

CENTRALIZATION AND NETWORKING IN ITALIAN NHS. EUROPEAN BENCHMARKING AND PERFORMANCE EVALUATION

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ABSTRACT

The health sector is becoming one of the key customers within the public procurement: purchases of goods and services account for 20-30% of total HC expenditures, which represents 10-15% approx. of GNP. Furthermore, hospitals and other health organizations purchase drugs, medical products, biomedical technologies, e-health, which are crucial for the development of economic systems.

This paper presents the results of an empirical research (2007-2009) on the Italian NHS procurement (€20 billion 2008) and analyzes the different solutions adopted by the Italian Regions to streamline purchasing processes. Analyzing the outcomes of our case studies research – making use of a benchmarking approach – three “lessons” were developed to summarize our main findings:

- the need for a multidimensional performance evaluation. A description of the (economic, social, organizational and clinical) impacts of an evaluation System Thinking model has been included;

- the need for organizational interventions in other tightly-connected areas (such as training, health technology assessment, logistics, ICT, e-health, etc.). These activities are considered as strongly impacting on the effectiveness of Demand Aggregation Processes;
- the importance to analyze best practices in national and regional healthcare governance systems with particular attention for the purchasing centralization processes. In order to do so, two national experiences have been considered: United Kingdom and Switzerland.

1 INTRODUCTION

The organization of purchasing processes in the public sector can be considered one of the most outstanding research topics, both for academics and practitioners (Annessi-Pessina, Cantù and Jommi, 2004; Annessi-Pessina and Cantù, 2006; Edler and Georghiou, 2007). Such an issue is particularly important in the health care industry, whose spending is a significant percentage of the GNP of several countries and, particularly, European ones (Tediosi, Gabriele and Longo, 2009).

In Italy, the financial viability of the health system is challenged by health expenditure growth rates being constantly higher than those of the GDP. Additionally, in the last decade public finances in Italy have been under pressure due to the enormous public debt accumulated in the late 1970s and 1980s and the need to comply with the European Monetary Union (EU) stability pact. In Italian National Health Service (NHS) the main percentage increase occurs in purchasing of “goods and services” items. According to recent figures by the Fiaso-Ceis Laboratory (2009) on data from the Ministry of Labor, Health and Social Policies (Table 1), the percentage expenditure increase for purchasing of (medical and non-medical) goods, in the period between 2004 and 2007 amounted to 31.9% (34,4% considering only medical products), with an average annual growth of 10.6% (11,5% only for medical products)¹ (see Figure 1).

This figure makes public procurement affairs an important issue for the assessment of a country's economies (Frey, Meneguzzo and Fiorani, 2009). For this reason, the purpose of the EU Government, through various purchasing guidance documents, is to simplify the procedures for finalizing contracts, to encourage competition between firms through transparent selection practices, and to improve

efficiencies (reducing the costs of purchasing processes) and effectiveness (improving quality of goods/services procured) by gaining scale and scope economies. In order to realize this purposes, Italy – as many others European countries – has been experimenting with a new idea of public purchasing that allows public administration to purchase goods using alternative methods and practices in every stage of the purchasing process such as on-line purchasing, purchasing group, purchasing consortia and centralized purchase systems² (Arrowsmith, 1998; Johnston, 2004).

As several studies pointed out (Brusoni and Marsilio, 2007; Fiorani, 2008; Fiorani, D'Adamo and Giordano, 2008; Brusoni, Cappellaro and Marsilio, 2008; Fiaso-Ceis Laboratory, 2009; Fiorani and Meneguzzo, 2009a, 2009b), in Italy the rationalization of procurement in health sector has been implemented mostly through centralized purchasing strategies. The main argument in favour of centralised purchasing lies in the potential economies of scale: volume purchases makes it possible to obtain significant reductions in the price of goods or to receive better services at lower costs. This strategy implies a consolidation of health care organization needs and is used to transfer several activities such as tender organization, bidding, supplier evaluation, negotiation, quality control and contract management to a unique entity. This purchasing approach allows health care organizations to acquire additional contractual power on suppliers; as a result, they can get more favourable conditions than they would have obtained individually (Rozemeijer, 2000). At the same time, consolidation and centralization reduces administrative costs for tender management, since the negotiation process is performed by one organization only. On the other hand, consolidation has higher organizational costs, since different administrations have to jointly organize and coordinate data and processes for the procurement activities (Thai, 2001; Liana and Laingb, 2004).

Table 1 – National health expenditure (years 2004-2007; thousands of euro)

Items	2004	2005	2006	2007	Δ 2004/2007	Average annual rate of increase 2004-07
A. PURCHASE OF GOODS	9.299.936,00	10.779.713,00	11.423.091,00	12.264.210,00	31,9%	10,6%
> Medical Goods	8.573.842,00	10.000.434,00	10.684.133,00	11.523.481,00	34,4%	11,5%
> Non Medical Goods	726.094,00	779.279,00	738.958,00	740.729,00	2,0%	0,7%
B. NON MEDICAL SERVICES	4.139.399,00	4.882.069,00	5.335.216,00	5.789.582,00	39,9%	13,3%

C. MAINTENANCE AND REPAIR	1.187.772,00	1.362.540,00	1.407.358,00	1.515.910,00	27,6%	9,2%
TOTAL (A+B+C)	14.627.107,00	17.024.322,00	18.165.665,00	19.569.702,00	33,8%	11,3%
Medical Services	41.345.685,00	42.046.260,00	44.534.315,00	45.055.310,00	9,0%	3,0%
Training	132.996,00	140.149,00	132.675,00	146.115,00	9,9%	3,3%
Personnel	29.508.356,00	31.758.597,00	33.414.590,00	33.811.421,00	14,6%	4,9%
Expenses for Leased Assets to Third Parties	772.221,00	831.134,00	910.953,00	858.817,00	11,2%	3,7%
Other Costs	2.591.826,00	3.660.669,00	2.271.745,00	3.885.283,00	49,9%	16,6%
TOTAL EXPENDITURE	88.978.191,00	95.461.131,00	99.429.943,00	103.326.648,00	16,1%	5,4%

