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Organisational choices in public procurement: what can public management learn from the private sector?

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ABSTRACT

In the public context, the efficient and effective management of procurement activities has a crucial impact on the achievement of operational and broader government objectives. In particular, the potential contribution of procurement within local governments has been broadly recognized, and organisational procurement choices represent a strategic aspect that must be managed to contribute to these objectives. Through the analysis of data on 371 Italian municipalities, this paper discusses how to design procurement organisation variables for local governments. Three possible organisational models are identified (i.e., authoritative procurement, silo procurement, and local procurement) and discussed from the perspective of internal and external contingencies that may affect organisational decisions.

KEYWORDS Local government procurement; organisational design; cluster analysis; iscriminant function analysis

1. Introduction

The importance of public procurement for the dynamics of public administration in the European Union (EU) is increasing. Fostering efficiency in public spending, enhancing cooperation among different administration levels and establishing a common regulatory framework are the main reasons why public procurement reforms at EU and national level are being pursued (Piga and Tatrai 2017). To obtain the desired performance, the decision of how to organize procurement is critical (Patrucco et al. 2018). The combination of good internal procurement system design and flexibility in responding to external factors (e.g., regulatory changes) not only affects operational performance, but also contributes to the achievement of broader government objectives, such as social outcomes,

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environmental benefits and economic growth (Porter et al. 2011; Patrucco et al. 2017; Flynn 2018).

Despite the limitations public managers need to face when structuring their organisation, the discussion on organisational design in public institutions has a lengthy history (e.g., Hood 1991) and remains relevant today for all governmental functions, from both theoretical (Taylor 2014) and practical (Jung 2014) perspectives. The debate on procurement is similarly relevant although it is still developing. Compared to research on the private sector, where several studies have extensively investigated procurement organisation adopting different perspectives and methods (Schneider and Wallenburg 2013), public procurement has received less attention. Here, most authors have focused on limited aspects (e.g., the level of centralisation; Glock and Broens 2013), mostly adopting a general view (Glas, Schaupp, and Essig 2017) and thus minimizing the relevance and impact of the research for specific types of institution – such as local governments. To extend this discussion, this paper first proposes a conceptual framework (inspired by the private sector and developed in manner consistent with contingency theory) that includes variables characterizing the public procurement system and organisation. Subsequently, the framework is investigated through the analysis of data collected by surveying Italian local governments. The intentions of the study are to 1) enrich the research on public procurement organisational design by proposing archetypes for adoption by local institutions and 2) discuss how these archetypes can be adopted according to specific institution-level contextual factors (i.e., local government dimension, spending budget, human resource base).

2. Theoretical background

Normative issues and high-level policy goals constrain managerial decision in the public sector, forcing managers to look for specific and separate approaches to managing organisational choices (e.g., Rosenberg Hansen and Ferlie 2016). However, this does not mean that public management cannot find points of connection with the private sector, particularly when decisions regarding how to organize the more operational government functions – such as procurement – are concerned.

According to Thai (2016), public procurement is a complex system that depends on both external and internal variables. It is tasked with specific objectives beyond traditional cost savings and quality – such as transparency, accountability, fair competition, and social benefits (Patrucco et al. 2017). Among public procurement's various elements, the organisational structure-related aspects represent a key component to be defined (Thai 2016). Effective and efficient management of public procurement requires proper organisation, and how to shape the procurement organisation has been addressed by scholars of both private and public management for a long time.

An in-depth look at the literature on the topic (e.g., Glock and Hochrein 2011; Schneider and Wallenburg 2013) reveals that a large number of authors have focused their efforts on defining and detailing the different organisational variables that characterize procurement organisation, including 1) the degree of centralisation of procurement activities (e.g., McCue and Pitzer 2000; Johnson and Leenders 2004; Bals, Laine, and Mugurusi 2018), the design of the reporting relationships (e.g., Johnson, Leenders, and Fearon 2006; Glock and Broens 2013), the level of procurement involvement in decision-making processes (e.g., Driedonks, Gevers, and van Weele 2010; Luzzini and Ronchi 2011); the degree of specialisation and formalisation of the procurement process (e.g., Johnson, Leenders, and McCue 2003; Bals and Turkulainen 2017) and cross-functional integration with other departments (e.g., Foerstl et al. 2013; Johnson et al. 2014).

In addition to this research stream, several studies analyse how the different organisational design variables can be combined to realize specific configurations and archetypes. A small number of these configurations and archetypes is conceptually based (e.g., Cousins, Lawson, and Squire 2006; Kamann 2007). However, most are empirical and contextualized to a specific unit of analysis – such as industries (e.g., Glock and Broens 2011; Tolstoy and Axelsson 2018), countries (e.g., Jia et al. 2014; Patrucco et al. 2018), or product categories (e.g., Luzzini et al. 2014), or linked to specific initiatives, such as collaborative procurement and group purchasing (e.g., Schotanus and Telgen 2007; Schotanus et al. 2011) or innovation projects (e.g., Lakemond, Van Echtelt, and Wynstra 2001; Luzzini and Ronchi 2011).

