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Razionalizing administrative processes in terms of efficacy, efficiency and cost effectiveness

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**RATIONALIZING ADMINISTRATIVE
PROCESSES IN TERMS OF EFFICACY,
EFFICIENCY AND COST EFFECTIVENESS**

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Abstract

Among business achievement criteria we must also consider organizational functionality and administrative rationality, based on developed professional skills, investments in convenient information technology, reduction of costs and number of required operations. The authors¹ propose some examples and describe a virtuous path of management optimisation, in terms of efficacy, efficiency and cost effectiveness.

Keywords: Administrative processes; Costs of the administrative structure; Administrative service productivity; Administration services quality

JEL Classification numbers: M15 ; M21 ; L25

¹ Silvio Modena is author of the sections *Business development and quality of administrative services*, *Efficacy of administrative services* and *Efficiency of administrative services*. Roberta Zanolli wrote *Human resources* and *Cost-effectiveness of administrative services*.

1. *JEL Classification numbers:* M15 ; M21 ; L25

1. Introduction

Among the indicators of business achievement, those usually emphasized are the traditional ones: positioning compared to competitors, turnover increase, productivity, technological innovation, financial autonomy. Business value is unquestionably built² and developed through production and selling. However, what the point of creating value unless it is conveniently measured, distributed, managed, administered? The value created would totally or partially get lost.

The management of human and technical resources committed to administrative functions must be, as the enterprise on the whole, efficacious, efficient and and cost effective.

This essay aims at identifying convenient measurement systems of the performances of administrative processes. In connection with their heterogeneity, they absorb different resources on a quality and quantity level, and therefore they have to be opportunely weighted while defining a valuation model.

A measurement system of the performances can generate a rationalization of administrative processes, improve quality and contribute to business development.

2. Business development strategies and quality of the services

A development strategy is often linked to a choice of size increase accomplished through new investments conveniently supported by financing. All this is definitely true, however how could the new investment conditions be created without the support of an efficiency-oriented organization?

Among the causes influencing development, quality factors generally prevail on quantity factors.³ Therefore, organizational functionality and administrative rationality are as well identified as standards of business achievement⁴.

² GUATRI L., *La teoria di creazione del valore*, Egea, Milano 1991. (*The Theory of Value Creation*)

³ BERTINI U., *Scritti di politica aziendale*, Giappichelli, Torino, 1990, p. 48. (*Writings on corporate policies*)

⁴ BERTINI U., *Writings*, p. 62.

In order to maintain and increase the quality of administrative services it is necessary to invest constantly on the elements defining their performances. They are:

- human resources;
- processes;
- information technology.

Investments in **human resources** mean a development of single professional skills, group's team spirit and the leadership of the service coordinator.

Processes must be well defined and dynamic. Well defined means complete, clear and well-known. Dynamic because constantly in line with the evolutions of the working and decision-making processes. Comprehensive administrative services must embrace all the single phases and the ties between them. Clarity means that all actors involved have an easy understanding of the processes. Finally the term *well-known* refers to the necessary diffusion among operators.

The information **technology**, both as regards hardware – tools and networks – and software – operating systems and applications -, must be constantly supervised in order to evaluate its adequacy to company requirements. An information system fit for the company needs, size and development plans must guarantee a transparent and certified flow of informations.

See under for further discussion.

2.1. Human resources

Professionalism of single individuals

The development of professional skills of the individuals engaged in administrative services concerns both their specific proficiency and their ability.

The enterprise must constantly invest in professional and behavioural training in order to develop the necessary skills, both specific and emerging ones. As regards abilities, it is expedient to avoid an excessive segmentation of tasks encouraging, on the contrary, job rotation and scheme reevaluation. Such interventions can slow down overall performances and therefore must be introduced in phases of lower workload. Risks tied to a certain lack of elasticity in job rotation are considerably reduced and in the meantime continuity is guaranteed.

As regards a strong task diversification, the administrative role is usually divided into several tasks such as:

- accounting and financial statement;
- treasury and finance;
- human resource management;
- planning and control;
- internal auditing.

Depending on management complexities and business size, tasks are variously unified or separated in distinct roles.

