

Cost and Management Accounting Practices: A Survey of Manufacturing Companies

Ali UYAR *

Abstract

The purpose of this study is to explore cost and management accounting practices utilized by manufacturing companies operating in Istanbul, Turkey. The sample of the study consists of 61 companies, containing both small and medium-sized enterprises, and large companies. The data collection methodology of the study is questionnaire survey. The content of the questionnaire survey is based on several previous studies. The major findings of the study are as follows: the most widely used product costing method is job costing; the complexity in production poses as the highest ranking difficulty in product costing; the most widely used three overhead allocation bases are prime costs, units produced, and direct labor cost; pricing decisions is the most important area where costing information is used; overall mean of the ratio of overhead to total cost is 34.48 percent for all industries; and the most important three management accounting practices are budgeting, planning and control, and cost-volume-profit analysis. Furthermore, decreasing profitability, increasing costs and competition, and economic crises are the factors, which increase the perceived importance of cost accounting. The findings indicate that companies perceive traditional management accounting tools still important. However, new management accounting practices such as strategic planning, and transfer pricing are perceived less important than traditional ones. Therefore, companies need to improve themselves in this aspect.

Keywords: Costing methods, Cost, Management, Accounting, Practices, Manufacturing industry, Small and medium-sized enterprises, Turkey

JEL Classification Codes: M41

* Assistant Professor, PhD, Faculty of Economics and Administrative Sciences, Fatih University, Istanbul, Turkey. e-mail: aliuyar@hotmail.com

1. Introduction

The importance of cost and management accounting practices has increased more than ever. The reasons for this are the domestic and global competition getting severer by globalization, decreasing profit margins, increasing input prices due the tightening energy sources, economic crises etc. Therefore, companies operating in developing countries have also begun to implement cost and management accounting practices which were first adopted by companies operating in developed countries. Parallel to these developments, research studies which have been conducted initially in developed countries are followed by the studies conducted in developing countries¹. However, Lin and Yu (2002) states that the application of management accounting in less developed countries remains unsatisfactory and studies on this area are rare in the literature. They add saying “this may be due to the relatively under-developed status of economic and business administration in less developed countries”.

Based on the economic developments, Turkish accounting profession has been in progress since the establishment of Turkish Republic (Aysan, 2006). As a result of industrialization, the need for accounting profession emerged (Aysan, 2006). For this reason, the business managers and management accountants needed in private companies were mostly transferred from State Economic Enterprises (Aysan, 2006). In the last decades, cost and management accounting has gained importance as private sector developed in almost all areas. Large industrial enterprises set up cost and management accounting segments in accounting departments. Furthermore, curricula of faculties of economics and administrative sciences included cost accounting and/or management accounting along with financial accounting.

The purpose of this study is to explore cost and management accounting practices utilized by manufacturing companies operating in Istanbul, Turkey. Although there are some published papers on cost and management accounting practices in Turkish national scientific journals of accounting, and economics and administrative sciences, there are not at all publications in international journals. This paper aims to fill in this gap. The findings are expected to contribute to the existing literature about the subject, especially in developing markets.

The remainder of the paper is organized as follows. Section two provides literature review. Section three explains the objectives of this study. Section four provides scope and methodology of the study. Section five presents analysis and interpretation. Summary and conclusion takes place in sixth section. Finally, scope for further research is presented in the last section.

¹ Some authors have used terms “less developed countries”, “newly industrialized countries”, “emerging nations”, “emerging markets” and “transitional economies” interchangeably for developing countries (Budhwar, P.S. and Debrah, Y.A., (2003), *Human Resource Management in Developing Countries*, Routledge, p.4.)

2. Literature review

Parallel to increasing importance of management accounting practices in achieving organizational goals, studies conducted in this field have increased in recent years in emerging markets (Wu et al. 2007; O'Connor et al., 2004; Joshi, 2001; Szychta, 2002) following the studies conducted in developed markets (Wijewardena and Zoysa, 1999; Chenhall and Langfield-Smith, 1998; Guilding et al., 1998; Shields, 1998).

