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The role of cost accounting in the university performance measurement in Portugal

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Abstract

Cost accounting is aimed at emphasising those elements of costs and profits of original importance to the management board of an organizational unit. Therefore, cost accounting was initially understood as mere collector of costs and profits, using the traditional system of costing everything, a budget with a limited base. Originally, it was designed to calculate real costs with the aim to determine the results.

In public organizations, the aim of cost accounting, costs or management, can be summarized as follows:

- Obtain information of how costs are found, both the ones corresponding to the internal activities as well as those for external services rendered and the cost realized investments;
- Obtain information for cost and control management, with efficiency indicators of how the planned objectives were achieved and the efficient use of available resources.

This paper aims at knowing the role of cost accounting in the public sector of higher education, and checks its contribution for the establishment of the management indicators in public institutions of higher education.

Key words: Cost Accounting, management, indicators, education

Introduction

The system of cost accounting¹ has, according to Carvalho *et al* (1999:529), its influence in France. The French Accounting Plan, defines cost accounting is “a method of managing data with the following main objectives: understand the costs of the different functions performed by the enterprise; determine the assessment basis of some elements of the business Balance Sheet; explain the results, by comparing the costs of the products (goods and services) with the corresponding selling prices on the one hand; and establish the set forecasts of recurring costs and profits (for example, pre-established business costs and budgets), check its application and explain the resulting differences (for example, cost and budgets control)”.

Blanco Ibarra (2003:271) states that management accounting, as a development of cost accounting began at the beginning of the 20th Century, although in this book the author says that 1953 was the start year. The model of direct costing, which initially showed direct costs and variable costs to be the same, later expanded to include those fixed costs, associated with each product. This was the change from the simplified model to an advanced model of direct costing, more appropriate for decision-making.

Since then, there are various basic tools available to calculate costs, namely (the quoted author, 2003:271):

- The model of ‘full costing’, already existing and includes the total cost of manufacturing a product;
- The Advanced model of direct costing.

Management accounting was based on the development of new information and control techniques, such as, management control by areas of responsibility and operational control by specific tasks.

To achieve our aim, a first step was to design an historical costs system, which uses real costs. Subsequently, we saw a significant improvement, with pre-set standard costs, which permitted an improved control of the efficiency of resources.

1. Scope and aims of Cost Accounting: Cost Accounting as a tool for the Management of Organizations.

1.1 Scope and aims of Cost Accounting

¹ Cost Accounting is also know as Management Accounting, and recently as Directive Accountancy. There are authors who distinguish between these various terms.

Cost Accounting shows the elements that make up costs and profits, and is of great importance to the management of an organization. Cost accounting initially understood as a mere collector of costs and profits, using the traditional system of costing everything, with a budget of a limited base. It was originally designed to calculate real costs with the aim to determine the results.

This slowly developed into the analysis of the results for management control. As the management process became more complex, it came to include the following essential functions: planning, organization, co-ordination, motivation and control. In this context, cost accounting began to include new costing systems, such as standard costs² and *direct costs*³ and the rational costing system⁴, which can be adapted to flexible budgeting systems, the only ones that can assess the efficiency and efficacy of an organization.

In *Public organizations*, according to Carvalho *et al* (1999:530), the aims of cost or management accounting is summarized as follows:

- Obtain information on the process of costing, both the ones corresponding to internal activities, as well as those for external services rendered and the costs of investments made
- Obtain information for management analysis and control, with efficacy indicators of how the planned targets were achieved and the efficient use of the available resources.

1.2 Conceptualization: costs, profits and results

In accounting literature, cost is a necessary sacrifice of the resources to produce a product. Thus, cost can be defined as a measure and assessment of consumption made or forecast by the rational application of the production factors to obtain a product, a task or service (Blanco Ibarra (2003:24).

A differentiation must be made between the concept of cost and the concept of expense. The first refers to the internal sphere of the business while the latter refers to an external aspect.

² According to Horngren *et al* (2002), a **standard cost** is a “carefully determined cost. The standard costs may refer to consumption units (*inputs*) or production (*outputs*)”.

³ Horngren *et al* (2002) go back to the definition of variable cost, according to which this, which is a “method of costing where all the manufacturing costs are considered as a stock . Not all fixed manufacturing costs are include in the stocks, these are costs of the period when they occurred also known as direct costing”.