If we restrict our view to public sector studies, in a time when many governments worldwide have to cut spending in response to the recent economic crisis and stimulate cooperation among central and local purchasing bodies (Meehan, Ludbrook, and Mason 2016; Glas and Eßig 2018), decisions regarding how to organize procurement have become an important means to obtain desired performance. At this regard, despite the regulation constraints, public managers have all the levers to manage and configure the procurement system in order to meet desired objectives.

Scholars have debated that procurement organisations may vary from more straightforward to more complex structures (e.g., Patrucco et al. 2018), with these alternative configurations discriminated according to the level of centralisation (e.g., McCue and Pitzer 2000), the level of procurement responsibilities (e.g., Glock and Broens 2013), the level of process formalisation (e.g., Johnson, Leenders, and McCue 2003) and the integration with other government functions (Glas, Schaupp, and Essig 2017).

In their meaning, design, and deployment, these variables do not differ greatly from those discussed for the private sector, suggesting that practical learning across sectors is possible (Tadelis 2012).

3. Organisational dimensions of procurement in local governments: research motivations and framework

A sound procurement organisation represents the basis on which to pursue operational targets (i.e., efficiency and effectiveness; Dimitri, Dini, and Piga 2006; Walker et al. 2013; Ubeda et al., 2015; Keranen, 2017; Patrucco et al. 2018). In addition, it supports the delivery of broader government objectives, such as implementing innovation policies (e.g., Osborne and Brown 2011). Moreover, it supports the industrial development of particular sectors and local economies (e.g., Loader 2013), helps deliver social outcomes in the form of community benefits (e.g., Glas, Schaupp, and Essig 2017) and contributes to environmental management (e.g., Brammer and Walker 2011)

Despite these potential contributions, procurement design remains an open issue for governments at all levels (e.g., Glock and Broens 2013; Patrucco et al. 2017) and, from an academic perspective, there is a lack of discussion on how organisational choices can be combined to design suitable procurement organisational forms that adequately support the institution and contribute to the achievement of broader government objectives. In addition, from a practical perspective, evidence indicates that public administrations at different levels face difficulties in realizing effective procurement organisation, often operating based on unstructured internal and external organisational relationships.

There are several reasons for these failings. For example, while the elevation of purchasing to a strategic value adding-function has long been a focus of many researchers in the private-sector context, where purchasing is recognized as having an active role in corporate planning processes (e.g., Ates et al., 2018), facilitating beneficial organisation-environment alignment (e.g., Bals, Laine, and Mugurusi 2018) and fostering cross-functional integration among supply-chain activities (e.g., Foerstl et al. 2013), comparatively little attention has been paid to promoting the idea of '*strategic public procurement*' (e.g., Erridge and McIlroy 2002; Loader 2016; Patrucco et al. 2017).

This neglect is somewhat surprising because of the magnitude of procurement at different government levels (an average 14% of GDP for EU states; European Commission 2017) and because even if public procurement management requires a specific approach due to regulation and administrative issues (McCue, Prier, and Swanson 2015) as far as organisational design is concerned, the key decisions seem to be highly similar across the public and private domains (Stentoft Arlbjörn and Vagn Freytag 2012; Tadelis 2012).

This gap is particularly felt by local governments, which are heterogeneous in size, higher in number, and in which procurement is often a neglected aspect (e.g., McAdam, Walker, and Hazlett 2011; Murray 2011). More than in other administrations, the procurement department in local governments is often assigned to a 'bureaucratic role' (Patrucco et al. 2017). That is, its primary

objectives are to assure compliance with procedures (rather than being focused on the final output of a process), implement standardized practices (to limit degree of freedom in supplier choice), and find the lowest price for most contracts (Murray 2001). This normative perspective is primarily driven by the need to respect both national and European procurement regulations, which assign to this department the primary task of assuring that procedures and contracting rules are respected when awarding contracts to external suppliers (Piga and Tatrai 2017).

This perception limits the possibility of spreading a strategic vision of procurement at this level (which encourage more investment and effort in organisational design). However, because of the influence of local institutions on state finances (according to the OECD, in 2017, 48% of government expenditures was determined at the local level; OECD 2017), there is a growing necessity to assign procurement a proper role – in line with government needs – and consequently to design an appropriate procurement organisation, i.e., one that can contribute best to achieving the spectrum of objectives it is assigned.