In a study conducted on 40 industrial companies in Egypt, Van Triest and Elshahat (2007) concluded that cost accounting information in Egypt is available at a basic level, and used more for external (pricing) purposes than for internal (performance) purposes. They also found that the use of advanced cost accounting techniques such as activity-based costing system seem absent. The comparative study conducted by Joshi (2001) revealed that Indian manufacturing companies rely heavily on the traditional management accounting techniques such as variable costing, budget for day-to-day operations, capital budgeting tools, return on investment based performance evaluation, and performance evaluation. However, the adoption rates of recently developed practices such as shareholders' value analysis, performance evaluation (qualitative measures), product life cycle costing, back flush costing, activity based budgeting, value chain analysis, benchmarking and balanced scorecard, have been rather low and slow. Meanwhile, some studies have shown that size has a major influence in determining the adoption of newly developed cost and management accounting practices; adoption rates are much higher in larger firms (Joshi, 2001; Chenhall, and Langfield-Smith, 1998).

Parallel to the developments in other countries, implementation of cost and management accounting practices are gaining momentum in Turkey. Number of books and journal articles published about the subject is increasing everyday parallel to these developments as well. There have been many published cost and management accounting books since 1950s. Following works can be cited among them: Akdoğan (2009), Altug (1982, 1985), Bursal (1968, 1990), Buyukmirza (1977, 1985, 1987, 2007), Sevgener (1986), Karakaya (2007), Ustun (1984, 1985, 1988), Caldag (2008), Gursoy (1999), Guredin et al. (2007) and Hacirustemoglu (1999). These works cover cost classifications, allocation of costs, product costing methods (i.e. job costing, process costing, activity-based costing), standard costing, budgeting, break-even analysis, and other topics in cost and management accounting.

In addition, researches about cost and management accounting practices conducted by academicians have been published in national academic journals. A study, which was conducted on 51 companies from largest 500 industrial enterprises for 2002 in Turkey, showed that (1) 29.5 percent of the respondents utilize process costing, followed by activity-based costing (25.5 percent) and job costing (23.5 percent), (2) direct materials cost has the largest portion in

manufacturing costs, followed by manufacturing overhead and direct labor costs, (3) the most widely used overhead allocation base is units produced (30 percent), followed by direct labor hours (23 percent), direct machine hours (15 percent), (4) the most frequently used management accounting practices are cost-volume-profit analysis (72.6 percent), strategic profitability analysis (47.1 percent), flexible budgeting (45.1 percent), and customer profitability analysis (45.1 percent) (Ersoy et al., 2006).

Another study conducted in Kayseri, which is one of the leading industrial prominences of Turkey, showed that 22 companies out of 30 (73.3 percent) use process costing, 7 companies (23.3 percent) use job costing, and 1 company (3.3 percent) uses both (Ayyıldız and Durna, 2005). This study showed that the most widely used overhead allocation bases are units produced (43.2 percent), followed by direct labor costs (37.8 percent).

According to the third study conducted recently in another industrial province, Denizli in Turkey, 30 companies out of 86 (35 percent) use process costing, 23 companies (27 percent) use job costing, and 17 companies (20 percent) use both methods (Uyar, 2008). The same study showed that most widely used overhead allocation base is units produced (45 companies out of 86), followed by direct material costs (14 companies out of 86), direct machine hours (7 companies out of 86), and direct labor costs (7 companies out of 86). Another important finding of this study is that the largest share in manufacturing costs belongs to direct materials costs.

3. Objectives of the study

The objective of this study is to explore cost and management accounting practices utilized by manufacturing companies operating in Istanbul, Turkey. The paper is expected to contribute to the existing literature about the subject, especially in developing markets. The paper primarily investigates the following points: product costing methods used by the companies; difficulties faced in product costing; overhead allocation bases used by the companies; usage areas of costing information; the reasons which increase the perceived importance of cost accounting; and management accounting practices usage.

4. Scope and methodology

The data for this study was obtained by means of a survey questionnaire conducted face-to-face with 61 randomly chosen manufacturing companies in Istanbul from various industries. The questionnaire includes multiple choice, open-ended, and Likert scale questions. Some questions of the survey were adopted from various previous studies (Brierly et al., 2001; Van Triest and Elshahat, 2007; Wijewardena and Zoysa, 1999). The data collection period ranges from January 2008 to April 2008.

The questionnaire consists of two parts:

- (1) general information on the business organizations and respondents; and
- (2) cost and management accounting practices.

Table 1 presents information gathered from the first part of the questionnaire.

