



CONSTRUCTION AND VALIDATION OF THE INFLUENCE BUILDING MEASUREMENT MODEL FOR OPERATING PERFORMANCE IN PUBLIC ORGANIZATIONS

CONSTRUÇÃO E VALIDAÇÃO DO MODELO DE MEDIÇÃO DE INFLUÊNCIA PARA O DESEMPENHO OPERACIONAL EM ORGANIZAÇÕES PÚBLICAS

CONSTRUCCIÓN Y VALIDACIÓN DEL MODELO DE MEDICIÓN DE INFLUENCIA PARA EL DESEMPEÑO OPERACIONAL EN ORGANIZACIONES PÚBLICAS

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ABSTRACT

This research aims to construct and validate a scale to measure the influence of planned purchases on operational performance in the Brazilian public service. The absence of instruments to measure the influence of planned purchases on operational performance in public organizations led to the development and elaboration of this research instrument. The research construct has two first order dimensions, planned purchases and operational performance. The first-order planned purchasing construct involves framing dimensions: planned purchasing, infrastructure and technology, procurement practices, and knowledge and skills. The first-order operational performance construct is made up of five dimensions: quality, reliability, flexibility, agility and cost. Participated in the validation studies of the construct 106 employees of the Federal Institute of Santa Catarina located in the Department of Administration and Planning, involving servers and managers acting in the purchasing area. Initially, the questions that make up the research model were validated by professionals and researchers in the purchasing area, and the items were validated by 8 professionals in the area. The statistical method used to validate the model was the Structural Equations Method, with data reliability occurring through the stroke test, croanbach's alpha and composite reliability. The result pointed out that planned purchases influence operating performance by 83.70% (R^2 adjustment of = 0.837).

Keywords: Planned purchases, operational performance, Santa Catarina Federal Institute, Research construct.

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RESUMO

Esta pesquisa tem como objetivo construir e validar uma escala para mensurar a influência das compras planejadas no desempenho operacional no serviço público brasileiro. A ausência de instrumentos capazes de medir essa influência em organizações públicas motivou o desenvolvimento deste instrumento de pesquisa. O construto da pesquisa é composto por duas dimensões de primeira ordem: compras planejadas e desempenho operacional. O construto de compras planejadas envolve as dimensões de planejamento de compras, infraestrutura e tecnologia, práticas de aquisição, e conhecimentos e habilidades. Já o construto de desempenho operacional é composto pelas dimensões qualidade, confiabilidade, flexibilidade, agilidade e custo. Participaram dos estudos de validação 106 servidores do Instituto Federal de Santa Catarina, lotados no Departamento de Administração e Planejamento, incluindo técnicos e gestores atuantes na área de compras. Inicialmente, as questões do modelo foram validadas por especialistas e pesquisadores da área, sendo posteriormente avaliadas por 8 profissionais. O método estatístico utilizado foi o de Equações Estruturais, com verificação da confiabilidade dos dados por meio do teste de consistência, alfa de Cronbach e confiabilidade composta. Os resultados indicaram que as compras planejadas influenciam o desempenho operacional em 83,70% (R^2 ajustado = 0,837).

Palavras-chave: Compras planejadas; Desempenho operacional; Instituto Federal de Santa Catarina; Construto de pesquisa.

RESUMEN

Esta investigación tiene como objetivo construir y validar una escala para medir la influencia de las compras planificadas en el desempeño operativo en el servicio público brasileño. La ausencia de instrumentos capaces de medir dicha influencia en organizaciones públicas motivó el desarrollo de este instrumento de investigación. El constructo de la investigación está compuesto por dos dimensiones de primer orden: compras planificadas y desempeño operativo. El constructo de compras planificadas incluye las dimensiones de planificación de compras, infraestructura y tecnología, prácticas de adquisición, y conocimientos y habilidades. Por su parte, el constructo de desempeño operativo está conformado por las dimensiones calidad, confiabilidad, flexibilidad, agilidad y costo. En los estudios de validación participaron 106 servidores del Instituto Federal de Santa Catarina, pertenecientes al Departamento de Administración y Planificación, incluyendo técnicos y gestores que actúan en el área de compras. Inicialmente, las preguntas del modelo fueron validadas por especialistas e investigadores del área, y posteriormente los ítems fueron evaluados por 8 profesionales. El método estadístico utilizado fue el de Ecuaciones Estructurales, verificándose la confiabilidad de los datos mediante pruebas de consistencia, alfa de Cronbach y confiabilidad compuesta. Los resultados indicaron que las compras planificadas influyen en el desempeño operativo en un 83,70% (R^2 ajustado = 0,837).

Palabras clave: Compras planificadas; Desempeño operativo; Instituto Federal de Santa Catarina; Constructo de investigación.

1. INTRODUCTION

Planned purchases can be defined as the process of planning, evaluation, implementation and control of decisions of high importance to the organization (CARR AND SMELTEZER, 1997).

Therefore, the strategic role of procurement activities rests on three pillars: first, organizations need to have a long-term plan, second, the long-term procurement sector plan must be aligned with the organization's strategic objective, third, The need for revision of the long-term plan must be aligned with the organizational and strategic changes of the institution (CARR; SMELTZER, 2000).