As regards tasks pertaining to each single post, we can distinguish between generic managerial tasks and specific ones, divided into three organizational levels:⁵

lower levels: technical and operative skills have a leading position; with specific reference to the context of administrative role, in addition to accuracy, reserve, capacity to adjust to new operational contexts, constancy and predisposition to the task also some knowledge of business economics basics, accounting and software applications must be included.

intermediate levels: in addition to technical skills, also interpersonal relationship skills are important. The management of lower level human resources and the handling of relationships with peers working at different tasks require co-ordination and communication skills, conflict management skills, capacity of involving and controlling junior staff, and working in team and in interfunctional projects. It is also expedient to include the ability to motivate and to mediate.

high levels: strong conceptual skills must prevail as formulation of ideas and ability to lead the organization towards results not tightly connected to daily operations are required. Therefore, capacity to analyse and interpret data, creativity and propensity for innovation, ability to interpret the external context, to define targets and to plan, decision-making skills, competence in dealing with priorities and unforeseen events must prevail.

The team

⁵ AGLIATI M., *Tecnologie dell'informazione e sistema amministrativo. Esperienze aziendali a confronto*, Egea, Milano, 1996. (*Information Technologies and Administrative System. A Comparison of Business Experiences*)

Propensity to decentralize many survey activities, to centralize core administrative activities and to have recourse to multifunctional groups are the main organizational answers to the need to improve the quality of administrative services. Besides being equipped with functions supplied by support groups, the team plays as well supervisory and control roles, which are functional to resource and time allocation, and performance valuation.

The single members of the team, or the team, can be evaluated in regard to the gap between required professional skills and expressed professional skills.

The required expertise is the set of skills, attitudes and abilities necessary to hold a working post. They can be evaluated through levels:

- decision-making autonomy;
- knowledge;
- information management;
- emotional stability;
- impact on results.

A system defining the required professional skills permits:

- a) to define and describe knowledge, abilities and attitudes required in the different roles;
- b) to set the importance of a role in the organization;
- c) to reclassify and compare roles and posts;
- d) to give consistency to a classification of roles as required by the organization;
- e) to build a dynamic and slim system for role management in a changing organization.

The expressed professional skills represent the level of fulfilment of a role. Through its measurement we can understand and define the actions necessary to second and support professional growth.

The leadership

Information technologies do not influence so much the carrying out of a task but rather the organization of the flow of administrative procedures, inside the value chain. Thus the attention is placed on the main coordination and leadership role, essential to fully integrate information technologies into the business organization.

In every age and culture the leader of a group is always the individual to whom others turn to be reassured and guided in moments of uncertainty and danger, or when a work or an undertaking must be accomplished. Leaders act as emotional guide of the group, as a guiding light. This role requires the capacity of directing collective emotions in a positive sense and dispelling the destructive effects of negative emotions.

When a leader is able to turn emotions into a positive attitude, he/she can make the most of positive repercussions and feedback.

The leader must be able to emphasize capacities present inside the organization; they can become a decisive factor in the process rationalisation, included administrative processes.

2.2. Administrative processes

Administrative processes include all the business activities connected to data entry in the company information system, data processing and their transfer to inside or outside users.

A wider vision of the administrative system includes all the business activities to the exclusion of operation, selling and research activities. This definition is coherent with the decentralization process of the administrative activity made possible by the evolution of information systems and based on the principle that data must be captured exactly where they originate, avoiding double entry, and they must be sharable according to precise rules. Data must be considered as a business resource and isolated information management must be avoided.

Thus an administrative system⁶ articulated in several autonomous subsystems comes into existence and can develop. Input data are entered into subsystems processing both specific output for management use and elementary data which are the input of the accounting system. The accounting system aims at the production of complex information such as balance sheet, economic account and financial account.

These brief notes aim at emphasizing the link between a definition of administrative processes and a technological solution used for information management.

