

**Innovation in public procurement process:
A proposal for quantitative analysis**

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ABSTRACT

The implementation of innovations in the public sector offers opportunities for modernizing public management, with the goal of providing important improvements in public services. This article seeks to outline a proposed instrument for analyzing the innovation present in the Ministry of Health's process of public procurement of medicines and health inputs, based on the Coefficient of Content Validity (CCV). It enables quantitative assessment of content from instruments for collecting data. Five specialists in innovation took part in the validation. 42 items were put forward to analyze innovation in the context mentioned. The CCV was calculated in order to verify the clarity of language, practical pertinence and theoretical relevance for the instrument as a whole, in addition to the fulfillment of semantic validation, which uncovered the opportunity to construct a valid and reliable instrument with 32 items to analyze the organizational innovation.

Keywords: Public Sector Innovation; Content Validation; Coefficient of Content Validity; Public Procurement of Medicines.

1 – INTRODUCTION

The transition towards the modern nation-state, the landscape of which is represented mainly by critical factors such as: the new economy, underpinned by globalization, technology and knowledge; and the New Public Management, governed by premises of efficiency, flexibility, result, social and organizational learning, social control and responsibility. Managers who operate in this state are thus required to seek the use of management technology that is more appropriate for adding value and, in this sense, innovation emerges with the goal of providing important improvements in the efficiency, efficacy and effectiveness of state measures (Bresser-Pereira, 2006; De Vries, Bekkers & Tummers, 2015).

The Ministry of Health (MH) falls within this context. It is responsible for the Brazilian National Health System (SUS), the broadest social policy in the country and one of the largest public health systems in the world. Its strategic objectives, as per the planning for the 2011-2015 and 2016-2019, include the National Pharmaceutical Assistance Policy (NPAP), of which the basic premise is the free provision of medicines and strategic health inputs. It was noted that, in 2010, a specific area was created to oversee the logistical chain for medicines and health inputs, namely the Department of Health Logistics (DLOG). This logistics chain covers logistical planning, the procurement, storage and distribution of the above-mentioned inputs.

This procedural restructuring reveals the State as an innovative agent, acting as the legally instated responsible entity, and which implemented a new methodology in the area of procurement, developing an information system called the Electronic Procurement Process (EPP), since 2013. The process consists of a set of electronic and procedural documents, gathered organically throughout a procurement process for goods and services at the MH. This tool was created with the aim of optimizing the procurement process and guaranteeing the effective supply of medicines for citizens. Significant studies have been performed to analyze innovation, although these studies are scarce in the public sector, reflecting the need for quality and reliable analytical instruments for the innovation process in this sector, which is incipient in terms of innovation in public procurement (Bloch et al., 2009; De Vries, Bekkers & Tummers, 2015).

Thus, researchers in social science have become aware of the importance of validating content from measurement and assessment instruments, that is to say, their ability to measure precisely and reliably the phenomenon studied, and consequently to reproduce consistent results in space and time, with different observers (Pasquali, 1999; Netemeyer, Bearden & Sharma, 2003). However, approximately three years into the implementation of this innovation at the DLOG, it has become necessary to analyze its features and effects using

an instrument that grasps the perception of stakeholders who are directly involved. Hence, the goal of this article is to outline a proposed instrument for analyzing the innovation present in the MH's procurement process of medicines, based on content validation, following the CCV model advanced by Hernández-Nieto (2002). Consequently, based on the proposal, this study comprises sections that address the theoretical assumptions about public procurement of medicines, public sector innovation and content validation. Subsequently, the article outlines the method applied and the analysis of the data obtained, as well as the final version of the instrument for analyzing innovation. The article ends with considerations and suggestions.

2 – THEORETICAL BENCHMARK

2.1 - Public procurement of medicines

Public procurement can be defined as the process through which the government seeks to obtain the materials, services and equipment necessary for its functioning as per the norms and laws in force (Baily, 2000). Even if the public sector's procurement and contracting aim primarily to meet various government targets, it is incontestable that more cohesive employment of the economic and strategic potential of this demand can generate other objectives that are also associated with development.

