

Clerical productivity in bureaucratic organizations: a methodology to accelerate the evolution from budget constraint to management objective*

Manuel Cardós[†], José Candela, Cristóbal Miralles

Departamento de Organización de Empresas, Universidad Politécnica, Camino de Vera s/n, 46071 Valencia, Spain

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Abstract. In industrial and service corporations, efficiency is an important objective related to the profits and the long-term future of the company. Nevertheless, the objectives of the Public Administration are not always related so directly to efficiency but to people's welfare and civil rights. Unfortunately, if there is no efficient control of the public systems, the economic efficiency of their actions is only considered when there are clear budget constraints.

For this reason, traditional clerical productivity enhancement techniques, which have been successfully applied in most companies, do not seem to work with the Public Administration and so a different approach is required. This paper describes a methodology to assess and improve clerical productivity allowing us to identify the greatest inefficiencies, estimate the staffing needed, and adapt to the evolution of the organization's clerical productivity in line with reforms put forward by the New Public Management.

Keywords: clerical productivity, public management, work measurement

1 Introduction

Work study is found at the very onset of Operations Management and has played a relevant role in its development in the 20th century. Nevertheless, this development has been stagnating in the industrial arena with few attempts to study clerical work, while overhead staffs increased its share in industry. Growing competition placed the emphasis on the importance of efficiency in resource management to the extent efficiency maximisation in recent decades has become an objective comparable to effectiveness. The key to business success in competitive markets requires both objectives to be attained simultaneously and in a sustainable manner.

Moreover, continuous improvement activity of corporations can be generated and sustained through the promotion of a good improvement model and management support^[2] but, obviously, the nature of the Public Administration is radically different from that of private corporations. Its operation, aims, resources, and procedures are regulated by law; particularly, the available resources regulated by budgetary law do hamper the fulfilment of its aims. Little attention is paid to efficiency enhancement, even though it would eventually allow reaching a larger number of aims with the same budget. In this regard, efficiency is deemed a part of the constraints to be met.

This operational model is currently undergoing a review, especially as a result of the so-called New Public Management (NPM) movement. As pointed out by Thompson and Thompson^[5], "According to Christopher Pollitt (1993), the NPM reflected a set of prescriptions, borrowed primarily from the literature of business administration, calling for more managerial freedom to use resources, a focus on results rather than inputs, and greater reliance on the private sector for service delivery. Contemporary public sector reformers emphasize:

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[†] E-mail address: mcardos@omp.upv.es.

- A bold use of market-like mechanisms for those parts of the public sector that cannot be transferred directly into private ownership;
- Intensified organizational and spatial decentralization of the management and delivery of services;
- A constant rhetorical emphasis on the need to improve service quality;
- An equally relentless emphasis on customer satisfaction.”

As analysed by Gruening^[1], this proposal includes elements accepted by most authors in this field, like budget costs, accountability for performance, performance auditing, privatization, customer concept, decentralization, strategic planning and management, separation of provision and production, competition, performance measurement, changed management style, contracting out, freedom to manage, improved accounting, personnel management, user charges and vouchers, separation of politics and administration, improved financial management, and more use of information technologies. Even though each of his proposals can be found in earlier theories, Gruening concludes that the combination of the suggested reforms is completely new.

Mathiasen^[3] picks up the NPM definition by the Public Management Committee of the OECD: “a new paradigm for public management has emerged, aimed at fostering a performance-oriented culture in a less centralized public sector”. Some of the basic features of the new paradigm are “a closer focus on results in terms of efficiency, effectiveness, and quality of service” as well as “a greater focus on efficiency in the services provided directly by the public sector, involving the establishment of productivity targets and the creation of competitive environments within and among public sector organizations”.

Efficiency improvement then becomes a key target in the public management reform. Apart from the existing social, cultural, and political differences among OECD countries, in general terms the reform implies radical qualitative differences from the current model in force. Unlike the common recognition of efficiency in today’s public management, these reforms implicitly accept that both its efficiency and the quality of the service provided can be evidently improved. In this respect, efficiency is no longer regarded as part of the constraints to be observed but as part of the objectives to be optimised by public management.