⁶ SAITA M., *Il sistema amministrativo evoluto. Sistema civilistico, sistema gestionale*, McGraw-Hill, Milano, 1988. (*The Advanced Administrative System. Civil Law System, Managerial System.*)

2.3. Information technology

Data management and information processing have a decisive role as regards the quality of administrative services.⁷ Nowadays it is non even possible to conceive an administrative system without the support of information technology.⁸

Originally a tool for processing data, computer is developing into a unit able to sistematize business information and knowledge.⁹

After a first phase when companies used computers in an unsystematic manner to solve specific problems and automate single procedures, the use of computer evolved towards a systematic employment in all business functions, with the exception of the decision-making function. Only in an advanced phase the information system becomes a key support in decision making, even of strategical nature.¹⁰

The information system aims at satisfying the knowledge need expressed by the decision-making system and operating system¹¹; it must generate information with quality and quantity features in line with the needs of inside and outside users.¹²

The computer-based information system is the portion of information system run through electronic data processing and communication methods based on electronic tools.

Many influential authors have written on the theme of information technology investments¹³. These notes aim simply at recalling that an

⁷ JONES G., MCNAMARA T., *Information Technology and the New Accounting*, McGraw-Hill, London, 1988.

⁸ SAITA M., *Economia e strategia aziendale*, Giuffrè, Milano, 2000. (*Economics and Business Strategy*)

⁹ ROSIGNOLI C., *Organizzazione e sistemi informativi*, FrancoAngeli, Milano, 1997, p. 166. (*Organization and Information Systems*)

¹⁰ BERTINI U., *Il sistema d'azienda. Schema di analisi*, Giappichelli, Torino, 1990, pag. 153. (*The Enterprise as a System. An Analysis Framework*)

¹¹ RUGIADINI A., *I sistemi informativi d'impresa*, Giuffrè, Milano, 1970. (*Business Information Systems*)

¹² MANCINI D., *Le condizioni di efficacia del sistema di controllo aziendale. Qualità e sicurezza nel governo delle aziende*, Giappichelli, Torino, 2005, p. 138. (*The Efficacy Conditions of the Business Control System. Quality and Safety in Corporate Governance*)

¹³ AMIGONI F., BERETTA S., *Information technology e creazione di valore. Analisi del fenomeno SAP*, Egea, Milano, 1998 (*Information technology and value creation*); PINI M., *Trasparenza dei bilanci e investimenti EDP. Principi amministrativi per la direzione aziendale*, Etas Libri, Milano, 1990 (*Financial Statement Transparency and EDP Investments. Administrative Standards for the Company Management*); MARCHI L., *Sistema*

investment project, regarding the partial or entire renewal of the company information system, can be originated by several causes, among which we can mention: new information requirements, software technological innovations, excessive maintenance charges and implementation of existent software.

The project must follow the following phases:

- a) draft of a feasibility study;
- b) draft of functional specifications
- c) draft of technical specifications
- d) system design;
- e) programming and tests;
- f) deployment;
- g) post implementation.

A feasibility study aims at discovering problems and requirements on which the attention should be centered, pointing out targets to reach and evaluating appropriate solutions.

A feasibility study must include:

- definition of the set of problems;
- provisional system design;
- project's planning (stages, work group, project manager, costs, achievable advantages, risks with the present system and risks connected to change);
- detailed plan of the following phase.

Only when a feasibility study is approved by top managers, the project can carry on the next phases.

Functional specifications deal in particular with:

- outline of system input (both entered manually and retrieved through different procedures);
- input size and number, control to be exerted, coding;
- overview of logical processes;
- report design (content, receivers and frequency).

The work group's approval of functional specifications define the start up of a technical implementation of the project according to the phases above listed up to the deployment, that must provide for:

- user tasks and responsibilities;
- management of possible parallel systems;
- detailed phasing;
- controls;
- user training;
- gathering of possible anomalies or omissions to insert during the post-implementation phase.

The size of information technology investments takes on a different meaning in the various company sectors.

According to Cash, McFarlan and McKenney model¹⁴ applied to value-adding activities as defined by M. Porter¹⁵, it is possible to classify the incidence of information technology. When the incidence of information technologies is low both in the management of primary activities and support activities, as shown in the lower left part of Table 1, primary sector and heavy industry companies tend to fall into this category. As regards finance, insurance and air transport companies, the incidence of information technology is significant both in the management of support activities and primary activities.