The role that public procurement units have assumed since 1990 up to the present day, reflects a growing search for high quality, lower costs, enhanced speed and flexibility of public procurement and contracting, thus demonstrating managers constant concern over efficient use of public resources, which represent a significant portion of the budget. Good management of these resources is a complementary option for enhancing efficiency in public spending, as well as improving the performance of government organizations (Schooner, Gordon & Clark, 2008).

In Brazil, processes for public procurement of medicines observed a centralized management model up until 1997, and were carried out by the MH, although the decentralization of health measures in the public sector began in 1990. Since 1998, with the publication of the National Medicines Policy (NMP), the MH has highlighted the importance of distributing medicines free of charge to the population, increasing the responsibilities for operating the management of pharmaceutical aid within SUS. In this way, the adequate supply of quality medicines, obtained at reasonable prices, is a key aspect for the economic viability of the public procurement organizations responsible for these medicines, though this has emerged as a complex task for public managers. Hence, management and financing issues have added to problems of supply logistics as part of the set of great challenges faced by the NPAP within SUS (Bevilacqua, Farias & Blatt, 2011).

2.2 – Innovation in the public sector

Innovation has been a constant quest for entrepreneurs, members of government and academics, with the aim of delivering a higher value-added product or service to citizens. It is understood as a motor of social and economic development, the solution to social problems and the remedy for the lack of competitiveness (Schumpeter, 1982; De Vries, Bekkers & Tummers, 2015).

Since the 1990s, the change in context and the emergence of new approaches and models for analyzing innovation, have led to the creation and updating of instruments for measuring and analyzing innovation activities. The public sector is no different and despite the reduced number of empirical studies investigating the phenomenon of innovation in this sector, the studies undertaken by De Vries, Bekkers & Tummers (2015), Bloch et al. (2009) and Bloch (2011) were all selected, since they remained closer to the locus and phenomenon examined in this article. In line with the need to analyze the public sector innovation, De Vries, Bekkers & Tummers (2015) developed a heuristic framework that consolidated a systemic literature review, involving 181 articles and books published between 1990 and 2014 on innovation in the sector. This framework links the main antecedent factors, types and features, plus the results of public sector innovation, as displayed in Table 1.

Table 1 - Systematization of the definition, categories, description and variables proposed by De Vries, Bekkers and Tummers (2015) on public sector innovation

Definition of innovation	Category	Description	Variable
Innovation in the public sector is understood as an idea, practice or object considered new for an adopting unit, with the objective of generating public value	Environmental antecedents	Context in which the public organization operates to innovate	Environmental pressures Participations in Networks Public organizations that adopt the same innovation Regulatory aspects Competition
	Organizational antecedents	Features and structure of the public organization	Availability of resources Leadership styles

	that innovates	Degree of aversion to risk/learning environment Incentives/rewards Conflicts Organizational structure
Individual antecedents	Features of individuals who innovate	Employee autonomy Organizational Position Knowledge and skills Creativity Demographic aspects Commitment to and satisfaction with job Innovation acceptance
Types of innovation	Behavior of public organizations that innovate	Process: administrative or technological Product or service Governance Conceptual
Outcomes of innovation	Substantive results of the implementation of innovation	Increase or reduction in effectiveness Increased efficiency Involvement of private partners Involvement of citizens Increased customer satisfaction

Source: Developed by the authors, adapted from De Vries, Bekkers & Tummers (2015).

In addition, Bloch et al. (2009) developed a framework as a basis to measure innovation within public organizations at the organizational level. This framework is adapted to the reality of the MH and outlined in Table 2; it therefore focuses on the fundamental elements of innovation activities in this context.

Table 2 - Systematization of definition, categories, description and variables proposed by Bloch (2011) and Bloch et al. (2009) on innovation in the public sector

Definition of innovation	Category	Description	Variable
Innovation in the public sector is the implementation of significant change in the way the public organization operates or supplies its products.	Types of innovation	Classification of innovation activities, based on the Oslo Manual, and adapted to the public sector	Product Process Organizational Communication
	Process of innovation	Specifies the way innovation occurs at the public organization	Collaboration and learning Diffusion of innovation Organizational culture Productivity of innovation
	Outputs for innovation	Goods, services or activities delivered by the innovating public organization	Types of innovation Level of novelty of innovation Intangible outlets Social impacts
	Outcomes of innovation	Wider results of the activities of the innovating public organizations	Improvement for employee Benefit to users Other intangible effects (confidence, legitimacy)
	Structural	Factors or external	Demands of users and suppliers

conditions	conditions that influence the innovating public organization	Organization of the public sector and incentive structure Political priorities Facilitators and barriers to innovation
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Source: Developed by the authors, adapted from Bloch et al. (2009) and Bloch (2011).