⁴ This consists of the inclusion in the production costs not all manufacturing costs but only the variable manufacturing costs and the fixed manufacturing costs to the actual activity.

Profit, occurs at the time of sale of a product, or when a service is rendered, independent of payment being received or not.

The result is the difference between the profit and the total cost. The external result of financial accounting is the internal result of cost accounting. These should not coincide seeing that not all expenses are costs.

1.3 Components of production costs

The production costs are the costs resulting from the process of transforming the factors into the final products, according to the function of the business, that is:

- The cost of raw materials;
- The cost of labour that intervene directly in the production of the product;
- The indirect costs of manufacture, that are indirectly part of the production of the products (depreciation, salary of supervisor, etc.)

1.4 Accounting for the costs of production

The cost of a product or a service is the sum of all the operational costs made, that is, the cost of supplies and manufacturing costs. This does not include, the commercial costs, the administration costs and of the sub activity. The existing stock of products in progress should also be taken into account.

Therefore:

Initial stock of products in progress
+ Cost of Supplies
+ Manufacturing costs
- Final Stock of products in progress.
= Industrial Cost of product or service

Source: Adapted from Blanco Ibarra (2003:64)

1.5 Cost Centres

In an organization, the main functions, such as cost of supplies, transformation, commercial and administrative costs, are allocated to various cost centres like divisions, sections, departments, etc.

The characteristics of a cost centre are as follows: (1) these are made up of a group of means that serve the same end. (2) It is led by a manager with authority and the inherent accountability. (3) The activity of the cost centre can be measured, in some cases, by physical criteria, such as manufactured products, actual sales, etc., or according to a time criterion such as time worked. This is a real section of the enterprise. It comprises of a set of means that compete against each other to achieve the same objective, and whose activity is physically measured in work units.

2. Cost Accounting in the Public Sector of Higher Education System

2.1 Cost Accounting in the Official Public Audit Plan (OPAP) for Education

The Universities have to adopt the Official Audit Plan for the Education Sector, set by Ordinance No. 794/2000, of 20 September, whose model is based on the OPAP.

According to the standards agreed in the OAP-Education, cost accounting is a compulsory system, and an important management instrument to manage and control the costs in education as well as the profits of the results by activities. The OAP – Education includes the preparation of a statement showing the costs per job and the analysis of costs per activity. It should be noted that the analysis of the economy, efficiency and efficacy of public spending in Education, can be achieved with an efficient system of cost accounting.

Analysing the efficiency in the use of public financial resources is one of the aims that we hope to achieve with the introduction of cost accounting in the education sector.

We therefore have to check if the aims forecasted were achieved and what the differences are between the forecasted costs and the real costs as well as the expected profits and the real profits in the case of activities providing services to the community. It makes this an information tool, both in the process of decision making as well as in planning, programming execution and control.

Another of the objectives of the introduction of Cost Accounting is to give the manager of the public entity the information needed to prepare the indicators, of efficiency, efficacy and economy to be included in the management report, in the scope of management control. In this way we aim to gather the necessary information to fill in

the statement of costs by function or activities and the other statements foreseen in the OAP - Education (Costa Marques e Marques de Almeida, 2001).

Strategic decision-making becomes possible and is supported by a system of management information. However, the management margin in “public sector management” is extremely limited, resulting in not using the information system fully.

The economic exercise in cost accounting is the academic year, permitting to get information on costs and profits of the activities, products or services, whose duration does not coincide with the economic exercise.

The provisional documents foreseen in the OAP – Education are: Activities Plan, pluriannual investments, annual management plan, and budgets showing the guideline and the expected objectives. These documents, in order to develop an effective role as management tools, have to be compared, checked and assessed, based on cost accounting that shows in a relevant and viable manner the realizations made. This comparison shows the differences and permits the so-called management by exception. (Marques de Almeida, 2001).

2.2 Shortfalls of Financial Accounting

Financial accounting has some shortfalls⁵, which can be overcome with the system of cost accounting. This type of accounting provides an adequate control of the costs, profits and results bring an important element in the management of the organizations, because the costs/profits and results can be associated with the objectives of the different organizations. These objectives are costs, profits and results of the organizations that determines and analyses, not in a global manner, but in an analytical manner.