¹⁴ CASH J. L., MCFARLAN F. W., MCKENNEY J. L., *Gestione strategica delle tecnologie per l'informazione*, Isedi, Torino, 1989. (*Corporate Information Systems Management*)

¹⁵ PORTER M., *Il vantaggio competitivo*, Comunità, Milano, 1987. (*Competitive Advantage*)

Table 1 - Incidence of Information Technology in Different Sectors

Primary Activities (logistics, production, marketing, services)	high	Chemistry Pharmaceutics Publishing Defense	Finance Sector Insurance Sector Air Transport Health Care
	low	Primary Sector Iron Industry Heavy Industry	Fashion Consumer Goods Comm. Products
		low	high
		Support Activities (supply, technologies, human resource, infrastructures)	

Production and marketing of fashion products and consumers goods generally ask more investments for computer-based information management of support activities than for primary activities. Finally, pharmaceutical, chemical, publishing and defense companies generally need higher investment for computer-based information management of primary activities and stronger contents for support activities.

3. Efficacy of administrative services

As already stressed, administration services must meet requirements of efficacy, efficiency and cost effectiveness.

Efficacy is defined in relation to the capacity of achieving fixed goals. It concerns the discharge of civil and fiscal requirements, but also the producing of statements and reports according to forms and contents set

through rules and procedures.¹⁶ It concerns as well the observance of targets defined by the company policy.

Efficacy is measurable on the basis of the quality level of reached results as compared to fixed goals.

In order to evaluate efficacy it is necessary to single out clients and suppliers of administrative processes. The information produced and distributed by administrative services come from and are intended for the following subjects:

- top managers;
- inside and outside control bodies;
- executives responsible for the company management;
- operating managers responsible for functions or processes;
- inside user of inside products;
- outside users (banks, suppliers, clients, revenue authorities, institutions, ect.).

In order to evaluate the efficacy of the administrative product-service, the following elements are necessary:

- procedures regulating quality, features and timing of the product-service;
- monitoring of user satisfaction.

The degree of user satisfaction should be regularly monitored by managers responsible of supplier processes.¹⁷ The process control pattern must provide for feed back modes and timing. Without a methodological pattern, no adequate control can be guaranteed.

With inside clients it is possible, and hopeful too, to provide for periodical concerted exams of results, comparing supplier data with user data or perceptions and intervening on gaps.

Gaps regarding standards are classified as nonconformities. In relation with their typology, they can be :

¹⁶ BRUNI G., *Contabilità per L'Alta Direzione*, Etas Libri, Milano, 1990. (*Accounting for Top Executives*)

¹⁷ CONTI T., *Come costruire la qualità totale. Una guida per il management*, Sperling & Kupfer, Milano, 1992, p. 149 (*How to Build Total Quality. A Guide for Top Managers*)

- non-misleading and a priori identifiable nonconformities;
- misleading and only ex post identifiable nonconformities.

Moreover, nonconformity may be due to a missing datum or information or a wrong information.

Therefore, as shown in Table 2, nonconformities can be classified into 4 categories:

- A) very serious: when the information is wrong, non identifiable and it leads into mistakes;
- B) serious: when the information is missing, non identifiable and it leads into mistakes;
- C) fairly serious: when the information is wrong, identifiable and non-misleading;
- D) non-serious: when the information is missing, identifiable and non-misleading.

Table 2 – Classification of “nonconformities”

wrong information	C	A
missing information	D	B
	non-misleading identifiable information	misleading non-identifiable information

With relation to the moment when nonconformities are detected, the administrative process can be divided into three different phases:

- data and information gathering from outside and inside suppliers;
- data processing;
- data supply to outside and inside clients.

Therefore, the list includes: nonconformities detected during data gathering, nonconformities detected internally in data processing carried out by administrative services and finally nonconformities detected by the administrative service clients. In each case, it must be possible to assign a classification and therefore a weight. For example, 5 points are assigned to A-type nonconformities as opposed to 1 point attributed to D-type nonconformities.

The survey of nonconformities must be slim and should not weigh against the process. System design and setting-up can be challenging but while in full operation can contribute to a significant and favourable error decrease.

4. Efficiency of administrative services

Efficiency concerns the promptness of administrative systems. Accounting may be delayed, however a daily update is a premise to a careful management of costs, credits, financial flows and investments. It can concern as well simplicity and safety of the system.