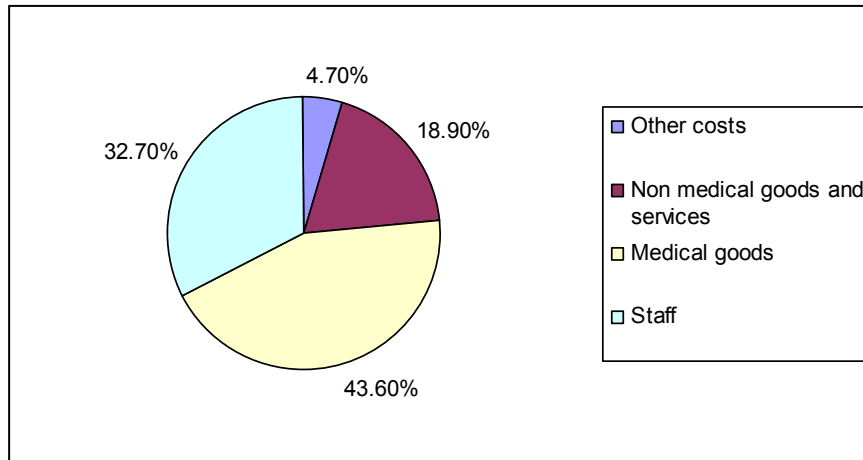
Source: Fiaso-Ceis (2009)

Even if the rationalization of the expenditure in the Italian health sector through centralization of purchasing is widely participated in, the operative implementation of this strategy seems to be strongly differentiated for each region (France, Taroni and Donatini, 2005).

With this as a background, the aim of this paper is threefold. Firstly, we review the different centralized purchasing strategies (clusters) implemented within the Italian regions. By means of an empirical research developed between 2007 and 2009, we analyze different elements such as: institutional assets, extent of centralization (i.e. degree of power and functions devolved to the central purchasing organization), technological support systems (i.e. e-Procurement system), degree of coordination among public organizations and private suppliers (supply chain integration), extent of cooperation among health sector and other public organizations. Secondly, we propose a System Thinking technique that could be useful to evaluate the strenghts and weaknesses of the different regional approaches in managing health sector purchasing centralization and networking strategies. Finally, we compare Italian NHS purchasing solutions with the strategies developed by other European countries (UK and Switzerland), making use of a benchmarking approach.

This paper is structured in the following way: The second section provides a description of the methodology. The third section presents the main outcomes of our empirical analysis. The fourth section is dedicated to the description of the main findings with reference to three different lessons developed.

Figure 1 – National health expenditure composition (2007)



2 METHODS

Due to the empirical character of the topic, the nature of our research is exploratory.

The empirical analysis was developed in three steps. The first one concerned the collection of preliminary data and information about health care purchasing needs and behaviors from local health authorities. Both public sources – such as publications and official reports by Italian NHS bodies – and information from several in-depth interviews with Senior Managers from relevant Italian health service organizations³ were considered.

During the second step of empirical research, regional case studies were developed in order to underline differences and similarities among centralized purchasing and networking strategies. A benchmarking approach was employed to compare the different regional case studies. Furthermore, two national case studies (UK and Switzerland) were carried out in order to improve our understanding of the topic (Fiaso-Ceis, 2009).

Finally, the third step was dedicated to the development of a multidimensional impact assessment model employing the System Thinking approach. This method allows modeling of non-linear relationships within complex social systems (Wolstenholme, 2005). Following the System Thinking perspective, only the study of the entire system and the identification of the cause-effect relationships among variables and feedback mechanisms (sometimes not immediately "visible" to the decision-makers) can lead to proper performance assessment. The model was developed using Vensim PLE version 3.0 software (Ventana Systems Inc., 1998). Vensim TM, the Ventana® Simulation Environment, is an interactive software environment allowing development, exploration, analysis and

optimization of simulation models. As mentioned in previous studies, our findings confirm the potentiality and usefulness of this tool in health care industry research (Brailsford, 2008).

3 RESULTS

3.1 The Strategy of Centralized Purchasing: The Different Regional Approaches

In the Italian NHS the responsibility for health care is shared by the Central and the Regional Governments (21 administrations). The Central Government has the exclusive power to guarantee the essential level of care – which must be available to all country residents – while the Regional Health Care Authority enables the regions to have exclusive responsibility for the organization and administration of regional budget allocation and control. Moreover, the day-to-day management of the service is devolved to the local health care boards – Local Health Authorities (LHAs) – that essentially play a coordinating administrative role and are also the providers of primary medical service for each regional area, through a cluster of hospitals and health care centers.

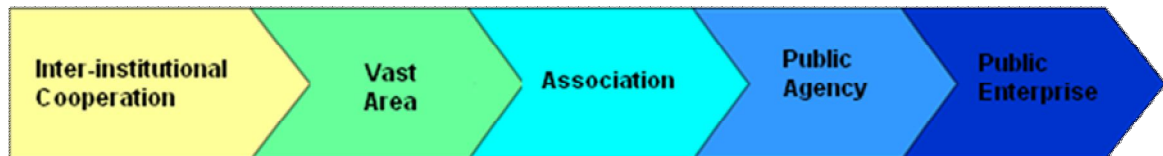
Following the Italian Central Government's general recommendations, each LHAs need to organize its own purchasing activity autonomously, by using the budget it receives every year by the Regional Authority. Despite the wide variety of purchasing behaviors currently adopted by the LHAs, a tendency towards a centralization of purchasing seems to be emerging. In chronological order, 9 regions earlier have experienced centralized purchasing strategies. In the remaining regions, the centralization process of purchasing started between 2007 and 2008.

Analyzing the different regional centralization strategies, some common elements can be identified. With reference to the organizational structure of purchasing activities in Italian health care regional systems, a recent study of Ceis (Fiaso-Ceis Laboratory, 2009) identified five categories (s.c. "clusters") showing the evolution from "weak" to "strong" institutional models of centralization (Figure 2). A synthesis of the composition of each clusters defined in the Ceis classification follows.

1. Cluster n. 1: regions adopting the light model of Inter-institutional Cooperation (7 regions);
2. Cluster n. 2: regions adopting the light model of Vast Areas (2 regions);
3. Cluster n. 3: regions adopting the intermediate model of associative cooperation (1 region);

4. Cluster n. 4: regions adopting the strong model of Public Agency (4 regions);
5. Cluster n. 5: regions adopting the strong model of Public Enterprise (1 region).

Figure 2: From “weak” models to “strong” models



Two variables are employed in the CEIS taxonomy: (a) organizational and structural complexity and (b) formal and organizational autonomy of the central purchasing organization(s). Thus, “weak” models are the ones with low organizational and structural complexity and with narrow formal autonomy; on the contrary, “strong” models describe the regional centralization experience in which specific organizations were established and empowered with different degrees of formal (legal) and organizational autonomy (Age.Na.S., 2008).

