimin (delta=0), the best theoretical adhesion was obtained by Promax, with 3 factors.

Due to differences of less than 0.100 between the absolute values of the factorial loadings in different factors (Laros & Puente-Palácios, 2004), the items related to the categories of knowledge management and sustainability orientation needed to be excluded. After removing them, the EFA was processed again, keeping the same 3-factor solution obtained before the exclusion, achieving a total explained variance of 83.93%. Then, the reliability analysis of the factors was carried out using Cronbach's alphas.

Box 2 portrays the EFA results covering categories, factor loadings, and Cronbach's 3-factor alphas. It is noteworthy that the categories represent the content analysis result, but do not appear in the data collection, but their respective items.

Box 2
EFA Result (38 items): broad context

Factor	Category	Factor Loading
Factor 1 Cronbach's alpha: 0.986 (15 items)	Time management	.876
	Performance management	.859
	Setting goals and objectives	.858
	Quality-oriented	.814
	Planning	.814
	Organization and work monitoring	.768
	Skill to deal with problems	.740
	Result-oriented	.739
	Strategic Vision	.735
	Task delegation	.731
	Critical, logical and analysis/synthesis skills	.727
	Project management	.704
	Decision-making	.671
	Conducting meetings	.589
	Fund-raising	.516
Factor 2 Cronbach's alpha: 0.989 (20 items)	Interpersonal relationship	.991
	Participatory decision-making process	.934
	Team knowledge and understanding	.846
	Conflict management	.789
	Team leadership and management	.788
	Delegation and participatory management	.752
	Creativity and innovation	.738
	Idea Presentation	.719
	Feedback	.697
	Stimulus to motivation	.679
	Team development	.665
	Communication	.649
	Political Skill	.647
	Orientation for diversity and inclusion	.628
	Risk management	.610
	Change management	.609
	Negotiation and persuasion	.552
	Orientation for transparency	.529
	Acting in organizational networks	.529
	Systemic view	.493
Factor 3 Cronbach's alpha: 0.910 (3 items)	Orientation for ethics and integrity	.855
	Orientation for institutional image	.855
	Orientation for legality	.802

Note: We opted to use the categories to avoid repeating the items described in Table 4.

Source: Research Data.

Based on the EFA results, the AFC was carried out with the second half of the data obtained in the broad context. Root Mean Square Error of Approximation (RMSEA) was the only index that did not immediately reach the expected result. To solve the problem, the modification index was used, which recommended the item "orientation" for diversity and inclusion of factors 2 to 3, with this reallocation providing even greater theoretical adhesion to the item.

Then, by the residual correlations analysis, 9 items relative to the following categories were excluded, in this order: systemic vision, setting goals and objectives, negotiation and persuasion, team knowledge and understanding, work organization and monitoring, risk management, skills to deal with problems, creativity and innovation, and stimulus to motivation. After the exclusions, the RMSEA reached a satisfactory level, demonstrating the grouping of items compatible with the reviewed literature.

It is noteworthy that the exclusion of these items does not mean that they should not be considered as managerial competencies or that their writing was not clear enough. What can be concluded is that they are related to the factors at the same time or that, in the Brazilian public context, they were not contributing in a significant manner to the composition of some of the factors. In other words, to measure and carry out a diagnosis of a specific factor, the inclusion of these items would not significantly change the result, only making the instrument more extensive. Thus, using the principle of parsimony, it is more recommended to remove these items, favoring the adhesion in the data collection.

Therefore, after the modifications, all the indices reached the values recommended by Hair et al. (2009), as shown in Table 2.

Table 2
AFC Results: broad context

Measure	Expected values by Hair et al. (2009, p. 573)	Initial Result	Result after adjustments
Square-Qui- χ^2	Significant values may be expected	2132.828 (p-value = 0)	918.020 (p-value = 0)
Comparative Fit Index (CFI)	Over 0.90	0.930	0.964
Tucker-Lewis Index (TLI)	Over 0.90	0.926	0.961
Relative Non-centrality Index (RNI)	Over 0.90	0.930	0.964
Root Mean Square Error of Approximation (RMSEA)	Below 0.07 (with CFI ≥ 0,90)	0.085	0.069
Standardized Root Mean Square Residual (SRMR)	Up to 0.08 (with CFI > 0.92)	0.028	0.022

Source: Research Data.

The factorial structure was identified from AFC in the broad context with 29 items, data collection was carried out in the STJ and a new AFC, whose results immediately presented satisfactory adjustment indices, as shown in Table 3.