An important part of the Public Administration is composed of bureaucratic organizations, defined by the public choice theory as organizations that are partly or wholly not evaluated on markets. The most important resource usually utilized by these organisations is their own staffs, which means their clerical productivity turns into one of the most relevant measures of their performance. The aim of this paper is to propose a conceptual design a management system to measure clerical efficiency and to identify actions for improvement in bureaucratic organisations doing repetitive work. To that end, a methodological approach will be used different from the one normally used by Operations Management.

A comprehensive work study includes both the analysis of the applied methods and the measurement of the amount of work required to do it. However, this paper is limited to measuring work, basically because the work method is determined by different acts and regulations. In spite of that, we shall not overlook the fact that work methods can frequently be improved, the potential for improvement being high through the implementation of Business Process Reengineering principles.

2 The conventional work measurement approach

As any performance measurement, the efficiency measurement of repetitive clerical work has to be defined, accounted for, calculated, evaluated and assigned a target. Work measurement provides techniques to address all these aspects directly, exactly in the same way as in a manufacturing plant, as per the OIT^[4] [5] description. For instance, clerical efficiency can be defined as the relationship between the time used in completing a task and the standard time the task is assigned with. Nonetheless, some practical reasons do hinder the implementation of this approach:

- (a) Its radical application can lead to significantly reduced staffing levels that would be difficult to assimilate in many OECD countries, especially in Europe, for social and political reasons.
- (b) Precisely for the above reasons, its feasibility depends on a massive application in public management. However, there are literally thousands of different tasks, which means their timing would be a tremendous job lasting for years, this certainly delaying implementation *sine die*.

(c) The subsequent application of improvements in work procedures would give way to new adaptation needs in the staff, which would in turn give rise to new conflicts.

(d) A long training and learning period is needed for public managers to understand, accept, and develop the necessary skills to be able to manage clerical efficiency and service quality as new managerial objectives.

To avoid the previously described problems, a new approach must be designed allowing: (a) rapid implementation; to that end, the need to do massive timings must be avoided; (b) gradual implementation, starting with the areas with the greatest inefficiencies; (c) promotion of ongoing improvement, especially the incorporation of techniques for the improvement of work methods; and (d) convergence towards a situation close to high efficiency.

3 A pragmatic methodology to improve clerical efficiency

In the experience of these authors, obtaining a positive outcome within this environment requires little ambition to start with, but enough inflexibility in the implementation of an ongoing improvement organizational process. Fig. 1 shows the proposed methodology structured into phases and with an iterative application. In section 4 of this paper the application of this methodology in a Spanish autonomous government will be presented.

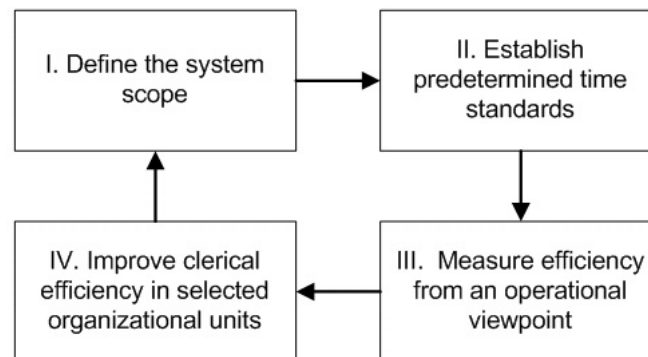


Fig. 1. Iterative methodology to increase clerical efficiency

I. Define the system scope

The first step in the application of the methodology consists of setting the system scope. To start with, it is recommendable to include a complete organisational area, as small as possible, so that the initial project dimensions are easily handled and the system is managed effectively.

The first core concept of the methodology is not to try to measure clerical efficiency directly. Instead, the efficiency of the most outstanding organizational units is accepted as a reference. An organizational unit is defined as the smallest part in the organisation, its features being: (a) there is only one person in charge of its operation, performance, and eventually its budget; and (b) its scope includes all activities unchained by an activity driver (externally-originated event that sets in motion an administrative process with a clearly defined final outcome).

The most outstanding organizational units are those with reasonable balance between the amount of work done, the staff allocated to it, the quality of the work, and the time it takes.

II. Establish predetermined time standards

The second core concept is the modelling of the relationship between activity driver characteristics and the clerical work they involve, as per Fig. 2. This approach allows us to objectively compare the efficiency of organizational units working with different activity drivers. Since this paper is only focused on repetitive

clerical tasks, activity drivers are defined in such a way that each of their repetitions unchains a foreseeable activity sequence with similar operation times.

