



## CHARACTERISTICS OF MANAGEMENT ACCOUNTING SYSTEMS IN PORTUGUESE INDUSTRY

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### Abstract

This article summarises the results of a survey on the accounting systems implemented in large Portuguese manufacturing firms. The literature review was used to define the hypotheses of the study and the analysis of data characterises the state of art of management accounting systems of the surveyed firms. The data was gathered by postal questionnaire.

The study shows a preference for simple criteria in costing inventory-flow and in cost allocation methods for determining the cost of the product. The major conclusion is that simplicity is preferred over technical and statistical rigor.

**Key words:** Management Accounting, Information Systems, Decision Making, Empirical Study.

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### 1. INTRODUCTION

The aim of management accounting is said to serve the planning, coordinating and evaluating activities, especially in complex organisations. According to Horngren et al. (1962) the basic function of management accounting is to measure and report financial information, as well as to support management decision-making. It should also be used and motivate the users to achieve the organisation's goals (Horngren, 1995). As a result, it is important to have a thorough knowledge of the management accounting practices (Bruns and Kaplan, 1987). To our knowledge there is no published study on the state-of-art of management accounting in the

manufacturing industry in Portugal. Therefore, the primary concern of this study is to address this issue, taking into account that it should be studied in the environment where it was developed and where it functions (Bruns and Kaplan, 1987).

Existing literature (Innes and Mitchell, 1992; Zairi, 1992; Atkinson et al., 1995) documents an increased interest in new accounting methods and techniques, with many success stories. On the other hand, the evolutionary history of management accounting shows that its practices evolve in a clear association with the environmental changes and the society needs (Clarke, 2004). Some authors relate the use of accounting techniques with the strategic priorities of the firm (Chenhall and Langfield-Smith, 1998). Nonetheless, the level of management accountancy practice and its effects on Portuguese companies remains unknown.

Studies on management accounting practices in Portugal are rare (Ferreira, 2002; Alves, 2003), and the few that are available, tend to concentrate on case studies and specific tools such as the ABC or the Balanced Scorecard (Sousa, 2001; Sousa and Rodrigues, 2002; Silva, 2003 and Quesado, 2005). However, evidence from other countries points to a large gap between accounting theory and practice. As a consequence, management accounting today is faced with several incoherencies. Many of the theoretical issues and techniques discussed and disseminated by researchers aren't implemented in practice by firms (Bromwich, 1988). An example of this gap is the allocation of overheads (Brierley et al., 2001; Hughes and Gjerde, 2003). In spite of the criticisms, firms continue to use the traditional allocation systems.

Furthermore, whilst the theoretical claims that traditional costing methods are inappropriate (Drury, 1992), full-costing is often mentioned to be the most frequently used costing method (Drury and Dugdale, 1992; Adler et al., 2000), as the preference tend to favour easily applied methods and techniques (Drury, 1998).

At the same time, developments in information technology made accounting information accessible to all functional areas, requiring the user to understand and analyse the accounting information in the context of all available information sources (Scapens, 1988).

The literature review shows that accounting information is a basic element of a companies' information system and, as such, it is a component of daily management practices (Scapens, 1988). Management accounting as a sub-system of management control is seen as an important tool for decision-making, planning, performance evaluation and control (Anthony and Dearden, 1975; Johansson and Samuelson, 1998; Barbosa et al., 2002). Management control also highlights the importance of budgeting systems. Budgets are fundamental for planning and control, providing means to express an organisation's plans and a base for controlling its activities (Atkinson et al., 1995).

The implications of management control for decision-making have become ever more apparent in recent years, above all in terms of monitoring and analysing

monthly results, which is related to the size and complexity of the organisation (Bollecker, 1999; Clarke, 2004). In practical terms, this is illustrated more clearly through the pivotal role of the involvement of the controller in the process of management. While the traditional role of the controller has been defined around the production and supervision of accounting (Maher et al., 1978, Zimmerman, 1995) and in the preparation and interpretation of financial information to managers, investors and creditors (Atkinson et al., 1995), in Europe, this role has evolved with higher involvement in the process of decision, as more as a consultant or advisor to the management team (Jordan et al., 2005).