The government procurement and procurement area is one of the most important components for public management, having as attributions, contracting, regulating and evaluating procurement procedures. Therefore, the purchasing function plays a fundamental role in the organization's strategic purchases (PIMENTA, 2002).

For Carr and Pearson (2002), the purchasing function's activities should be based on strategies aligned with the organization's strategic plans, and should be planned, evaluated, implemented and controlled to achieve the company's long-term goals. Brown and Potoski (2003) claim that procurement planning also facilitates the procurement process, ie public managers can determine whether a service is really needed and whether there are appropriate suppliers to purchase the products and contract the services, facilitating the feasibility assessment, or determine whether purchases should actually be made and the services contracted.

Batista and Maldonado (2008) argue that the purchasing process is considered essentially an administrative function, separated by several interrelated stages. The decisions made in this process are associated with quality, quantity, origin, schedule and cost of acquisition. The literature points out that cost management is useful to support decision making, as well as to verify the viability and coherence of purchasing activities. These factors help managers to reduce costs, improve efficiency and resource allocation (VERBEETEN, 2011). With regard to public service, Constantino et al. (2012) state that one of the advantages of adopting planned purchases is the balancing of the purchasing costs that are obtained within organizations, because by adopting planned purchasing practices, institutions are able to make the appropriate purchases using this, a structured planning, whether short, medium, or long term.

Caniato, Luzzini, Ronchi (2014) state that organizations can measure purchasing performance through operational approaches, and organizations can measure the time, quality and flexibility of the purchasing process, thus providing efficiency in acquisitions. Kumar, Nair and Piecha (2015) argue that efficiency in procurement leads to reduced administrative costs, ie getting good value in procurement is not just a matter of getting goods at the best price, but also involves consideration of costs incurred during For Luzzini and Ronchi (2016), the purchasing process depends on top management support, so that purchasing performance is measured through operational approaches. Managers are responsible for directing financial and personnel resources to improve functional capacity, ie, the high level is responsible for providing resources for the procurement processes to be executed. Given the importance of involving operational approaches in the purchasing processes and literature of Carr and Smeltezer (1997), Carr and Pearson (2002), Paulraj, Chen and Flynn (2006), Giunipero and Percy (2000), Freeman and Cavinato (1990) and Rabinovich, Desdener, Evers (2003), who reinforce the importance of planned purchases and the role that the purchasing function plays in the organization, the research instrument was elaborated to verify the influence of planned purchases on performance. when moderated by the budget of the organization.

2. THEORETICAL ANALYSIS

In this section, we present some aspects of planned purchases as well as the concepts of each dimension that make up planned purchases and operational performance.

2.1 Planned Purchases

For Freeman and Cavinato (1990) purchasing operations must be designed to meet the needs of the organization. The organization, by making planned purchases, makes it possible for the organization to achieve long-term goals.

Spekman.; Kamauff and Salmond (1994) state that the purchasing process must evolve strategically. The environment demands that purchasing become part of the strategic role of organizations. Burt and Pinkerton (1996) argue that with an integrative role buying can be characterized as a strategic function. Procurement professionals today are more interested in understanding planned procurement procedures and how they might interact with the organization's overall business strategy (CARR; SMELTEZER, 1997).

Over the years the purchasing function has begun to play a key role in the strategic planning of various organizations, purchasing professionals have had to improve, as well as the purchasing processes, due to the rapid changes that occur in the environments in which organizations are inserted. (CARR; SMELTEZER, 1997).

Brown and Potoski (2003) argue that planned purchases allow an assessment of the feasibility of contracting a service or making certain purchases, that is, whether contracting a particular service is appropriate and whether there are still suppliers to purchase the service. With regard to the public service, the public organizations, by not performing the purchases in a planned way, end up having unnecessary and even excessive expenses in the execution of the purchases and the contracting of services, not directing the necessary resources to other areas due to the expenses made of inappropriately, even reflecting on the feasibility of contracting services or on the real need to make purchases, influencing the quality and rendering of services to society (BROWN; POTOSKI, 2003).

For Brow and Potoski (2003) it is essential for public administration to "do more with less" because through this policy municipalities and government companies can reduce operating costs and optimize the public budget, facilitating the application to other essential areas of the organization, improving the quality and efficiency of public services (CONCHA et al., 2012). The procurement process in the public sector is subject to a different legal framework than private procurement, as public institutions typically pursue a different set of private enterprise goals. The procurement structure is more complex and formalized in public than private institutions, this is because public organizations use public resources and have to ensure transparency and accountability. Public institutions tend to be more centralized in their procurement activities as they seek to reduce variability in the procurement process, ensure that employees perform procurement processes in a standardized manner and that the laws governing the procurement process are followed. stripe (GLOCK; HOCHREIN, 2011).

Brown and Potoski (2003) and Concha et al (2012) state that public administration needs to "do more with less", because through this policy public organizations are able to reduce operating costs and optimize budget, thereby facilitating allocation. resources in the institution's core areas, improving the quality and efficiency of public services.

Constantino et al. (2012) argue that planned purchases are essential for balancing public accounts, because through planning, public organizations manage budget resources, directing a correct budget for the purchase or contracting of services, thus avoiding the waste of public money and facilitating its best applicability.

