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## **Budgeting Control System and *e-Procurement*: an Integrated Tool for Limiting Misconducts in Healthcare Purchasing Procedure**

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### **Abstract**

*Corruption and misconducts, “the abuse of entrusted power for private gain” (Pope, 2008), are pervasive virus that negatively affects the public lives of many Countries. Given that the 9% of the worldwide GDP on average is represented by health expenditure, healthcare is particularly vulnerable to corruption (Petkov and Cohen, 2016; EU, 2017). Due to the large number of services delivered, Public Hospitals and Local Health Authorities undergo a high risk of misconducts, which could bring not only to a waste of public resources, but also to undermine access to the services, impoverishing their quality and the possibility for sustainable development of countries (Braithwaite, 2013; Neu et al., 2013). Corrupt practices and fraud affect up to 25% of expenditure on medical and non-medical goods (Sorenson and Kanavos, 2011); these increase inequality and determine substantial well-being and value losses (Porter, 2010). Corruption can be expressed by the Klitgaard’s equation (1998): **Monopoly plus Discretion minus Accountability**. Hence, to limit corruption phenomena an efficient way seems to be increase accountability and transparency by strengthening of internal controls (Christensen and Skærbæk 2007; Fadda et al, 2017).*

*Accordingly, e-Procurement in the public domain can be seen as a tool to support the delivery of public purchasing process, improving efficiency and transparency of transactions (Carayannis and Popescu, 2005; Croom and Brandon-Jones, 2005); Budgeting control system is a powerful tool to align strategies and plans with operational decisions (Garrison et al, 2010), suitable for simultaneous controls in daily management and purchasing decisions (Provenzali, 1991).*

*Therefore, the goal of this work is to understand if it is possible to integrate the simultaneous budgeting-based control system with the e-Procurement procedures (through an ERP software), and how this integration could potentially limit misconducts in healthcare purchases.*

*After a theoretical background about themes of Corruption, e-Procurement and Budget, a single pilot qualitative case study (Yin, 2014) has been conducted. In particular, we developed a qualitative inquiry (Patton, 2002) based on face to face interviews (Said et al, 2017) with two high-qualified SAP® developer-providers.*

*This contribution attempts to clarify how internal controls impact on the “responsibility chain” (roles, responsibility, transparency degrees of discretion) of procurement process in public healthcare, by increasing level of accountability.*

*This paper fosters debate about relationship between corruption and level of internal control system of Healthcare Organization. This would have considerable consequence also for practitioners involved in ERP software development.*

**Keywords** – Budget, e-Procurement, Corruption, Internal Control, Healthcare.

**Paper type** – Academic Research Paper

## **1 Introduction**

Corruption and misconducts are a pervasive virus that negatively affects the public lives of many countries around the world. Corruption, in particular, could be considered as “the greatest obstacle to economic and social development” (Braithwaite 2013, Neu et al 2013).

Many definitions of this phenomenon have been provided over time (Bardhan 1997, Liu 2016). Although a unique definition of corruption has not been provided yet, on the other hand one of the most commonly shared definition is the “the abuse of entrusted power for private gain” Pope (2008).

Given that the 9% of Gross Domestic Product on average for Organization for Economic Co-operation and Development Countries is represented by health expenditure, there is a shared agreement that Health facilities are particularly vulnerable to corruption, especially regarding procurement procedures (Petkov and Cohen, 2016; EU, 2017).

Health organization are currently facing a growing demand for health services. This phenomenon is affected by the health status of the community, progress in medical technologies, costs and patients’ preferences (WHO, 2014). Accordingly, purchases of drugs, medical devices, machineries and common consumables represent those operative inputs that can potentially improve population health, access to care and quality of life by providing an effective healthcare service. However, due to the large number of services delivered and the amount of financial resources managed, Public Hospitals and Local

Health Authorities undergo a high risk of conducting misleading behaviours, which could undermine access to the services and their quality. Misleading behaviours triggered events are represented by the possibility to alter a fair economic price, clinical efficacy, maintenance needs, usage of technologies for pursuing private gains. Therefore, damages generated by corruption lead not only to a waste of public resources but also undermine the possibility for sustainable development of countries, increase inequality and determine substantial well-being losses. With regard to procurement process, opportunistic behaviours are strongly encouraged by unstoppable interactions between public and private sectors, which involve various stakeholders with different perspectives concerning the value added by health technologies (Drummond et al., 2013). Corrupt practices and fraud affect up to 25% of expenditure on medical and non-medical goods (Sorenson and Kanavos, 2011). Implications of corruption in the procurement of health technology are mainly represented by the acquisition of low quality and ineffective products, which are not aligned with health needs (Petkov and Cohen, 2016).

