

Performance of public sector organizations: do management instruments matter?

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Introduction

Only very recently, the study on the influence of management on the performance of public organizations has increased. The reasons for the -rather late- rise of this study are clear.

“To a great degree the field of public administration is based on the assumption that how public management is organized has an effect on the performance of an organization. The appeal of the “*management matters*” adage masks a dearth of empirical evidence. This is in part because of the ambiguity of what public performance actually means and how it may be quantified. More troubling from a public administration perspective is a failure to define what good management – [also] called “capacity”—actually looks like” (Moynihan 2003: 2).

The ‘*management matters*’ thesis has been inspired to a large extent by the doctrines of ‘managerialism’ and the ‘New Public Management’. These doctrines advocate the adoption of private management instruments (e.g. Osborne and Gaebler 1992, Hood 1995, Osborne 2002) within public sector organizations in order to increase efficiency, effectiveness and quality. Moreover, a lot of these management instruments (e.g. quality management instruments) were propagated by ‘gurus’ with bestselling management manuals as performance enhancing devices for both the private sector and public sector organizations (Bouckaert and Thijs 2003).

Lately, the amount of positive empirical evidence on the influence of *managerial styles and strategies* and performance has been growing rapidly, but the exact conditions, under which such an influence occurs, remain very unclear. Moreover, not much is known about the influence of specific *management instruments* on performance of public sector organizations. Besides, studies in this area mainly focus on governments as a whole, rather than on individual public sector organizations. The research on specific groups of public sector organizations, such as agencies, does not seem to tackle this empirical question either¹.

This paper tries to contribute to the scientific literature on the link between management and performance by amending some of the shortcomings listed in general public management research, as well as in agencification research. In this paper, we explore the possible influence of specific management instruments on the performance of public sector organizations, while controlling for specific contextual factors, which are suggested in the literature.

In order to do this, we first discuss some relevant literature and theories in order to construct our theoretical model. Second, we elaborate on the measurement of concepts and the methodology we use. In the empirical part we draw on survey data from Flemish public sector organizations and put our theoretical model to the test. Finally, we discuss the relevance and implications of the research results for theory and for future research.

In the context of the paper, the concept ‘performance of public sector organizations’ refers to the *efficiency, effectiveness and quality* of the activities of these organizations. These dimensions of performance are central to the New Public Management doctrine. The set of

¹ Also within contemporary research and literature on (semi-)autonomous agencies, management styles and instruments have not received much attention as determinants for agency performance. Most of the studies focused on the effects of autonomy itself or of the control instruments deployed by governments in order to steer the agencies. The lack of studies on internal agency management is rather striking. One may expect that the widely-assumed performance-enhancing effect of granting more autonomy to agency heads will only take place in those agencies where management styles or instruments have changed after a process of agencification.

independent variables is the presence of management instruments related to specific management fields, such as HR management, financial management, quality management and performance management. The management instruments under review are mainly copied (with different levels of adjustment) from the private sector. As we rely for our data on surveys with public sector organizations as respondents, we will use perceptual data, referring to self-assessments. We will elaborate on these conceptualizations and their measurement further in this paper.

Public sector management and performance: a short literature review

Traditionally, the literature on performance of public sector organizations has mainly focused on the constraints and stimuli posed by external factors, such as the rule of law and specific contingencies (Boyne and Walker 2005: 483). One popular approach was the focus on the performance-enhancing influence of private versus public ownership (see e.g. the relative efficiency studies in the '80s or the privatization debate). Next to this, more and more focus is also on internal organizational variables, of which management is an important one. For example, in their model to assess and predict organizational performance in US Federal agencies, Brewer and Selden (2000) mainly focus on internal factors, such as organizational culture, task related features and management related issues like leadership and supervision, and (the management of) human capital and capacity. In their meta-analyses of more than 800 US-based empirical studies and 193 non-US studies, Hill and Lynn (2004) and Forbes and Lynn (2005) give an excellent insight of the performance studies and the different levels of determining variables under study. They illustrate that the distinction between external and internal determinants is too simplistic and should be elaborated further in order to understand interrelations between the variables. However, in order to keep this paper clear and concise, we use the internal-external dichotomy.

Most relevant in the context of the internal-external dichotomy is the classification by Boyne (2003) of sixty-five statistical studies on the determinants of public service improvement, which is his understanding of 'performance'. He groups the studies based on five theoretical perspectives, which point at potential determinants. In his view, relevant external factors are resources, regulation, and market structure (competition or not), and for internal factors he lists organizational change (mainly regarding size and type of organization) and management. 'Management' refers in his study to issues of organizational culture, leadership styles, human resources management, and strategy process and content. His overall conclusion is that public service performance is "subject to systematic influences" and that extreme contingency views are inappropriate to describe organizational reality (Boyne 2003: 389). Resources and management seem to have the "most consistent influences on performance. The statistical results for the other theoretical perspectives are thin and/or contradictory" (Boyne 2003: 389).

There is indeed a rapidly growing empirical evidence on the influence of management on performance of public organizations, that shows that 'management does indeed matter' (e.g. Boyne 2004; Meier and O'Toole 2002; O'Toole and Meier 2003; Nicholson-Crotty and O'Toole 2004; Forbes and Lynn 2005; Ingraham, Joyce and Donahue 2003). This is probably a valid statement, but nonetheless the contemporary empirical evidence is eligible to, at least, four kinds of flaws: the nebulous management terminology, the absence of knowledge about relevant covariates, the elusive concept of performance, and the lack of theoretical underpinnings. In this paper, we try to address these flaws.

First, in the abovementioned literature, management is a somewhat elusive term, covering several issues, such as impact of frontline supervisory management (Brewer 2005), managerial successions (Hill 2005), managerial quality (Meier and O'Toole 2002), human resources management systems (Donahue, Selden and Ingraham 2000). In this respect, Forbes and Lynn (2005) make a useful analytical distinction between administrative structures, managerial tools, and management values and strategies in order to describe public management. 'Administrative structures' like formalization and organizational structure are considered to be management variables to the extent that public managers' discretionary actions either create structures or infuse them with meaning. 'Management values and strategies' reflect managerial choices with respect to goals, missions, and priorities and encompass issues, such as leadership, empowerment, service integration. Forbes and Lynn (2005: 572) make clear that most empirical studies focus on these dimensions of public management, rather than on the dimension of 'managerial tools'. Only 18 out of 76 studies, using public management as an independent variable, focus on these tools (Forbes and Lynn 2005: 572). 'Managerial tools' are used by managers with a given structural setting as administrative mechanisms to design, implement and evaluate policies and programs. Examples are performance incentives, coordination instruments, and specific management systems. So, if indeed 'management matters', are we then talking about structures, strategies or tools, or a combination of them?