## 2. DEVELOPMENT OF THE STUDY

The aim of this study is to understand the state-of-art of management accounting in large Portuguese manufacturing companies.

The option to concentrate the research on the manufacturing industry is as follow:

- The relevance of the manufacturing industry for the Portuguese economy. In 2000 the industrial sector employed 35% of the active population and the manufacturing industry 22% (MF-DGEP, 2001). It is worth noting that firms with more than 100 workers, whilst they are lower in number, employ around 40% of workers in the manufacturing industry (MF – DGEP, 2001 – INE, 1998).
- The manufacturing industry contributes to the national economy in various ways. The industrial sector provides employment for over 900,000 people and is responsible for a significant proportion of the corporate revenue in Portugal (MF-DGEP, 2001). It is also the preferred sector for foreign investment with over 50% of direct foreign investment in 2000.
- The development of management accounting in a firm is generally associated with its size and complexity. The larger the company, the more complex its structure is, and the more developed its administrative systems will be (Mintzberg, 1979; Mendoza and Bescos, 1998).

Large companies tend to give greater importance to their information and control systems, as their internal problems in terms of control and coordination demand for more sophisticated information systems. Additionally, these firms tend to be involved in a diversity of markets and activities, requiring also more detailed and sophisticated information and control systems (Mohan, 1991).

Large companies also tend to have decision-making processes more structured (Luoma, 1967) and to attribute greater importance to their information and control

processes than smaller firms, as they have greater coordination and control problems (Mintzberg, 1979). Consequently, more sophisticated accounting systems are used, and more significance is given to budgeting management systems (Khandwalla, 1977; Merchant, 1981).

More sophisticated accounting information systems imply considerable resources invested, so it is likely to find large companies with those systems (Johnson and Kaplan, 1987; Elmore, 1990; Clarke, 1997). Thus, the literature suggests that large companies are characterised by the existence of management accounting and control systems.

However, the results of various studies (Cornick et al., 1988; Drury and Dugdale, 1992; Drury, 1998; Adler et al., 2000) show that more easily methods are preferred over the most sophisticated with full-costing being predominant for determining the cost of products and the average cost for costing inventory-flow.

Regarding the indirect costs, most studies evidence direct-labour hours and, sometimes, machine-hours as the most frequent bases for overheads allocation to products (Bromwich and Bhimani, 1994). In this perspective, although direct labour has lost relevance in the cost structure, it still is the predominant base for allocating manufacturing overheads.

### 3. HYPOTHESES

Based on the literature review, the hypotheses are formulated as follow:

- H<sub>1</sub>: *Management-accounting and budget management systems exist in the majority of large Portuguese manufacturing firms.*
- H<sub>2</sub>: *Most large Portuguese manufacturing firms use full-costing systems to calculate the cost of product and the average cost for costing inventory-flow.*
- H<sub>3</sub>: *Direct labour cost is the most frequent allocation basis used by large Portuguese manufacturing firms for allocating manufacturing overheads.*

### 4. METHODOLOGY

The target population for this study are directors of Accounting & Finance, Production and Sales & Marketing. Companies were selected from two sources:

- A list of firms in the Statistical Department of Labour, Employment and Professional Training Statistics of the Portuguese Ministry of Labour and

Solidarity - DETEFP (Departamento de Estatística do Trabalho, Emprego e Formação Profissional do Ministério do Trabalho e da Solidariedade);

- A list of the largest Portuguese firms published in the weekly newspaper, Expresso.

Accounting & Finance managers were asked to evaluate their accounting systems and the information supplied by the accounting department to other departments. Production managers and Sales & Marketing managers were asked for their views on the contribution of accounting information to their decision-making processes. As in other studies (Simon et al., 1954; McKinnon and Bruns, 1992; Pierce and O'Dea, 2003), the simultaneous collection of data from three different sources is to avoid the limitations and bias that may arise from analysing a single point of view (Clarke, 1997; Pierce and O'Dea, 1998).