The owners of public hospitals, indeed, are citizens who cannot nominate or oversight managers directly. Hence, the separation between formulation of policy and administrative action has been considered the way to improve the efficiency and effectiveness of Public Administration, to contain opportunistic behaviours and, thus a pre-requisite for a sustainable development (Barberis, 1998; Osborne, 2006).

Structure, culture and tradition design the essence of how public administrations work: the legal setting largely determines what can be done or not and which solutions pursue or not. Governance mechanisms have a great role in determining internal control systems and their reliability and, at last, how much it easy for the corruption finds its pathway into organizations (Zahra et al., 1995). In other terms, the triangle: 1) public administration, 2) internal control systems and 3) corporate governance mechanisms represent the spectrum where the corruption could take its dangerous role (Di Pietra and Melis, 2015).

Corruption can be expressed with the following equation: monopoly plus discretion minus accountability (Klitgaard 1998). Monopoly and discretion (by bringing low transparency) are positively related with the level of corruption within a Country, while accountability negatively. Although this equation is generally valid, it seems particularly suitable for the healthcare context; this field has the following peculiarities, which makes it vulnerable to corruption:

- High discretion of clinical decision;
- High information asymmetry between clinicians and patients;
- Monopolistic power of public health providers in many specialized healthcare services.

Consequently, the aim of the public organization reforms has been to underpin performance management and increase the transparency and accountability of health organizations in order to increase as well responsibility of managers and decision-makers. Accordingly, the introduction of e-procurement goes in this direction by promoting fair competition and low “cost-effective” prices (Cohen et al, 2002).

Ex-ante better design of governance mechanisms, internal system controls and performance management tools as a whole, is felt even more in the public sector: this is essential for preventing opportunistic behaviours and avoiding information losses (Christensen and Skærbæk, 2007)

Hence, to limit corruption phenomena an efficient way seems to be the strengthening of internal controls (Fadda et al, 2017, Palozzi et al, 2018). Accordingly, the budgeting control system would be a powerful tool to align strategies and plans with operational decisions. Budget is suitable not only for planning activities, but also for simultaneous controls in daily management and purchasing decision. (Provenzali, 1991).

Starting from these preconditions the aim of this work is to answer to the following research questions:

“Within the Healthcare Public Providers context, could Budgeting Control System be integrated with the e-Procurement process in order to verify consistency between plans and purchases? And, could this integration be effective in limiting potential decision-makers misconducts in health procurement?”

In other words, this contribution attempts to understand which features of Budgeting Control System increase awareness and accountability in the e-procurement process.

Based on an Enterprise Resource Planning (ERP) software, the integration between Budget and eProcurement allows intervening on all the variables of the corruption equation: Budget increases public hospitals’ responsibility and transparency in financial resource employment (Kassel, 2008; Barret, 2014), e-Procurement promotes traceability of purchasing process.

Thus, this contribution attempts to clarify if it is possible to practically formalize the “responsibility chain” in the procurement process within the electronic market. Responsibility chain expresses relationships between roles, responsibility, accountability, degrees of transparency of decision-making process which bring to approve (or not) a health furniture, without opportunistic pressures and in coherence with the value-based healthcare principles (Porter, 2010).

To achieve its purpose, this paper follows the following outline: after this brief introduction, the second section reports a background addressed to the issues of corruption, e-procurement and Budgeting. The third section explains how the interview-based qualitative pilot case study (Patton, 2002; Yin, 2014) intercepts opinions of two SAP® developers/providers in order to understand the real feasibility of an ERP integration between Budget and e-Procurement. The fourth presents findings of the inquiry. The last section discusses results obtained and provides some consideration about the potential impact of such control tool on misconducts, in relation of the procurement phase within Healthcare Organization context.