3.1 Research objectives

On these premises, to enrich the literature, the research objectives of this paper are twofold.

Using local government as the unit of analysis, we first want to shed more light on the key organisational decisions that public managers must take when they design the procurement organisation eco-system in their institutions.

This objective can be addressed by answering the following research question:

RQ1. what are the main variables characterizing public procurement organisational choices?

To explore this, we adopt the contingency theory approach, a perspective first conceived to investigate how companies differentiate and configure their organisations, suggesting there is no single best organisational structure that is valid and effective for all situations (Ruekert, Walker, and Roering 1985) and that organisations perform better when they evolve and are aligned with the context within which they operate (Lawrence and Lorsch 1967). As a consequence, changes in specific contingencies (e.g., economic conditions; geographical area) imply that organisations should adjust their structure and resources to adapt to the new conditions (Ginsberg and Venkatraman 1985).

This argument has had a respected place in the management literature and in the context of public organisations (e.g., Greenwood, Hinings, and Ranson 1975; Andrews, Beynon, and McDermott 2015). Public institutions are multi-functional, political, and more influenced by external as well as internal pressures, legislation

and governmental regulations, aspects which limit managerial decisions (Christensen et al. 2014). The focus on organisational design, primarily promoted by New Public Management, tends to be a necessary response to ongoing changes and reforms introduced worldwide (Bryson, Crosby, and Bloomberg 2014). Consistently with this view, when discussing public organisations and their configurational variables, we cannot neglect the role of contextual factors, i.e., those elements that describe situational characteristics that are either internal or determined by the environment and typically beyond the direct control of the institution and which influence organisational decisions. For public procurement, introducing a contingency perspective means that the discussion of procurement organisational design in local governments must include internal and external contextual factors that can influence these decisions (a perspective already adopted in past studies, e.g., Waring, Currie, and Bishop 2013; Glock and Broens 2013; Patrucco et al. 2018).

Thus, we also discuss the following research question:

RQ2 How are public procurement organisational choices impacted by contingent factors?

3.2 Conceptual framework to study public procurement organisational design

To answer our research questions, a conceptual framework to investigate the public procurement system was designed as starting point (Figure 1).

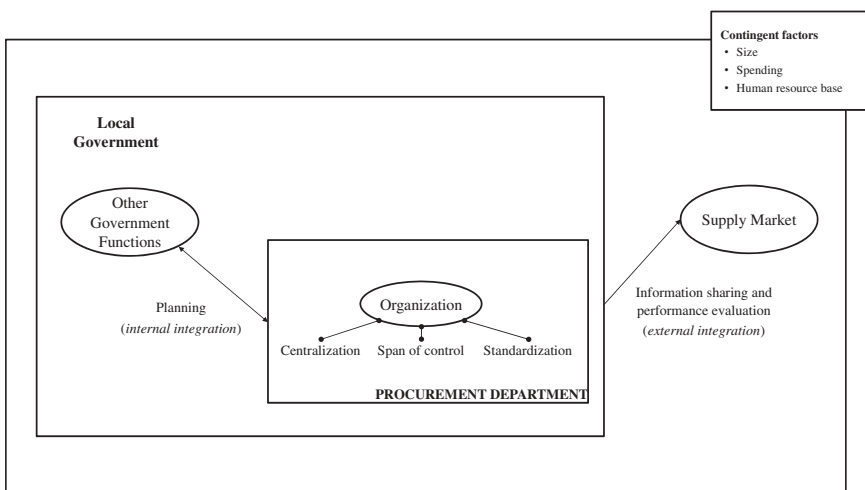


Figure 1. Conceptual framework.

Consistent with contingency theory, this conceptual framework includes organisational decisions – as response variables – and a selected set of contingent factors – as contextual variables.

Regarding the response variables, in line with the idea that the main structural dimensions of procurement organisation are similar in the private and public context (as are the decisions that must be taken to design this organisation), the design of the procurement department is addressed in a threefold way, using both the internal and external perspectives (Walker et al. 2013).

First, internal decisions on how to organize the procurement department must be taken, which can be distinguished in:

- (1) the level of centralisation of strategic and operational activities, i.e., the degree to which authority, responsibility, and the power of the procurement process are concentrated within an office (e.g., McCue and Pitzer 2000; Dimitri, Dini, and Piga 2006; Tadelis 2012);
- (2) the span of control assigned to procurement resources, i.e., the extent to which organisational members are empowered and involved in decision-making (e.g., Johnson, Leenders, and McCue 2003; Loader 2016; Patrucco et al. 2018); and
- (3) the level of procurement activity formalisation and standardisation, i.e., the extent to which organisational activities are precisely defined and coded in formal documents describing rules, procedures and policies (e.g., Bals, Laine, and Mugurusi 2018).