To our knowledge, there are no published studies on the characteristics of management accounting systems of large manufacturing Portuguese firms. As a consequence, we collected primary data through a questionnaire administered by post to search on the practices of management accounting in a sample. Despite its limitations, such as the wording bias, the questionnaire has some significant advantages. First of all it is simple to administer saving time and costs. Distortions resulting from the direct intervention of the researcher are avoided. Data is easily analysed and interpreted and respondents remain anonymous, thereby encouraging greater veracity in their answers. However, one major limitation is the typical low response rate. In order to minimise this risk, several procedures were implemented:

- The delivery process of the questionnaire was carefully prepared – prior to the delivery of the questionnaire all companies in the sample were initially contacted by post or email, and informed about the objectives of the study;
- All questionnaires were sent including a covering letter explaining the objectives of the study;
- The telephone number and email address of the researcher was provided for required enquiries or clarifications;
- Two calls for participation were made by post;

The data collected was analysed through descriptive statistics with the SPSS (Statistics Package for Social Sciences).

## 5. RESULTS

### 5.1. Sample characteristics

From the two previously mentioned lists 365 firms satisfied the following criteria:

- belong to the manufacturing industry;
- employ more than 100 workers;
- are among the 1,000 largest Portuguese companies.

The questionnaires' response rate varied from 19% at the Finance & Accounting Departments, to 12% to the Sales & Marketing Departments and 13% to Production Departments.

The average age of the companies in the sample are more than 30 years and 61% use job-order process production systems (Table 1).

TABLE 1

Sample Characteristics

<i>Criteria for characterising firms</i>	Questionnaires sent by financial managers	Questionnaires sent by others managers (non-financial areas)
<i>Location (origin of returned questionnaires)</i>	10 districts of continental Portugal. Lisbon and Aveiro were the most highly represented districts, accounting for 30% and 23% respectively of the completed questionnaires received.	13 districts of Portugal. Lisbon and Aveiro were the most highly represented districts, accounting for 34% and 17% respectively of the completed questionnaires received.
	Average age is 33 years.	Average age is 39 years.
<i>Characteristics of production activity (2 variables were considered, the destination market for the final product and the production process).</i>	Regarding destination market for the final product, 90% of firms work for the external market, although many (40%) intend to export less than 25% of their production. In 6 cases production is intended entirely for the internal market. The most common production process is <i>order-based production</i> (61%), followed by <i>continuous production</i> , and lastly, <i>batch production</i> .	The majority of firms work for the external market. However, only 3 work exclusively to export and a significant proportion (30%) intend to export less than a quarter of their production. The most common production process is <i>order-based production</i> (about 61%), followed by <i>continuous production</i> , and lastly, <i>batch production</i> . No company reported any other type of production process.

### 5.2. Accounting system characteristics

The first set of questions to Finance & Accounting managers was to characterise the cost structure of the surveyed firms (Table 2).

The second set of questions aims to identify the costing systems used to determine the cost of products and the inventory-flow.

TABLE 2

Cost Structure by Sector (in %)