## **2 Background**

As recognized, corruption negatively affects public lives of many countries around the world, whose damages lead both to waste public resources and to undermine the

possibility for a steady and fair growth of countries, increasing inequality and determining huge well-being losses

Referring the issue to the health sector implies an investigation about how much misconducts affect the creation of public value and, thus, wealth of people. However, healthcare professionals do not always understand what is the corruption range and how it impacts on their daily operations; conversely, anti-corruption specialists often are not able to really understand the complexity of the healthcare system (Petkov and Cohen, 2016); the result is a continuous providing of anti-corruption rules and structured procedures, often disconnected from the clinical practice needs.

Potential structural malfunctions could be observed at the NHS-hospital or Region-hospital level (Beerli and Navot, 2012), where healthcare providing is strongly influenced by scientific and technological advancement, which affects expenditure of both current supplies and strategical assets. Hence, the procurement process seems to be particularly vulnerable to opportunistic behaviours of decision-makers, which could result in corruptive conducts aimed at private gains.

European Union (2017) defined six typologies of corruption in healthcare:

1. bribery in medical service delivery;
2. procurement corruption;
3. improper marketing relations;
4. misuse of (high) level positions;
5. undue reimbursement claims;
6. fraud and embezzlement of medicine and medical devices.

All these distorted practices could lead both to waste resources and to decrease the access to healthcare services and treatments.

Referring with the procurement process, corruption appears into the possibility to alter fair economic purchases within manipulated negotiations; this, potentially, means: higher price supplies, overestimation of supply volumes, falsification of maintenance needs, not appropriateness health technologies employment, etc.

In this scenario, the higher the ineffective managerial structures and control mechanisms, the higher the possibility of observing corruption (European Union, 2017).

Accordingly, since the introduction of New Public Management (Hood, 1991; Dunleavy and Hood, 1994; Barberis, 1998), and its evolution to the paradigm of Public Governance (Osborne, 2006; Bovaird et al., 2009), the separation between Policy and Administration has been considered the way to contain opportunistic behaviours within Public Administrations in order to improve their efficiency and effectiveness. In this direction, many jurisdictions' reforms have attempted to contain misconducts through the improvement of rules aimed at regulating corporate governance mechanisms and internal control tools (Cooper et al, 2013). Within these reforms, we can find the introduction of new procurement process for Public Organization built on centralized and electronic (e-) markets.

With the term e-business we consider information exchange, commercial transactions and knowledge sharing between organizations (Croom, 2005) by using an information

technology interface completely integrated with the organization's processes (Graham and Hardaker, 2000), in coherence with the broader organizational strategy.

In particular, e-procurement is the mirroring of procurement activities on the internet (Croom and Johnston, 2003), which deals both with all the "technology solutions" that facilitates procuring goods and services (Presutti, 2003) and with the automation of the procurement process (Vaidyanathan and Devaraj, 2008); it also includes the activities of purchase request, authorization, ordering, delivery and payment supplier (Chaffey, 2007). E-procurement can be defined as the use of information technologies to facilitate B2B purchase transactions (Wu et al., 2003), which enables firms to more efficiently and accurately capture and aggregate the value of "how much" they are spending.

E-procurement in the public domain can be seen as a tool to support the delivery of public procurement policy, improving efficiency and transparency of transactions (Carayannis and Popescu, 2005; Croom and Brandon-Jones, 2005).

Benefits can have a twofold nature (Garrido, 2008; Dai and Kauffman 2004):

- financial (quantitatively and monetary measurable);
- organizational (qualitatively measured)

Starting from the financial benefits, e-procurement allows increased efficiency in the organizational structure, especially in the reduction of purchasing department size, levels and number of functional areas involved in the purchasing process. It implies gains in the administrative process and procurement costs.

Moreover, e-Procurement prevents single users or buyers from purchasing outside the negotiated contracts and from different sources. Maverick buying is considered a relevant cause of internal inefficiency and increase in the total cost of ownership of the purchased goods and services. Accordingly, Barratt and Rosdahl (2002) claimed that it improves transparency of prices and in the relations with suppliers (contractual conditions, time and terms of each order, order tracking and tracing), that brings to higher accountability of operation-purchasing processes (Puschmann and Alt, 2005, Currie, 2000).