Table 3
AFC Results: STJ context

Measure	Expected values by Hair et al. (2009)	STJ Result
χ^2	p-values may be significant	918.020 (p-value = 0)
CFI	Over 0.920	0.964
TLI	Over 0.920	0.961
RNI	Over 0.920	0.964
RMSEA	Below 0.07 (with CFI ≥ 0,90)	0.069
SRMR	Up to 0.08 (with CFI > 0,92)	0.022

Source: Research Data.

The final scale is composed of 29 items, organized into 3 factors. Factor 1- Processes and results are the grouping of managerial competencies focused on process follow-up and reaching organizational results; Factor 2 – Human Relations and innovation is the set of managerial competencies that privileges the attention to people and implementation of innovating solutions; and Factor 3 – Public interest groups managerial competencies focused on the public interest, covering principles of diversity and social inclusion, ethics and integrity, institutional image, and legality. Table 4 shows the final version of the scale, with the results after the AFV in the broad context and STJ.

Table 4
Final version of the scale. AFC Result: broad context and STJ

	Category	Item	Broad context			STJ		
			Factorial loadings	Standard error	Extracted variance	Factorial loadings	Standard error	Extracted variance
Factor 1 – Processes and results	Time Management	Manages the pace of tasks, observing goals, deadlines, priorities, and available time.	0.916	-	84.00%	0.872	-	76.00%
	Performance management	Monitors people development, emphasizing goal achievement, deadlines, and quality expected by the Institution.	0.909	0.036	82.70%	0.856	0.015	73.20%
	Quality-oriented	Carefully checks the compliance with quality standards related to inputs, resources, processes, products, services, and information.	0.902	0.035	81.30%	0.819	0.018	67.10%
	Planning	Plans tasks, setting guidelines, strategies, policies, deadlines and priorities, in compliance with the future needs of the unit/institution.	0.955	0.031	91.20%	0.876	0.017	76.70%
	Result-oriented	Manages the tasks emphasizing productivity, promoting a favorable environment to reach results.	0.948	0.033	89.80%	0.895	0.017	80.10%
	Strategic vision	Defines strategies adhering to organizational vision, mission and values, considering opportunities, context and global objectives.	0.939	0.032	88.10%	0.845	0.018	71.40%
	Delegation of tasks	Distributes tasks emphasizing results according to the demand, the level of responsibility, the competencies and task complexity, privileging a balanced division between people and units.	0.918	0.035	84.30%	0.844	0.019	71.30%
	Critical, logical, and analysis/ synthesis skills	Interprets data, information or documents in a critical manner and in details, analyzing or summarizing their impact on the unit.	0.935	0.034	87.50%	0.805	0.021	64.80%
	Project management	Manages projects, monitoring scope, objectives, schedules, managers, costs, risks, and indices.	0.934	0.034	87.20%	0.728	0.024	53.00%
	Decision-making	Makes decisions with confidence according to their level of competence and authority, considering contrary repercussions and opinions.	0.942	0.033	88.70%	0.836	0.022	69.80%
	Conduction of meetings	Carefully prepares and disclosures meetings, conducting them with resourcefulness, stimulating debates, and recording the resulting actions.	0.925	0.036	85.60%	0.818	0.02	66.90%
	Fund-raising	Raises people and resources (financial, structural, technological, etc..), presenting the current achievements of the unit/institution and the improvements expected to be implemented.	0.855	0.038	73.20%	0.758	0.022	57.50%