Given the presentation and the literature of Carr and Smeltezer (1997), Carr and Pearson (2002), Paulraj, Chen and Flynn (2006), Giunipero and Percy (2000), Freeman and Cavinato (1990) and Rabinovich, Desdener, Evers (2003), which reinforce the importance of planned purchases, the following dimensions were formed, presented in square 1:

Table 1: Planned Purchase Dimensions

Planning Dimension		
Dimension	Concept	Authors
Planning	Organizational purchases and service contracts contracted by the organization should be covered by a long-term plan, which should be reviewed and adjusted in accordance with the organization's strategic plan.	Carr e Smeltezer (1997) Paurak, Chen e Flynn (2006)
Knowledge and Skills	Through the knowledge and practice that professionals get the purchasing skills. The skills and knowledge gained enable procurement professionals to meet the procurement department's established goals as well as meet organizational goals.	Carr e Smeltezer (2000).
Infrastructure and technology	Infrastructure refers to material planning, involving the control and flow of materials. The adoption of a technology system enables the organization to improve inventory management and inventory management. The technological system allows the organization to operate efficiently.	Rabinovich et al., (2003)
Purchasing Practices	Evidence of the interrelationship between the purchasing sector and the other departments of the organization. Demonstrates that procurement management is a key activity for managing the organization.	Simões; Michel, 2004; Batista; Maldonado, 2008

Source: prepared by the author (2018)

The dimensions that form the construct support the research performed. According to Carr's studies; Smeltezer, 1997; Paulraj; Cousin; Spakmann, (2003) Chen; Flynn (2005). The planning dimension starts from the elaboration of a long-term plan for product procurement and service procurement, ie planning assumes that supply management must be concerned with the flow of goods and services for the organization to achieve. develop their activities purposes.

For Ubeda, Alsua and Carrasco (2015) purchases need to go through a maturity process. Purchasing maturity is defined as the level of professionalism in the purchasing function, which in turn measures the degree to which a purchasing department is advanced, sophisticated and professional. It is a measure of how people, strategies, procurement practices, suppliers and communication are managed in a purchasing department. This measure seeks to save

on shared and sustainable costs, know-how, innovation and improvements in productivity. Mature purchasing departments are likely to implement effective procurement planning.

There are a number of skills that purchasing professionals must master in order for buyers to gain knowledge and skills that have influenced the execution of the purchasing process so that they can meet the goals set by the department and organization (KOLCHIN & GIUNIPERO, 1993). and Smeltezer (2000) skills and knowledge come from practice. Cran and Baden-Fuller (2004) highlight the importance of alliances between organizations in knowledge acquisition. According to the authors, knowledge-based alliances serve as a vehicle for organizational learning, where strategic alliances are motivated by organizations to acquire knowledge from each other.

Alliances contribute to the efficient application of knowledge. Firstly, it improves knowledge regarding the production of complex goods and services, secondly, it increases the efficiency with which knowledge is used. Simões and Michel (2004) complement, stating that the interrelationship of purchasing activities between purchasing departments causes the flow of materials and supplies to flow together within the organization, facilitating the purchase of products, and with that, impacting on institutional activities. Knowledge and skills can be gained from sharing information and experience with other institutions, enabling knowledge to impact operational performance by minimizing operational errors and improving procurement efficiency (GRANT; BADEN-FULLER, 2004).

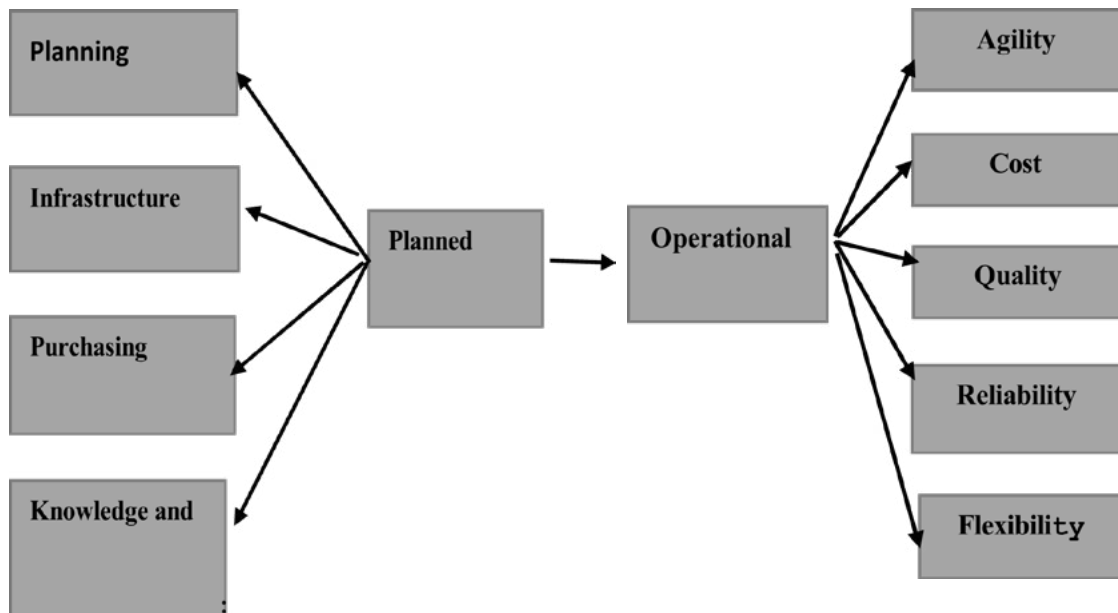
In purchasing practices Batista and Maldonado (2008) state that through inter-departmental relationships occur the information flows that make the purchasing process flow more quickly and quickly. Karttunen (2018) highlights persuasion skills as essential because it is strategic in that it is critical in cases of conflict or problems. Strategic skill, which is generated by persuasion skills, is understood as the skills necessary for purchasing managers to develop creative solutions to development problems or needs and to execute collaborative solutions. Emphasis is also given to the social and political skills of purchasing managers, these skills enable motivation among individuals working in the procurement process beyond cooperation through objectives, political skills involve goal management and cooperation.