Therefore, in the first cluster groups the “light” experiences of “inter-institutional cooperation”, which arise from the aggregation of common needs from the bottom of health care systems (i.e. the LHAs); the second cluster includes the experiences of “vast areas”, that could be defined as “unstructured”; the third cluster groups the intermediate experience of vast areas in Emilia Romagna region, which represent an additional step “association” compared with the vast areas of Marche and Veneto, as they are established on a voluntary basis.

The last two clusters collect the regional experiences in which a purchasing organization was established in order to manage autonomously the procurement of health care goods and services. Particularly, in the fourth cluster the most sophisticated experiences from an organizational perspective are grouped: the Estav in Toscana (see Box 1), the Shared Services Center in Friuli Venezia Giulia and Intercent-ER in Emilia Romagna. These organizations – defined as Public Agencies – are established with their own, autonomous organizational and management public identity. Their responsibilities are not limited only the centralization of purchasing activities (configuring themselves as central administration service centers), but also to carry out many others activities such as logistics,

management of centralized information system, real estate asset management, facility management and human resource management.

It seems important to underline that Emilia Romagna is accounted for in both the third and fourth cluster: in this region, in fact, there are two different centralization models (“ast areas” and “intercent-ER”). This double organizational structure increases the complexity of regional governance and makes the cooperation among the regional health care organizations more difficult. The risk of overlapping of responsibilities and functions between the “vast areas” and the “intercent-ER” is also high.

The developed analysis of the regional case studies shows the purchasing centralization strategies are constantly evolving. Despite the wide variety of regional experiences, a general tendency is emerging: the movement from weak to strong models of centralization (see Box 1. the evolution from CAV to ESTAV in Toscana). To date, some regions included in the first cluster (Figure 2) are developing programs and policies oriented to test more structured centralized purchasing patterns as in the case of Liguria and Lombardia.

Box 1. The Centralized Purchasing in Toscana through the ESTAV

To date, the Tuscan Health Service is structured into 12 Local Health Authorities (named “Aziende Unità Sanitarie Locali” - AUSL’s) and 4 hospital organizations (named “Aziende Ospedaliere-Universitarie”). The 12 AUSL’s and the 4 hospitals are managed by three geographical governance agencies named ESTAV (“Enti per i Servizi Tecnico-amministrativi di Area Vasta”).

The ESTAV agencies were introduced in 2000, with the purpose of increasing efficiency and improving AUSL and hospital performance with particular focus on logistics and procurement activities. In the beginning they were structured as a consortium (CAV), as the regional government aimed to test such a project in order to check results before arranging for relevant investments. Three ESTAV agencies were created, each one managing a limited geographical area of Tuscany. After a two year trial period, the Tuscan Regional Authority approved of the good results produced by the consortium and decided to enlarge the powers of ESTAV agencies by issuing a local law in 2005.

More specifically, ESTAVs have now become public agencies of the Tuscan Health Service with their own, autonomous organizational and management public identity. The ESTAV are competent in the

fields of: supply of goods and services; management of warehouses and logistics; management of information networks and information technology – especially in regard to integration and support of the unified Center for appointments (CUP) – real estate asset management; human resource management and staff training.

ESTAVs present themselves, in respect to the needs of the regional health care system, as an organization which is able to make the integration of complex resources by being “*a structure of communal services between Sanitary Agencies*”⁴. The ESTAVs have the objective of modernizing and improving the performance of the regional health care purchasing and supply system. They hope to be able to deliver better value for money by centrally negotiating contracts for clinical and non-clinical items of expenditure, covering everything from maintenance, repair and operations items to major pieces of scientific equipment. Moreover, they develop and employ purchasing planning strategies and supply chain management tools in order to better accomplish the needs of local health organizations.

The ESTAVs procurement responsibilities include: procurement calendar, product selection, contract management, programmes to support new technologies and innovation. They also have responsibilities for placing tenders in the market, for evaluating suppliers, negotiating and managing contracts. Since September 2008, a contract has been awarded between the Regional Directorate and Consip Spa⁵ in order to manage e-procurement functions for all three ESTAVs.

3.2 Performance assessment of centralization

For the centralization process of purchasing at the regional level to be effective, it requires the implementation of dedicated performance measurement systems that provide information and feedbacks useful for the policy makers. Since the health care industry is a dynamic system, the performance evaluation both of the individual areas/organizations and of the whole system can be difficult. As many studies pointed out, the more complex the health care landscape is (in terms of actors involved and relationships), the more critical is the role of control and monitoring practices (Kumar, Ozdamar and Ng, 2005).

Following these requirements, the Italian regions have developed differentiated measuring system in order to evaluate the performance of centralized purchasing strategies. Most of these systems are exclusively cost-saving oriented; very few experiences also take qualitative performance metrics and indicators (i.e. quality of supplies) into account (Campania and Emilia Romagna-Aven).

Table 2 shows some evidence of performance evaluation outputs developed by the most representative Italian regions. This figure highlights that the savings obtained by the centralization of purchasing in terms of costs and timing are significantly high, especially in Emilia Romagna (in 2004 a 45% saving is obtained through the adoption of “therapeutic equivalence”) and in Lombardia (Lombardia Informatica declares cost-savings of 30% and time reduction of 40%). Moreover, in 2008, ESTAVs in Toscana region reached a good level of operational efficiency looking at the considerably high annual volume of bids/contracts and the percentage of savings delivered.

Table 2 – Economic and organizational assessment of centralization

Regions	Time Period	Bids (Number)	Aggregated purchase (Euro)	Savings (%)	
Lombardia (Lombardia Informatica)	2008-2009	493	160 million	30%	Interinstitutional Cooperation
Veneto (AV Vicenza)	2007-2008	n.a.	753 million (basic contract) 627 million (award)	16.62%	Vast Area
Emilia Romagna (Aven)	2008	n.a.	261 million	45% (Drugs) 20% (Medical Device)	Association
Emilia Romagna (Intercent-ER)	2008-2009	57	900 million (20.5 million for medical products)	19%	Public Agency
Toscana (Estav)	2008	2.451	950 million	3.21%	
Campania (So.Re.Sa)	2006-2009	n.a.	2.282 million	12%	Public Enterprise

To date, the Italian regional best practice has been represented by the experience of Toscana performance evaluation system. It was

developed using lessons from the many performance measurement systems that have been developed over the last 20 years (i.e. multidimensional systems already used in healthcare and the Balanced Scorecard model) (Kaplan and Norton, 1993; Mayne and Zapico Goni, 1997; Lewis, 1999).