Evidence indicates that, among these different decisions, the level of centralisation represents a critical aspect, as it also determines the need for cross-functional integration (Patrucco et al. 2018). That is, the higher that the level of centralisation is, the higher the need for procurement staff to interact and coordinate with other departments, to carefully plan the needs for goods and services and to understand requirements. Therefore, suitable internal integration mechanisms should be introduced (Zeemering 2008; Walker 2014), which represents the second relevant dimension to be considered when organizing procurement in public institutions.

Finally, procurement organisation affects not only internal relationships but also the way relationships with external suppliers are managed. Therefore, even though national and international regulations limit governments' degree of freedom in managing their supply base (Thai 2016), attention paid to type and amount of information shared with suppliers as well as performance evaluation approaches remain critical issues to be defined (Patrucco, Luzzini, and Ronchi 2016) and cannot be neglected when addressing organisational design choices.

Regarding the contextual variables, according to evidence from the literature (e.g., Kuipers et al. 2014), we assume that internal decisions regarding

procurement department characteristics, planning and integration mechanisms with other offices as well as the management of external relationships with the supply market, should be shaped according to the following contingencies:

- (1) the size of the institution, i.e., the number of citizens (e.g., Murray 2007; Murray, Rentell, and Geere 2008);
- (2) the magnitude of spending, i.e., the budget allocated for purchasing goods and services (e.g., Glock and Broens 2013); and
- (3) the human resource base, i.e., the number of employees supporting institution operations (e.g., Charron, Dijkstra, and Lapuente 2014).

4. Research method

To investigate our research questions, a survey method was adopted. Over time, this approach has been recognized to be an effective method even when the purpose is exploratory (Malhotra and Grover 1998), particularly when analysing procurement organisation characteristics (e.g., Johnson, Leenders, and McCue 2003; Driedonks, Gevers, and van Weele 2010; Ubeda et al., 2015).

4.1 Questionnaire design and sample characteristics

The questionnaire was designed with a focus on local governments. This type of institution represents a convenient choice in terms of sample size and heterogeneity of characteristics, particularly in terms of public procurement management. In many countries, local governments are independent in deciding how to provide, or commission the provision of, a range of goods and services to citizens, including education, social care, environmental services, and infrastructure. Thus, the potential relevance of results is assured, particularly when the focus is on organisational design (e.g., Norris and Reddick 2013).

On this basis and following previous studies that examine the organisational characteristics of procurement in private and public sector, a questionnaire aimed to investigate organisational decisions and procurement process characteristics in local governments was designed by the research team and then refined through a series of workshops with public procurement experts.

This endeavour resulted in 38 questions, which were grouped into five different sections ('general information', 'procurement strategy', 'procurement people and organisation', 'procurement tools', 'procurement performance'). Respondents were asked to give their perception about the organisational structure of procurement. For this reason, most of the key items were measured through a 1–4 Likert scale because, given the conservative nature of public managers in expressing judgements (Diefenbach 2009), we wished to avoid respondents providing neutral answers.

Considering the research team's network of contacts, we opted for a single-country sample and send the survey to Italian local government procurement managers.

According to the Italian Institute of Government Statistics, Italy has 7,978 local governments (56% located in North Italy, 16% in the Centre and 28% in the South), with yearly spending for goods, services and capital expenditure of approximately 40,000,000 € per year. A total of 7,458 of these local governments can be classified as small-medium authorities (i.e., with fewer than 20,000 citizens in their jurisdictions), while the remaining 520 can be classified as moderate-large (i.e., between 20,000 and 60,000 citizens), large (i.e., between 60,000 and 250,000 citizens) and very large (i.e., more than 250,000 citizens) (ISTAT 2018).

These numbers reveal that compared to other countries, the geography and institutional differentiation of Italian public administrations assure a heterogeneity of respondents, thus providing substantial leeway for discussing the validity and generalisability of our results.

For each local government, the challenge was to find the most suitable person, i.e., one able to respond to all of the questions. The ideal target respondents were highly qualified procurement professionals who were recognized as playing a relevant role in the procurement process of their institution. Using these selection criteria and trying to follow a stratified random sampling approach (Torugsa and Arundel 2016), the research team was able to construct a database of contacts for 1,870 of these institutions, to which the questionnaire was sent.

The final sample contains data collected in 2017 from 487 local governments (6% response rate). Unfortunately, only 371 of these respondents provided sufficient information to investigate the described model. *Table 1* summarizes the main local government characteristics. According to the numbers reported, we can consider the distribution of respondents in our sample as representative of the local government population in Italy.

Table 1. Local governments characteristics (Italy vs sample).