In the infrastructure and technology dimension, Jonsson and Mattson (2008) argue that organizations should use methods to better manage material planning, as well as material and inventory flows (RABINOVICH; DESDENER; EVERS, 2003). Ramanathan (2012) completes the studies by Rabinovich, Desdener and Evers (2003) and Jonsson and Mattson (2008) by arguing that the adoption of an information technology system enables the organization to manage purchases and organizational inventory, allowing purchases to be executed efficiently. From the point of view of Dobrzykowski et al (2015) information management is a core supply chain activity. Through information management, organizations can optimize their absorption capacity. Absorption capacity is defined as the degree to which the organization acquires, assimilates, transforms and applies information. Absorbing capability enables the organization to capture external information, disseminate it and use it to create value.

The literature found indicates that planned purchases are made up of the following dimensions: planning, knowledge and skills, purchasing practices, and finally infrastructure and technology. Through the studies by Ferdows and De Meyer (1990) and Vokurka and Fliedner (1998), the dimensions that compose operational performance were established:

reliability, agility, flexibility, cost and quality. Given this context, a research construct was developed involving four dimensions that form planned purchases: planning, knowledge and skills, infrastructure and technology and procurement practices and the dimensions that form operational performance: quality, reliability, flexibility, agility and costs. Figure 01 shows the research construct model:

Figure 1: Research Construct (2018)



Source: Prepared by the author (2018)

The basis for constructing the dimensions was Carr and Smeltezer's (1997) strategic purchasing model as well as Cousin and Spekman's (2003) strategic alignment model. There are other literatures that support the research construct, in the dimension of knowledge and skill, Giunipero and Percy (2000) state that "due to the new strategic role of the purchasing function in organizations, it is essential that companies get professionals with skills and knowledge that maximizes the procurement function with the organization's objectives." Procurement practices encompass the organization's supply management, playing a strategic role and procurement planning, according to Paurack; Chen and Flynn, 2005, Planned Purchasing allows the organization to develop a long-term procurement and service plan, mitigating the risks and uncertainties that may occur during the procurement process.

With regard to infrastructure and technology, this is essential because it is linked to material flow control, which controls and monitors the organization's purchases, with the intention of maintaining an uninterrupted material flow (RAMATHAN, 2012). For Kembro and Selviaridis (2015), the sharing of inter-organizational information, that is, between the units of the organization, allows for a more efficient purchasing planning, positively affecting the organization's performance. Information sharing favors the three levels of the organization: operational level, buyers share ordering information, at the tactical level, buyers are able to share demand forecasts, plans and trends, thereby facilitating resource level planning and allocation. Strategic buyers are able to share demand forecasts, thus enabling effective planning of future purchases. In this way the organization can achieve

cost reduction, improve decision making and foster innovation based on sharing ideas and joint decision making (PRADABWONG, ET AL; 2017).

2.2. Operational performance

Operational performance can be defined as the expected result that the organization intends to achieve in the medium and long term, as well as the results it intends to achieve in the competitive area, such as quality, cost, flexibility, agility and reliability (HAYES; WHEELWRIGHT, 1979).

According to Hayes and Wheelwright (1979), operational performance can be defined as the performance that the organization has as a short and long term goal and the results it intends to achieve in the competitive variables such as agility, flexibility, quality, reliability and cost.

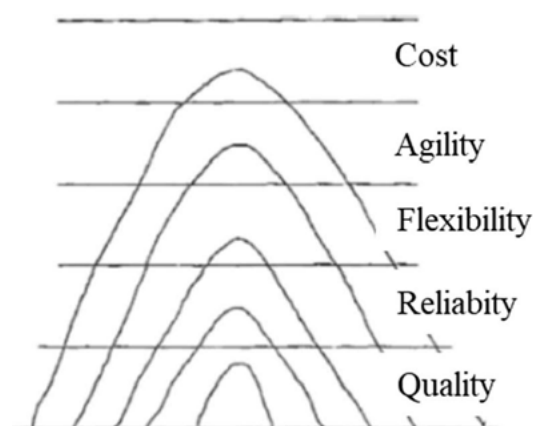
According to Ferdows and De Meyers (1990) as improvement efforts begin and some results are obtained, other efforts should be focused to make processes more reliable. As processes become more reliable, performance improvement in the quality of the organization is improved.

For Vokurka and Fliedner (1998), in the future, companies will have to strategically focus on cost, quality, reliability, flexibility and agility to remain competitive, due to the dynamism of the market and frequently changing customer demands.