Efficiency means also the observance of timings set by regulations and inside rules as a late report loses completely its function. Promptness stands for a quick answer as regards information needs of the users above defined.

It is possible to improve the efficiency of administrative systems when the appointed organization is able to anticipate information gathering and transmission. On the contrary, lower efficiency means a delay in information gathering, even if deadlines are respected.

Incurring costs and result effectiveness being equal, it is also possible to improve the administrative system efficiency through an improvement of the procedure flow, making it safer, less tied to single professional skills and capacities.

Administrative services should see that the system is easily manageable, easy to be used, and does not require a long and complex training of the users.

The information system efficiency is tightly connected to the degree of uncertainty with whom decision-making and operative processes are accomplished. Uncertainty can be defined as the gap between the received information and those that would be essential to the personnel carrying out processes both in terms of information quality and promptness.¹⁸

The valuation of system efficiency can be particularly concise, considering for example:

- overall improvement of system efficiency;
- maintenance of system efficiency;
- decrease of system efficiency.

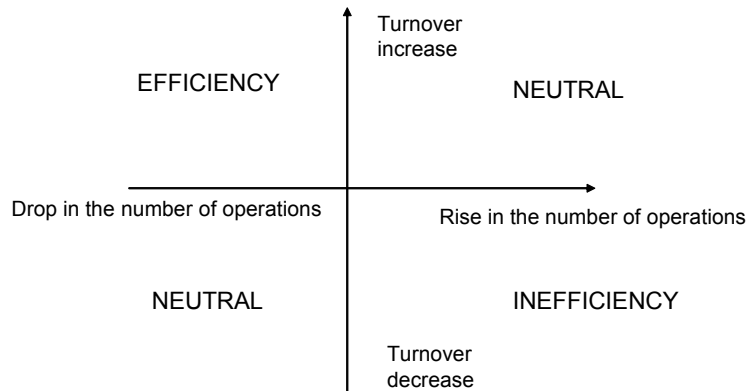
It is therefore possible to assign a rating in relation to overall results reached in terms of efficiency.

The number of operations carried out as compared to the entire amount of performed activities falls into the efficiency valuation, that can be synthetically identified with the turnover volume.

When, turnover being equal, administrative services are able to reduce the number of operations, they can be considered more efficient. Their performance can be judged neutral, when the number of operations rises or drops in line with the revenue fluctuations. Finally a rise in the number of operations, accompanied by a turnover decrease, must be considered as a sign of inefficiency (Table 3).

¹⁸ GALBRAITH J. R., *Organization design*, Addison Wesley, London, 1977.

Table 3 – Efficiency of the administrative system



The number of operations must be calculated in relation to all the administrative performances, such as invoicing, revenue management and registration, order management, payments, reconciliation of trade accounts, financial statements, human resource administrative management and so on.

As they absorb resources that are different in quantity and quality, such performances must adequately “weighed” (Table 4).

The referred weighing is simply an example; it concerns some macro activities tied to administrative processes. The listing of activities and the weight attributed according to complexity vary with relation to several factors, among which: product sector, company size, internationalization, structure and organization.

Table 4 – “Wheighing” of macro activities related to administrative processes

Description of the operations	Operation number	Weight	Operations sized up
Invoices made out	30.045	2	60.090
Invoices received	22.687	2	45.374
Receipts	43.088	1	43.088
Payments	37.521	1	37.521
Pay slip preparation	4.582	4	18.328
Financ. statement controls	11	100	1.100
Adjustment entries	300	5	1.500
Statement closing	11	100	1.100
Reconciliation trade accounts	94	3	282
			208.383

5. Cost effectiveness of administrative services

Cost effectiveness concerns the relationship between resources employed and goals reached; in a word, the productivity of the administrative system calculated as ratio between incurred costs¹⁹, often the only standard considered relevant, and achieved production.

Besides the production of administrative services, quantifiable in carried-out operations conveniently sized up, it is therefore necessary to consider costs necessary to implement the service under consideration.