This paper focuses on the influence of managerial tools, but using managerial quality as a control variable. The sets of managerial instruments, discussed here, are frequently referred to as *management systems* or *management capacity*². In many publications, management capacity is used as a dependent variable (e.g. Joyce and Sieg 2000; Ingraham and Moynihan, 2001). Only a few studies do link specific management capacity (as an independent variable) with measures of performance. For example, higher levels of management capacity concerning HR corresponds with better HR outcomes, like lower employee turnover (Selden and Moynihan 2000; Donahue, Selden and Ingraham 2000). Other publications link overall management capacity with overall performance, however the link remains rather patchy and fragmentary (e.g. Selden and Sowa 2005, Ingraham, Joyce and Donahue 2003).

Most studies on management systems focus on management systems and instruments within central, state or local governments as a whole. Much less has been published about the internal use of management instruments within individual public organizations and the effects on their performance (see Moynihan 2003). We use survey data from Flemish public sector organizations to study the link between managerial tools and individual organizational performance. We will focus on the following management instruments:

² This management capacity is the central variable within the Government Performance Project (GPP), which tries to assess the quality and integration of management systems in US states and local authorities (Ingraham, Joyce and Donahue, 2003). Five management subsystems are distinguished in the GPP, which were assessed with a criteria-based methodology: financial management, human resources management, capital management, information technology management and a horizontal management for results. In this project, management capacity is considered to be a *platform*, facilitator or precondition for government performance.

Table 1: List of management instruments under review

<p>1- Financial management</p> <ul style="list-style-type: none"> • Internal allocation of resources to organizational units on the basis of results • Extended internal management autonomy for lower organizational units • Development of a cost calculation system <p>2- Performance management</p> <ul style="list-style-type: none"> • Intern steering of organizational units on objectives and results • Development of an internal reporting and evaluation system to enable board and management to assess results • Multi-year planning or long range planning <p>3- Human resource management</p> <ul style="list-style-type: none"> • Development of a results driven HRM • Extended internal management autonomy for lower organizational units <p>4- Quality techniques³</p> <ul style="list-style-type: none"> • Use of quality standards for production/service delivery in the organization • Use of customer surveys in the organization • Use of quality management systems (such as Balanced Score Card, Common Assessment Framework or ISO) • Use of internal units that monitor quality in the organization

A second flaw in the contemporary empirical literature with regard to management and performance is that, although there seems to be cumulating evidence about a positive influence of management on performance, less is known about the exact conditions and contingencies that affect this influence (Boyne, Meier, O'Toole and Walker 2005). Therefore, in this paper we include several covariates in our models, based on theoretical insights and empirical results of existing studies.

The third flaw lies within the concept of *performance*, which is widely recognized as being multi-dimensional. As Boyne et al. (2005: 634) state: “managerial aspects seem to matter for some dimensions of performance, but not all”. Boyne (2003) considers as dimensions of service performance: quantity of outputs, quality of outputs, efficiency, equity, outcomes, value for money and consumer satisfaction. Other studies of performance use even broader definitions encompassing internal and external performance (Brewer and Selden 2000, Boyne 2002, Selden and Sowa). Internal performance dimensions refer to aspects of organizational health and entails e.g. employee satisfaction. External performance refers to dimensions like outputs, efficiency, effectiveness, responsiveness and democratic outcomes (cf. Boyne 2002). Probably the most comprehensive notion of performance is elaborated by Heffron (1989) who referred to the distinction made by Campbell, grouping 35 criteria into five approaches of performance in the public sector: the goal approach, human resources approach, internal process approach, systems approach and political approach.

As the use of a too broad concept of performance may hamper clear interpretation of empirical findings, we focus on performance related to the goal approach mentioned by Heffron (1989) and the NPM-doctrine in general. Hence, focus in this paper is on efficiency, effectiveness and quality.

A last flaw of several performance studies is a lack of theoretical underpinnings, which help to select the relevant control variables or covariates that should be included in models (for

³ For these items, the response categories were ‘yes’ or ‘no’ (the extent of use was not specified here)

exceptions see discussion in Forbes and Lynn 2005, Boyne 2003). Most studies start with the assertion that management should matter, but mostly, this assertion is not build upon a clear theoretical framework. In the next section of this paper we will use economic neo-institutional theories to give a broader theoretical underpinning to the model that will be developed. In the discussion section we will also shortly discuss the sociological neo-institutional theory, from which we can derive that even when conditions for performance-enhancing effects are fulfilled, management instruments do not necessarily have an effect on performance, because of e.g. decoupling of management instruments from the actual work procedures.

Public sector management and performance: Theories

As mentioned before, a lot of normative literature in the field of private and public management takes a positive stance towards the adoption of management instruments (e.g. Hood 1991, Pollitt 1995). Some authors suggest that the use of management instruments can be a condition for better organizational results (Naschold, 1996; Kastelein, 1990). However, such doctrines of ‘managerialism’, being mainly practitioner-oriented, can hardly be considered as theories.

At the level of broader theoretical frameworks the economic neo-institutional theories with their rational choice assumptions, such as principal-agent and property rights theories can be useful. From this perspective, the use of internal management instruments is considered as a rational choice by utility maximizing actors in order to enhance their performance. These theories are generally considered to be the theoretical foundations of New Public Management ideas, together with public choice theory. The theoretical model in this paper will be mainly developed based on the principal-agent theory and will make some references to the property rights theory.

Principal agent theory concentrates on institutions within a specific framework of contractual relations between principal and agent, with goal incongruence and information asymmetry as central themes. Goal conflict and information asymmetry can lead to adverse selection (ex ante), moral hazard (ex post), and – in policy settings- to a subversive or deviant policy execution (Verhoest 2002: 59; Van Thiel 2000: 55-56; Waterman & Meier 1998: 174-178), or, alternatively stated, to a lower performance with respect to the principal’s goals in general. Three kinds of mechanisms can be used to avoid these problems and to increase the performance of the agent (Jensen and Meckling 1976: 308; Verhoest 2002: 59):

- Monitoring instruments: when a principal is able to observe and to evaluate the behavior of an agent, this reduces the ex post information asymmetry, which discourages agents to provide the principal with incomplete or incorrect information. The chance of adverse selection and moral hazard decreases (Verhoest 2002: 60).
- Bonding instruments reduce information asymmetry and as a consequence adverse selection and moral hazard. On the one hand, agents can build in ex ante guarantees that they won’t take actions that are not aligned with the goals of the principal. These guarantees bring more trustworthiness into the P-A relationship and increase selection chances for the agents. On the other hand, principals can build in contract limitations and in this manner restrict the decision making power of agents (Jensen and Meckling 1976: 325).
- Incentives and risk turnover reduce goal conflicts and thus adverse selection and moral hazard. The principal can use rewards and sanctions in order to stimulate agents to make an effort to accomplish specific goals (Verhoest 2002: 60).