	Number of local governments		Average spending (per citizen)		Geographical distribution		
					N	C	S
<i>Citizens class</i>	<i>Italy</i>	<i>Sample</i>	<i>Italy</i>	<i>Sample</i>	<i>Italy</i>		
< 5,000	5,560 (69.7%)	168 (45.3%)	1,359.6 €	909.78 €	4,454 (56%)	973 (12%)	2,551 (32%)
5,001–19,999	1,898 (23.8%)	91 (24.5%)	734 €	641.50 €			
20,000–59,999	416 (5.2%)	61 (16.4%)	717.8 €	1,469.64 €		<i>Sample</i>	
60,000–249,999	92 (1.2%)	43 (11.6%)	977.2 €	1,116.60 €	245	59	67
> 250,000	12 (0.2%)	8 (2.2%)	1,360.9 €	2,003.42 €	(66%)	(17%)	(16%)
	7,978	371	1,029.9 €	983.58 €			

4.2 Cluster and discriminant function analysis

To investigate our first research question, we determined to perform cluster analysis on our data set (e.g., Shortell et al. 2014; Johnson et al. 2014) to verify if local government procurement choices could be discriminated according to specific variables.

Consistently with our research framework, we used as input variables the five organisational dimensions included in *Figure 1. Table 2* summarizes how the variables were measured through the questionnaire.

Two-Step clustering was performed on the data set using SPSS 25.0. This approach is commonly used in quantitative management studies to determine the optimal number of clusters by minimizing the variance within each one (Punj and Stewart 1983).

To test the relationships between clusters and contingent factors, we then performed discriminant function analysis (DFA) using local government size (measured as the '*number of citizens*'), the spending amount (measured as the '*last fiscal year budget expenditure for purchasing of goods and services*') and the human resource base (measured as the '*last fiscal year Full Time Equivalent dedicated to procurement activities*') as relevant contextual variables.

4.3 Non-response and common method bias

Before performing the analysis, we verified that our data were not affected by non-response bias (NRB) and common-method bias (CMB) (Podsakoff, MacKenzie, and Podsakoff 2012).

For NRB, a comparison of early waves (i.e., respondents who returned their responses within the first two weeks), late respondents (i.e., respondents who returned their response in the third week or later), and non-respondents (i.e., respondents who returned responses not usable for the study) was conducted. T-tests were performed on early and late waves for the variables listed in *Table 2*, and no significant differences were found.

To ensure that variations in responses were not caused by the survey instrument rather than the actual predispositions of the respondents that the instrument attempted to uncover, we adopted both ex-ante and ex-post approaches. In the ex-ante approach, our procedure was a first way to control for CMB. Here, the research project was presented to the respondent as a broad overview of public procurement management and practices adopted in local governments, and no explicit reference to the intention to analyse procurement organisation dimensions was made. Thus, the respondents' attention was not drawn to the relationships targeted in the study. In the ex-post approach, we used Harman's single factor score to test for the absence of CMB. In this analysis, we found that the average variance explained by the factor composed by our independent variables had a linear

Table 2. Questionnaire items.

	Definition	Question(s)	Scale
Level of centralisation	The extent to which execution of procurement activities is concentrated within a central department	Single question (from the less centralized to the more centralized option)	Ordinal: 1 = 'completely decentralized' 4 = 'completely centralized'
Span of control	The extent to which procurement activities are under responsibility of the procurement department	One question for each process activity: 1) Demand management; 2) Requirement definition; 3) Market analysis; 4) Tender procedure selection; 5) Bid management (documents preparation and offer evaluation); 6) Contract management; 7) Order fulfilment and delivery; 8) Payment management; 9) Supplier performance evaluation	Ordinal: 1 = 'not involved' 4 = 'executor and decision-maker'
Level of standardisation	The extent to which activities of the procurement process are precisely defined and coded in formal documents describing rules, procedures and policies	Bid management (documents preparation and offer evaluation); Contract management; Order fulfilment and delivery; Payment management; Supplier performance evaluation	Ordinal: 1 = 'not at all' 4 = 'to a large extent'
Level of external integration	The extent to which procurement is integrated with external suppliers, in terms of: 1) Level of visibility and information sharing about demand and requirements 2) Identification of performance indicators to evaluate suppliers	For visibility: Single question (from no visibility to complete information sharing) For performance measurement: One question for each relevant performance area: 1) cost; 2) quality; 3) time; 4) flexibility; 5) compliance; 6) innovation; 7) sustainability	Ordinal: 1 = 'no data and information sharing' 4 = 'Full visibility for all the categories'
Level of internal integration	The extent to which procurement interacts and coordinate with internal departments for planning demand and requirements	Single question (from no coordination to joint definition)	Ordinal: 1 = 'no coordination' 4 = 'joint definition of needs'
Size	The number of citizens served by the local government	Single question (approximate number of citizens)	Continuous (#)
Spending	The magnitude of spending for procurement of goods and services	Single question (approximate value of budget spending)	Continuous (€)
Human resource base	The number of resources employed in the procurement department	Single question (approximate value)	Continuous (#)

estimate of .436. This value is lower than the 50% threshold and thus ensures that the data are not excessively affected by CMB.