Thus, the aim is to analyze innovation in the public sector and the studies undertaken by the authors De Vries, Bekkers and Tummers (2015), and Bloch et al. (2009) outline categories and variables to devise a reliable and suitable instrument for measuring innovation in this context.

2.3 – Content validation

Content validation can be understood as a means of developing new measures for a given phenomenon, since it represents a method for associating abstract concepts with observable and measurable indicators; or, in a broader sense, content validation applies when there is a proposal to assess the degree to which each element of a measurement instrument is representative of a specific construct (Netemeyer, Bearden & Sharma, 2003).

Pasquali (1999) endorses this understanding and highlights the importance of content validation in the process of developing and adapting measurement instruments, as the growing demand for assessment instruments from researchers has not followed the concern regarding the calibration of the quality of these instruments or the applicability to our cultural context. Hence, Cassepp-Borges, Balbinotti & Teodoro (2010) have outlined techniques to adapt instruments from one culture to another via translation and validation of content, with the aim of systematizing these procedures so that they are used in the most diverse fields of knowledge.

Content validation is linked to studies that examine the clarity, representativeness and relevance of items, and to this end, assessing judges must be used for a subjective assessment that verifies whether the instrument measures what it purports to measure, in accordance with content bias (Cassepp-Borges, Balbinotti & Teodoro, 2010). Among the techniques applied for content validation, this article highlights the Coefficient of Content Validity (CCV), advanced by Hernández-Nieto (2002), resulting from the need for a new coefficient, in order to measure this validation, assess agreement among judges and present reliable results.

Hence, CCV seeks to measure the magnitude of the value obtained by judges, compared with the maximum possible value (optimal), in accordance with a Likert Scale, varying from one to five and demonstrating the equivalence of content among items (Hernández-Nieto 2002).

3 – METHOD

Regarding the means of investigation, the locus of the phenomenon analyzed was the MH and the objective was to examine the phenomenon of innovation in public procurement of medicines and health inputs within this context, by validating the content from the survey.

In order to validate the content, it was submitted - via a form sent by email - to 10 judges, all specialists in public sector innovation, with a minimum experience of three years in researching the construct under discussion, in line with the Coefficient of Content Validity (CCV), advanced by Hernández-Nieto (2002), which represents a quantitative analytical procedure for each of the 42 questions initially formulated.

Assessment of questionnaire items was performed through a Likert Scale, varying from one to five, where one represents a very low level of adaptation and five indicates greater intensity for the variable assessed. Hernández-Nieto (2002) recommends a minimum of five and a maximum of 10 judges to assess instrument items.

Each questionnaire item was assessed by five judges according to three criteria: clarity of language, which considers the language used in the items with respect to the responding population; practical pertinence, which analyzes whether each item was developed in such a way as to assess the concept of interest; and finally, theoretical relevance, which assessed the degree to which the item was associated with theory. Furthermore, qualitative validation was performed through the insertion of a column entitled "observations", in order for judges to put forward improvements and suggestions regarding the items presented (Hernández-Nieto 2002; Cassepp-Borges, Balbinotti & Teodoro, 2010).

The method for calculating the Content Validity Coefficient (CCV), applied to validate the questionnaire, was performed by drawing on Hernández-Nieto's description (2002) and structured via the following stages:

- a) Based on the judges' scores (one to five), the mean score for each item was calculated (M_x):

$$M_x = \frac{\sum_{i=1}^J X_{ij}}{J}$$

Where, i = 1 and J represent the sum of the judges' scores and the number of judges who assessed the item, respectively.

- b) Based on the mean, the initial CCV is calculated for each item (CCV_i):

$$CCV_i = \frac{M_x}{V_{max}}$$

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Where, V_{max} reflects the maximum value the item can receive. In the case of the Likert Scale varying from one to five, the maximum value is five.