Continue

	Category	Item	Broad context			STJ		
			Factorial loadings	Standard error	Extracted variance	Factorial loadings	Standard error	Extracted variance
Factor 2 – Human Relations and innovation	Interpersonal relationship	Strives to promote a pleasant work environment, in which people respect one another, cooperate and trust one another.	0.95	-	90.20%	0.862	-	74.20%
	Participatory decision-making process	Get the people in the unit involved in the decisions, stimulating them to express themselves and valuing their opinions.	0.95	0.026	90.30%	0.855	0.017	73.10%
	Conflict Management	Manages conflicts between people serenely, privileging harmony, impartiality, and solutions of common interest.	0.929	0.027	86.30%	0.83	0.017	68.90%
	Team leadership and management	Leads people in an inspirational manner, influencing them by their example, mobilizing them to achieve results without emotionally destabilizing them, creating a common sense of responsibility.	0.946	0.028	89.50%	0.89	0.017	79.30%
	Delegation and participatory management	Delegates assignments with confidence in people, considering their interests, skills and work style, valuing autonomy, participation, and joint solutions.	0.935	0.028	87.40%	0.839	0.018	70.30%
	Presentation of ideas	Exposes ideas or proposals of their unit/institutions in an organized and engaging way.	0.953	0.025	90.80%	0.839	0.02	70.40%
	Feedback	Give ***feedbacks*** in an individual, constructive, and discreet manner, reconciling personal, professional, organizational interests, being open to dialogue.	0.92	0.03	84.60%	0.818	0.02	66.90%
	Team development	Incentives the development of people through courses, academic graduation, lectures, and creating opportunities so that people express their competencies.	0.875	0.033	76.50%	0.726	0.024	52.70%
	Communication	Communicates with the team, listening carefully and making balanced, clear, objective and coherent placements, using multiple channels.	0.949	0.027	90.00%	0.9	0.016	81.00%
	Political Skill	Demonstrates good political deal, waiting for the most strategic moment to present proposals, respecting hierarchies, sharing achievements, and showing themselves available to represent the unit/institution, whenever required.	0.906	0.03	82.10%	0.812	0.02	66.00%
	Change management	Conducts organizational changes with balance, mobilizing people before, during and after the process.	0.935	0.028	87.40%	0.889	0.019	79.10%
	Transparency-oriented	Gives transparency to their decisions and professional relationships, making available and sharing unit information clearly and rapidly.	0.916	0.029	84.00%	0.823	0.02	67.80%
	Acting in organizational networks	Interacts with the other units or with other institutions, suppliers, partners or customers, seeking joint solutions and sharing resources, strategies and good practices.	0.896	0.03	80.30%	0.780	0.022	60.80%

Continue

	Category	Item	Broad context			STJ		
			Factorial loadings	Standard error	Extracted variance	Factorial loadings	Standard error	Extracted variance
Factor 3 – Public Interest	Orientation for diversity and inclusion	In their acting area, demonstrates impersonality in relation to several segments of the society, disapproving of discrimination and encouraging tolerance and respect for diversity.	0.849	-	72.10%	0.901	-	81.10%
	Orientation for ethics and integrity	Their actions, decisions and relationships are based on ethics and integrity, rejecting corruption, even in small deviations.	0.888	0.055	78.90%	0.958	0.02	91.90%
	Orientation for institutional image	Acts to improve the image and reputation of the public sector, contributing to quality service and demonstrating institutional pride.	0.913	0.052	83.40%	0.952	0.019	90.60%
	Orientation for legality	Respects the applicable rules to their unit/ institution, showing their commitment to correct any non-compliances.	0.808	0.062	65.20%	0.862	0.022	74.20%

Source: Research Data.

DISCUSSION AND CONCLUSION

In a global analysis, Factor 1 brought together items related to the dimensions "rational goals" and "internal processes" of Quinn's (1988) approach, under the influence of scientific management and bureaucratic theory. Furthermore, Factor 1 is also compatible with the dimensions related to work and results: model manager and producer of Metcalfe e Richards (1989); focus on the work of Holmes e Joyce (1993); manages the work of Yukl (1998); functional competencies of Cheetham e Chivers (2005); and attitudes of focus on results of Teixeira et al. (2011).

Factor 2, in turn, brought together items that, in contrast to Quinn's (1988) approach, would be linked to the models of "human relations" in the light of the humanist school, and "open systems" related to the systemic and contingency theories. In addition, there is theoretical compatibility between Factor 2 and the following dimensions: integrative and innovative from the model of Metcalfe e Richards (1989); focus on people from Holmes and Joyce (1993); managing relationships from Yukl (1998); relationship management from Goleman, Boyatzis, and McKee (2002); personal/behavioral competencies from Cheetham and Chivers (2005); leadership, interpersonal relationship and global environment from El-Baz and El-Sayegh (2010); leadership skills and innovation, and attitudes of perception and change participation from Teixeira et al. (2011); and people, organization, and other interested parties' engagement from Alban-Metcalfe and Alimo-Metcalfe (2013).

Finally, Factor 3 included items focused on the public interest, especially related to the public services provision (Paz, 2018); ethical performance, based on values and integrity (Bourgault, Charih, Maltais, & Rouillard, 2006; Cheetham & Chivers, 2005; Teixeira et al., 2011); social awareness and respect to diversity (Alban-Metcalfe and Alimo-Metcalfe, 2013; Goleman et al., 2002); and care with rules and norms (El-Baz & El-Sayegh (2010). It is noteworthy to highlight that the aspect of public interest was not present in Quinn's (1988) model, therefore the items are not restricted to flexibility-control dichotomies and internal-external environment, but value peculiarities, principles and values of public management, precisely those that raised the importance of developing a scale of own managerial competencies for the sector.