5. Data analysis: results

Clustering provided the following results.

Table 3 summarizes the characteristics of the centroids for each cluster. As shown in *Table 4*, the iterative procedure produces three different and significant clusters, which can be differentiated by 'Level of centralisation', 'Span of control', 'Level of standardisation' and 'Level of internal integration'. 'Level of external integration' cannot be considered a discriminant variable for clustering. Cluster reliability was considered acceptable considering the value of the silhouette coefficient (which should be higher than 0.5) and the cluster distance (*Table 5*).

Once each observation was assigned to one of the three clusters, we performed DFA to evaluate which contextual factors could predict cluster affiliation.

The multivariate tests reported in *Table 6* show that 'Size' (Wilks Lambda = 0.921, $p < 0.001$) represents the most important factor for cluster discrimination, followed by 'Human resource base' (Wilks Lambda = 0.926, $p < 0.001$). In contrast, 'Spending' is not found to be statistically relevant for cluster affiliation (Wilks Lambda = 0.93 $p > 0.05$).

Table 3. Cluster centroids characteristics.

	Cluster 1	Cluster 2	Cluster 3
Level of centralisation	1.47	2.20	3.20
Span of control	1.35	2.62	3.43
Level of Standardisation	3.21	2.99	3.08
Level of internal integration	1.99	1.65	2.24
Level of external integration	1.66	1.54	1.67

Table 4. Validity of clustering variables.

	Mean	St.Dev	F	p-value
Level of centralisation	2.13	0.95	250.04	0***
Span of control	2.00	1.02	533.134	0***
Level of Standardisation	3.11	0.78	13.682	0.036**
Level of internal integration	2.08	0.76	3.481	0.049*
Level of external integration	1.62	0.67	1.366	0.256 ns

Silhouette coefficient: 0.518

Table 5. Cluster distance matrix.

	Cluster 1	Cluster 2	Cluster 3
Cluster 1		1.763	2.217
Cluster 2	1.763		2.078
Cluster 3	2.217	2.078	
Number of cases	102	117	152

Table 6. Discriminant function analysis results.

	Cluster 1		Cluster 2		Cluster 3		Wilks Lambda	F	p-value
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.			
Human Resource Base	2.12	0.98	5.38	0.78	7.04	1.13	0.926	14.697	0***
Size	5,086	6,759	7,827	15,773	17,927	16,482	0.921	15.681	0***
Spending	€ 873	€ 135	€ 1,044	€ 172	€1,133	€158	0.993	1.237	0.197 ns

Table 7. Discriminant function analysis results (continued).

	Variables	Eigenvalue	ΔVariance explained	Wilks Lambda	Chi-square	p-value
Model 1	<i>Size</i>	0.201	79.9%	0.899	36.497	0***
Model 2	<i>Size, Human Resource Base</i>	0.044	19.8%	0.916	22.721	0***
Model 3	<i>Size, Human Resource Base, Spending</i>	0.07	0.3%	0.993	2.557	0.121 ns

Regarding the discriminant function analysis, in line with previous results, 'Size' is considered the best predictor, followed by 'Human resource base', with the model with both predictors being able to explain 99.7% of the total variance (Table 7).

6. Discussion of findings

6.1 Procurement organisational models

Our first research question aimed to analyse the main procurement organisational choices and how, when combined, they can realize possible archetypes.

First, cluster analysis reveals that four main variables are relevant when designing the procurement organisation – the level of centralisation, the span of control, the level of standardisation, the level of internal integration – excluding the level of integration with suppliers. The reasons for this exclusion may be twofold. On the one hand, practices such as information sharing and supplier performance measurement are not so sufficiently 'mature' to be implemented in local governments (Patrucco, Luzzini, and Ronchi 2016). Therefore, it is likely that the approach used by these institutions does not differ significantly from one organisation to another. On the other hand, the recent revisions of the EU and Italian public procurement regulations require local governments to follow specific procedures relating to 1) the level of demand visibility to be shared with suppliers (i.e., at least 4 months planning for one-year contracts; at least one year planning for contracts longer than one year) and 2) the contract performance to be measured (i.e., the 150/2009 regulation on the 'Local Government performance plan' requires local governments to establish and monitor strategic and operational performance while also providing suggestions for KPI definition in each function, including procurement). As a consequence, local

government actions are likely to be designed to be compliant to these rules and thus invariant from one organisation to another. Additionally, that internal integration is the variable with the lowest impact in discriminating among clusters and reflects recent reforms. That is, the EU regulation has imposed standards regarding how to execute needs and requirements in planning activities. Thus, local governments are forced to align themselves accordingly.