In particular, referring with the transparency in public sector, positive impacts of e-procurement can be summarized as follows:

- better control and maverick-buying reduction (Croom and Johnston, 2003);
- attracting more new suppliers to do business with government (Rotchanakitumnuai, 2013)
- reducing corruption between purchasing officers and suppliers (Panayiotou et al., 2004)
- preventing from information asymmetry (Croom and Brandon-Jones, 2007)
- traceability of information and all the daily operations (Belisari et al, 2019)
- reinforcing user compliance (Belisari et al, 2019)
- reducing opportunities for corruption in public procurement process (Neupane et al, 2014)

Following Figure 1 illustrate the process flow of public procurement:

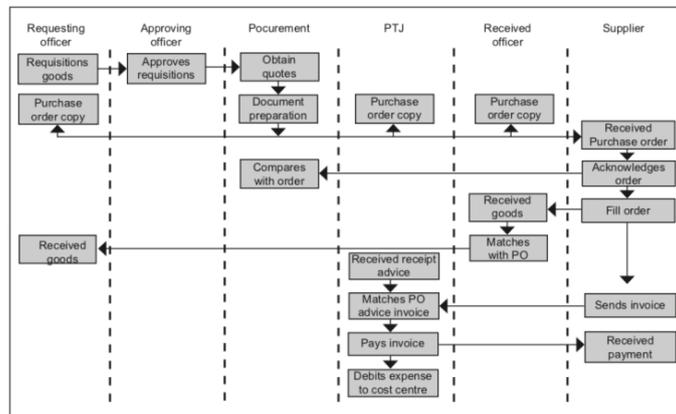


Figure 1: The procurement process for the public Procurement. Source: Said et al 2017.

Within this process three are the stages identified as highly vulnerable to corruption: 1) the need of assessment; 2) during the selection of supplier; 3) monitoring of services. (Said et al, 2017).

In Italian context, according with Raffa and Esposito (2006) the procurement code over regulates the use of the public procurement procedures, so that the purchasing process is often paralyzed. Moreover, the Italian government concentrated in the hands of a state-led agency (CONSIP) the power of negotiating big contracts aimed at buying standard goods. With exception of special equipment, the most of purchasing of details of such auction contracts and the availability of goods, firms operating in the public sector have to surf CONSIP's electronic catalogues. In healthcare field, the process starts with defining both the items and the rules that would be followed during the bidding. Usually, the price is the key determinant for awarding the contract. Figure 2 describes the auction process in the Italian public health care system. The auction may take advantage of multiple criteria of assessment (Bichler, 2000)

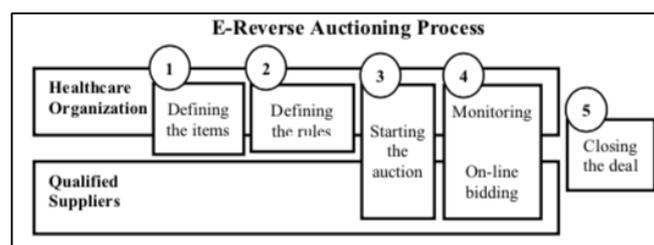


Figure 2: e-Reverse Auctioning Process. Source: Raffa, L., & Esposito, G. (2006).

Said et al (2017) have analyzed the process of public purchasing through the e-Procurement; the activities are listed in the following Table 1.

Table 1: The activities of e-Procurement

| N | Activity   |
|---|--|
| 1 | User requests to purchase goods or services.   |
| 2 | Procurement officer checks the availability of funds in the financial system   |
| 3 | Procurement officer chooses potential suppliers based on the selected registered code in the system                                      |
| 4 | Successful supplier would be chosen based on the goods services provided in addition to the exact specifications requested by the users. |
| 5 | Once the supplier is selected, the procurement officer would send the proposal to the authorized personnel for approval.                 |
| 6 | Procurement officer generate the purchase requisition through the system and sent it to the successful supplier                          |
| 7 | At the time of delivery of good, supplier include invoice and delivery notes.  |
| 8 | The store keeper verifies the supply received and generates a receipt note in the system   |
| 9 | The payment process would proceed, after all reconciliation process with the order were completed.                                       |

Source: Authors' elaboration inspired by Said et al (2017)

Across this e-procurement process (in particular for activities from 1 to 6), it would be possible to compare what is the amount of financial resource licensed by the Healthcare Organization Budget with the actual purchases for the different kind of goods and services.