In view of the grouping of items, it is noted that the classification found is supported in the literature and reinforces categories of previous models of managerial competencies. Only 2 items were not included in the forecasted factors during the instrument development phase. The item related to fund-raising, designed for the dimension "open systems" (considered in Factor 2), was allocated in Factor 1. It is possible that the reach of resources and attraction of people has been interpreted as a process

that leads to results, and not as an achievement from social interactions or from persuasion and the power of influence. The item related to transparency that was expected for Factor 3, due to its connection with the principle of public transparency, was included in Factor 2, possibly by the expression "Gives transparency to their [...] professional relationships". Therefore, it was necessary to investigate with due precision, the justifications for these discordant factorial accommodations, confirming and discarding the hypothetical causes raised or presenting others.

It is believed that the refining of the instrument and the exclusion of items during the AFC phase in the broad context have contributed to the success of the final version. This result also demonstrates the security of the scale and confirms the cross-section character of the managerial competencies as good adjustment indices were obtained both in the broad context and in the specific (STJ). In other words, although the competencies are very linked to the context, the existence of a group of expected behaviors of the Brazilian public manager cannot be denied, regardless of power, federative level, hierarchical level, or position held.

Another evidence of the stability of the new scale is that the descriptive statistics (average, median, and standard deviation) for the 3 factors were very similar in the 2 contexts, as shown in Table 5.

Table 5
Descriptive statistics for the factors

Context	Factors	Average	Median	Standard Deviation
Broad (scale: 0 to 100)	Factor 1 – Processes and results	57.26	56.77	31.52
	Factor 2 – Human Relations and innovation	58.96	58.00	32.71
	Factor 3 – Public Interest	72.90	72.40	22.06
STJ (scale: 1 to 5)	Factor 1 – Processes and results	4.06	4.00	0.87
	Factor 2 – Human Relations and innovation	4.06	4.00	0.94
	Factor 3 – Public Interest	4.54	5.00	0.66

Source: Research data.

In general terms, public employees perceive in their manager a greater expression of competencies focused on the Public Interest (Factor 3) at the expense of results for the dimensions Processes and results (Factor 1), and Human Relations and innovation (Factor 2), also showing a possible influence of biases arising from the fear of employees to negatively evaluate their superiors on more sensitive topics, such as ethics, integrity, legality, diversity and social inclusion and institutional image, which are included in Factor 3.

To analyze the predictive power of the scale, the seminal proposition of Katz (1974) was retrieved that the higher the hierarchical level of the manager, the greater is their expression of human and conceptual skills, whose definition is strictly related to managerial competencies of Factor 2- Human Relations and innovation. Kruskal-Wallis index showed significant differences between managers of STJ's strategical level that express more the competencies of Factor 2 (with average 4.41 and standard deviation of 0.50) when compared to tactical managers (average 4.27 and standard deviation 0.63) and operational managers (average 4.11 and standard deviation 0.47). These results evidence that the scale has predictive validity as they confirm findings established in the literature.

For all the aspects presented, the new instrument adds to the field of knowledge by being comprehensive in light of the specialized literature, by having reduced extension, facilitating data collection, and by containing items composed by a verb, object, and criteria or condition, which are configured observable behaviors and can be answered by public employees from different Powers, positions, hierarchical levels, branches, and segments.

Even in view of this result, it is necessary to present some limitations of the study, especially with regard to the manner the samples were obtained. In the broad context collection, the individuals were contacted by e-mails, which are located in the computers network at random through search engines and official websites of the public agencies, which resulted in a sample with low representation of municipal employees and an elevated number of respondents with master's and doctorate degrees.

Regarding recommendations for field researchers, and considering that the validity and reliability of a scale are not permanent, and may vary depending on the context, circumstance, population, or purpose for which it is applied (Souza, Alexandre, & Guirardello, 2017), it is recommended the use of the instrument in different Brazilian public institutions. It is also suggested to compare any differences in the hetero-evaluation based on the application of the scale not only to subordinates but also to hierarchical superiors, peers, citizens, and other *stakeholders* who interact with the public managers.

Finally, the future research agenda may include correlational and causality studies that investigate possible influences of the 3 factors that make up the scale on contextual variables, such as organizational climate, *work design*, people management policies and practices, as well as the interference of sociodemographic or functional variables on the expression of the 3 factors of the scale.

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