Second, cluster analysis distinguishes procurement organisations according to three archetypes, which can be discussed more effectively by further grouping these variables according to two dimensions:

- The decisions regarding the level of centralisation and the span of control define, in practice, the typology of goods and services directly managed by the procurement department and the nature of activities executed by procurement resources. We can say they reflect the '**decision-making scope**' of the procurement organisation (e.g., McCue and Pitzer 2000; Dimitri, Dini, and Piga 2006; Glock and Broens 2013);
- The decisions regarding the level of process standardisation and the intensity of internal integration mechanisms define, in practice, the '**organisational alignment**' of the procurement organisation, i.e., how much procurement best practices are formalized and executed aligned with processes in other offices (e.g., Murray 2001; Johnson and Leenders, 2006).

We can thus represent the position of the three clusters as follows (*Figure 2*).

As shown in *Figure 2*, the configurations are quite similar with respect to the positioning on 'organisational alignment'. That is, the local governments tend to configure process standardisation and internal integration mechanisms following standard prerequisites. In contrast, the level of centralisation and the span of control seem to be the most critical variables for discriminating between the three clusters, and decisions about their increase seem to be correlated (i.e., higher level of centralisation is associated with higher span of control, and vice-versa).

Thus, we can describe the emerging organisational archetypes as follows.

In certain local governments, the procurement department primarily has a bureaucratic function. It acts in light of decisions taken by technical offices and departments and executes most procurement administrative activities to guarantee compliance with external regulations and internal procedures. In this case, a so-called '*Local*' procurement organisation can be designed. For this model, procurement is decentralized and dispersed throughout the institution, and decisions regarding demand and requirements defined for the category of goods and services to be purchased belong to single departments (which are responsible for the spending budget). Procurement resources are perceived as



Figure 2. Representation of clusters according to decision-making scope and organisational alignment.

the ‘executive arm’ of the process of operational activities (e.g., tender design, bid evaluation, contract management), with the aim of maximum efficiency and compliance with internal and external regulations. Therefore, standardisation and formalisation of activities are typically high, and while no formal and planned coordination mechanisms are in place, communication between procurement staff and other departments occurs regularly in a reactive way.

In certain other cases, procurement organisation can be conceived not only to guarantee compliance with legislation and procedures but also to directly contribute to the efficient use of public funds. In such cases, a so-called ‘*Silo*’ procurement organisation can be designed. For this model, the procurement department is assigned more responsibilities because procurement decisions regarding goods and services are split between the procurement office and other departments. Typically, the provision of technical goods and services (e.g., construction and special projects, social services) is under the control of related offices, while non-technical spending (e.g., cleaning and security services, office supply, ICT) is directly managed by procurement resources, for with respect to decision-making and operational activities. Therefore, internal integration may be weak because procurement decisions are taken independently and separately from the procurement department and the technical offices (according to the distribution of procurement responsibilities among the different categories), thus resulting in an uneven execution of procedures and policies. This type of configuration optimizes the management of spending – balancing both procurement and technical priorities – but a separated management strategy may result in low visibility and weak integration.

Finally, there are cases in which local governments consider procurement a tool to provide more value to citizens and support the achievement of broader objectives. In such cases, a so-called '*Authoritative*' procurement organisation can be designed. For this model, the management of procurement of goods and services is centralized, with the procurement department being responsible for all operational and decision-making aspects of the process. Given this empowerment, the procurement department can manage decisions independently, with technical offices playing a supporting and consulting role on a regular and structured basis (e.g., through planned coordination meetings and interaction for technical support). Activities are typically highly standardized and formalized (even if less than in the '*Local*' case), thus resulting in significant control over the entire process, with the possibility of identifying performance improvements at all levels (e.g., savings, lower process cost, better requirements, and higher customer satisfaction).

6.2 Impact of local government factors

Our analysis also identifies '*Size*' and '*Human Resource base*' as relevant variables in determining the most suitable configuration. No significant role was found for '*Spending*'. This evidence is in line with today's public management orientation, in which efficiency and saving costs are primary objectives for all local government functions (particularly procurement) and effective organisational models should be designed independently from the spending budget of the institution, which should be a target rather than an input variable. Instead, the scale of the procurement organisation should be co-measured with the dimension of the local government and with the number of resources the institution can dedicate to the process management. A review of [Table 6](#) reveals the impact of these factors.