Budget is a quantitative plan for acquiring and using resources over a specified time (Garrison et al, 2010). It is used for two distinct purposes:

- *Planning*, that is “how developing goals” and preparing various budgets to achieve those goals.
- *Control*, that regards the action taken by management to increase the integration of all parts of the organization in working together in order to achieve the goals fixed at previous stage.

Budget is strictly connected to Responsibility Accounting, whose basic idea is that a manager should be held responsible for those items that he/her can effectively control to a significant extent. This implicates a personalization of accounting information and assignments to individuals, who will be responsible for revenues, costs and performance of the operational Unit they govern.

In particular, for an organization as a whole, the master budget consists of a number of separate, but interdependent, budgets that formally lay out the company's sales, production and financial goals. Among these budgets, the production one (composed by direct materials, labour, and service budgets) details the resource that must be purchased to fulfill the expected production as contrasted to expected sales. In the context of a healthcare organization is production budget where the use of consumable components (e.g. prosthesis, medical device, drugs, etc.) or new capital equipment employment are authorized.

However, a static planning budget is inappropriate for evaluating how well resource consumption is controlled. If the actual level of expense differs from what was planned, this should be kept into account in terms of impact on costs: if this difference is negative, the spending variance (difference between how much a cost should have been and its

actual amount) should be immediately highlighted and labeled as unfavorable (or vice versa).

Budget, as said, should be suitable for simultaneous controls of daily management activities (Provenzali, 1991). By verifying the consistency between actual and planned costs, it could give indication about the cost-effectiveness of resource employed, identifying also the responsible of the purchasing of those resources used. In this perspective, in accordance with Casati (2000) budget becomes a comprehensive tool able to:

1. map goals,
2. count resources for their achievement,
3. to set control parameters able to trigger, in case, corrective actions.

Moreover, in a Healthcare Organization budget is a “bridge” between business administration and clinical management aimed to formalize strategic plans into practical actions, which brings to “more efficient use of hospital resources” (Barr, 2005).

In this perspective, Budget has stopping to be a tool aimed at the mere authorization of expenses on the base of a check of funds availability. It should evolve into a formal validation of the appropriateness of the resource employed, able to connect the responsibility of who promotes the purchase with the results obtained.

Accordingly, by increasing the level of ERP-based internal controls, budget could surely contribute to fight misconduct within procurement within Healthcare Institution (Fadda et al., 2017)

### **2.1 Research Problem**

In the context of Healthcare Organizations, what happen if the amount of the actual cost of a specific supply is considerably higher than how much it should have been, as licensed in the planning budget? Who has been held responsible? Which are the potential corrective actions?

The attempt to answer these questions is the very engine of this work: understand if it is possible to integrate the simultaneous budgeting-based control system with the e-Procurement procedures (within the electronic market) through the use of an ERP software.

Our expectation is to understand if the presence of procedural mechanisms of control are able to monitor the responsibility chain of procurement process in case of significative variance among planned and actual purchases.

Variance can be:

- i) quantitative, if the purchase differs in term of financial resources or in terms of quantity of goods (or services)
- ii) qualitative, if the purchase differs in term of composition of expenditure.

Potentially, this check should hold responsible those who promote the purchase, increasing accountability and thus limiting their misconduct or opportunistic behaviours.

### 3 Method

To get this goal, we ran single pilot case study (an “empirical inquiry that investigates a contemporary phenomenon within its real-life context”, Yin 2014), with the purpose to intercept some insights from information-rich key informants.