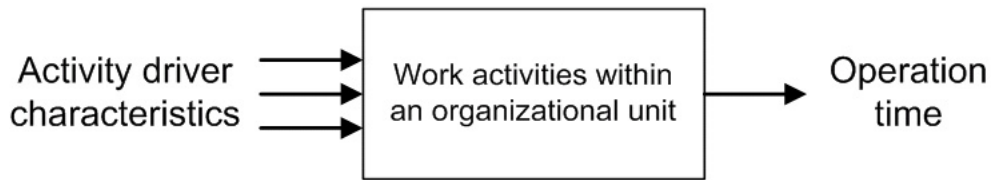


Fig. 2. Activity driver process diagram

It is most important to bear in mind that the resulting model is only applicable for the previously defined organization scope. The empirical approach adopted has implications for the models obtained. For instance, a statistically non-significant characteristic in an analysed sample might well influence operation time. But it only means its contribution to explaining operation time variations in the analysed sample is unnoticeable. In this regard, eventually a characteristic could become significant if the sample size or the variety of organizational units analysed are increased. A more robust estimation of the model is achieved by using design of experiments techniques, but their application is constrained given the actual choice possibilities of organizational units

The times estimated through the obtained model are considered predetermined standard times. In fact, this cannot be assured due to the lack of evidence that processes used as references are performed according to the demandable activity level defined in work measurement techniques described by OIT [5]. Strictly speaking, the times obtained are predetermined standard times accordingly to the highest clerical efficiency within the organization.

III. Measure efficiency from an operational viewpoint

The efficiency each activity driver is processed with can be drawn by comparing the time spent by the clerical staff with the predetermined standard time calculated. However, that would demand a system for recording the time incurred for each activity driver. This level of detail is not usually available but, fortunately enough, it is not indispensable. In practice, calculating efficiency for the organizational units is enough, and there is no need to describe the activity drivers they work with in detail. Therefore, as shown by Fig. 3, the staff's dedication can be estimated from the payroll system and management transactional systems.

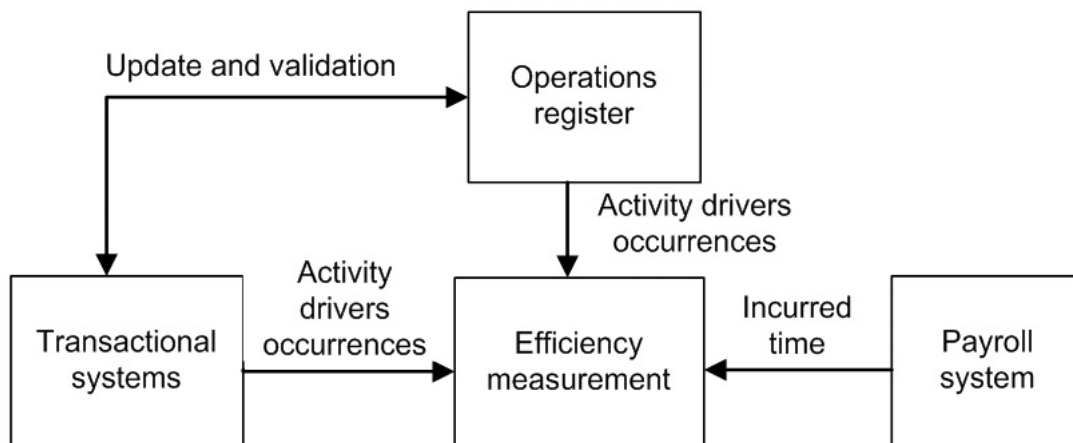


Fig. 3. Systems involved in efficiency measurement

Transactional systems for the management of all activity drivers are not always in place. In such cases, an operations register can be used showing the start and finish of the operations unchained by each repetition

of the activity drivers. In addition, the register allows us to measure some quality dimensions too, e.g. service lead time.

IV. Improve clerical efficiency in selected organizational units

The greatest potential for efficiency improvement is found in organizational units with the smallest estimated efficiency. Yet, other organizational factors like the process extension to other areas in the organization and the involvement of their managers must be taken into account. This is why it is recommendable to carry out selection based on the agreement of all the parties involved.