When applying this theoretical framework to public sector organizations, three important principal-agent relationships can be distinguished. First, inside the agencies, a principal agent relationship exists between senior management and the lower organizational levels. Second, the government can be considered to be the principal of the public sector organization, which as an agent commits itself to achieve objectives or to perform some tasks. A third principal-agent relationship could be distinguished with the user or customer of the services of the public sector organizations as the principal. In all of these P-A relationships, goal differentiation and information asymmetry are assumed to be present.

The management instruments under review in this paper (see table 1) can be considered as mechanisms of bonding, monitoring and/or incentives/risk sharing as solutions for information asymmetry and goal conflicts and as ways to increase performance. On the one hand, they can be viewed as control instruments that are used by senior management in the relation with lower organizational units.

- Bonding: on the organizational level, bonding instruments mostly exist solely in the form of restrictions of decisional space of lower management units (agents) by the senior management (principal) (P-A) and can be focused on inputs, outputs and/or activities. For example the internal control of organizational units on objectives and results is a bonding technique that focuses on outputs: lower management units are restricted by the senior management of the agency in the choice of type, quality and quantity of results that they strive for.
- Monitoring: some of the management instruments enable the senior management of an agency to monitor the activities of lower organizational units (e.g. the development of an internal reporting and evaluation system to enable the board and management to assess results).
- Incentives/ risk turnover: some of the management instruments (e.g. internal allocation of resources to organizational units on the basis of results, or result oriented human resources management) can be used to align goals of senior management and lower levels of the agency.

On the other hand, next to their role in the internal relation between senior management and lower organizational units, the use of management instruments can play a role in the external principal-agent relationships of the public sector organization with the government or with its customers. All the management instruments, listed in table 1, can be used by the public sector organization as a guarantee towards its external principals in order to ensure them *ex ante* that the organization will achieve high standards of performance (e.g. the use of quality management systems like Balanced Score Card or ISO norms). Moreover, some of the instruments enable these external principals to monitor the performance of the public sector organization *ex post*, especially in those cases where standards, norms and results are published (e.g. the use of quality standards for production and/or service delivery in the agency).

Based on agency theory, we could thus expect that *the presence of management instruments will increase the performance of public sector organizations*. This is because the senior management will use these instruments in order to avoid agency problems and agency loss within the organization. Additionally, these instruments may reduce agency problems in the external principal-agent relationships with government and users.

However, one can argue, rightly, that our theoretical framework is too simplistic at this stage. We assume (the presence or the lack of) an influence from management instruments on performance, independent of the context. Yet, the literature review and theory point at several variables with a potential influence on organizational performance (such as resources, type of organization...). Therefore, we should refine the model by controlling for the most relevant variables. We will take four of them into account in our model.

First, in several empirical studies *managerial quality* showed to have a direct effect on performance of public sector organisations (e.g. Meier and O'Toole 2002, see studies on leadership Boyne 2003) and should be included in the model as a covariate. Managerial quality can also be regarded to be a precondition for the effective use of management instruments. One may assume that the use of management instruments will especially affect performance when they are used as tools by high quality managers.

Second, *resources* are, according to the review article by Boyne (2003), a quite consistent determinant for organizational performance in the public sector. Moreover, within rational choice institutionalism, such as agency theory, it is acknowledged that the principal must have the *resources* to use the necessary management instruments in an effective way. 'Resources' is understood in this context as the necessary capacity to put the managerial tools adequately to use. In order to use the management instruments effectively, public organizations need manpower, specialized expertise and financial means. In our model we will take one indicator of resources, i.e. *number of staff*. This is also a measure of organizational size, and one can assume that bigger organisations with more staff will find it easier to attract specialized expertise and staff. In bigger organizations the staff divisions become more pronounced. This means that besides a direct influence on organizational performance, 'number of staff' also may have an intervening influence on the relationship between management instruments and performance.

Third, several agency research studies point at *flexibility* as a variable with a direct positive influence on organizational performance, although the overall results of studies are still unequivocal (see for an overview of such studies, Verhoest et al. 2004). According to agency theory, the agent needs some capacity for autonomous decision making concerning the use of resources, i.e. managerial autonomy (for full definition see Verhoest et al. 2004), in order to fulfil the principals' goals in the most optimal way. Likewise, in order to use management instruments optimally in its decision making processes, the public sector organization needs to have sufficient flexibility or managerial autonomy. So, flexibility can have both a direct and/or an indirect influence on performance.

In this study we will use a rough proxy for flexibility or managerial autonomy, i.e. the '*legal type of organization*', ranging from core-departments, public law agencies and private law agencies (cf infra) and suggesting an increasing level of managerial autonomy. This proxy for managerial autonomy has been used frequently in agency research. For the specific sample of the Flemish agencies, used in this study, there is a strong positive correlation between level of managerial autonomy and form of affiliation⁴.

The '*legal type of organization*' as a variable can have a positive influence, not only because of increasing flexibility, but also because of increasing *incentives* to perform well. Agency theory, for example, states that actors are motivated to perform well to the extent that they are considered to be 'residual claimants'. When moving to legal types further away of

⁴ However, this doesn't necessarily mean that this relationship between managerial autonomy and form of affiliation is always straightforward (e.g. Verhoest et al. 2004)

government, agency boards or heads can increasingly be considered as residual claimants, because their incentives to perform well and to use appropriate management instruments increase. Property rights theory leads to a somewhat similar assumption (Furubotn and Pejovich, 1974). It focuses on the allocation of the different property rights, which are associated to a certain good, over the different economic actors and the influence of this allocation on their behaviour. The types of property rights are: (1) *usus*: the right to use a good; (2) *usus fructus*: the right on yield; and (3) *abusus*: the right to change form of content of a good or to transact it (Furubotn and Pejovich, 1974: 4). The more property rights are centralised in one actor, the more this actor will be induced to perform in an efficient way. In public law agencies and, even more articulated, in private law agencies, more property rights will be allocated to agency heads and/or boards, in contradiction to core-departments. The relative performance of private law bodies, compared to public law bodies was researched in the relative efficiency studies, which drew heavily on property rights theory.

Fourth, rational choice economics also refer to specific task characteristics, in particular, the *tangibility of tasks* or the measurability of its results, as a condition for performance. In agency theory, the principal can measure the results of tangible tasks more easily, than in the case of intangible tasks. Hence, the agent can be controlled more strictly when executing tangible tasks (instead of intangible tasks) in order to make him perform well. Some studies have found an influence of task related features on performance (e.g. Brewer and Selden 2000). As most management instruments rely on some performance information (such as result oriented financial management instruments or performance management instruments), they can be used more easily and effectively in the case of tangible tasks, compared to organizations with less tangible tasks.