In particular, we developed a qualitative inquiry (Patton 2002) based on face to face interviews (Said et. al, 2017) with two SAP® developer-providers. The interviewees hold the following apical job-position within their organization:

1. The Chief Executive Officer at Technis Blu Company (SAP® Partner)
2. The IVE Services Industries Director at SAP® Italy

The framework for the analysis includes the following main topics:

- A. Acceptance of Budget as a Managerial Control Tool
- B. Functional Interaction between budget and procurement
- C. Employment of an ERP software as support of procurement
- D. Accountability
- E. Transparency
- F. Abuse of discretion
- G. Functional Integration between an ERP software and Public Electronic Market

On the base of their professional experience (Scapens, 2004) we asked participants to talk about such open topics. Interviews, in Italian language and integrally recorded, were transcribed and coded them for each of the seven topics. We used sentences to analyse the data on the basis of such portions of text. Once the coding process was carried out, we sorted and analysed all the portions of text coded. Then, we analyzed data by generating a large quantity of codes by assigning labels to sections of text that have some distinct meaning in order to categorizes, organize and interpret them.

### 4 Results

In relation to our interviews, we derived around 80 raw concepts, included in approximately 30 pages. Based on interviewees’ experience on SAP® development, this selection process was finalized to build and refine categories into more specific concepts, clustered per topic. Interviewees’ opinions are included in the following Table 2. After each statement, a code is shown in order to distinguish the interviewee who agrees with the assertion: K1, K2 (where K1 represents the Key Informant 1 and so on).

Table 2: Findings form interviews

|  |
|--|
| <p><b>A. Acceptance of Budget as a Managerial Control Tool</b></p> <ul style="list-style-type: none"> <li>• Internal control is the keystone to fight misleading and opportunistic behaviours. (K1, K2)</li> <li>• Always more frequently, in the field of Managerial Control in Healthcare is used to use the Budget as an operating control, and not only as a planning support. (K1, K2)</li> <li>• Budget have to be considered a tool for: i) ex ante, ii) simultaneous, iii) ex post controls, provided by different forms and features. (K1)</li> </ul> |
| <p><b>B. Functional Interaction between budget and procurement</b></p> <ul style="list-style-type: none"> <li>• In the Healthcare context, the budgeting process is commodity-related; this means that its connection with procurement procedures has to be tailored with the kind of goods or services purchased (K1); for instance:</li> </ul>   |