Just as an organization it is divided into organizational segments, it is also up to cost accounting to analyse and report to those concerned the costs incurred for the operation of the various sections of the organisation. The organizational sectors managed by a manager, who needs this information at shorter intervals, more detailed and above all

⁵ Financial Accounting (or asset) allows:

- Knowledge of asset and financial status and the results of the organization;
- Recording the costs, profits and the results, that is economic status, in general.

The way it works in a group generates significantly insufficient information to manage the organisations, especially the lack of control, day to day management and planning the activities that have to do with costs and profits of the enterprise/entity. It mainly registers the operations with third parties, of the changes to assets and the financial results.

more organised, to permit measuring and controlling the efficiency and efficacy of the various sectors of the organizational enterprise.

2.3 Overcoming the shortfalls of Accrual accounting: the emergence of cost accounting

In Spain, the IGAE – *Intervención General de la Administración del Estado*, developed a model of costs for autonomous organizations, called *CANOA – Contabilidad Analítica Normalizada para Organismos Autónomos* (Cost Accounting for autonomous organizations). The *CANOA* is a subsystem in the global information system, aiming to provide information for decision making. To determine the cost of the activities or the supply of public services, to establish public rates and prices and provide information by cost objects: elements, centres, activities, products; measure the efficiency and the economy; permitting the assessment of efficacy; making the information basis for preparing the budget; assess the assets generated by the activities of the public sector. Cost accounting is a tool for the management of resources in a rational manner permitting decision making at a high level of operation.

In Portugal, in the scope of the reforms achieved in management of budgets and in public accounting, this resulted in the publishing of various legal orders, with special mention of the State regime for financial administration (DL nº 155/92), cost accounting is recognised as a management tool (artº 16º). However, it is not generally used yet, that is, there are not many organisations making up the universe of Public Administration, in a position to implement it correctly, using it.

2.4 The basic rule for the implementation of cost accounting: the existence of an internal control system.

For the correct implementation of cost accounting, the existence of an adequate system of *internal control* is essential. The accounting entities obliged to use OAP – Education will adopt a system of internal control (ICS), that includes an internal organisation plan, policies, methods, techniques and control procedures, as well as others to be defined by the respective management organs.

The internal control system set in Decree-Law No. 166/98, of 25 June, which rules the internal control system of the financial administration of the State, is dependant on the government and in special articulation with the Ministry of Finance. The system of internal control includes the budgets, economic, financial and assets sectors, aims at assuring a coherent and articulated control exercise in Public Administration. The main objective is to include totally and correctly all the transactions and operations in the accounting records.

Therefore, the OAP – Education is a high quality information system, and any deficiency or lack of reliability is a risk, that the services cannot take. The internal control is therefore, very important, because of its complexity and the resources it manages in the Education sector, and the management complexity involving the different organizations, the delegation of duties and responsibilities to the different hierarchic levels, that aim, essentially to make management more efficient.

In this sense, the ICS includes a set of procedures to guarantee:

- Guarantee the Assets;
- Record and update the fixed assets of the entity;
- Legality and regularity of the transactions;
- Completeness and accuracy of accounting records;
- Execution of set plans and practices;
- Efficacy of management and information quality;
- True and fair view of financial statements.

In order to achieve the objectives described before, it is essential that there is separation of duties, transactions control, set authority and accountability and a methodical record of the facts.

The design of the ICS is not enough; the facilities to achieve the objectives must be there, it is also necessary for objectives and plans be defined; a solid organisational structure; effective and documented procedures; an approval and recording system; competence and integrity of personnel; an organ of supervision and vigilance. The idea behind internal control should be to prevent and not detect, because the benefit of internal control is above all a philosophy of prevention.

Finally, we can say that the OAP – Education may prove to be, in the universities a valuable aid in the process of implementing system of indicators and management.

2.5 The objectives of cost accounting according to the OAP – Education

One of the basic objectives of cost accounting recommended by OAP – Education is to provide the manager of the public entity adequate information for him to prepare indicators of efficiency, efficacy and economy.

According to the OAP – Education, with cost accounting we aim to get and justify the costs per intermediate activities: auxiliary centres, administrative services and management organs. We aim also to get and justify the final cost per activity and know: the course, subjects and students, meals, goods or final products for sale. Also the final products for assets, external services, cost per research project, cost of internal services and get information on the value of the cost of public services that have as a final offer a price, a charge or fee, in order to justify the price demanded by the user of those public services (Master's PhDs and Post Graduations).