The "*Local*" model seems to be a diffused structure in the smaller local governments, in which procurement is likely part of the traditional administrative role. On the one hand, this model does not require substantial resources to be dedicated to the execution of procurement activities (that a small institution cannot allocate). On the other, the scale of available resources does not justify a more complex structure.

In contrast, the '*Silo*' model seems more diffused in medium-sized local governments, where resource availability (and dimension) are insufficient to justify a full centralisation solution but able to support sharing responsibilities regarding the various categories of goods and services purchased by the institution, with coordination, alignment and information exchange continuing to occur in many informal ways.

Finally, high investments are required to design and implement the centralized '*Authoritative*' model, in addition to a robust managerial commitment to

defending the authority and role of the procurement department within the institution. Therefore, an investment of this type can be justified for large local governments, which serve a high number of citizens (where efficient and effective procurement management has a pervasive impact on the government's ability to provide better services) and can rely on a strong human resource base with specific competencies to execute the various procurement processes.

7. Conclusions: which configuration suits your institution?

With the increasing importance of efficiency at all levels of the public sector, the role of procurement (particularly in local governments) has become a common discussion topic (Glock and Broens 2013). Given that organisational design is the core of a sound and strategic procurement system (Thai 2016; Patrucco et al. 2018), this paper aimed to contribute to this wide research field by investigating procurement organisation in the public sector using local governments as the unit of analysis.

Our results shed additional light on the organisational configurations that can be adopted for procurement in local authorities (RQ1). In particular, three possible archetypes were identified (i.e., '*Local Procurement*'; '*Silo Procurement*', '*Authoritative Procurement*') and differentiated according to four organisational variables (i.e., level of centralization, span of control, level of standardization, intensity of internal integration). These configurations were matched with two relevant contextual factors (i.e., local government size; human resource base). We conclude that when the government dimension and the human resources dedicated to procurement operations increase, the organisational archetypes for public procurement should change from the '*Local*' to the '*Silo*' and then to the '*Authoritative*' configuration (RQ2).

Despite our focus on Italy, the characteristics of these configurations are independent of the local government institutional organisation adopted in the country. The same classification dimensions and contingent factors used for the Italian sample can be considered valid for institutions outside Italy.

Thus, our results are relevant from a theoretical perspective as they enrich the discussion on the importance of organisational design in public institutions promoted by New Public Management (Bryson, Crosby, and Bloomberg 2014), while focusing attention on more administrative functions (such as public procurement). In this way, they reinforce the relevance of contingency theory when addressing organisational approaches in public management (Hood 2005). In addition, our results can be used as a starting point for raising the level of the discussion on public procurement organisational strategy and configuration in local governments (e.g., Glock and Broens 2013; Glas, Schaupp, and Essig 2017; Keränen 2017; Patrucco et al. 2018). Moreover, they argue for the relevance of implementing the principles of and research findings

regarding procurement in the private sector in the public context (Stentoft Arlbjörn and Vagn Freytag 2012).

These findings may also be useful for public managers, who should consider these results when in the process of designing a well-structured procurement organisation.

Of course, the possibility of changing and investing in the procurement organisation (and the positioning in one of the three identified clusters) strictly depends on the overall characteristics of the public institution and, particularly, on how procurement is recognized and perceived within the authority. For these reasons, these results might also be relevant for public policies, in driving choices of the public authorities for the orientation of procurement organisation. These motivations are set in top institutional levels (where the use of public procurement as a strategic lever for improving local government performance is not always recognized): once procurement has been assigned to its proper role – which may vary from the simple assurance of compliance and accountability to the support of broader government policy and objectives – public managers should then discuss how to configure the four key variables, in a manner coherent with local government contextual factors.

As a pioneering study, this research has several limitations, which represent opportunities for further investigation.

First, the sampling strategy was designed to target local governments, thus limiting the unit of analysis and the possibility of generalizing our results and conclusions to the entire public sector. One suggestion for future researchers would be to examine of the suitability of the proposed archetypes for other public institutions, possibly using other methods (e.g., case studies), to verify whether the selected organisational dimensions, contextual factors and clusters continue to apply or should be integrated and/or re-adapted. Second, the three profiles are presented and discussed according to the variation of input variables. Although other factors could be added (e.g., other public organisation variables), the survey structure does not facilitate analysing their suitability when governments are in search of specific output (e.g., cost, quality, responsiveness, sustainability), which open space to further evaluate the coherence of the profiles with performance objectives set by governments. Third, the survey was designed for and administered in Italy. Although our results can be easily extended and readapted to other contexts, researcher might seek to replicate our results for other countries or compare configurations and contingent variables adopted in different areas to verify whether further contextual variables, archetypes or considerations emerge.

Disclosure statement

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