According to Narashimhan and Jayaram (1998) cost, flexibility, quality and reliability are considered essential for supply management. According to Vokurka, Zank and Lund III (2002) supply chain management can improve performance involving the following factors: quality, reliability, flexibility and cost.

To measure operational performance, Vokurka and Fliedner (1998) propose a model with five factors that contribute to the competitive advantage of organizations. Figure 02 presents the sand cone, elaborated in the studies by Vokurka and Fliedner (1998).

Figure 2: Sand Cone Model



Source: Vokurka and Fliedner (1998)

For Merdith and Francis (2000) agility must be performed at both operational and strategic levels, and these, in turn, must be aligned. At the operational level, agility is related

to what happens within the organization, at the strategic level, agility allows the organization to transform multiple internal operations.

According to Stevenson (2001) flexibility can also be considered as an ability to respond to change. Quality is intrinsically linked with the buyer's perspective on the product or service, if it will serve its purpose.

Vokurka, Zank and Lund III (2002) agree with this understanding that quality, reliability, flexibility, agility and cost efficiency, being executed efficiently, provide competitiveness to the organizations Zhang, Vonderembse and Lim (2005) claim that Organizations that have efficient operational performance can eliminate bottlenecks and provide increased responsiveness.

Singh and Acharya (2013) state that flexibility can be defined as the ability to change or react with little penalty on time, effort, cost or performance. Flexibility is the ability of the organization to respond to changes that occur in the surrounding environment, whether from customer demand, changing government-sanctioned laws and regulations that impact business policy changes, implement new technologies, volume according to demand, design changes, etc. (SINGH; ACHARYA, 2013).

Moreover, mastering the steps that form the sand cone allows organizations to perform their operational activities in an integrated manner and processes to be executed in a coordinated manner (Bortolotti et al., 2015). Table 02 presents the concept of each dimension:

Table 2: Operational Performance Dimension

Operational Performance Dimension		
Dimension	Concept	Authors
Quality	It involves the elimination of waste throughout the system, thereby optimizing the resources of the organization. Improvements within an organization result from its ability to perform quality operations.	Vokurka e Fliedner, 1998
Reliability	The purchasing industry should focus its efforts on improving product delivery reliability.	Vokurka e Fliedner, 1998
Flexibility	Ability to respond to changes required by customers / requesters. Ability to adapt product delivery to the needs of various customers.	Vokurka; Zank; Lund, 2002
Agility	Ability of the organization to respond to unforeseen changes where there is no standard procedure to follow.	Vokurka e Fliedner, 1998
Cost	Receiving the right product at the right time and at the right cost. Cost efficiency.	Vokurka e Fliedner, 1998

Source: Prepared by the author (2018)

Several literatures indicate consensus on the use of the dimensions presented in sand cone studies, using them in an integrated manner. - Quality, reliability, flexibility, agility and costs (CHIANG; KOCABASOGLU-HILLMER; SURESH, 2012; PRAJOGO; MCDERMOTT; JAYARAM, 2014).

From the point of view of Bortolotti et al. (2015) the sand cone model has been used by various organizations in operational strategies and that companies that have a solid foundation of integrated operations can benefit from the sand cone model.

3. METHODOLOGICAL RESEARCH PROCEDURES

The validation of the research instrument occurred through the Qsort method. According to Moore and Benbasat (1991) the questions that make up the research instrument are submitted to the analysis of specialists in the field, so that each assertion is analyzed by different judges who have a vast knowledge about the research theme. The evaluations of professionals and researchers in the area allow us to diagnose which questions that compose the research should be reviewed, eliminated or maintained (Moore and Benbasat, 1991). First, it was necessary to carry out a literature review regarding the dimensions that make up the research, that is, the indicators that make up the planning, knowledge and skills, purchasing practices and infrastructure and technology, and the operational performance, formed by the cost dimensions, quality, agility, flexibility and reliability.

Through the study of the dimensions that make up the planned purchases and operational performance, the research questions applied at the Federal Institute of Santa Catarina were elaborated. The questionnaire sent to the judges (procurement professionals and area researchers) consisted of 43 questions, divided into 28 questions of the second-order construct, called planned purchases, and 15 questions of the dimensions of operational performance.

The second stage of Qsort consisted of judges evaluating the items. The analysis of the assertions was performed as follows: a) the questionnaire containing the 43 assertive questions was sent by e-mail, the questionnaire itself had instructions on how the judges should proceed in relation to the evaluation and a brief summary of each dimension; b) After returning the questionnaire answered by the judges, the questions were grouped and analyzed; c) from the analysis of professionals and researchers from the purchasing area, the questionnaire was readjusted.