Efficiency improvement can be attained through a variety of techniques including performance auditing, improvement of work methods, and direct measurement of the work done and the fitting of the staff allocated. Improved calculation of predetermined standard times might be eventually needed.

In the months following the changes, check-ups must be made conducted to ensure that the initially achieved efficiency is maintained without the detriment of quality or service delivery deadlines.

The system scope must also be checked regularly in order to consolidate the obtained results and extend them to other areas in the organization.

4 A case study: Junta de Comunidades de Castilla la Mancha

The *Junta de Comunidades de Castilla la Mancha* is one of the 17 autonomous governments in Spain. Its roles are vast, as the Spanish government transferred most of its competencies on to the region. It employs some 17,000 civil workers, who deliver services to 1.7 million people.

The general trend towards budget reduction also affects the autonomous government, and so the General Direction of the Public System (*Dirección General de la Función Pública*) decided to improve personnel management, particularly, staff efficiency. The system scope was limited to the repetitive clerical work carried out in the central administration of the regional government. As a consequence, areas like education, social services, and health care were excluded.

In agreement with the General Direction of the Public System, 18 organizational units with the traits required by the methodology and from different activity areas were selected. Unit managers were asked to supply a list of their activity drivers, as well as their description, annual occurrence rate, and generated work. Next, the following data were double-checked: (a) comparison between the total work reported by the unit manager and the staff assigned, and (b) review of the work procedures of the activity drivers to check their characteristics and the available data. As a result of the review, three organizational units were ruled out.

By means of interviews with the managers and field work, those characteristics, which could have an effect on work time, were identified and are classified into three groups:

(1) Responsibilities taken on by the people doing the job: (a) *evaluation* of magnitudes and opportunity to express an opinion; (b) on site *inspection* causes displacements of highly variable magnitude; and (c) *economic and social impact* of decisions involving expenditure valuation, affecting a large number of people like decisions on public health, or bringing along significant consequences to the relations of the autonomous government with its own personnel.

(2) Characteristics of the files: (a) *frequency* of activity driver repetition; (b) *number of documents* to be processed; and (c) *people dealing* with completing the information, answering queries, or clarifying the applicable regulations.

(3) Related circumstances: (a) *software tools* to facilitate procedure management; and (b) *procedure variability* affecting routine learning and efficiency.

The intensity of each characteristic scores as per Tab. 1.

A first examination of operation times shows that: (a) variance increases as the level rises; hence, Box-Cox transformation indicates a logarithmic transformation must be applied; (b) variability in times under 5 minutes is very high, and so the analysis must use direct measurement standard techniques; and (c) operation times over 600 minutes result from activity drivers for which we are not certain about the repetitiveness of their work process. Consequently, the 126 activity drivers available were analysed in order to model the relationship

Table 1. Score of activity characteristics

Characteristics	Score	Description
Evaluation	0	Data do not require any checking or only require simple routine checking
	1	Some relevant data must be checked against the Administration's own records or the documents provided by the citizen, or several financial and technical data audits conducted by qualified staff
Inspection	0	No inspection is needed
	1	Routine inspections are conducted on a small sample
	2	Inspections are conducted on a broad, randomly selected sample
	3	Data are inspected on site, in a separate place for the workplace
Economic or social impact	0	Cost per unit < 12,000€, or events with no social repercussion
	1	Cost per unit between 12,000€ and 30,000€, or Events with mild repercussion
	2	Cost per unit between 30,000 and 140,000€, or Events affecting a large number of people
	3	Cost per unit > 140,000€, or events affecting the public health system, the environment, or the Administration's impartiality credibility
Frequency	0	An event occurring more than 5,000 times a year
	1	An event occurring between 1,000 and 5,000 times a year
	2	An event occurring between 100 and 1,000 times a year
	3	An event occurring less than 100 times a year
Number of documents	0	Files completed with 5 or less simple, easily compiled documents
	1	Files including a small volume of documents, but the citizen makes inquiries
	2	Files with precise rules, aimed at population sectors who need to be explained what documents must be submitted
	3	Files involving numerous different documents asking the citizen to do certain things to fill them in
People dealing	0	No need to contact citizens, or inquiries are simple
	1	Files with rules requiring citizens to specify some aspects
Software tools	0	Simple software, or absence of software, or only an operation is automated, or it facilitates checking but does not avoid it
	1	High automation of tasks, even checks the information requested
Procedure variability	0	The procedure is always run in the same way, or The procedure has slight variations every year
	1	The procedure changes substantially every year
	2	The procedure is new or periodically repeated

between their traits and the operation time logarithm, and values under 5 minutes or over 600 minutes were ruled out.