SECTOR		Direct labour***	Consumption of materials*	Manufacturing overheads**	General administrative costs
15 – Food and beverage industry	Average	7	67	11	16
	Obs.	7	7	7	7
17 – Textile production	Average	23	40	24	13
	Obs.	7	7	7	7
18 – Clothing industry	Average	15	62	19	6
	Obs.	2	2	2	2
20 – Wood and cork industry	Average	17	64	13	6
	Obs.	3	3	3	3
21 – Production of paper products	Average	9	61	13	15
	Obs.	4	4	4	4
22 – Editing, printing and reprographics	Average	17	43	20	6
	Obs.	3	3	3	3
24 – Production of chemical products	Average	10	64	8	18
	Obs.	5	5	5	5
25 – Production of rubber and plastics	Average	20	50	18	13
	Obs.	2	2	2	2
26 – Other non-metallic minerals	Average	22	33	29	16
	Obs.	5	5	5	5
28 – Industrial metals	Average	27	49	14	9
	Obs.	5	5	5	5
29 – Machine tools and accessories	Average	15	62	11	13
	Obs.	5	5	5	5
31 – Manufacture of electrical appliances	Average	7	62	24	8
	Obs.	2	2	2	2
34 – Automobile manufacture	Average	9	63	21	7
	Obs.	4	4	4	4
35 – Other transport materials	Average	40	40	20	0
	Obs.	1	1	1	1
36 – Production of furniture	Average	21	55	12	13
	Obs.	2	2	2	2
Total	Average	16	54	17	13
	Obs.	57	57	57	57

Results of Kruskal-Wallis and ANOVA tests

\* = significance level 0.1

\*\* = significance level 0.05

\*\*\* = significance level 0.01

The weight of each item in the total cost is an important factor for cost control (Sandretto, 1985). Direct labour expenses represent 16% of the total costs in the sample, cost of materials 54%, manufacturing overheads 17%, and general administrative expenses 13%. This cost structure is similar to other recent studies (Hendricks, 1988; Shim and Larkin, 1994; Clarke, 1997; Drury, 1998, 1999), highlighting the need for greater control in the cost of materials and the indirect costs both manufacturing and administrative.

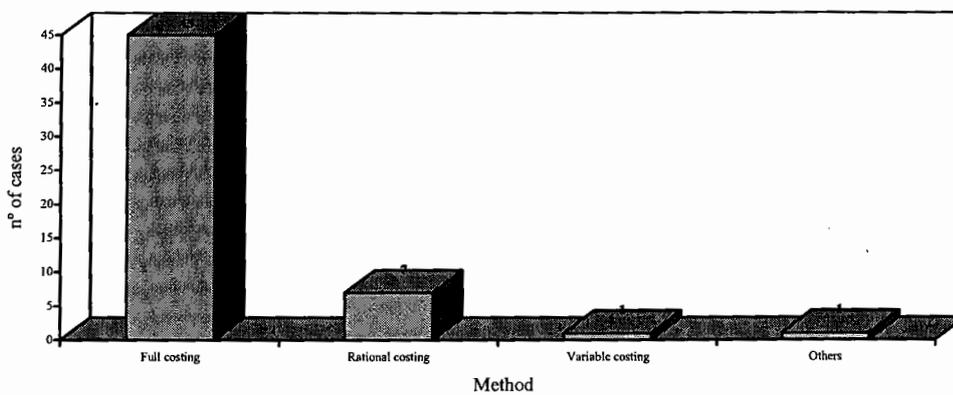
Analysis by sector shows that direct labour expenses vary from 7% to 40% of total costs. Cost of materials varies from 33% to 67%, manufacturing overheads from 8% to 29% and general administrative expenses from 0% to 18%. The Kruskal-Wallis test shows significant differences between sectors in direct labour expenses, cost of materials and manufacturing overheads, although the small sample size of some sectors may affect these results. As these variables are numeric

(percentage of total cost), the ANOVA test was applied, and the same conclusion remains (Table 2).

It is known that allocation of indirect costs is a major difficulty in costing finished products (Clarke, 1994). The two methods - full-costing and variable-costing - treat fixed manufacturing overheads differently. The former considers that manufacturing overheads are inventoriable while for variable costing it is a cost of the period. Thus, although variable-costing is very popular in accounting literature, it is not frequently applied in practice. The full-costing is clearly the predominant approach in the sample (Figure 1).

FIGURE 1.

Costing Methods



This is not surprising as it conforms to previous studies (Cooper and Kaplan, 1987; Cornick et al., 1988; Drury, 1998; Hendricks, 1988; Adler et al., 2000). As a matter of curiosity one firm mention the use of a costing-system they call the factory price.