To obtain the agreement index percentage, a calculation was performed based on the number of assertions that were correctly scored in the respective dimensions. After tabulating the judges' answers, it was contacted the need to resubmit four questions of the infrastructure and technology dimension to re-examine. Among the 43 questions submitted for professional analysis, 04 questions had to be reviewed and 01 question eliminated, as they did not meet the minimum agreement index established in the literature. According to Hair et al. (2009), agreement rates below 50% should be excluded from the analysis. Two questions that were resubmitted remained in the final survey questionnaire, thus totaling 40 questions. Table 01 shows the agreement index among the 40 questions:

Table 3: Index of agreement with 40 questions

	Judge1	Judge2	Judge3	Judge4	Judge5	Judge6	Judge6	Judge8
Judge1		63%	73%	73%	68%	53%	73%	63%
Judge2	63%		75%	80%	75%	75%	75%	75%
Judge3	73%	75%		85%	80%	75%	80%	83%
Judge4	73%	80%	85%		90%	78%	85%	70%
Judge5	68%	75%	80%	90%		73%	80%	70%
Judge6	53%	75%	75%	78%	73%		65%	70%
Judge7	73%	75%	80%	85%	80%	65%		80%
Judge8	63%	75%	83%	70%	70%	70%	80%	
Média	67%	74%	79%	80%	77%	70%	77%	73%

Source: Prepared by the author (2018)

The results reached values higher than the recommended in the literature of 55%. Therefore, the agreement among the evaluators was calculated for the 40 questions that make up the final questionnaire, as well as for each dimension of the research construct, according to the data presented in table 2.

Table 4: Agreement rate with 40 questions

Dimension	Code	Agreement index per question.	Agreement Percent by Dimension
Knowledge and skill	CH01	80%	94%
	CH02	75%	
	CH03	100%	
	CH04	100%	
	CH05	100%	
	CH06	100%	
Infrastructure and Technology	ITO7	71%	79%
	IT08	75%	
	IT09	88%	
	IT10	100%	
	IT11	63%	
Planning	PL12	100%	84%
	PL13	63%	
	PL14	50%	
	PL15	100%	
	PL16	100%	
	PL17	88%	
	PL18	100%	
	PL19	75%	

Continue

Conclusion

Dimension	Code	Agreement index per question.	Agreement Percent by Dimension
Purchasing Practices	PC20	75%	63%
	PC21	50%	
	PC22	50%	
	PC23	88%	
	PC24	63%	
	PC25	50%	
Costs	CT1	88%	92%
	CT2	88%	
	CT3	100%	
Quality	QL4	88%	92%
	QL5	100%	
	QL6	88%	
Reliability	CO7	75%	79%
	C08	75%	
	C09	88%	
Flexibility	FL10	100%	83%
	FL11	88%	
	FL12	63%	
Agility	AG13	63%	83%
	AG14	100%	
	AG15	100%	

Source: Prepared by the author (2018)

Given the results presented, it can be seen that the questions IT07 “The Santa Catarina Federal Institute foresees investments in technology that enable materials planning” and IT10 “The Santa Catarina Federal Institute has an implemented information system that allows the sharing of operational information between the departments. of purchases” now have a concordance index of 71% and 100%, respectively, bringing the overall infrastructure and technology dimension index to 79%.

The items by construct through the evaluation of professionals and researchers in the purchasing area were distributed as follows:

Table 5: Comparison between construct allocation in the planned purchasing dimension

Theoretical Construct	Planning	Purchasing Practices	Knowledge and Skill	Infrastructure and Technology	Total	Correct Allocation Index
Planning	54	3	5	2	64	84%
Purchasing Practices	11	30	4	3	48	63%
Knowledge and Skill	1	2	45	0	48	93,75%
Infrastructure and Technology	4	3	1	32	40	80%
Total hits	70	38	55	37	200	

Source: Prepared by the author (2018)

The total number of items that obtained the correct allocation, in the dimension of planned purchases, was 161 out of 200 possible, obtaining the agreement index of 80.5%. No construct had an index below 50%. According to Moore and Benbasat (1991) the acceptable percentage is at least 70%. Table 04 shows the allocation index in the dimensions that constitute operational performance.

Table 6: Construct Allocation in Operational Performance Dimension

Theoretical Construct	agility	reliability	cost	flexibility	quality	Total	Correct Allocation Index
agility	21	0	0	2	1	24	87,50%
reliability	3	19	0	0	2	24	79%
cost	0	0	22	0	2	24	91%
flexibility	4	0	0	20	0	24	83%
quality	1	1	0	0	22	24	91%
Total hits	29	20	22	22	27	120	

Source: prepared by the author (2018)

In the analysis of the operational performance construct, the total of hits was 104 out of 120 possible, reaching an allocation rate of 86%. As shown in Table 11, no construct had an index below 50%, all remaining above 70% and considered acceptable, according to the authors Moore and Benbasat (1991).

Next, to obtain the degree of agreement between the judges, the kappa measure was used, which is based on the number of concordant answers, ie, it is based on the number of cases in which the evaluation result is equal for the peers evaluated. The Kappa index corresponds to the degree of interobserver agreement and measures the degree of agreement beyond what is expected by chance. Table 05 presents the recommended indices for Kappa, as indicated in the literature of Landis JR and Koch (1977).

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Table 7: Acceptable level of agreement between raters on Kappa index

Kappa value	Interpretation
<0	Not acceptable
0.0-20	Unacceptable
0.21 – 0.40	Medium
0.41 – 0.60	Moderate
0.61 – 0.80	Substantially agreeable
0.81 – 1.00	Perfectly agree

Source: Adapted from Landis and Koch (1977).

Based on the studies by Landis and Kocch (1977), a result of $K = 0.72$ was obtained for the dimensions that make up the second-order construct, called planned purchases, and was considered substantially consistent. The dimensions that make up the second order construct of operational performance, the Kappa index was considered to be $K = 0.82$, being considered perfectly concordant.