Finally, in the model of Brewer and Selden (2000; see also Boyne 2003), *organizational culture* proved to be a determinant of performance of public organizations. We assume that management instruments will be more effectively used in organizations with a goal oriented or customer oriented culture, than in organization where such a culture is less dominant. In organizations with a detail oriented culture, associated with the negative connotations of ‘bureaucracy’, we assume that management instruments would be less effectively used.

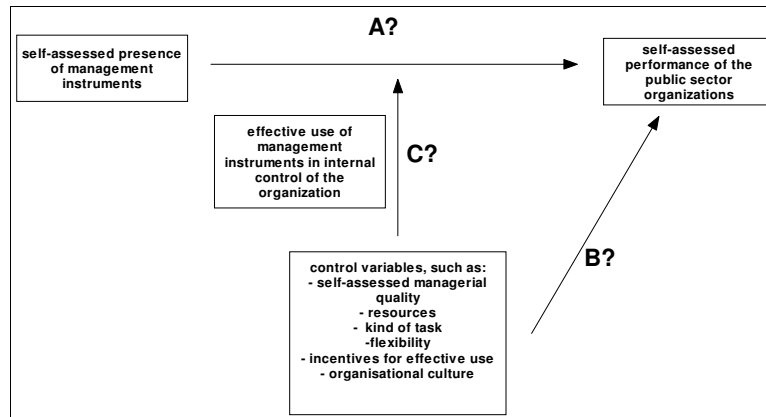
Taking into account these covariates, we can construct a more refined theoretical model (see figure 1). Central in this paper is the extent to which management instruments influence self-assessed performance of public sector organizations (see relationship A in figure 1). Next to the direct influence the five abovementioned variables might have on performance (see relationship B in figure 1), they can also be *intervening variables* - e.g. *moderating or mediating* - (see relationship C in figure 1), since they may have an influence on the causal relationship between the presence of management instruments and performance.

The mere presence of management instruments as such might not be sufficient to cause a high increase of performance. The management instruments may need *to be used effectively* in order to nurture the processes of decision making and controlling the organizations to a great extent. One could assume that the effective use of the available instruments is determined by the same variables, as the covariates in the model. The organization may need a management of a high quality, enough resources, enough flexibility and incentives, as well as the appropriate organization culture - or at least some of these elements – in order to use the management instruments in a effective way.

In this paper we will firstly check to what extent these control variables have a direct effect on performance (A). The variables with a significant direct influence on performance (B) will be

controlled for, when we research the relationship between the management instruments and performance (C).

Figure 1. The theoretical model



In the next sections, we put the theoretical model in figure 1 to the test. But first, the used methodology is elaborated.

Agency management instruments and performance: analytical framework and methodological issues

In this section, we will discuss our research design: the survey, respondents and operationalization of the main concepts. Furthermore, the analyses performed in order to shed a clearer light on the link between management instruments and performance will be elaborated.

Survey and respondents

As mentioned before, we will rely on perceptual data and self-assessment. We use data from two surveys, conducted respectively in 2002-2003 and 2004-2005⁵. These surveys focused on the wider autonomy and control arrangements of the agencies, but included questions that refer to management instruments and performance. The survey population consisted out of four different groups of Flemish public sector organizations. To date, the Flemish public sector can be considered as existing of a number of concentric circles, with in its core the Departments and Administrations that are hierarchically structured under the responsible ministers (the so called core government). The other circles are at a larger distance from this core, meaning that the organizations that belong to these circles have some levels of autonomy vis-à-vis the political and administrative principals (they are at *arm's length* of the

⁵These questionnaires were developed and conducted by a team of researchers at the Public Management Institute (K.U. Leuven): Geert Bouckaert, Guy Peters (Pittsburgh), Koen Verhoest, Bram Verschuere and Falke Meyers. The first survey focused on organizations from types 1, 2 and 3; while the second survey focused on the private law organizations (type 4). The data from the two surveys can be analyzed together because, except for a few questions (on which the different organizations will not be compared), the surveys are identical. The fact that one survey was held in 2002-2003 and the other in 2004-2005 is not considered as a problem because during this period no significant changes of the Flemish governmental structure occurred.

core government). The surveys represent data from 124⁶ Flemish public sector organizations varying from departments through internally autonomous agencies to externally autonomous organizations with private law statute (cf Table 2). The latter group, albeit their private law statute, is considered to be part of the Flemish public sector, since they are created by the Flemish government to execute public tasks.

Table 2: five types of public sector organizations

<i>Type</i>	<i>Description</i>
1	Core government organizations that are part of the legal person of the Flemish community, and that are in the budget of the core department to which they belong
2	Internally autonomous public organizations with an own budget (some managerial discretion), no legal personality.
3	Externally autonomous public organizations with an own budget, public law legal personality and a governing board.
4	Externally autonomous public organizations with an own budget, private law legal personality and a governing board.

Operationalization of the main concepts

The two surveys both dealt with specific variables that are relevant for the research question in this paper. These variables, their role in this research and the way they are operationalized in the surveys are represented in Table 2⁷.

Table 3: Relevant variables and their operationalization

Variable	Role	Operationalization
Management instrument	Independent variable	11 questions about use of management instruments (cf infra)
Performance	Dependent variable	Score (1-10) on different aspects of self-assessed performance of the organization: quality of products & services, efficiency, effectiveness
Resources	Independent (covariate)	Question about amount of FTE in organization

⁶ However, the N in the analyses will be ranging between 86 and 91, due to missing values.

⁷ For more information about the surveys, see <http://www.publicmanagement-cobra.org>

Variable	Role	Operationalization
Task	Independent (covariate)	Question about type of task (policy formulating, regulation-scrutiny-control, public authority, public service delivery, coordination of policy sector, commercial and industrial services)
Formal legal type	Independent (covariate)	Question about legal status of the organization (core-administration, public law agencies, private law agencies)
Organizational culture	Independent (covariate)	Index self-assessed goal oriented culture, index customer oriented culture, index detail oriented culture (cf infra)
Quality of management	Independent (covariate)	Score (1-10) for self-assessed quality of management

As mentioned earlier, the sets of managerial instruments, central in this study, are frequently referred to as management systems or management capacity. We distinguish between four management subsystems, based on existing subdivisions in the literature (e.g. Pollitt 1995, Ingraham et al 2003, Lawton & Rose 1994, Flynn 2002): financial management, performance management, human resources management and quality management (Meyers & Verhoest 2005). For each subsystem, we identified a number of important managerial instruments. For each of the public sector organizations, the respondents were asked to report for each instrument whether it was used and to what extent it was used (to some extent or to a large extent). The items are listed in table 1.