Following these intentions, a multidimensional performance evaluation system (PES) has been adopted in all the Tuscan health care organizations (12 Tuscan Local Health Authorities, 4 Teaching Hospitals and ESTAVs). The system was designed by the MeS laboratory of Sant'Anna School of Advanced Studies with the aim to become a reference model (an evaluation tool) useful for both, linking performance evaluation to health care management and supporting health care organization decision making processes (Nuti, 2008; Nuti *et al.*, 2009).

The evaluation system has been used continuously and systematically since 2005, at both regional and local level and has become a public policy reference tool that supports the Regional Government in evaluating its strategic actions. It results useful also because it allows a comparative analysis of health care organizations' performance, stimulating also efficiency and innovation improvements due to the competition among the actors. Since 2006 the PES has been linked to the CEO's rewarding system. In 2008, the Tuscan PES has been adopted by other three Italian regions: Piemonte, Liguria and Umbria, and in 2009, it was patented and adopted by the Italian Health Minister at national level.

The Tuscan PES is based on 130 benchmarking indicators, classified in six dimensions of assessment (the letters are used to indicate each dimension)⁷:

- A) *Population health status*;
- B) *Capacity to pursue regional strategies and recommendations*, to guarantee that strategic regional goals are pursued in the time and manner indicated;
- C) *Clinical performance* (quality, appropriateness, effectiveness, clinical risk management and managing supply to match demand);
- D) *External evaluation*: the customers' experience and level of satisfaction with the services;
- E) *Internal evaluation*: results of surveys on the satisfaction level of staff with their working conditions;
- F) *Efficiency and financial performance*.

In order to provide an adequate representation of the results reported by the health care organizations in each of the areas identified, a "target" diagram is used. The target is divided into five assessment bands with different colors. Performance on each dimension of the

target diagram is the sum of scores across a “tree” of indicators⁸. The more a health care actor is capable of reaching objectives and obtaining results in the various performance areas, the nearer the center – the green area – is to the performance indicator.

Assessment levels were divided into five different bands:

- 1) *Dark green band*, closest to the centre of the target, corresponding to excellent performance on a five-band assessment scale (score between 4 and 5);
- 2) *Light green band*, corresponding to good performance (score between 3 and 4);
- 3) *Yellow band*, where assessment is between 2 and 3 and the performance, although not negative, leaves room for improvement;
- 4) *Orange band*, where assessment is between 1 and 2 and shows a worrying situation: performance must be improved;
- 5) *Red band*, corresponding to very poor performance and assessment is below 1.

In Toscana, the PES is employed also for the evaluation of the three ESTAVs performance with regards to centralized purchasing and logistics activities. This result is useful not only because it allows a performance comparative analysis among the three organizations, but also because it enables a comparison among the Toscana regionally centralized purchasing experience and other similar experiences implemented in different regional contexts. Figure 3 shows the outcomes of ESTAVs multidimensional performance evaluation in 2008⁹.

4 DISCUSSION

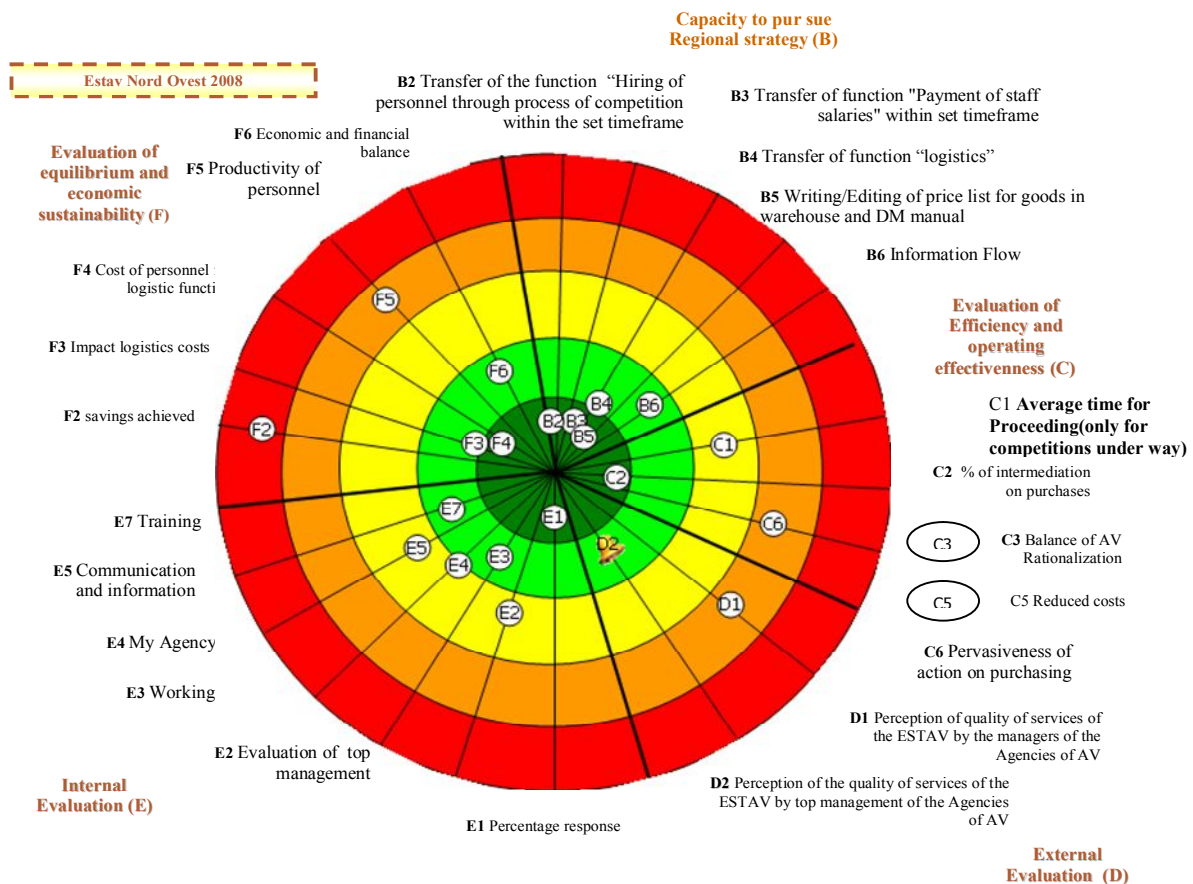
Analyzing the outcomes of our case studies research making use of a benchmarking approach, several remarks could be expressed. Three “lessons” were developed to summarize our main findings:

- 1- the need for a multidimensional (non only economic) performance evaluation (today used only in Toscana);
- 2- the success in Demand Aggregation Processes needs interventions in other tightly-connected areas (*training, health technology assessment, logistics, ICT, e-health, etc.*);
- 3- the importance to benchmark Italian experience with other successful countries looking for best practices in healthcare purchasing processes.