The objective of the cost accounting (CA) is calculating costs, profits and results of the activities, products or services, supported totally by the buyer, and assist strategic decision-making for the supply to external units of production of goods and services provided.

With the CA we also try to justify the use of income from the external entity for a specific activity, increasing the current assets and the fixed assets produced by the entity, for the effects of recording in the accrual, analyse the efficient use of public financial resources comparing the objectives forecast with the actual objectives and determine the difference. Finally the CA wishes to provide the manager reliable information permitting the preparation of management indicators, to be included in the management report and to prepare cost statements by tasks or activities.

To comply with the requirements of the OAP – Education, the objectives of cost accounting, are summarized as follows:

- First concern is the correct allocation of costs and profits. In this field, the correct cost distribution to the intermediate activities will reflect the structures of the organizational entity.
- As a reflex of this first concern, is the correct evaluation of the current assets and of the fixed assets.
- Concerns with the information system. Here we should point out the concern with the building of indicators of economy, efficacy, and efficiency of the organization and the preparation of the statement of costs by tasks or activities.

- Management concerns. Support the adoption of strategic decisions especially in the field of outsourcing.
- Analysing the efficiency, through the intermediate analysis of the differences.

2.6 Schematization of cost accounting

Cost accounting is based on an accounts plan inserted in class 9. This cost accounting should contain a set of accounts and sub accounts to record the objectives consigned previously. Thus, the system of cost accounting should comprise of a set of accounts and sub accounts that determine the real costs of intermediate activities and final activities (activities or internal service, product or final service). Determine the provisional costs of the intermediate and final activities, establish the differences between the provisional costs and the real costs by activities, determine the results per activity and establish the costs incurred.

The control of costs, according to OAP – Education, suggests a classification and selection under the following triple perspective:

- Classification by responsibility centre;
- Classification by activity;
- Classification by nature.

This classification of costs in these three opinions is of interest for the effects of control, decision making and planning.

The education institutions are divided into organizational segments, having the human resources and the material facilities to reach the objectives set by superiors. A person who is accountable to and receives orders from his superiors leads the organizational segment. “An improvement in the efficiency of public entities is directly related to the degree of decentralization of the organization. The implantation of a cost accounting model with efficient costs should be accompanied by a decentralization in management units allowing these to be measured by objectives and can, therefore, identify with the centres of responsibility in the execution of specific activities (...) to facilitate the analysis of its contribution to the general efficiency”, as referred by Fernández Rodríguez, (2000:71).

In this context, cost accounting should determine the costs of the organizational segments of the various entities. It analyses and transmits these to the respective managers. Therefore, centres of responsibility that correspond to the organic structure

of the entity share the running costs of the various activities, internal services, and final services or for each product.

The classification by activity is generated because the four education institutions carry out activities, which require the determination of costs for planning, control and decision-making.

Concerning the objects, the OAP – Education indicates a classification by direct and indirect costs. The direct costs are charged directly and without any ambiguity to the objects (departments, centres, services, products, etc). The indirect costs are costs that are common to the various objects. The classification results in the breaking down the global cost permitting its analysis as well, as the knowledge of its variations from period to period.

Regarding the link between accrual accounting and cost accounting, the OAP – Education ignores it. (Marques de Almeida, 2001). A link can be made based on a monist accounting system and on a dualist system. The monist systems can have the following setup: radical monist system or single undivided; system monist divisible. The dualist system, on the other hand can be setup as: the double entry system or the mixed double entry system.

The monist systems, does not separate the two types of accounting forming a single system. There is only one type of accountancy that includes both accrual and internal transactions of an organization

In the dualist systems, there are two types of accounting, two distinct systems of accounts, one for general accounting and the other for cost accounting. We have two separate accounting systems, and cannot change accounts in cost accounting in compensation of accounts in general accounting.