5.1. Costs

For the purposes of this analysis, costs of the administrative structure are divided according to functional areas. Those areas are:

¹⁹ INNES J. - MITCHELL F., *I costi di struttura. Metodologie di analisi e di gestione*, Egea, Milano, 1994. (Structure Costs. Analysis and Management Methodologies)

organizational functionality;

operative functionality;

environmental functionality.

All the employee costs related to administrative activity, assistance and consulting refer to **organizational functionality**.

Other costs directly related to overall employee costs are: trips and temporary transfers of the administrative staff, insurance cover, internal social security systems, personnel selection and training. Such costs are classified separately from personnel costs and must be included in the organizational functionality with a specific position.

Costs related to **operative functionality** are those incurred for telecommunications, information technology development, consumable materials and stationery, insurances, subscriptions, refresher training, document filing and retention. To this end, the dematerialization of transactions and documents becomes significantly relevant as regards the administrative process organization. In fact, costs and risks connected to exchange and processing of paper documents are incompatible with the need for simpler and safer administrative processes.

As regards **environmental functionality**, costs include heating, air cooling, lighting, energy, surveillance, waste disposal, amortizations, rent, maintenance, cleaning. Financial burdens calculated on the invested capital necessary for environmental functionality itself can be included as well.

Prospects of reducing these costs are very limited. In complex organizations a concentration of administrative functions into a single structure can contribute to reduce costs tied to environmental functionality and partially those tied to operative functionality (for example, telecommunications). The creation of an administrative service operating for different companies can weigh on costs related to organizational functionality ending job duplication and assigning previously externalized services to internal resources.

5.2. Productivity

Administrative service productivity can be evaluated both in relation to the incidence of service costs on turnover, and in relation to the unitary cost of carried out operations.

The number of operations can vary in connection with turnover changes, external factors or efficiency improvements in the service itself.

In order to properly evaluate the performances of administrative services it is necessary to be aware of the causes originating a significant variation in the number of operations.

In the example below, (Tables 5 and 6) an increase in administrative costs from 50.000 to 53.000 can be however considered as a saving of 2.000 if you compare the incurred costs to a standard created keeping the same incidence of costs on turnover ($1.650.000 \times 3,3\% = 55.000$). Such cost would correspond to the administrative service costs if they had increased proportionally to the proceed.

Considering that the number of operations decreased, both in absolute terms and in proportion to turnover, we can state there was an improvement in the administrative service efficiency.

Table 5 – Cost effectiveness and efficiency

	YEAR N	YEARN+1	VARIATION absolute	YEAR N+1 with STANDARD YEAR N	VARIATION compared to Standard
ADMINISTRATIVE SERVICE COSTS	50.000	53.000	3.000	55.000	- 2.000
TURNOVER	1.500.000	1.650.000			
NR. OPERATIONS (sized up)	7.000	6.500	- 500	7.700	- 1.200
TURNOVER PER OPERATION	214	254		214	
COST INCIDENCE ON TURNOVER	3,3%	3,2%	-0,1%	3,3%	

Table 6 shows an increase in the number of operations. The increase is both in absolute terms (+ 1.000) and in relation to the standard (+ 300). The standard is built on the basis of performances relative to year N.

The administrative system shows a better cost effectiveness, but not an increased efficiency.

Table 6 - Cost effectiveness without efficiency

	YEAR N	YEAR N+1	VARIATION Absolute	YEAR N+1 with STANDARD YEAR N	VARIATION compared to standard
ADMINISTRATIVE SERVICE COSTS	50.000	53.000	3.000	55.000	- 2.000
TURNOVER	1.500.000	1.650.000			
NR. OPERATIONS (sized up)	7.000	8.000	1.000	7.700	300
TURNOVER PER OPERATION	214	206		214	
COST INCIDENCE ON TURNOVER	3,3%	3,2%	-0,1%	3,3%	

Examining data shown on the Tables, it is possible to calculate the cost of an operation, dividing administrative service costs by the number of operations carried out ($50.000 / 7.000 = 7,14$). Such cost (as an alternative it is possible to elaborate a standard cost) multiplied by the number of operations carried out during year N+1 makes 57.120. Such figure represents the cost of the service in year-N productivity conditions (or in standard productivity conditions). As the incurred cost was 53.000, the saving is worth 4.120.