4.1 Lesson 1: The need for a multidimensional performance evaluation

The first remark concerns the performance evaluation system. In fact, for a continuous improvement of centralized purchasing activities, we suggest the implementation of effective evaluation systems in all the regions and in respect of the many different health care bodies (hospitals, public purchasing agency, Vast Area, etc.) (Monczka and Carter, 1979; Chang, Lin and Northcott, 2002; Greener, 2003). The effective tool developed by Toscana region (Target) could be extensively adopted in different regional contexts. That way a comparison among the regional experiences could be effectively realized (Aidemark, 2001).

Figure 3: The performance evaluation system of Centre ESTAV (2008)



Source: Adapted from Nuti (2008)

An effective evaluation system for analyzing purchasing centralization strategies should take into consideration that the health system is a complex system in which various interests (economic, social and clinical¹⁰) are interdependent. In this context, the quality of services delivered - strongly associated with the improvement of population health conditions - cannot in any way be conditioned only by the “budgetary constraints”. Economic savings resulting in clinical errors cannot be accepted (Stewart, Greisler and Feldman, 2002). Therefore, the need to develop multidimensional assessment systems that consider both intervention policies and economic/organizational policies in regional health systems must be underlined. Also, in order to become an efficient tool of strategic management, the performance evaluation system should consider financial and non financial measures in a causal relationship, so as to highlight the management of processes leading to output capable of improving the final outcome (Pursglove and Simpson, 2000). In order to stress this point, we employ the System Thinking Multidimensional Assessment Model (Box 2, Figure 4).

The model takes into account four perspectives – clinical, organizational, social and economic - to evaluate the performance of health care centralized purchasing strategies. Different key elements/variables were considered. Also the nature of relationships (i.e. positive or negative) among the variables were hypothesised (cf. Fiorani, 2010 for the analytical model description).¹

¹ This static model on the effects of a purchase centralization process shows the areas of impact, the variables to take into considerations and the relationships between them. The use of MeS indicators in a dynamic model (under construction) will be useful to evaluate the performances of single Regions.

Box 2. The System Thinking Multidimensional Assessment Model

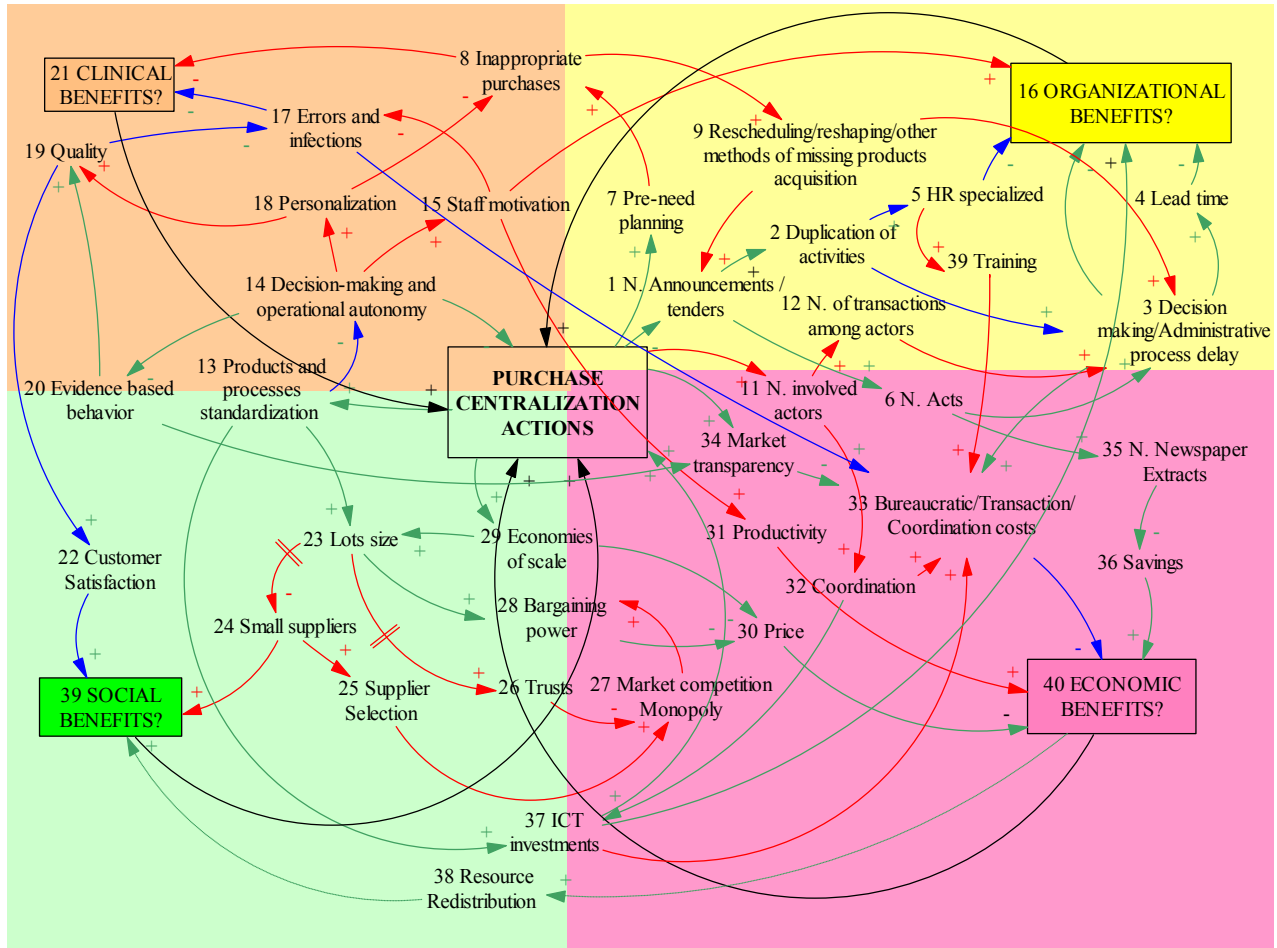


Figure 4 – System Thinking Multidimensional Assessment Model

Model explanation

(a) The polarity

The model shows in graphics the polarity (direction of correlation) of a relationship between two variables. The direction of the correlation can be positive or negative. In a positive correlation, as the values of one of the variables (y) increase, the values of the second variable (x) also increase. Likewise, as the value of one of the variables decreases, the value of the other variable also decreases. In a negative correlation, as the values of one of the variables (y) increase, the values of the second variable (x) decrease. Likewise, as the value of one of the variables decreases, the value of the other variable increases. It is like an “inverse” correlation.