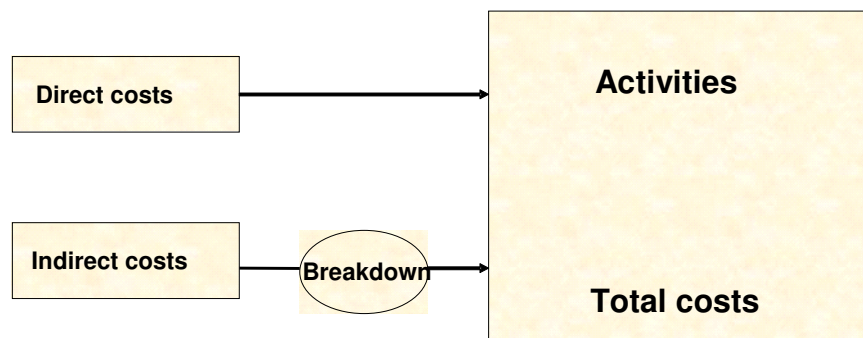
Although separate, cost accounting must record all costs and profits shown in accrual accounting. Accounts permitting the checking of the values recorded in the accruals accounting, have to be created. This task is fulfilled by the accounts group known as cost control accounts.

2.7 Chosen cost system

According to Marques de Almeida (2001), the costing system chosen by the OAP – Education is a system of total cost, since *“the costs of goods for sale and for services rendered corresponds to the respective direct and indirect costs, including*

administrative costs of the actual entity” (OAP-Education, point 2.8.3). Through this system, designated by complete total costs, all costs, direct and indirect are charged to the intermediate activities and final activities. Therefore:

Fig. I – Complete total cost



Source: Marques de Almeida (2001)

From a short term perspective, this system of total costs is, in the process of decision making, the most adequate for the objectives of cost accounting followed by OAP – Education. Therefore, from the point of view of public cost accounting, it appears that for the intermediate activities and final activities to be carried out, the charging of both the fixed and variable direct costs as well as the fixed and variable indirect costs is essential.

2.8 Breakdown of indirect costs

According to the OAP-Education, *“The charging of indirect costs is made through a coefficient. Breakdown of costs should be different based on a more direct relationship with the use of those costs by the various activities. However it is understood that the number of hours worked in the financial year should be the base for the breakdown of indirect costs.”* (OAP-Education, point 2.8.3).

In the case of the Entities whose main activity is education, the breakdown of indirect costs by the functions of education, research and rendering of services, should be duly justified, namely when the education function shares less than $2/3$ of the costs of the teaching staff. The basis for charging is generally the key for the development of the cost function that, specifically, manages to link total costs to the cost objectives.

The ideal criterion to choose a base for charging is the relationship cause- effect, or correlation. In this manner, the so-called “cost pool”⁶ is used for the subsequent charging of grouped costs and not individual costs. The costs are normally pooled by nature (OAP – Education), which can be divided into intermediate and final objectives, that is intermediate and final activities. The Breakdown of indirect costs, based on the number of hours of the activity in relation to the total number of hours is closely linked with the time factor. For this reason the number of hours dedicated to the activity are frequently used as a basis for charging.

The OAP – Education does not exclude the existence of coefficients of simple and multiple charges. Therefore when an organization produces a great variety of products and services, using various intermediate activities this determines the non-existence of homogeneity, which may result in the use of different charging basis per cost centres.

In heterogeneous organizations with multiple activities, the use of a single basis for charging is an accounting simplification. The key to the various links is the “Charging basis”, which appears as a systematic method of relationship between a said pool of costs and the objective of costing. The choice of charging basis is done considering:

- a) The factors that are related to the intermediate and final activities or products:
- b) The administrative costs required to prepare the charges;
- c) the differences of the results achieved.

In summary, we point out the principle basis *for charging*, the following: direct costs of materials; Activity hours; cost of activity hours; hours-machine.

We should say further that the cost accounting scheme developed in the OAP – Education is very general, extremely flexible, needing therefore subsequent studies to permit its proper adaptation to the institutions. This leaves a great free margin of action, whereas the comparison of the economic, efficiency and efficacy indicators, can be the object of much controversy, especially in the more traditional universities with very rigid structures

⁶ Grouping of costs.

3. Final summaries

The OAP-E recommends the creation of accounts and sub-accounts that allow the registration of the costs of each internal activity or service. For that effect, it suggests class 9 accounts.