A stepwise regression analysis and the tests of fit are shown in Tab. 2 and Tab. 3 respectively, under the conditions described.

Table 2. Results of the regression analysis for logarithmic operation time; cases constrained to operation time between 5 and 600 minutes

	Beta	Std.Err.	B	Std.Err.	t(98)	p-level
Intercept			2.6705	0.1196	22.3267	0.0000
Frequency	0.2873	0.0548	0.3811	0.0727	5.2451	0.0000
Number of documents	0.3958	0.0492	0.6807	0.0846	8.0464	0.0000
Inspection	0.2471	0.0518	0.4613	0.0967	4.7719	0.0000
Software tools	-0.1575	0.0491	-1.2953	0.4035	-3.2103	0.0018
Evaluation	0.4081	0.0577	1.1546	0.1633	7.0699	0.0000

Note: $R = 0.88110083$, $R^2 = 0.77633867$ Adjusted $R^2 = 0.76492738$

$F(5.98) = 68.032$, $p < 0.0000$ Std. Error of estimate: 0.67057

The interpretation of the results allows us to understand the clerical work completed within the system scope: (a) the regression model is highly significant, so operation time could be drawn from the activity driver

Table 3. Regression summary and variance analysis

	Sums of Squares	Degrees of freedom	Mean Squares	F	p-level
Regression	152.9595	5	30.59189	68.03249	0.000000
Residual	44.0673	98	0.44967		
Total	197.0267				

characteristics; (b) reference cycle time is $\exp(2.67)=14.4$ minutes, which is slightly higher than the 12 minute maximum period usually recommended to maximise staff efficiency; (c) when a powerful computer system is used, operation time is 73% reduced; (d) the effect of the remaining significant characteristics is an increased operation time; for instance, when evaluation is needed, operation time is multiplied by 3.17; (e) variability, people dealing, and economic or social impact are not statistically significant; and (f) while the need for inspection, evaluation or the number of documents to be processed clearly affect the amount of work to be done, surprisingly the frequency is also significant; this fact can only be accounted for by the improvement of the work methods, only occurring when tasks reach a high level of repetition. As a consequence, the calculation of predetermined times consists of multiplying base time by the factors in Tab. 4 corresponding to activity driver characteristics.

Table 4. Parameters to calculate predetermined times

	Factor per characteristic and score			
	0	1	2	3
Frequency	1.00	1.46	2.14	3.14
Number of documents	1.00	1.98	3.90	7.71
Inspection	1.00	1.59	2.52	3.99
Software tools	1.00	0.27		
Evaluation	1.00	3.17		
Base time =14.4 minutes				

Anyway, it is important to bear in mind that the model is not intended to accurately estimate every operation time but to provide a conceptual framework and useful tools for comparing efficiency across organizational units doing different jobs. This comparison allows us to identify a reduced number of organizational units with low clerical efficiency, for their subsequent analysis and improvement. For example, the very first result of the application of this methodology to *Junta de Comunidades de Castilla la Mancha* was the new competence of Direction General of the Public Function to assess the modification proposals of the organizational units staff; with the new developed tools, this assessment could be accomplished in a technical and objective way instead of the more political previous approach leading to a tighter budget control.

5 Summary

To date and for the different reasons described throughout the paper, work study has been little used by the Public Administration. However, the Public Administration's growing concerns about efficiency will boost broader implementation. To that end, current circumstances in the Public Administration are to be taken into account; particularly, big evolution efforts must be made in including efficiency as a managerial objective and not as an element related to budget constraints. For that particular purpose, a methodology has been presented to enhance clerical efficiency, allowing a fast and gradual application based on the organization's existing efficiency level. An example for the construction of a calculation model of predetermined times has also been presented together with the most relevant implications of a model of this nature.

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