(b) The colours of the arrows

In the graph, the arrows symbolize the four typologies of impact (clinical, organizational, social and

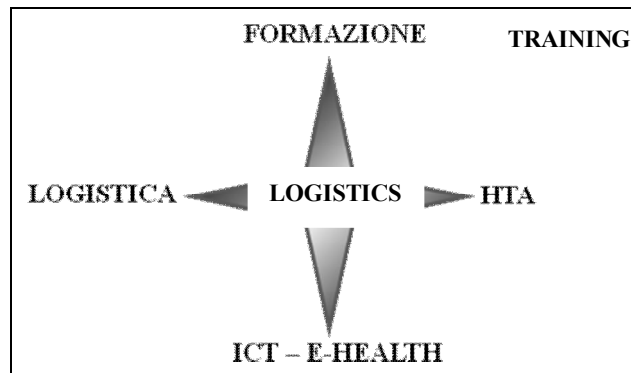
economic) of the y variable on the x variable. Different colours are employed to distinguish the direction of the correlation: green arrows mark positive relationships; red arrows mark negative relationships and blue arrows mark undefined relationships. A relationship is marked as “undefined” when it is difficult to isolate the effects of a correlation between two variables from other different effects. In this case, additional research efforts are required mostly through quantitative analysis and measuring methods.

4.2 Lesson 2: Intervention Policies in Demand Aggregation Processes

The sharp increase of “demand aggregating” processes occurring in many Italian regional areas suggests that the success of these interventions – mostly the purchasing performance improvement achieved - cannot simply be explained by the effective introduction of new institutional arrangements and by the redesign of purchasing procedures. In fact, the re-engineering of purchasing processes was an ongoing idea already in the late 90s; after almost ten years, a new logic is arising. The management and the organization of purchasing functions is considered a key activity not only for the single organization but for a system that involves different public and private actors. This approach aims to integrate different strategic perspectives in order to improve the performance of health care supply chain as a whole. To make this vision effective, several levers have been developed at different stages of health care value chain such as e-health system and human resource management practices.

As shown in Figure 5, the identification and deployment of the levers of action are very complex activities. Considering our focus on demand aggregation strategies, the challenges emerging for the purchasing function of healthcare organizations and hospitals could be summarize as follows: (a) the need for professionalization with specific reference to the public buyer (*training*); (b) the implementation of methods and techniques of multidimensional assessment (*HTA- health technology assessment*); (c) the integration between purchasing and logistics also through integrated information systems (*ERP platforms, and e-health, electronic order for payment*).

Figure 5 – Intervention Areas



First of all, the response to these challenges require a more robust coordination capacity among all the actors of the health care supply chain. In order to make this possible, among horizontal and vertical networks and regional and local health organizations, other public bodies and suppliers should be developed. Secondly, public-private partnership should be considered. This cooperation strategy could be useful to support the rationalization and redesign of the purchasing function as it carries the potential for several benefits. In fact, potential benefits can include reduced government spending (e.g. eliminating large up-front investments of scarce public funds), greater efficiency (e.g. due to private partners' operational efficiency), or better health care management (e.g. of hospital services and infrastructure). In the health sector, partnering can also be particularly valuable as a method of leveraging technical or management expertise (e.g. performance-based monitoring and incentives) and spurring technology transfer, all of which can lead to quality improvements.

4.2.1 Logistics

The redesign of purchasing activities implies, in many cases, the implementation of innovative supply chain management (SCM) practices and tools. These practices involve different functions within logistics. Logistics impact on both the internal and external perspective in the organization, because they have to judge all the processes developed in order to manage: a) material flow of the physical goods from suppliers through the distribution centre to the customers; b) information flow of demand data from the end-

customer to the suppliers and vice versa, so that the material flow can be accurately planned and controlled (Jarrett, 1998). Considering this, we could distinguish different dimensions in health care logistics: the micro-logistics, involving the management of physic and informative flows of drugs/products within the departments; the macro-logistics, covering the typical activities of industrial logistics such as warehousing, transportation, supplier relationship management, etc.

Following these remarks, the national and regional governments have been stimulating policies which are able to improve the performance of logistics in health care organizations and the coordination between logistics and purchasing activities. The currently set up projects by the LHAs and the hospitals in this field, mainly look at the pharmaceutical supply chain, but in the long term, they will be extended to other health care product categories.

Looking at the Italian regional health systems, the most widespread organizational model for logistics management consists of a regional distribution center (s.c. hub) coordinating different logistics activities which are currently fragmented through a number of localized warehouses¹¹. In this case, the logic of “aggregation” of different medical and non-medical products managed and stocked in a single warehouse is considered effective in order to both, reduce the level of stocks and to improve the turnover ratio. Relying on this supply chain structure, numerous limitations in the logistics management model of regional health systems have been overcome, such as the multiple goods handled, the lack of economies of scale, the duplication of resources employed for inventory and order processing.

Furthermore, these solutions have been widely adopted in many regional contexts through the adoption of institutional and organizational models based on “vast areas”. In terms of logistics management the vast area is characterized by the establishment of a unique logistics platform (*hub*) with sufficient capacity to handle all the product categories needed for the area. Moreover, it centralizes within a single organization a number of functions previously entrusted to local health care units and hospitals.

Box 3. Logistics in Regional Health System: the case of Center ESTAV

To support health care organisation requirements in focusing on core activities the ESTAVs – each responsible for its own geographic area – also provides a logistics service for specific product categories including packaging and material handling, warehousing and transportation operations. They provide end-to-end supply chain services for certain consumable categories incorporating

procurement, logistics, e-commerce, web based product catalogue and customer and supplier support.