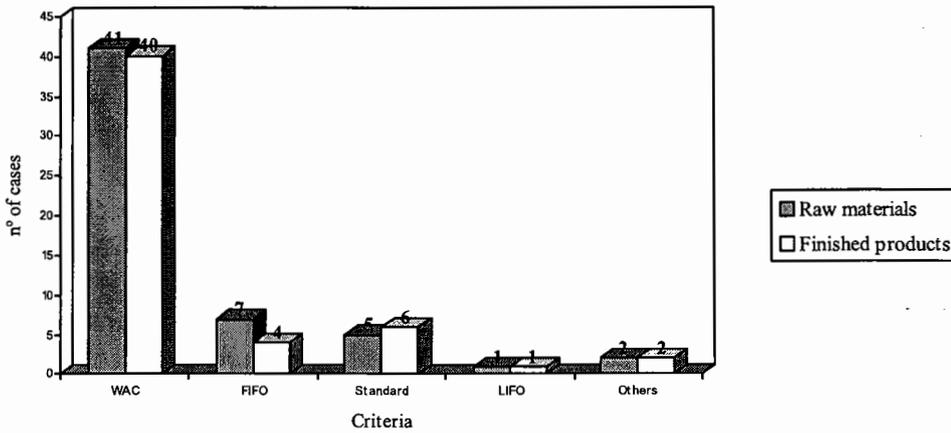
Regarding the costing of inventory-flow, there is a clear preference in the sample for the average cost method (Figure 2).

Perhaps it can be explained by historical reasons and for the simplicity of its use, which is coherent with the preference of companies to use simple methods (Drury, 1998).

Given the importance of the allocation costs in determining the cost of products, product profitability and pricing decisions, the study searched for the practice of allocation bases for manufacturing overheads (Shim and Larkin, 1994). Machine-hours, volume of production and direct-labour hours were the most utilised allocation bases. This is in line with a previous study in Ireland (Clarke, 1997). Moreover, the literature on this subject highlight the importance of allocations based on

FIGURE 2

Methods for Costing Inventory-Flow



direct-labour – direct-labour costs and direct-labour hours - to the detriment of other alternatives. Direct-labour hours are the second most used basis of allocation base and direct-labour expenses the fifth (Table 3).

TABLE 3

Manufacturing Overheads Allocation Bases

ALLOCATION BASES (Scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always)	Average	Proportion ranked 1/2	Proportion ranked 4/5	Percentage of users n=56*
- Machine hours	3.32	30%	50%	82%
- Direct labour-hours	3.18	34%	47%	75%
- Volume of production	3.18	30%	47%	73%
- Cost of materials	3.00	45%	48%	63%
- Direct labour expenses	2.70	48%	36%	63%
- Number of workers	2.39	55%	25%	54%
- Occupied area	2.05	66%	14%	48%

\*In companies with implemented analytic accounting systems

In a comparative study of Scotland and Japan Yoshikawa et al (1989) found that direct-labour hours was used as a basis of cost allocation in 34% of Scottish firms and 50% of Japanese and Hendricks (1988) reported it in 35% of the cases. Allocation bases used in traditional management accounting, such as direct-labour, are usually criticised for their lack of direct relationship with the resources consumed by each product (Kaplan, 1985; Johnson and Kaplan, 1987; Cooper and Kaplan,

1989; Brierley et al., 2001; Drury and Tayles, 2005). Johnson and Kaplan (1987:22) mention that “costs get distributed to products by simplistic measures, usually direct-labour based, that do not represent the demands made by each product on the firm’s resources”. In our sample direct-labour expenses represent 16% of total production costs (Table 2) while direct-labour hours is one of the three most frequently used allocation basis (Table 3) and the number of workers and occupied area the least used bases.