- c) For each item, an error calculation (Pe_i) is necessary to discount possible bias from judges:

$$Pe_i = \left(\frac{1}{J}\right)^J$$

- d) Thus, the final CCV (CCV_c) for each item is:

$$CCV_c = CCV_i - Pe_i$$

- e) The total CCV for the questionnaire (CCV_t) is calculated for each of the assessment criteria (clarity of language, theoretical relevance and practical relevance):

$$CCV_c = MCCV_i - Mpe_i$$

Where, $MCCV_i$ reflects the mean for the content validity coefficients of the items and Mpe_i the mean for the errors of the questionnaire items.

- f) Lastly, the mean for the CCV_c of each questionnaire item is calculated in order to proceed to the assessment, in line with the guidelines of the aforementioned author, who attributes the cut-off score of $CCV_c > 0.80$.

To validate each of the questionnaire items, the score of 0.80 was adopted as the cut-off for each of the above-mentioned analytical criteria. Items, in which only one of the variables obtained a mean CCV of below 0.80, were discarded and not included in the final version of the instrument for analyzing innovation in public procurement of medicines.

4 – DATA ANALYSIS

The research questionnaire was devised following the dimensions and variables outlined in the models of De Vries, Bekkers and Tummers (2015), and Bloch et al. (2009), as displayed in Tables 1 and 2, to which two variables were added: sustainability and transparency of information, concerning the features of technological innovation in the context of the MH.

Initially, 42 items were created for the questionnaire, categorized according to three main blocks: items 1 to 10, regarding the features and results of innovation, in this case the EPP; items 11 to 38, which outline the management practices and perceptions of the organizational environment to promote innovation; and, lastly, items 39 to 42, which reflect practices concerning the innovation process at the MH.

For the purposes of assessment, the questionnaire was submitted to ten judges, all specialists in innovation, although five replied and performed the content validation process as per the Coefficient of Content Validity (CCV), advanced by Hernández-Nieto (2002), for each of the 42 questions initially formulated, in accordance with the sample form sent by email.

To validate each of the questionnaire items, a score of 8.00 was adopted as a cut-off benchmark for each dimension analyzed: 1) clarity of language, 2) pertinence of items, and 3) theoretical relevance. Items in which the measurement of the categories received a mean CCV of below 8.00 were discarded and not included in the final version of the questionnaire. Table 3 outlines the calculation inventory of the CCV .

Table 3 – Calculation inventory of the CCV to validate content from the instrument on innovation in the MH's procurement process of medicines

Item	Clarity of language	Practical pertinence	Theoretical relevance	Item Mean
1) Offers easy use	0.88	0.96	0.96	0.93
2) Provides a relative advantage to the physical process (role)	0.92	0.96	0.96	0.95
3) Can be tested	0.84	0.92	0.92	0.89
4) Is compatible with other systems of the MH	0.96	0.96	0.96	0.96
5) Is considered an innovation in the MH's procurement process of medicines	0.96	0.96	0.96	0.96
6) Generates intangible assets, such as improved security of information, in the MH's procurement of medicines	0.76	0.96	0.96	0.89
7) Promotes improvement in the work processes of public	0.96	0.96	0.96	0.96