With regard to the operationalization of the dependent variable ‘performance’, we relied on the categorization mentioned by Heffron (1989). To avoid a conceptualization that would be too broad, we focus on performance, related to the goal approach (cf supra). Hence, in this paper, we focus on efficiency, effectiveness and quality of products and services. Yamamoto (2006) made a similar distinction, adding accountability as an indicator of performance⁸. In our study, respondents were asked to rate the effectiveness (the degree to which the desired societal impact and results are achieved given the objectives of the organisation), efficiency (the degree to which the desired outputs are achieved with a minimal amount of resources) and quality of products and services (e.g. number of trains that arrive in time, care for the public domain, etc.) of their organization on a 1-10 scale.

Next to efficiency, effectiveness and quality of products and services, which are the dependent variables in this paper, quality of management also belongs to the framework, suggested by Heffron (1989). In this framework, quality of management can be situated in the internal process approach of performance. In our theoretical model (cf supra), we assume the quality of management to be an important intervening variable. In the survey, respondents could rate the quality of management (can be observed through the status of the managers by the subordinates, efficient management of the organisation) on a 1-10 scale.

Other covariates, integrated in our model, are the organizational resources, operationalized as the number of staff (FTE) working in the organization, and the legal type of the organizations

⁸ For this paper, we do not take into account accountability as a part of performance because, in the framework offered by Heffron (1989) this concept is considered to be a part of the political approach of performance.

(e.g. a simplification of the typology in table 1). The organizational task as a covariate is divided into tangible (public service delivery, industrial and commercial services) and intangible (policy formulation, regulation-scrutiny-control, public authority, coordination of policy sector) tasks (cf Verschuere, 2005). A last covariate in our model is the organizational culture. We assume that goal oriented and customer oriented cultures lead to a better performance, while a detail oriented culture leads to stagnation or even a decrease in performance. For the operationalization of culture, we used the dimensional approach of Tepeci (2000). He constructed nine cultural dimensions. The dimension of valuing customers and quality of service delivery consists out of the following four items: quality of service delivery, valuing customers, relations with customers and giving customers what they expect. The dimension of detail oriented culture consists out of the items detail orientedness, attention to detail, precision and accuracy. The third dimension, in which we are interested in this paper, is the dimension of the goal oriented culture, existing out of: task accomplishment, work hard, goal orientedness and orientedness to accomplish something. Respondents were asked to rate, on a 1-7 scale⁹, how characteristic the abovementioned cultural features are for their organizations. Consequently, we computed the mean score for each dimension and used this score as the cultural indexes.

As the survey was directed to the senior management of the public sector organizations, the performance variables, as well as the other variables about quality of management and organizational culture, are based on self-perception and self-assessment. This operationalization may lead to a response bias (e.g. systematic overestimation). Indeed, the variance of the variables on performance and quality of management within the lower range of values is limited. Almost all of the original scores ranged from 5-10 on a scale of 10. This means that almost no organizations rated his/her organizational effectiveness, efficiency and quality low (1-4). Since there is still enough variation in the remaining 6-point scales (see appendix II), we do not consider these variables to be useless, but we will focus our analysis on the variance within these ‘medium to high’ scores. Because of the non-discriminating nature of the variables, we have recoded the dependent variables and the ‘quality of management’ variable to a 6-point scale.

A systematic overestimation and the lack of variation in the scores on the performance variables could also be interpreted as a halo-effect, since the different dimensions of performance and quality of management were included in the same category of questions. However, correlations between the performance variables suggest that there are different answering patterns for some dimensions of performance¹⁰, which reduces the possibility of a halo-effect.

Notwithstanding the dangers of response biases like the ones mentioned above, perceptual data are more and more used in studies on performance. As a lot of these studies report, the use of objective measures for performance, which are based on result indicators, is highly problematic due to the lack of available data in the public sector, and the limited quality of the indicators used (e.g. perverse effects, such as goal deviation). These problems with regard to objective measures of performance are even more pronounced when the population of public sector organizations performs a huge diversity of tasks and have different objectives, like in our sample. Next to scientific studies, also public and private organizations use self-assessed

⁹ 1=very uncharacteristic - 7=very characteristic

¹⁰ Correlations on the full list of variables on performance (based on the comprehensive list of Heffron 1989) show low (0.2) to high (0.7) significant correlations on most of the performance dimensions, except for two dimensions, i.e. accountability and democratic level of service delivery, which are not significantly correlated with the other dimensions.

performance data. Within organizations, these data are often used as part of evaluations. Nevertheless the subjective nature of our data on performance forces us to make interpretations in a very careful way. Throughout the paper, we will make the qualification that we are studying the influence on ‘self-assessed’ performance.

Influence of management instruments on self-assessed performance: empirical evidence from Flemish agencies

Data were analyzed in SPSS 12.0. A summary of the main descriptive findings for each variable, used in this study, can be found in appendix I-III.

In order to test for the link between management instruments and performance and the influence of possible intervening variables, we conducted ordinal regression analyses¹¹. For each individual management instrument, we looked at the influence on efficiency, effectiveness and quality of products and services with separate regression analyses. Before we entered the suggested covariates in the regression models, we computed some bivariate correlations¹² in order to explore the link between each individual variable and the dependent variables. The variables that showed a significant correlation with the dependent variable(s) were retained for ordinal regression analyses. The variables that proved to be significant determinants of performance in these analyses were preserved for the final regression models. These final regression models thus consisted out of individual management instruments and the significant covariates.

In the following parts, results of these analyses are discussed separately for each dependent variable (efficiency, effectiveness and quality of services and products).

Influence of management instruments on self-assessed efficiency

Influence of individual management instruments on self-assessed efficiency (without covariates)

Ordinal regression analyses with the individual management instruments as independent variables and efficiency as the dependent variable show that only the internal allocation of resources to organizational units on the basis of results (intalloc) on the one hand, and extended internal management autonomy for lower organizational units (intmgmau) on the other hand have a significant ($p < .05$) influence.

Table 4: Individual management instruments → efficiency, results of ordinal regression analyses

Independent	Nagelkerke	Estimate	Wald	p
intalloc	.141	Intalloc to a large extent: 1.886	11.867	.001
		Intalloc to some extent: .850	2.965	.085
intmgmau	.131	Intmgmau to a large extent: -.819	5.206	.023
		Intmgmau to some extent: .988	2.108	.147

¹¹ We opted for ordinal regression analyses because our dependent variable is ordinal and because our independents are a mix of categorical, ordinal and interval variables. Ordinal regression analysis has many analogies to OLS regression, but in general has less stringent requirements.

¹² Parametric and non parametric correlations, depending on the types of variables.