Even if the benefits of centralized logistics and procurement activities are not irrelevant, to date the logistics infrastructures of the ESTAVs are considered poor and the performance of logistics service is considered not as satisfactorily as it could be. Moreover, the three ESTAVs are at different levels of maturity. In fact, one of the ESTAVs – Centre ESTAV – has set up a logistics infrastructure with a large pharmaceutical warehouse (that results from a consolidation of 22 smaller warehouses), several vehicles and an integrated information system. The other one is running similar logistics arrangements while the third one needs to develop relevant improvements in this area.

Despite these weaknesses, in Centre ESTAV some relevant outcome (mainly linked to cost-savings for rent of facilities and staff) rose from the consolidation of warehousing activities as evidenced by Table 4.

Table 4 - Before and after the unification of pharmaceutical warehouses

	Before (2002)	After (December 2008)
Warehouses (n.)	22	1
Superface (sm)	9.311	9.500
Volume (cm)	35.718	57.000
Leasing (n.)	6	1
Catalogue dimension (Products lines)	146.784	12.900
Frequency of replenishment	Every day	Twice a week
Orders per annum	76.153	9.000
Products delivered (annual value)	€ 143.641.171	€ 104.391.238
Value of average stocks	€ 19.803.394	€ 10.874.087
Turnover index (Purchase /Stock)	7,25	9,6
Warehouse staff	108	51
Pharmacists	44	4

Toscana region was moving in this direction when it established the three ESTAVs (Box 3). Also Emilia Romagna and Abruzzo are evaluating this possibility, while two centralized logistics hubs have been set up in Veneto and in the south area of Marche region.

It should be stressed that the experiences in our country are different from other experiences implemented in European countries, in which procurement and logistics management are generally managed through public-private partnerships (see the case of English NHS in Box 4). Our experiences is also different from the organizational model based on the involvement of several customers such as university hospitals, hospitals, long term care centers, residential healthcare (Box 5, case *Cadés-Switzerland*).

4.2.2 ICT, eHEALTH and HTA

In addition to the purchasing centralization projects, several other “supporting” projects are carried out by the local health organizations, such as the following: codes standardization for goods and services, establishment or re-launch of “price observatories” or set up of technology platforms supporting the auction/bids procedures with innovative tools (*e-procurement*).

With reference to the technology platforms, a plurality of independent options co-exists. The following are the most representative:

- a) in some regions solutions have been developed for all public bodies (very frequent), (e.g. the agency Intercent-ER of Emilia Romagna);
- b) some regions use only the Consip national platform (e.g. Basilicata);
- c) Campania has decided to employ the platform Intercent -ER developed by Emilia Romagna.
- d) in the remaining regions, private service organizations are acting as on-line auction providers (Cicchetti, 2009).

In respect of all different legal models of regional centralization of purchases existing or under construction, harmonization procedures seem to be appropriate. The 2008 Agreement (January 24) between central government, regions and autonomous provinces proposed an *Integrated plan for grid development aimed at creating an harmonized system of e-procurement at national level*.

The Information and Communication Technology (ICT) is, therefore, the way for harmonization of innovation policies in health care industry. In Italy, several projects are underway to spread the use of ICT in the health sector; this process must be properly prepared, coordinated and controlled, because very often projects on e-Health are made for opportunities which ICT offers, rather than for specific regional strategies. Consequently, an important area of intervention is to support the process of re-designing and streamlining of purchasing

functions in health care organizations and hospitals is *Health Technology Assessment*¹² (HTA).

The HTA is a multidimensional and multidisciplinary approach to analyze the medical-clinical, social, organizational, economic, ethical and legal implication of technology through the assessment of multiple dimensions such as effectiveness, safety, costs, social and organizational impact. There are many agencies engaged in HTA, acting independently or under the control of INAHTA (*International Network of Agencies for Health Technology Assessment*), which has been coordinating the international activity of technology assessment since 1993.

In Italy a common orientation about HTA has not been established yet. Actually, the existing projects are very differentiated and not coordinated. They mainly have a business orientation and only a few cases are employed at regional and/or vast areas level.

In 2003, under the experimental project of the National Ministry of Health, the Italian Network for Health Technology Assessment (NI-HTA) was established, thanks to the experience gained from the Policlinico Universitario “Agostino Gemelli” (Catholic University of Rome). The guidelines for companies and medical institutions interested in introducing HTA have been defined at the 1st Italian forum for Health Technology Assessment in 2006,.

Particularly important for the allocation of the HTA institutional role is the 2007 decision of the Joint Conference State - regions, which assigned to Age.Na.S. the function to support the regions in the development of HTA. Although Age.Na.S. has been identified as an engine of HTA initiatives, it remains confined within the institutional and programmatic framework and many regions continue to move independently.

4.3 Lesson 3: look at other countries experiences

As underlined before the experiences in our country are different from other experiences implemented in European countries, in which procurement and logistics management are generally managed through *public-private partnerships* (see the case of English NHS in Box 4). Our experiences is also different from the *organizational model based on the involvement of several customers* such as university hospitals, hospitals, long term care centers, residential healthcare (Box 5, case *Cadés-Switzerland*). These two main national *benchmarks* are relevant in international health care landscape and could be useful in order to improve the Italian regional practices and to support policy makers in the public decision making processes.

Box 4. Outsourcing of purchasing and logistics functions: the NHS¹³ experience.

One of the more advanced centralized models of purchasing and logistics has been implemented by the English NHS, which has undergone the passage from a strong experience of centralization to an experience of outsourcing (Bevan, 2006).

As early as 1992, effectively to rationalize public expenditure on health, the NHS began a gradual process of centralized purchasing and distribution through the establishment of a publicly-funded organization, the *NHS Supplies* operating with two divisions: Purchasing Division and Logistics Division.

In 1998, a project was launched for the monitoring and evaluation of health supply chain performance by a *Review* commissioned by the *Cabinet Office*. The unsatisfactory results of this analysis led to the “replacement” of the NHS supplies with two new and distinct publicly-funded organizations: *NHS PASA* (purchasing and supply agency responsible for establishing and managing national contracts) and the *NHS LA* (authority for logistics working through logistical infrastructure, consisting of 7 distribution centres and numerous vehicles for transport able to cover as many as 400 Trusts located on the national territory and offer a personalized *pick-and-pack* service and a consolidation of custom orders). The categories of goods and services offered by the synergy between the two organizations covers all major items of expenditure² of the Trust.

However, the *Review* of 2001 shows the tendency of the Trust to refer directly to the supplier, rather than adhere to the national contracts signed by *NHS PASA*.