|  |
|--|
| <ul style="list-style-type: none"> <li>○ in case of drugs purchasing, budget has the role of monitoring the transactions; but, due to clinical safety reasons, it could never stop the supply;</li> <li>○ in case of medical devices purchasing, budget has the role to verify the fund availability; moreover, for special equipment which need staff training, budget tool has to be integrated with the SAP® “project management” tool.</li> <li>• During the procurement process, an ERP software provides a simultaneous control of the consistency between funds earmarked for a specific supply and funds actually employed. (K2)</li> <li>• Higher risks of misconducts are during the sourcing phase of suppliers, goods and service; during the procurement procedure, these risks are reduced. However, if an anomaly was observed, it is possible to locate who has held the responsibility; this both discourages misleading behaviour and potentially triggers penalty mechanisms. (K2)</li> </ul>   |
| <p><b>C. Employment of an ERP software as support of procurement</b></p> <ul style="list-style-type: none"> <li>• An ERP software would allow users to standardize procurement procedures; however, due to the necessity of healthcare field, often it is not suitable to define replicable procedures valid for different kinds of purchase. (K1)</li> <li>• An ERP software would reduce the common risks of anomalies in procurement process (K1):             <ul style="list-style-type: none"> <li>○ Invoicing is automatically connected with the order;</li> <li>○ The choice of supplier could be integrated with the electronic market in case of common goods searching (otherwise, in case of customized supplies, this choice cannot be automated).</li> </ul> </li> <li>• In the case of SAP®, it supports the purchasing process through two tools: Material Management as support for accounting and Ariba as support for the cash outflows cycle. (K1).</li> <li>• Through these tools SAP® encourages budget-based controls both for (K2):             <ul style="list-style-type: none"> <li>○ Funds availability;</li> <li>○ Appropriateness of purchases as compared with those planned.</li> </ul> </li> <li>• Budget, within ERP System, is still employed as a control tool in healthcare organizations. (K1, K2)</li> </ul> |
| <p><b>D. Accountability</b></p> <ul style="list-style-type: none"> <li>• During procurement transactions, it should be always identified the responsible of Cost Center who promote the purchase. (K2)</li> <li>• The responsible of procurement should have a mere technical role aimed at the issuing of purchasing order; actually, he/her holds the responsibility (and the power) of the whole procurement process (K2)</li> <li>• In a Healthcare Organization, the procurement process should involve different individuals with very heterogeneous competences: clinicians, responsible of procurement, Ethic Committee, Scientific Committee, HTA units. (K1)</li> <li>• Supervision of appropriateness of purchases should be due to Ethic and Scientific Committees; while, the Head of a Cost Center should have the responsibility of the Budget of his/her department. (K1)</li> <li>• For example, SAP® is based on rules and responsibilities; by a personal logon (user and password) is always possible to verify “who were” that “does something”. (K1)</li> <li>• The only solution to risks of misleading behaviour is the fragmentation of purchasing process in different activities, whose responsibility is held by different independent subject, interconnected among each other (K2).</li> </ul>                         |
| <p><b>E. Transparency</b></p> <ul style="list-style-type: none"> <li>• Transparency derives from the possibility to historicise information. (K1, K2)</li> <li>• For example:             <ul style="list-style-type: none"> <li>○ SAP® improves traceability of transactions by a drilldown approach applied to the procurement process. (K1)</li> <li>○ SAP® verifies the whole purchasing chain: by the login (user and password), it traces “who” is interested the advancement of an order. (K1)</li> </ul> </li> <li>• Transparency is scaring. Higher is the transparency of a process, more evident will be its inefficiencies (attributable to a specific responsible). (K2)</li> </ul>   |
| <p><b>F. Abuse of discretion</b></p> <ul style="list-style-type: none"> <li>• An ERP system can never judge clinical discretion and choices. (K1)</li> <li>• The budgeting controls could limit the abuse of discretion (maverick behaviour) in purchasing process. (K1, K2)</li> <li>• Multiple authorization workflows decrease risks of abuse of discretion. (K1, K2)</li> <li>• Rigid approval procedures for specific purchases (previously defined) contain abuse of discretion. (K1, K2)</li> </ul>   |
| <p><b>G. Functional Integration between an ERP software and Public Electronic Market</b></p> <ul style="list-style-type: none"> <li>• From a technical point of view, an ERP software (such as SAP®), can be easily integrated with the Public Electronic Market. This can be particularly suitable to reduce misconducts in supplier choice.</li> </ul>   |

(K1, K2)

- The integration would make possible to automatically identify within the Electronic Market those suppliers who own the features to satisfy the demand of those goods and services looked for. (K1, K2)

Source: Authors' elaboration

## 5 Discussion and Conclusion

“Within the Healthcare Public Providers context, could Budgeting Control System be integrated with the e-Procurement process in order to verify consistency between plans and purchases? And, could this integration be effective in limiting potential decision-makers misconducts in health procurement?”

As answer to the research questions, this study could affirm that a functional integration, through an ERP software, between Planning Budget and e-Procurement is possible and easily achievable from a technical point of view. In particular, the Budgeting system is still considered as a managerial tool for simultaneous control of operational activities provided by healthcare organizations. Its integration within e-Procurement logics, moreover, allows a continual check of resource employment from the responsible of the Cost Center within the organization.

With the exclusion of drugs, whose procurement can never be stopped due to obvious clinical reasons, integration between Budget and e-Procurement becomes a tool that potentially allows to verify the operational appropriateness of purchases, by overcoming the mere checking of the fair employment of financial funds. In some cases, this involves authorizing information materials coming from Ethic Committee, HTA Unit or Scientific Direction of Organization.

Even if managerial control tools cannot deal with decision of the clinical practice, they allow to map those who hold the responsibility of any phase of purchasing process, by locating also those officials who have authorized purchases that significantly differs from what budgeted.

In this sense, integration between Budget and e-Procurement magnifies the control possibilities that are owned, separately, by each of the tools. Hence, this integration strategy verifies the contingency between planned and actual purchases; this extends the “responsibility chain” from operational needs planning to the actual delivery of goods or services purchased. Accordingly, the choice of a supplier becomes the outcome of an objective process, which is parametrized on operational necessities and not on subjective propensities of Procurement Officers. This potential change involves the Principal-Agent Theory (Eisenhardt, 1989; Jensen and Mecklinig, 1976; Whipple and Roh, 2010) in term of relation between buyer and supplier.