N=90

There seems to be a positive effect of internal allocation of resources (intalloc) on self-assessed efficiency, particularly of the use of this technique to a large extent. This may not seem surprising, because the internal allocation of resources on the basis of results may be considered as a means to urge organizational units to cost-consciousness and efficiency.

With regard to extended internal management autonomy (intmgmau), this instrument seems to have a significant positive effect when used to some extent. When used to a large extent, it seems to have a negative impact on efficiency, but this finding is not statistically significant. An increase of management autonomy in lower organizational units may allow these units to deploy their means more efficiently. However, when too much management autonomy is granted to lower units, this may undo certain economies of scale.

The question now is whether this influence of internal allocation of resources (intalloc) and extended internal management autonomy (intmgmau) remains significant when we control for specific conditions, by putting our covariates in the model.

Influence of suggested covariates on self-assessed efficiency

In order to assess which of the covariates, suggested in our theoretical model (cf supra) has a significant direct influence on efficiency, we firstly computed some bivariate correlations. These correlations reveal that only customer oriented culture (cultcust), detail oriented culture (cultdet), result oriented culture (cultres) and self-assessed quality of management (qualmgm) have a significant ($p < .05$) relation with efficiency (cf appendix IV)

The results of the ordinal regression with these three variables as independents and efficiency as dependent variable can be found in Table 5.

Table 5: Covariates → efficiency, results of ordinal regression analyses

Independent	Nagelkerke	Estimate	Wald	p
Cultcust	.500	-.307	1.247	.264
Cultdet		-.006	.001	.980
Cultres		.689	3.395	.065
Qualmgm		1.717	37.929	.000

N=90

Only the quality of management proves to be a significant determinant of efficiency. Based on these results, the quality of management is the only suggested covariate that will be put in the regression models with the individual management instruments.

Influence of individual management instruments on efficiency, when controlled for quality of management

In this part we will discuss whether the self-assessed quality of management can be considered as an intervening variable in the relation between management instruments and efficiency. Do the influences of internal allocation of resources on the basis of results and the extended management autonomy for lower organizational units remain when the quality of

management is included in the model? Table 6 gives an overview of the results of the regression analyses¹³.

Table 6: Individual management instruments +covariates → efficiency, results of ordinal regression analyses

Model	Nagelkerke	Estimate	Wald	p
Qualmgm, Intalloc	.508	Qualmgm: 1.685	39.304	.000
		Intalloc to a large extent: 1.115	3.755	.053
		Intalloc to some extent: .323	.385	.535
Qualmgm, Intmgmau	.508	Qualmgm: 1.685	39.244	.000
		Intmgmau to a large extent: -.750	1.545	.214
		Intmgmau to some extent: .516	.452	.254

N=90

The results of the analyses show that none of the management instruments has a significant ($p < .05$) influence on efficiency when controlled for quality of management. Internal allocation of resources on the basis of results has a p-value of .053, which can be considered as a 'border significance'. However, when looking at the percentage of explained variance, in none of the models this percentage increases substantively (5% or more) compared to the model with quality management as only independent variable, pointing to a very limited explanatory power of the management instruments. This could mean that there is an interaction between the two variables (qualmgm and the management instruments in question).

It can be stated that quality of management largely mitigates the direct effect of internal allocation of resources on the basis of results, and it eliminates the individual effect of extended management autonomy for lower organizational units on self-assessed efficiency.

According to the variance inflation factors, which are all smaller than 4, multicollinearity does not seem to be a problem in this analysis. However, we did find a condition index higher than 30, which could indicate possible multicollinearity. Results should thus be interpreted with care.

Influence of management instruments on self-assessed effectiveness

Influence of individual management instruments on self-assessed effectiveness (without covariates)

In this part, results are discussed for the second dependent variable: effectiveness or the degree to which the desired societal impact and results are achieved given the objectives of the organisation. The analytical logic is similar to the logic in the previous part. Table 7 reveals the relevant results of the ordinal regression analyses with the individual management instruments as independent variables.

¹³ In the table, only the results of the models with the management techniques that were significant in the first analysis are included. Regression analysis with the other management techniques in combination with quality of management were also performed, but none of the techniques were significant determinants in these analyses.

Table 7: Individual management instruments → effectiveness, results of ordinal regression analyses

Independent	Nagelkerke	Estimate	Wald	p
intalloc	.114	Intalloc to a large extent: 1.716	10.005	.002
		Intalloc to some extent: .988	3.919	.048
asseres	.067	Asseres to a large extent: 1.467	5.320	.021
		Asseres to some extent: 1.132	3.132	.077
coscalc	.088	Coscalc to a large extent: 1.200	5.136	.023
		Coscalc to some extent: -.208	.230	.631

N = 91

Similar to the analysis with efficiency as a dependent variable, internal allocation of resources on the basis of results has a significant ($p < .05$) positive effect. Two other management instruments seem to be significant determinants of organizational effectiveness: the use, particularly to a large extent, of internal reporting and evaluation systems to enable board and management to assess results and the –extensive- use of cost calculation systems have a positive effect.

These results suggest that the internal allocation of resources on the basis of results may be an incentive for the accomplishment of organizational goals (effectiveness). Next to this, the use of reporting and evaluation systems is a crucial element to perform a follow-up on the accomplishment of organizational goals and strategies. With regard to the use of cost calculation systems, the influence on effectiveness is not that straightforward to explain, but as an instrument that computes the prices, it can be linked to the follow-up and the measurement of organizational results.

Other management instruments were no significant determinants of organizational effectiveness.

Influence of suggested covariates on self-assessed effectiveness

After the computation of the bivariate correlations between the theoretically suggested covariates and effectiveness, the variables result oriented culture (cultres) and quality of management (qualmgm) were retained for the regression analysis (cf appendix IV).

The results of the ordinal regression with these three variables as independents and effectiveness as dependent variable can be found in Table X.

Table 8: Covariates → effectiveness, results of ordinal regression analyses

Independent	Nagelkerke	Estimate	Wald	p
Cultres	.382	.486	3.582	.058
Qualmgm		1.313	30.077	.000

N=91

Again, as was the case with efficiency as dependent variable, only the quality of management proves to have a significant ($p < .05$) influence. Based on these results, the quality of management is the only suggested covariate that will be put in the regression models with the individual management instruments.

Influence of individual management instruments on effectiveness, when controlled for quality of management

As we have seen earlier, there are three management instruments that seem to be significant determinants of effectiveness (internal allocation of resources, use of reporting/evaluation systems and cost calculation systems). However, Table 9¹⁴ reveals that these relations change when quality of management is added to the regression model.