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servants involved in procurement of medicines				
8) Promotes an increase in the satisfaction of SUS users regarding the medicines acquired by the MH	0.88	0.96	0.96	0.93
9) Promotes transparency of information concerning the MH's procurement process of medicines	0.96	0.96	0.96	0.96
10) Promotes sustainability in the MH's procurement of medicines	0.80	0.92	0.96	0.88
11) Investment in R&D and innovation	0.84	0.96	0.96	0.92
12) Support for developing innovation within the agency	0.80	0.88	0.88	0.85
13) Provision of technological infrastructure for innovation	0.84	0.96	0.96	0.92
14) Perception that managers are the main sources of innovation within the agency	0.72	0.92	0.88	0.84
15) Perception that public servants are the main sources of innovation within the agency	0.68	0.92	0.92	0.84
16) Management of suppliers' demands to promote innovation	0.64	0.84	0.88	0.79
17) Management of users' demands to promote innovation	0.64	0.92	0.96	0.84
18) Development of innovation according to political priorities	0.80	0.96	0.96	0.91
19) Networking with other organizations to develop innovation	0.96	0.92	0.92	0.93
20) Adherence to innovation legislation	0.84	0.84	0.84	0.84
21) Use of innovation that is being adopted by other organizations with a compatible profile	0.84	0.92	0.92	0.89
22) Development of innovation according to competition with other public organizations	0.88	0.92	0.92	0.91
23) Availability of resources for investment in innovation	0.76	0.92	0.92	0.87
24) Influence of top leadership (management and upper advisory posts at levels 6, 5 and 4) in innovation development	0.68	0.88	0.88	0.81
25) Influence of top leadership (management and upper advisory posts at levels 3 and 2) in innovation development	0.68	0.88	0.88	0.81
26) Influence of top leadership (management and advisory post, level 1, and head of division) in innovation development	0.68	0.92	0.92	0.84
27) Application of risk management for innovation development	0.76	0.80	0.80	0.79
28) Existence of barriers to innovation development	0.92	0.92	0.88	0.91
29) Existence of facilitators for innovation development	0.92	0.92	0.88	0.91
30) Existence of incentives and rewards for those who innovate	0.88	0.92	0.92	0.91
31) Existence of conflicts that complicate innovation development	0.96	0.80	0.88	0.88
32) Existence of autonomy for public servants to develop innovation	0.96	0.96	0.96	0.96
33) Development of innovation based on skills and knowledge	0.64	0.84	0.84	0.77
34) Encouragement of creativity to develop innovation	0.88	0.96	0.96	0.93
35) Formation of multidisciplinary teams for innovation development	0.80	0.92	0.92	0.88
36) Perception that commitment to work influences innovation development	0.76	0.96	0.96	0.89
37) Perception that satisfaction with work influences innovation development	0.76	0.96	0.96	0.89
38) Sharing of knowledge concerning innovation development by the agency's units	0.76	0.96	0.96	0.89
39) Development of innovation strategy	0.76	0.84	0.84	0.81
40) Incentive towards collaboration and learning activities for innovation	0.88	0.88	0.88	0.88
41) Development of activities to diffuse innovation	0.80	0.92	0.96	0.89
42) Perception that the organizational culture favors innovation development	0.84	0.92	0.96	0.91
Totals	0.80	0.91	0.91	0.87

Source: Developed by the authors.

Following validation through the CCV model, items 16 and 33 received a score below 0.80, which was taken as the cut-off benchmark, and were then discarded from the final version of the instrument. Item 27 also

presented a score below 0.80, though since it was close to 0.80 and an important variable, it was included in the conception of the questionnaire.

Based on the contributions from the judges in the "notes" column in the form that was sent, the judges' collaboration was elicited through suggestions for developing the instrument, which represents a qualitative analysis, as a means of enhancing the quality of items. Drawing on these contributions, a new semantic validation was performed for the questions to be put to the MH. This validation provided some contributions that led to: the discarding of questions 3, 17, 22, 24, 25, and 26; as well as the incorporation of questions 30 and 31 into issues 28 and 29, since they address variables concerning the barriers to and facilitators of innovation. Furthermore, questions 1, 6, 8, 9, 10, 11, 18, 20, 37, 38 and 41 were reformulated based on these contributions.

Hence, the final version of the proposed questionnaire contains 32 questions about innovation, and it was filled in following the Likert scale entailing seven levels, varying from "Never" to "Always" or "Non-applicable (NA)", as displayed in Table 4.

Table 4 – Instrument for analyzing innovation in the MH's process for public procurement of medicines

Section A – In this section, the questions verify the perception of the attributes of the Electronic Procurement Process (EPP) software					
Indicate the frequency and intensity with which EPP exhibits the following features and results					
Item	Scale				
1) Offers easy use	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
2) Provides a relative advantage to the physical process (role)	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
3) Is compatible with other systems of the MH	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
4) Is considered an innovation in the MH's procurement process of medicines	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
5) Generates intangible assets, such as improved security of information, in the MH's procurement of medicines	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
6) Promotes improvement in the work processes of public servants involved in procurement of medicines	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
7) Improves the procurement process for medicines acquired by the MH for subsequent distribution to states and municipalities	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
8) Promotes transparency of public information concerning the MH's process for procurement of medicines	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
9) Promotes sustainability in the MH's procurement of medicines, given that sustainability is a set of instituted measures that observe ecological norms so as not to harm future generations.	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
Section B – In this section, the questions verify the perception of the environment and structural conditions in which the EPP software was developed and functions					
In the context of the MH, indicate the frequency and intensity of management practices and of perceptions of the organizational environment for promoting innovation					
Item	Scale				
10) Investment in innovation	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
11) Support for innovation development (through educational measures, incentives for diversity)	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
12) Provision of technological infrastructure for innovation	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
13) Perception that managers are the main sources of innovation within the agency	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
14) Perception that public servants are the main sources of innovation within the agency	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
15) Development of innovation to serve political priorities	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
16) Networking with other organizations to develop innovation	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
17) Adherence to innovation legislation	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
18) Use of innovation that is being adopted by other organizations with a compatible profile	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
19) Availability of resources for investment in innovation	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)
20) Application of risk management for innovation development	0 (Never)	1	2	3 4 5 (Always)	NA (Non-applicable)