In 2004, the system of national purchasing and logistics is re-thought through experimentation of outsourcing one of the distribution centres managed by *NHS LA*. The great success of this experience (in terms of better control of the supply chain and economic benefits) leads to the decision to expand the outsourced activities to procurement and logistics, leaving it to the private company that won the tender in 2006 (the *DHL Logistics*) also the management of human resources transferred from the existing public and private sector, management of supplier relationships and activities of Information Technology. As a consequence of the ten-year service contract (Master Service Agreement - MSA) signed between Department of Health and DHL

² Among the most significant items cost: medical-hospital prosthetic materials, medical devices, diagnostic equipment, instrumentation equipment, food, cleaning products, furniture, materials, wardrobes, computer support, office supplies, health equipment, drugs, specialist health, utilities, maintenance services and assistance.

Logistics, a new (private) organization was established in 2006: NHS Supply Chain.

Outsourcing non-clinical activities in the NHS has been developed as a cost-effective way to provide health services. It brings additional knowledge, expertise and infrastructure and enables health organizations to compete by focusing on their main goal of providing a health service for patients. In NHS experience, cost-savings seem to have been generated by making use of more efficient work practices and economies of scale through the provision of end-to-end control of the consumable supply chain by a private organization (DHL). In particular, economies of scale are achieved through product standardization and nationally aggregating volumes.

Furthermore, NHS case study suggests that outsourcing purchasing and logistics to a private organization (in this case a logistics provider) was also conceived for greater innovation and quality of service, making use of supply chain management capabilities, which DHL had developed over time. This strategy also aims at providing the NHS with additional resources – mainly managerial skills and professionals – who could improve the degree of specialization of NHS services. Item, NHSs' outsourcing had improved efficiency, even introducing potential for competition (also among private and publicly-funded organizations) into the provision of purchasing and logistics services (Delbufalo, Skipworth, 2009).

Box 5. International experience: the *Cadés* case (Switzerland)

In Switzerland, the public purchase of goods is based on the principle of centralized procurement. As a rule, similar and homogeneous goods are procured by one single procurement office. Government procurement is a very wide and diversified field. Complex legislation is applied at various levels of government and by private and public utilities operating under exclusive rights. Liberalization takes place progressively at the local, cantonal and national levels with an ever-increasing interest of the business community. Major efforts toward access to information and harmonization of procedures have been undertaken recently in Switzerland. The cooperation between the Federal government and the cantons has been fruitful and constructive. This implies that purchasing entities and bidders should be able to benefit significantly during the coming years of a lean organization and an efficient implementation of the new technologies leading to enhanced transparency and increased competition for national and international bidders.

Cadés (Switzerland), founded as the Federation of Hospitals of the Canton of Vaud, became in 1994 the central purchasing organization

for many health care bodies in Switzerland (acting as non-profit cooperative association). The centralized organization organized purchasing activities following three main models:

1. market conditions study for the associated bodies, with the provision of related catalogs;
2. formation of purchasing groups;
3. overall management of the purchasing function (outsourcing).

The different health care organizations in different cantons, are allowed to adopt one of the abovementioned model considering their needs and capabilities (Fiaso-Ceis Laboratori, 2009).

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NOTES

¹ The magnitude of the above mentioned figures is confirmed if we consider that in 2007 almost 20 billion Euros – corresponding to the 18.9% of the total health expenditure – have been spent for the purchase of goods and services. In particular: 11.5 billion Euros (approximately 12% of total health expenditure) were spent for the purchase of healthcare goods; 5.8 billion Euros were spent for non health goods (approximately 5.6% of total expenditure) (Ceis, 2008).

² A clarification about nomenclatures seems to be essential. In this paper, for the scope of our research, we used the term “purchasing” to identify the process which begins with a need for a good or service and it ends with its

use and the payment to the supplier (Gebauer *et al.*, 1998). In public sector, purchasing is more complex than in the private sector; indeed, public procurement is not a simple interface between government buyers and private sellers, but it represents a complex environment involving different public-private interactions.

³ Semi-structured and structured interviews were conducted with managers at macro (Regional Governments and Regional Healthcare Authorities) and micro (Local Health Authorities) level between 2007 and 2008.

⁴ Regional Law n. 40/2005 (Re-organization and Discipline of the Tuscan Regional Sanitary System).

⁵ Consip, even though a private law company, operates in the market exclusively with the function of “service organization” on behalf of the Italian Public Administration. The control functions over Consip are carried out by the Ministry of the Economy and Finance. The duties entrusted to Consip relate principally to: (a) the IT management activities for the Public Administration; (b) the implementation of the contractual IT instruments for the aggregation of procurement of goods and services on behalf of the Public Administration, with the aim of rationalizing public expenditure (also through the entrusting of adjudications and the management of suitable conventions).

⁶ Since 2004, Emilia Romagna (Intercent-ER) have been testing a performance measurement system that mix cost-savings metrics with social impact and quality assessment indicators. In order to obtain both quantitative and qualitative data, they have developed customer surveys targeted to many stakeholders such as public administrations, suppliers and trade associations.

⁷ To classify the indicators in the five assessment bands, the following reference criteria were taken into consideration: (a) recognised international standard was considered (e.g. the maximum rate of Caesarean sections recommended by the WHO); (b) a regional standard was considered; (c) if none of the precedent is set, the regional average was considered (Nuti, 2008).

⁸ There are a number of indicators considered in the MeS performance measurement system such as the following (years 2005-2008): number of contracts/bids to which each supplier is invited for year (i.e. “market power”); average time for proceeding; cost incurred by logistics; term of payment of suppliers; perceived quality of ESTAV services by the healthcare organizations.

⁹ The first (A) dimension (Population health) is not considered in the Centre ESTAV target because it is not directly linked to the evaluation of centralized purchasing and logistics activities managed by the ESTAV.

¹⁰ In the ESTAV target the clinical impacts has been included within the external evaluation.

¹¹ This is also the direction taken by some Danish Institutions, such as the County of Copenhagen Hospitals (which includes the suburban hospitals),

where a single central warehouse in the Central Purchase operating under the County has been established.

¹² It considers not only medical devices, surgical equipment and biomedical but also drugs, vaccines, clinical procedures, programs of prevention and health promotion.

¹³ See Delbufalo and Skipworth (2009).

¹⁴ The most important item costs are the followings: medical-hospital prosthetic materials, medical devices, diagnostic equipment, capital equipment, food, cleaning products, furniture, wardrobes, computer support, office supplies, drugs, utilities, maintenance services and assistance.

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