Table 9: Individual management instruments + covariates → efficiency, results of ordinal regression analyses

Model	Nagelkerke	Estimate	Wald	p
Qualmgm, Intalloc	.384	Qualmgm: 1.279	28.342	.000
		Intalloc to a large extent: 1.096	3.721	.054
		Intalloc to some extent: .597	1.329	.249
Qualmgm, Asseres	.380	Qualmgm: 1.343	32.215	.000
		Asseres to a large extent: 1.106	2.879	.090
		Asseres to some extent: 1.021	2.393	.122
Qualmgm, Coscalc	.402	Qualmgm: 1.358	32.470	.000
		Coscalc to a large extent: 1.020	3.510	.061
		Coscalc to some extent: -.360	.639	.424

N=91

The results of the analyses show that none of the management instruments has a significant ($p < .05$) influence on effectiveness when controlled for quality of management, although two variables have a border significance. When comparing the amounts of variances explained by the covariate model (Nagelkerke .356 cf supra) and the amount of variance explained when a management instrument is added to the model, there are no substantive gains, except maybe for the model with cost calculation systems (4,6% more variance explained). These results show that the quality of management is an important determinant of the self-assessed organizational effectiveness and that this variable has a strong mitigating effect on the relation between the above mentioned management instruments and effectiveness.

According to the variance inflation factors (all < 4), multicollinearity does not seem to be a problem. However, a condition index higher than 30 tells us the opposite. Results should again be interpreted with caution.

Influence of management instruments on self-assessed quality of services and products

Influence of individual management instruments on self-assessed quality of services and products (without covariates)

When quality of services and products is used as dependent variable in ordinal regression analyses with the individual management instruments, no single instrument has a significant influence. This is a somewhat surprising finding because we would expect the use of management instrument, especially the ones in the subsystem of quality management, to have some effect on the quality of services and products.

¹⁴ In the table, only the results of the models with the management techniques that were significant in the first analysis are included. Regression analysis with the other management techniques in combination with quality of management were also performed, but none of the techniques were significant determinants in these analyses.

Influence of suggested covariates on self-assessed quality of services and products

Bivariate correlations between the expected covariates and the quality of services are similar to the correlations between these covariates and the other two dependent variables (efficiency and effectiveness): customer oriented culture (cultcust), result oriented culture (cultres) and quality of management (qualmgm) are retained for the regression model. Also added to this model is detail oriented culture (cultdet), because this variable too showed a significant correlation with the quality of services and products (cf appendix IV). Results of the regression analysis are shown in Table 10.

Table 10: Covariates → quality of services and products, results of ordinal regression analyses

Independent	Nagelkerke	Estimate	Wald	p
Cultcust	.407	-.013	.002	.962
Cultres		.872	5.086	.024
Qualmgm		1.012	18.054	.000
Cultdet		.319	1.541	.214

N = 86

Manual backwards elimination leads to the final ‘covariate model’. In two steps, customer oriented culture (cultcust) and detail oriented culture (cultdet) are eliminated. In the final ‘covariate model’, quality of management (Estimate=1.004, Wald=18.371, p=.000) and result oriented culture (Estimate=1.127, Wald=15.161, p=.000) are the only independent variables (Nagelkerke= .396, N= 86). These two variables will be taken into account as covariates in the analyses with management instruments.

Influence of individual management instruments on self-assessed quality, when controlled for quality of management and result oriented culture.

Since there are no changes in the influences of management instruments¹⁵ (no management instrument has a significant effect on the quality of services and products) when the different management instruments, quality of management and result oriented culture are put together in a regression model, we do not include no table with results of the analyses is added here.

Agency management instruments and performance: conclusions

Referring to our theoretical model, we can conclude that only a minority of the variables that were assumed to have an effect on self-assessed organizational performance did indeed show to be statistically significant determinants.

When looking at the management instruments, defined earlier in this paper, our analyses suggest that only a few of these techniques exert an influence on performance, and no single influence of management instruments is significant when relevant covariates are added to the model.

Moreover, in contradiction to the literature (e.g. Boyne 2003), the variables that we have used as measures for resources, flexibility, incentives and organisational culture, did not seem to exert a substantial direct influence on the self-assessed performance of the public sector organizations in our samples.

¹⁵ We checked for multicollinearity by means of variance inflation factors (which were all smaller than 4) and condition indices, which were all smaller than 20, indicating that there is no serious multicollinearity problem. However, nonlinearity cannot be ruled out.

In our research quality of management appeared to be the variable with the most important influence on performance (measured as self-assessed efficiency, effectiveness and quality of services and products). This finding supports the ‘management matters’ literature and aligns with the findings from studies like that of Meier and O’Toole (2002), who state that managerial quality has a direct effect on performance of public sector organizations. The quality of management seems to play an important intervening role in the relation between management instruments and performance. This seems highly plausible. In the end, it is the quality of management that determines if and how a management instrument is used. In this way, the quality of management also determines whether a management instrument is actually used in the decision-making of the public sector organizations, and, as a consequence, has an influence on the organizational performance.

However, there could also be other explanations for our limited findings with regard to the effects of management instruments. The data, used in the analyses, were based on subjective survey data. The scores for e.g. effectiveness, efficiency, quality of services and products, but also for quality of management are self-assessed by respondents who are all active members of the reviewed organizations. Although there are indications, suggesting that there is no overall halo-effect concerning the issues of performance, other response biases could also be responsible for the low variance in the performance variables. Furthermore it could be that the concepts under investigation are not adequately operationalized. Next to response biases, this could also be a reason for the low variation. However, as can be derived from the descriptive data in appendix II, there is still some variation present. It is also possible that the management instruments under review in this paper have no influence on efficiency, effectiveness and quality of products and services but that these instruments influence other aspects of performance. The fact that almost no covariate in our model is a significant determinant of performance, could also be an ‘operationalization-issue’. The covariates in this research can only be considered as proxies for the concepts we are interested in.

It is clear that future research on this topic would need more than perceptual survey data and that concepts such as efficiency, effectiveness and quality need to be measured by more than one item in order to obtain a realistic score. Furthermore, for this paper, we focused on individual effects of separate management instruments. It is possible that when certain techniques are used in combination, they interact together and in this way they are able to affect organizational performance.

Last but not least, our theoretical model might need some revising. The starting point for this model was the rational choice framework. However, when we take into account other theoretical frameworks, like the sociological neo-institutionalism, the presence of management instruments need not be perceived as a predictor of a better performance of public organizations. In contrast to a ‘logic of consequence’, prominent in the rational choice neo-institutionalism, the sociological neo-institutionalism suggests a ‘logic of appropriateness’ (March and Olsen 1996: 251-252). From this point of view, it is possible that management instruments are adopted because of specific isomorphic pressures in order to obtain and maintain legitimacy and/or to reduce uncertainty.