6. Conclusions

Administrative service costs rise in connection with emerging complexities, information system investments, professional skills necessary to satisfy inside and outside information requirements. Considerable investments are made in order to realize management, quality and internal audit control system, thanks to external consulting as well.

In order to start bonus systems and improve skills it is necessary to monitor administrative service performances as regards efficacy, efficiency and cost effectiveness.

The efficacy degree can be checked controlling the satisfaction level as regards the information produced by the service and observing nonconformities.

Efficiency can be improved accelerating the system, making it simpler and safer, and reducing the overall number of operations.

Finally, cost effectiveness must be accomplished thanks to a reduction of service costs, but also through a stable or reduced incidence on the turnover or a stable or reduced unitary cost of the operations when their number rises due to external factors, independently of the administrative service control.

A synthetic valuation is a difficult task and should take into account all the different above-mentioned variables. The model to be applied must necessarily consider the specificities of the service and the company and, above all perhaps, the administrative service targets that top managers recognize as primary.

REFERENCES

- AGLIATI M., *Tecnologie dell'informazione e sistema amministrativo. Esperienze aziendali a confronto*, Egea, Milano, 1996. (*Information Technologies and Administrative System. A Comparison of Business Experiences*)
- AMIGONI F., BERETTA S., *Information technology e creazione di valore. Analisi del fenomeno SAP*, Egea, Milano, 1998. (*Information technology and value creation. Anayisis of the SAP Case*)
- BERTINI U., *Scritti di politica aziendale*, Giappichelli, Torino, 1990. (*Writings on corporate policies*)
- BERTINI U., *Il sistema d'azienda. Schema di analisi*, Giappichelli, Torino, 1990. (*The Enterprise as a System. An Analysis Framework*)
- BRUNI G., *Contabilità per L'Alta Direzione*, Etas Libri, Milano, 1990. (*Accounting for Top Executives*)
- CASH J. L., MCFARLAN F. W., MCKENNEY J. L., *Gestione strategica delle tecnologie per l'informazione*, Isedi, Torino, 1989. (*Corporate Information Systems Management*)
- CONTI T., *Come costruire la qualità totale. Una guida per il management*, Sperling & Kupfer, Milano, 1992. (*How to Build Total Quality. A Guide for Top Managers*)
- GALBRAITH J. R., *Organization design*, Addison Wesley, London, 1977.
- GUATRI L., *La teoria di creazione del valore*, Egea, Milano 1991. (*The Theory of Value Creation*)
- INNES J. - MITCHELL F., *I costi di struttura. Metodologie di analisi e di gestione*, Egea, Milano, 1994. (*Structure Costs. Analysis and Management Methodologies*)
- JONES G., MCNAMARA T., *Information technology and the new accounting*, McGraw-Hill, London, 1988.
- MANCINI D., *Le condizioni di efficacia del sistema di controllo aziendale. Qualità e sicurezza nel governo delle aziende*, Giappichelli, Torino, 2005. (*The Efficacy Conditions of the Business Control System. Quality and Safety in Corporate Governance*)
- MARCHI L., *Sistema informativo aziendale*, Servizio Editoriale Universitario, Pisa, 1984. (*The Company Information System*)

PINI M., *Trasparenza dei bilanci e investimenti EDP. Principi amministrativi per la direzione aziendale*, Etas Libri, Milano, 1990. (*Financial Statement Transparency and EDP Investments. Administrative Standards for the Company Management*)

PORTER M., *Il vantaggio competitivo*, Comunità, Milano, 1987. (*Competitive Advantage*)

ROSIGNOLI C., *Organizzazione e sistemi informativi*, FrancoAngeli, Milano, 1997. (*Organization and Information Systems*)

RUGIADINI A., *I sistemi informativi d'impresa*, Giuffrè, Milano, 1970. (*Business Information Systems*)

SAITA M., *Il sistema amministrativo evoluto. Sistema civilistico, sistema gestionale*, McGraw-Hill, Milano, 1988. (*The Advanced Administrative System. Civil Law System, Managerial System.*)

SAITA M., *Economia e strategia aziendale*, Giuffrè, Milano, 2000. (*Economics and Business Strategy*)