Analysis by sector reveals a wide variation on the use of allocation bases. Direct-labour hours is one of the most frequently bases in the textile and clothing industry, production of metal products, electrical machinery and appliances, and in the manufacture of other transport materials. Direct labour expense is one of the most popular methods in the rubber and plastics industry. In contrast, machine-hours is the basis most used in wood and cork, paper products, editorial, manufacture of electrical appliances, other transport materials and furniture. Cost of raw materials is the most used in the food industry, clothing, and manufacture of machinery. Finally, volume of production is one of the more frequently used in editorial, chemical production, non-metallic minerals and automotive industry.

The possible relationship between allocation bases associated with direct-labour and its importance in the cost structure is tested by the Spearman’s rank test. Although there is no consensus on the level of the coefficient to evidence a strong association, the correlation of 28% is statistically significant at a 5% level (Table 4).

TABLE 4

**Correlation between the Percentage of Costs from Direct Labour -Hours and the Use of “Direct Labour -Hours” as an Allocation Base**

			% costs from direct labour-hours	Frequency of use of direct labour-hours as base
Spearman’s rank	% costs from direct labour-hours	Correlation Coefficient Sig. (2-tailed) N	1.000 . 57	.281* .036 56
	Frequency of use of direct labour-hours	Correlation Coefficient Sig. (2-tailed) N	.281* .036 56	1.000 . 56

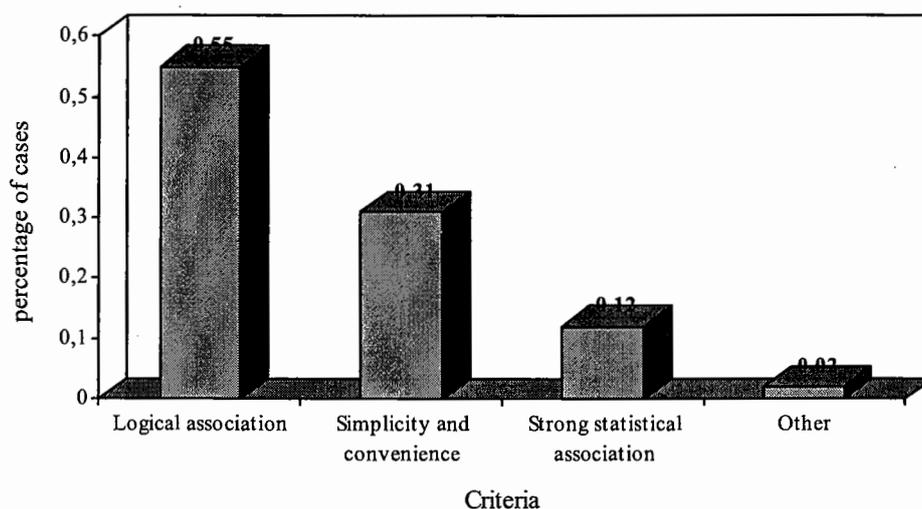
\* Correlation is significant at the .05 level (2-tailed).

The choice of these allocation bases are justified by their logical association with the output, simplicity and convenience while very few firms use statistical methods to choose the allocation bases (Figure 3).

One of the aims of management accounting is the production of information for helping the development of the budgeting process (Horngren, 2004). The results

FIGURE 3

Criteria for Selecting Allocation Bases



of the survey show that 89.4% of the companies use budgets and that 59% use standard costing systems. It is worth noting that questions related to the use of standard costing were directed only to directors of finance & accounting whereas questions relating to budgets were asked to the three types of functional directors. The results show that budgets are used for other purposes than providing information for defining standard costs. The evidence is not as strong as in other studies but allow a similar conclusion (Cornick et al., 1988; Lyall et al., 1990; Graham et al., 1992; Clarke, 1997).