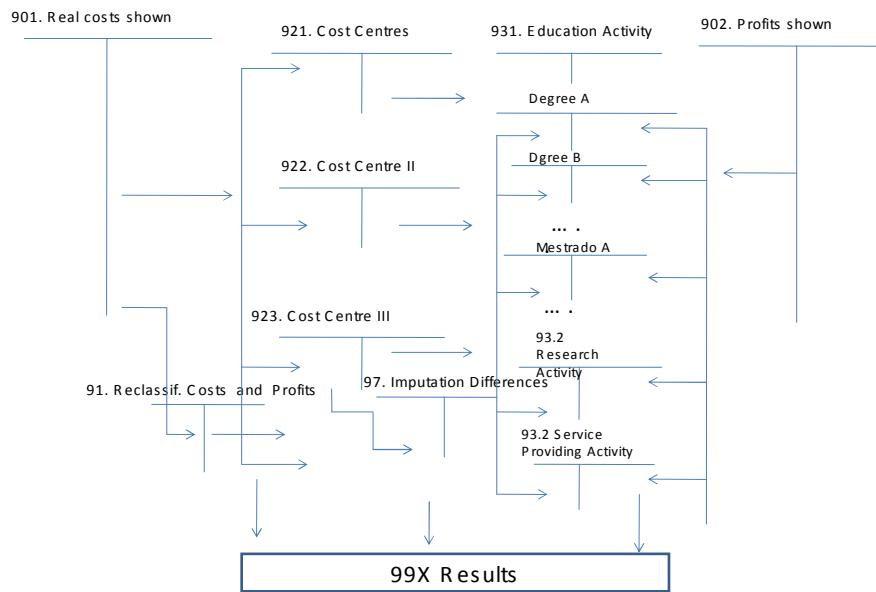
This type of account is for recording the costs and the profits, separated per functions, to determine the cost results

The plan implies the link between this (so-called internal accounting) and the external accounting (classes 1 to 8) is done through 'recorded accounts'.

Proposes structuring in 6 big groups:

- 90 'Costs and Profits Recorded';
- 91 'Reclassification of Costs e Profits';
- 92 'Cost Centres';
- 93 'Activities';
- 94 'Differences and Imputation' and
- 99 'Results'.
- The linking accounts, 90 'Accounts Recorded', ensure the double-entry method in Cost Accounting; and
- They are the reflex of the costs and profits recorded in accrual accounting.

Fig II – Linking Diagram



Source: Marques e Rodrigues (2006:38)

Class 9 makes it possible to prepare and show the costs by functions, a compulsory statement, which results from the filling 27 maps in of grouped in 7 sets, such as:

- Model A1 – Cost of internal support activities or services;
- Model A2 – Costs of the education activity;
- Model A3 – Costs of the research activity;
- Model A4 – Costs of user support activities;
- Model A5 – Costs of activities for services provided;
- Model A6 – Costs of other activities;
- Model A7 – Costs of production for the entity.

4. Indicators of efficiency and efficacy and economy

Indicators of economy show the relationship between the actual *inputs*, that is, the costs that in reality these resources achieved (real costs) and the available resources or forecast in the public action (forecast costs). These refer to cost, establishing opportune comparisons with the forecast costs.

Economy identifies with the degree of responsibility in the acquisition of productive factors regarding the price, the quantity, quality and time span of the same.

Efficiency Indicators show the existing relationship between the products obtained or the services provided and the *inputs* used (real cost) for the production or provision of a service, that is, the existing relationship between the resources used and produced in the fulfilment of their action.

Indicators of Efficacy is aimed at measuring the actions and the specific results in relation to the target population of the said action.

In general, efficacy is defined as an existing relationship with other *outputs*, the results and the effects derived from the action of an entity, and the objectives of the same, in a way which is possible to measure the degree the objectives were reached.

5. Conclusions

An introduction to Cost Accounting as a compulsory system, implemented, based on a double-entry system and in dualism, constituting without doubt, one of the greatest innovations of OAP-E.

In the case of Public Higher Education Institutions, the adoption of a costing system is especially important.

The Cost Accounting proves, to be, a powerful management tool permitting the understanding of the relationship between the costs and the benefits; obtaining results that were otherwise unavailable.

On the level of the system of higher education in general, the development of a system of this kind allows for the comparison of the results, both between the various institutions, as well as in different periods.

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- **Legislação**
- DL nº 166/98, de 25 de Junho
- DL n.º 79/03, de 23 de Abril – Altera o DL n.º 44/99, de 12 de Fevereiro.
- DL n.º 44/99, de 12 de Fevereiro - Torna obrigatória a adopção do Sistema de Inventário Permanente e a elaboração da Demonstração dos Resultados por Funções.

- Directriz Contabilística n.º 20 – Demonstração dos Resultados por Funções, Comissão de Normalização Contabilística.