Moreover, according to Kramer (2012), the improper selection of suppliers by approving higher price, accepting low quality goods and engaging unnecessary service or consultations probably has driven by corruption in public procurement (Said et al, 2017).

Thus, segmentation of procurement process in many sub-phases makes possible to isolate who hold responsibility of each sub-phase and his/her relationship with the supplier, since the planning of supply. In addition, the possibility to historicize

information increase the traceability of transaction and, then, the transparency of the entire procurement process.

Give the above, the continual control of financial resource employment has a positive impact on Accountability of purchasing process in healthcare. Sure enough, the integration between Budget and e-Procurement:

- individuates those who hold responsibility of each stage of procurement process;
- decreases subjectivism in supplier choice;
- triggers a justification mechanism (also clinical, if necessary) when actual expenses were too much different from those applied (both per amount and per operational composition).

These three endpoints should have the results to decrease misconducts and maverick behaviours, with the endpoint to prevent corruption activities during the procurement process (Said et al, 2017).

As simultaneous control tool for the operational management, the study demonstrates how Budgeting System increases the makings of e-Procurement to fight potential corruptive behaviour form public Officers, by triggering authorization mechanisms, which make more transparent the purchasing, process.

In particular, this study has referred with the combination of the following three elements:

- A. Managerial ERP software based on a rules and responsibilities for users;
- B. Variance analysis potentialities of Budgeting system;
- C. Fairness of a “step-by-step” on-line purchasing pathway, structured a priori, and form a Third Part.

This way, according with Christensen and Skærbæk (2007), it is possible to create conditions to decrease the abuse of discretion in procurement process, which would become more transparent, with the result of Accountability increasing.

However, the introduction of a high structured procurement process could be affected by resistance to change by those employees (both clinical and administrative) involved.

In this regard, a statement belonging to the Key Informant 2 has been extremely meaningful; K2 argued that:

“The increasing of Transparency could upset the whole Organization”.

With this sentence the interviewed has intended to underline two main aspect related to the improvement of internal managerial control system within healthcare organizations:

1. Increasing Accountability is scaring; it highlights internal inefficiencies (both aware and unintentional) and individuates the responsible of inappropriateness employment of resource.
2. No one wants to hold too much responsibilities in his/her job (often without additional benefits which justify these duties). Thus, employees ask for rigid procedures (in order to discharge part of own responsibility on the procedure itself); this behaviour brings to drastically slow down decision-making and operative processes.

Probably this is the reason why, as stated by the K1, just few Public Hospital and Local Health Authorities in Italy have decided to use a comprehensive internal ERP, such

as SAP<sup>®</sup>, for managing and monitoring all the processes of healthcare delivery and those resources their related.

For sure, results of our enquiry confirm that, all the organizational level, the only “mechanical” method to reduce misconducts during procurement process is to intervene on the “responsibility chain”, by strengthening it. As stated by Fadda et al (2017), by increasing the level of integrated internal control system is possible to increase the organization Accountability. According to the Klitgaard’s equation (1998), corruption decreases.

Clearly, this study and its findings are not free from limitations; firstly, the sample of interviewees is too small. Although the key informants are two high skilled managers that operate in the field of ERP implementation within MCs since 90s, their points of view should be partial and limited to their own experiences and to their involvement with SAP<sup>®</sup> supply. Hence, extending the sample to other key informants with different background would be advisable.

Secondly, the literature background about interrelationships among the huge topics of corruption, e-Procurement and Budget deserves to be better explored and clarified, in order to classify which levers of controls positively impact on misconducts.

Both these two major limitations lay the foundation for further detailed enquiries whose aim, as that one presented in this paper, is fostering debate about relationship between misconducts and level of internal control systems (Di Pietra and Melis, 2015), in the context of Healthcare Organizations.

By the way, in the lens of healthcare sustainability, the present work surely highlights the necessity to look for technical ERP solutions able to support “managerial-rational” approaches in clinical practice, which continually involve decision-makers, form the planning process to the procurement procedures.

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