3.1 Data Collection

The data collection instrument was organized with 40 questions. With 25 questions regarding the dimensions of planning, knowledge and skills, procurement practices, and infrastructure and technology, which form the second-order construct

called planned purchases, and 15 questions covering the dimensions of cost, reliability, flexibility, agility, quality, that form the second-order construct called operational performance. All variables in the data collection instrument were searched in the literature. The data collection instruments are presented in table 3.

Table 8: Research Questions

Dimension	Code	Item	Author (s)
Planning	PL01	1. Purchases are included in the organization's strategic planning process.	PAULRAJ; CHEN; FLYNN (2006).
	PL02	2. The procurement processes undertaken by the institution provide data to senior management.	PAULRAJ; CHEN; FLYNN (2006).
	PL03	3. Employees working in the procurement process have a good understanding of the Organization's strategic objectives.	PAULRAJ; CHEN; FLYNN (2006).
	PL04	4. The Santa Catarina Federal Institute has a formally written long-term plan.	CARR; PEARSON (2002).
	PL05	5. Purchasing strategies are designed to support the organization's strategies.	CARR; PEARSON (2002).
	PL06	6. Senior management considers purchasing a vital part of organizational strategy.	PAULRAJ; CHEN; FLYNN (2006).
	PL07	7. IFC's long-term procurement and service plan is reviewed and adjusted according to IFC's strategic plan.	CARR; PEARSON (2002).
	PL08	8. The procurement processes undertaken by the institution indicate long term supply needs	CARR; PEARSON (2002).
Knowledge and Skills	CH09	9. The servers working in the purchasing process have the technical capacity to improve the procurement and service contracting processes.	CARR; KEONG LEONG; SHEU (2000).
	CH10	10. The servers working in the purchasing process have the ability to follow all process steps.	CARR; SMELTEZER (2000).
	CH11	11. Workers working in the procurement process have knowledge involving procurement procedures (eg knowledge of legal issues, drafting of contracts and risk mitigation, etc.)	GIUNIPERO; HANDFIEL (2004).
	CH12	12. Employees working in the procurement process have knowledge of ethical conduct.	GIUNIPERO; HANDFIEL (2004).
	CH13	13. The servers working in the purchasing process have cost management skills.	GIUNIPERO; HANDFIEL, (2004).
	CH14	14. Servers working in the procurement process have the ability to verify process details (whether procedures are being met with reference to procurement requests and current standards and laws).	CARR; SMELTEZER (2000).

Continue

Continuation

Dimension	Code	Item	Author (s)
Infrastructure and technology	IT15	15. The Santa Catarina Federal Institute foresees investment in technology that enables the purchase planning.	STANK; KELLER; DAUGHERTY (2001).
	IT16	16. The Santa Catarina Federal Institute has an inventory management tool (inventory and asset) that connects the operations of receiving requests, supply and distribution.	RABINOVICH; DESDENER; EVERS (2003).
	IT17	17. The Santa Catarina Federal Institute has a computerized purchasing system that allows dealing with routine activities.	CARR; SMELTEZER (1997).
	IT18	18. The Federal Institute of Santa Catarina has an implemented information system that allows the sharing of operational information between the units' purchasing departments.	STANK; KELLER; DAUGHERTY (2001).
	IT19	19. The Santa Catarina Federal Institute has adequate capacity to internally share standardized and personalized information on purchasing practices.	STANK; KELLER; DAUGHERTY (2001).
Purchasing Practices	PC20	20. Best purchasing practices are shared within procurement departments within the Santa Catarina Federal Institute.	STANK, KELLER; DAUGHERTY (2001).
	PC21	21. The Santa Catarina Federal Institute seeks to reduce the time between receipt of the order and delivery to the customer.	STANK; KELLER; DAUGHERTY (2001).
	PC22	22. The Santa Catarina Federal Institute has the practice of purchasing products or contracting services according to specifications.	STANK; KELLER; DAUGHERTY, (2001)
	PC23	23. The Santa Catarina Federal Institute seeks to negotiate with suppliers the delivery time of products and the rendering of services.	GIUNIPERO; HANDFIEL (2004)
	PC24	24. The Santa Catarina Federal Institute seeks to monitor changes that occur in the external environment to check the availability of product or service.	ELLRAM et al., (2002)
	PC25	25. The Santa Catarina Federal Institute monitors the external environment to observe the price changes of the products to be purchased or services.	ELLRAM et al., (2002)