Sociological neo-institutional theories also assume that there is a difference between the formal adoption and the actual use of e.g. management instruments (cf. Meyer & Rowan 1977: 341). Thus, sociological institutionalism warns for a too optimistic view on management instruments and sees a potential breach between mere presence of management instruments, their effective use in the internal decision making and control of the public sector organization, and its performance.

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Appendix I : descriptive data management techniques**Table 11: Frequencies management techniques per dependent variable¹⁶**

Management technique	Efficiency (N=90)			Effectiveness (N=91)			Quality of products & services (N=86)		
	no	some	large	no	some	large	no	some	large
Intalloc	21	39	30	22	39	30	20	38	28
Intmgmau	33	42	15	33	42	16	32	39	15
Coscalc	36	34	20	36	35	20	35	32	19+
Intsteer	9	39	42	9	40	42	8	39	39
Asseres	11	37	42	11	37	43	10	36	40
Planning	10	29	51	10	27	52	9	28	49
Reshrm	27	37	26	27	38	26	27	34	25
Qualstan	38	52		38	53		37	49	
Custsurv	20	70		20	71		20	66	
Qualmgmsyst	50	40		50	41		48	38	
Intunmon	40	50		40	51		38	48	

Intalloc = Internal allocation of resources to organizational units on the basis of results

Intmgmau = Extended internal management autonomy for lower organizational units

Coscalc = Development of a cost calculation system

Intsteer = Intern steering of organizational units on objectives and results

Asseres = Development of an internal reporting and evaluation system to enable board and management to assess results

Planning = Long range planning

Reshrm = Development of a results driven HRM

Qualstan = Use of quality standards for production/service delivery in the organization

Custsurv = Use of customer surveys in the organization

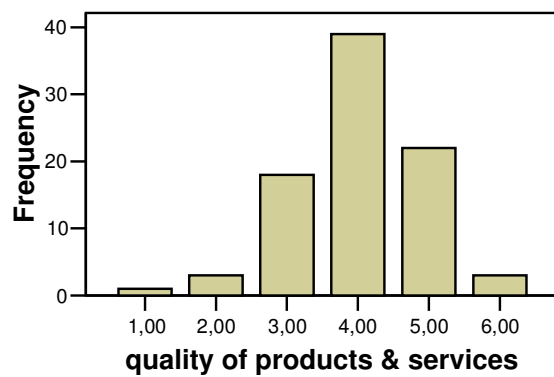
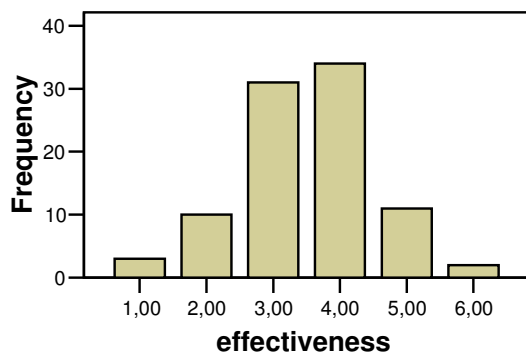
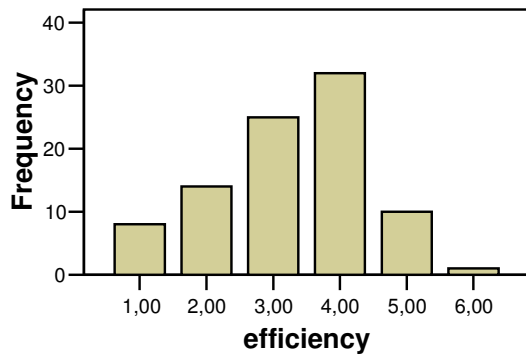
Qualmgmsyst = Use of quality management systems

Intunmon = Use of internal units that monitor quality in the organization

¹⁶ Analyses were conducted in separate dataset per dependent variable, N might be slightly different. Response categories were: no, to some extent, to a large extent. For Qualstan, Custsurv, Qualmgmsyst and Intunmon response categories were: no, yes

Appendix II: Descriptive data dependent variables

Variable	N	Min	Max	Mean	SD
Efficiency	90	1	6	3.27	1.16
Effectiveness	81	1	6	3.51	1.03
Quality of products & services	83	1	6	4.01	.93



Appendix III: descriptive data covariates

1- Quality of management

Dataset	N	Min	Max	Mean	SD
Efficiency	90	1	6	3.53	1.02
Effectiveness	91	1	6	3.52	1.06
Quality of products & services	86	1	6	3.55	1.04

2- Amount of staff

Dataset	N	Min	Max	Mean	SD
Efficiency	83	0	6846	312	973
Effectiveness	84	0	6846	313	976
Quality of products & services	79	0	6846	322	996

3- Legal type

Dataset	Type 1	Type 2&3	Type 4
Efficiency	22	24	44
Effectiveness	22	25	44
Quality of products & services	21	24	41

4- Task

Dataset	Tangible	Intangible
Efficiency	59	25
Effectiveness	60	25
Quality of products & services	57	24

5- Customer oriented culture

Dataset	N	Min	Max	Mean	SD
Efficiency	90	1.75	7.00	5.73	.93
Effectiveness	91	1.75	7.00	5.72	.92
Quality of products & services	86	1.75	7.00	5.74	.93

6- Detail oriented culture

Dataset	N	Min	Max	Mean	SD
Efficiency	86	1	7	5.02	1.05
Effectiveness	87	1	7	5.02	1.04
Quality of products & services	86	1	7	5.02	1.05

7- Result oriented culture

Dataset	N	Min	Max	Mean	SD
Efficiency	90	2.75	7.00	5.83	.82
Effectiveness	91	2.75	7.00	5.82	.82
Quality of products & services	86	2.75	7.00	5.85	.82

Appendix IV : correlations covariates-dependent variables

Covariate	efficiency	effectiveness	Quality of products and services
Legal type ¹⁷	.083 (p=.437, N=90)	.138 (p=.192, N=91)	.012 (p=.910, N=86)
Task ¹⁸	.143 (p=.193, N=84)	.120 (p=.274, N=85)	.115 (p=.307, N=81)
Number of staff	-.028 (p=.803, N=83)	.012 (p=.912, N=84)	-.012 (p=.917, N=79)
Result culture	.352 (p=.001, N=90)	.323 (p=.002, N=91)	.478 (p=.000, N=86)
Detail culture	.215 (p=.047, N=86)	.181 (p=.094, N=87)	.378 (p=.000, N=86)
Customer culture	.218, p=.039, N=90)	.204 (p=.052, N=91)	.336 (p=.007, N=86)
Managerial quality	.671 (p=.000, N=90)	.583 (p=.000, N=91)	.471 (p=.000, N=86)

Table X: correlations covariates-dependent variables

¹⁷ Nonparametric correlation (Spearman's rho)¹⁸ Nonparametric correlation (Spearman's rho)