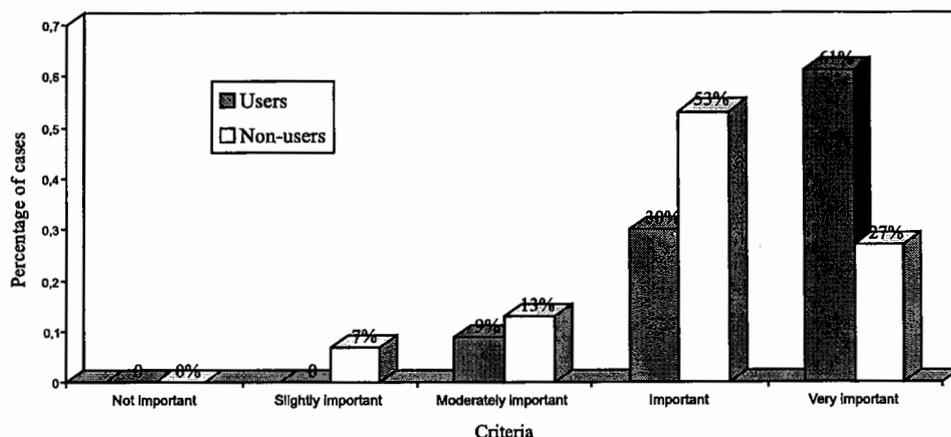
One pattern found in the sample is the existence of management accounting systems as a pre-condition for companies to use budgeting systems. Only one company with management accounting was not using budgeting systems. This was treated as an isolated case and not subjected to any statistical analysis.

Despite the criticism to standard costing systems for providing poor information for management purposes (Drury, 1999; Johnson and Kaplan, 1987) some argue it only needs to be appropriately interpreted (Lucas, 1997) and we find it is frequently used among the firms in the sample. The standards are frequently applied to three items of production cost: the cost of materials (72%), the direct-labour expenses (78%) and manufacturing overheads (64%).

The importance attributed to budgets was analysed in the perspective of the directors that use them in their activity and those that do not. The analysis shows an apparently consensus regarding the perception of their importance (Figure 4). Only one of the respondents said they were not important, and only 9% of the users and 13% of non-users considered them just moderately important.

FIGURE 4

Importance of Budgets



However, the “very important” classification was more addressed by users (61%) than non-users (53%) with the Mann-Whitney test showing a significant statistical difference between the opinions of users and non-users (Table 5)

As a summary budgeting systems are viewed in general as important and very important by managers, and especially by those that work directly with them.

5.3. Discussion of the hypotheses

The first hypothesis is confirmed by the fact that 90% of the firms in the sample use management accounting systems and approximately the same number of companies (89.4%) use budgeting systems. These conclusions are similar to studies for other countries (Lyll et al., 1990; Graham et al., 1992; Clarke, 1997).

In general, managers attribute importance to budgets especially if they use them in their practice. It is also confirmed that budgetary control and standard-costing systems are used by a large majority of firms and, as in other studies (Drury, 1998), there is no evidence to suggest that they have been losing popularity.

The second hypothesis is also confirmed as 83% of the companies in the sample use full-costing systems and 70% use the average cost for costing the inventory-flow in both inventories: finished products and raw materials. Other studies reach similar conclusions (Cornick et al., 1988; Drury and Dugdale, 1992; Adler et al., 2000). In some situations it is likely that other costing-systems could be more appropriate than full-costing but accountants need to comply with accounting standards (Jordan et al., 2005) and non-financial managers may not feel comfortable with more sophisticated costing systems (Luoma, 1967).