Continue

Conclusion

Dimension	Code	Item	Author (s)
Reliability	CO01	01. IFC Purchasing Area Fulfills Delivery Times for Requested Products and Services.	VOKURKA; FLIEDNER (1998)
	CO02	02. Our clients trust the deadlines we present, as they are always met.	VOKURKA; FLIEDNER (1998)
	CO03	03. When we generate an expectation for delivery we are efficient and meet the promised.	VOKURKA; FLIEDNER (1998)
Cost	CT04	04. IFC processes run at the lowest possible cost.	VOKURKA; FLIEDNER (1998)
	CT05	05. IFC is clear that cost reduction impacts organizational results.	FERDOWS; DE MEYER (1990).
	CT06	06. The reduction of operating costs is an important goal for IFC.	VOKURKA; FLIEDNER (1998)
Agility	AG07	07. IFC can quickly adapt to new legislation and standards in force.	VOKURKA; FLIEDNER (1998).
	AG08	08. IFC can promptly meet the required adaptations, quickly meeting the needs.	VOKURKA; FLIEDNER (1998).
	AG09	09. The Santa Catarina Federal Institute is agile to meet an increase of demands, if they occur suddenly.	VOKURKA; FLIEDNER (1998).
Flexibility	FL10	10. IFC may make changes to products and services.	FERDOWS; DE MEYER (1990).
	FL11	11. When we cannot solve a problem using conventional methods, we create new ones.	FERDOWS; DE MEYER, (1990).
	FL12	12. The Santa Catarina Federal Institute is prepared to absorb an increase in demand if it occurs suddenly	VOKURKA; FLIEDNER (1998).
Quality	QU13	13. The Santa Catarina Federal Institute has the routine of seeking continuous improvement in internal processes in order to improve quality.	VOKURKA; FLIEDNER (1998)
	QU14	14. IFC's processes focus on quality, meeting compliance standards.	VOKURKA; FLIEDNER (1998)
	QU15	15. The Santa Catarina Federal Institute seeks to avoid rework by working in daily activities to avoid mistakes.	FERDOWS; DE MEYER (1990)

Source: Prepared by the author (2018)

The data collection instrument was elaborated by the author, using the literature review. Prior to the application of the questionnaire, the questions were submitted to QSORT for analysis by experts in the area and consequently validation of the assertions. Subsequently, the questions were pre-tested for some survey respondents and finally, after instrument validation, the questionnaire was sent to the survey respondents.

3.2 Characterization of the sample

In the applied questionnaire was used the Likert scale from (1) (strongly disagree) to 5 (strongly agree). Data were collected using questionnaires composed of three parts. The first part concerning the second-order construct called planned purchases was composed of 25 questions. The second part regarding the second-order construct, called operational performance, had 15 questions.

The survey was conducted electronically, from October 2018 to November 2018, with the servers of the 15 units of the Federal Institute of Santa Catarina (IFC). The population is made up of a total of 199 (one hundred and ninety-nine employees), made up entirely of administrative technicians. Table 6 details the research population and sample for better understanding.

Table 9: Population and research sample

Campi	Servers in the Administration and Planning Department	Quantitative survey respondents	Percentage of participation
Reitoria	17	12	70,58%
Araquari	17	7	41,17%
Blumenau	10	8	80%
Brusque	8	6	75%
Camboriú	16	5	31,25%
Concórdia	19	12	63,15%
Fraiburgo	11	5	45,45%
Ibirama	7	5	71,42%
Luzerna	12	4	33,33%
Rio do sul	24	9	37,5%
Sta. Rosa do Sul	22	14	63,63%
São Bento do Sul	12	6	50%
São Francisco do Sul	7	5	71,42%
Videira	17	8	47,05%
TOTAL	199	106	53,26%

Source: Research Data (2018)

The survey obtained a total of 53.26% of participation. Campus Blumenau was the unit where most respondents were collected. When considering the number of respondents in relation to the number of servers filled in the administration and planning department, a 90% return rate of the questionnaires sent is obtained.

Turning to the place investigated, the research was conducted in a public educational institution, more specifically at the Federal Institute of Santa Catarina. The federal authority is made up of 16 units in the state of Santa Catarina and was created by federal law No. 11,892 of December 29, 2008.

The 16 units are distributed as follows: Administrative / Rectory Unit located in the city of Blumenau / SC and 15 (fifteen) campuses in the following cities of the state: Abelardo Luz, Araquari, Blumenau, Brusque, Camboriu, Concordia, Fraiburgo, Ibirama, Luzerna, Rio do Sul, Santa Rosa do Sul, Sao Bento do Sul, Sao Francisco do Sul, Sombrio and Videira.

5. FINAL CONSIDERATIONS

The research instrument, conducted through the literature by Carr and Smeltezer (1997), Cousin and Spekman (2003), Giunipero and Pearcy (2000), Paurack; Chen and Flynn, 2005, Ramathan, 2012 and Kembro and Selviaridis, 2015, Vokurka and Fliedner (1998) were applied and a public educational institution. The literature has pointed out that the dimensions that form the research construct are primordial to confirm the role of planned purchases on the operational performance of the organization. The main limitation of this research was the application of the questionnaires only to a public body. It is noteworthy that this limitation does not detract from the applied research nor the results achieved, since each IFC unit has autonomy to manage the resources in terms of purchases, while in other federal educational institutions located in the state of Santa Catarina, purchases are centralized in the Rectory.

Second limiting factor was that the questionnaire was applied only to servers performing activities inherent to the purchasing process, and not to servers requesting purchases or rendering of services. By applying the questionnaire to the requesting servers, their perception could have been misrepresented about the planned purchasing practices, as well as the effectiveness of the servers loaded in the DAP regarding operational performance.

The main contribution of this research is the model and the elaborated questions, since the literature did not find a ready model of the influence of the planned purchases on the operational performance focused, both for Brazilian public agencies, as well as for private companies. The applicability of this study to Brazilian public institutions and private companies allows managers to have better management of resources, as well as identify problems in the procurement procedure.

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