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21) Existence of barriers, such as conflicts, to innovation development	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)
22) Existence of facilitators, such as incentives and rewards, for innovation development	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)
23) Existence of autonomy for public servants to develop innovation	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)
24) Encouragement of creativity to develop innovation	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)
25) Formation of multidisciplinary teams for innovation development	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)
26) Perception that commitment to work influences innovation development	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)
27) Perception that a focus on satisfaction with work influences innovation development	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)
28) Sharing of knowledge concerning innovation development by the agency's units	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)

Section C – In this section, the questions verify the perception of the MH's innovation process

Indicate the frequency and intensity with which EPP exhibits the following practices concerning the innovation process

Item	Scale		
29) Development of innovation strategy	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)
30) Incentive towards collaboration and learning activities for innovation	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)
31) Development of activities to diffuse (propagate) innovation	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)
32) Perception that the organizational culture favors innovation development	0 (Never)	1 2 3 4 5 (Always)	NA (Non-applicable)

Source: Developed by the authors.

At the end of the validation process, the proposed questionnaire was developed with 32 items regarding innovation, in addition to five items concerning the socio-demographic profile of respondents, totaling 37 questions, aimed at assessing the perception that stakeholders associated with EPP have with respect to the variables outlined in the literature on innovation in the public sector. Thus, the content validation performed constitutes a mechanism for linking abstract innovation concepts to measurable indicators in the aforementioned context.

5 – CONCLUSIONS AND RECOMMENDATIONS

Validating the content of a given research instrument represents a means of enhancing its reliability in grasping the proportions at which the items constructed to measure a theoretical construct reflect all the important nuances of the concept to be measured (Pasquali, 1999). Thus, content validation is essential to infer the representativeness of items and in this sense, this article has outlined a proposal for an instrument to analyze the innovation present at the Ministry of Health, in order to optimize the public procurement process of medicines and health inputs, based on content validation. To this end, the (CCV), advanced by Hernández-Nieto (2002), was applied.

The article described all the procedures applied in the content validation, including the CCV, which is an important stage in developing the instrument proposed and creating a scale to measure innovation in the public sector, in the context of the MH's public procurement of medicines. However, there are other measures to assess the validity of instruments, as means to enhance their reliability, including the Kappa Agreement Coefficient to measure the theoretical dimension of items, referring to the ratio of the proportion of times judges agree to the maximum proportion of times judges could agree (Hernández-Nieto, 2002).

It is necessary to highlight that the innovation analysis, in the light of the instrument proposed, entails some limitations. Validating the innovation construct of the public procurement process of medicines clearly cannot offer generalizations for the instrument in statistical terms, though even the validation of the content of an instrument linked to specific contexts can be useful in gaining new methods for analyzing the innovation process in the public sector, as a way of increasing the quantity, quality and reliability of available instruments.

It is therefore evident that the validation of content from measurement and assessment instruments, applying techniques like the CCV, should be propagated, with the aim of enhancing the ability to measure precisely the reliability of the phenomena examined, thereby reproducing results consistently in time and space, with different observers (Pasquali, 1999; Netemeyer, Bearden & Sharma, 2003).

Furthermore, the instrument proposed following the process of validating the content described, made it possible to analyze each item individually, thus delimiting, by drawing on the literature suggested by the authors

Bloch et al. (2009) and De Vries, Bekkers and Tummers (2015), items that exhibit satisfactory psychometric properties and reveal an opportunity to analyze the innovation construct in the context of the Brazilian public sector.

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