TABLE 5

Importance Attributed to Budgets Sector

SECTOR		Importance of budgets for users	Importance of budgets for non-users	Average importance of budgets
15 – Food and beverage industries	Average Obs.	4.50 16	3.50 2	4.39 18
17 – Textile production	Average Obs.	4.31 16	2.00 2	4.06 18
18 – Clothing industry	Average Obs.	4.22 9	4.00 1	4.20 10
19 – Tanning and finishing of leather	Average Obs.	5.00 1		5.00 1
20 – Wood and cork industry	Average Obs.	4.75 4	5.00 1	4.80 5
21 – Production of paper products	Average Obs.	4.40 10		4.40 10
22 – Editing, printing and reprographics	Average Obs.	4.60 5	4.00 1	4.50 6
24 – Manufacture of chemical products	Average Obs.	4.69 13	4.00 1	4.64 14
25 – Production of rubber and plastics	Average Obs.	4.67 3		4.67 3
26 – Other non-metallic minerals	Average Obs.	4.44 9		4.44 9
28 – Industrial metals	Average Obs.	4.33 6	5.00 2	4.50 8
29 – Machine tools and accessories	Average Obs.	4.50 10	4.00 2	4.42 12
31 – Manufacture of electrical appliances	Average Obs.	4.80 5	4.00 1	4.67 6
32 – Manufacture of radio and TV equipment and appliances	Average Obs.	4.83 6		4.83 6
34 – Automobile manufacture	Average Obs.	4.83 6		4.83 6
35 – Other transport materials	Average Obs.	4.75 4	4.50 2	4.67 6
36 – Furniture production	Average Obs.	4.33 3		4.33 3
<b>Total***</b>	Average Obs.	4.52 126	3.93 15	4.46 141

The cost structure in average is represented by 54% of cost of materials, 16% of direct labour expenses, 17% of manufacturing overheads and 13% of general administrative expenses. A recent review of the literature on cost structure in European firms (Brierley et al., 2001) shows a tendency for cost of materials to increase their importance and direct labour expenses to decrease in the total weight of costs.

In spite of the theoretical criticism to traditional accounting systems and volume based allocation rates, machine-hours, quantities produced and direct-labour hours are used more often than other measures. These measures are also the most frequently used in Ireland (Clarke, 1997). The allocation of manufacturing

overheads is a difficult area for management accounting (Bromwich and Bhimani, 1994) and the direct-labour hours a severely criticised basis of allocation (Kaplan, 1985; Johnson and Kaplan, 1987; Cooper and Kaplan, 1989). Even though direct labour expenses accounts for only 16% of production costs, direct-labour hours and direct-labour expenses are used by the majority of the companies in the sample with 47% and 36% frequency respectively.

The use of direct labour basis varies from sector to sector with direct-labour hours being more used by textile and clothing industry, production of metal products, electrical machinery and appliances, and other transport materials and direct-labour expenses in rubber and plastics sector.

The motives for choosing one or another basis are logical association with outputs, simplicity or convenience while the use of statistical methods is rare. These findings support Bromwich and Bhimani (1994) that little effort is made to ensure that allocation of costs reflect the true cost of resources consumed by cost objects.

Machine-hour was found to be the most commonly used basis of allocation for manufacturing overheads. As a consequence, the third hypothesis is not confirmed, but direct-labour continues to be largely used by a majority of companies.

## 6. CONCLUSIONS

In spite of some limitations such as the lack of representativeness of some sectors in the sample and the level of response rates, some conclusions can be drawn.

It is reasonable to expect that the companies in the sample are the most innovative and proactive in the use of more advanced management accounting techniques and systems given their size and importance in the country. However, this research shows that their management accounting is based on the most traditional methods. The full-cost is the most popular criteria for costing the products and the average cost is the most used for costing inventory-flow.

However, management accounting system and the budgeting system is considered important and a main source of managerial information in the large Portuguese manufacturing companies. The majority of the companies in the sample do use management accounting and budgeting systems. Budgetary control and standard costs are frequently utilised and although they may be viewed as 'classic' tools, there is no evidence that they are losing popularity.

An additional conclusion is that, contrasting expectations raised by the low proportion of direct labour in the total cost of production, the companies in the sample often use direct-labour hours or expenses as a base for allocating overhead costs, suggesting that direct-labour continues to be highly utilised as an allocation basis in Portugal.

Furthermore, the study shows that few companies use rigorous statistical methods to test whether there is a relationship between the allocation base and the indirect costs to be allocated. This is a weakness that might generate a distortion in the cost of products and, consequently, companies should improve in the future.

To summarise, a more rigorous and technical approach is needed in the choices of management accounting by manufacturing Portuguese firms. The quality of information available for managers is crucial to stay competitive in this global and highly competitive market.

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