Table 1. Profile of the respondents

	Frequency	Percent
<i>Industry Classification</i>		
Textile	26	42.6
Paper Products and Publication	9	14.8
Chemicals and Plastics	11	18.0
Food	5	8.2
Miscellaneous	10	16.4
Total	61	100.0
<i>Size (Annual Sales)</i>		
Less than 25.000.000 TL	26	42.6
25.000.000-50.000.000 TL	14	23.0
More than 50.000.000 TL	21	34.4
Total	61	100.0
<i>Ownership Structure</i>		
100 percent Domestic	55	90.2
Domestic-Foreign	6	9.8
Total	61	100.0
<i>Position of Respondent</i>		
Owner	6	9.8
General Manager	3	4.9
Controller	28	45.9
Fiscal Manager	8	13.1
Cost Accountant	6	9.8
Certified Public Accountant	1	1.6
Missing	9	14.8
Total	61	100.0
<i>Number of Employees</i>		
10-49	13	21.3
50-249	39	63.9
250+	9	14.8
Total	61	100.0
<i>Age of Firm</i>		
Less than 10 years	17	27.9
10-20 years	23	37.7
More than 20 years	21	34.4
Total	61	100.0

In the Table 1, industry classification, size of the firms (in terms of annual sales), ownership structure, position of respondent, number of employees, and age of firms are presented. In the industry classification, the highest percentage belongs to textile industry (26 firms), and “miscellaneous” includes firms operating in information technology (1 firm), leather and shoes (2 firms), unknown (1 firm),

construction (1 firm), metal (2 firms), wood products (1 firm), automotive (1 firm), and cotton (1 firm) in industry classification. Most of the respondents (85.2 percent) are small and medium-sized enterprises (according to the number of employees), domestically owned, and more than ten-year old. 65.6 percent of the respondents have annual sales less than or equal to 50.000.000 Turkish Liras (TL). The average export/sales ratio of the respondents is 41.7 percent.

5. Analysis and interpretation

5.1. Product costing methods

In the second part of the questionnaire, the respondents were asked to specify the methods they implement in product costing. According to the answers, the most widely used costing method is job costing (31 firms), followed by activity-based costing (19 firms) and process costing (7 firms). In Table 2, which shows the detailed answers to this question, the most significant points are the usage of job costing widely by textile industry, and the usage of activity-based costing largely by chemicals and plastics industry. Possible reason for the usage of job costing by companies is that they manufacture distinct products.

Table 2. Product costing methods

Industry	Job costing	Process costing	ABC	Not specified	Total
Textile	17	1	4		22
Paper Products and Publication	5	3	1		9
Chemicals and Plastics	2	1	8		11
Food	2	2	1		5
Miscellaneous	5	0	5		10
Not specified				4	4
Total	31	7	19	4	61

5.2. Difficulties faced in product costing

The respondents were also asked to point out the difficulties they encounter in product costing. Out of 42 respondents, 22 companies see the complexity in production as the highest ranking difficulty (52.4 percent), followed by lack of needed information (33.3 percent), and lack of necessary software (14.3 percent).

5.3. Overhead allocation bases used to calculate product costs

Table 3 shows the details of the answers given to the question "Which overhead allocation bases are used in product costing in the business?". The most widely used overhead allocation bases are prime costs (65.6 percent), units produced (19.7 percent), and direct labor cost (19.7 percent). The table presents the findings of some other studies about cost allocation basis. Prime costs which is the most widely used allocation base is not stated in other studies, therefore, a comparison is not made. Comparison of other allocation basis indicates mixed results. Usage percentages of cost allocation basis differ from country to country. However, in the

textbook written by Horngren et al. (2000, p. 101), direct labor hours is the most widely used overhead allocation base among the countries United States, Australia, Ireland, Japan, and United Kingdom.

Table 3. Overhead allocation bases used to calculate product costs

Overhead rates	Frequency	Percent	Ireland ^a	United Kingdom ^b	Norway ^c
Direct labor hour	9	14.8%	39%	19.2%	28%
Direct labor cost (DLC)	12	19.7%	13%	4.7%	37%
Machine hour	7	11.5%	22%	22.5%	29%
Units produced	12	19.7%	28%	19.4%	40%
Direct material cost (DMC)	3	4.9%	7%	8.1%	26%
DMC+ DLC (Prime costs)	40	65.6%	-	-	-
Other	-	-	22%	26.1%	23%

^a Clarke (1997); ^b Brierley, Cowton, and Drury (2001); ^c Bjørnenak (1997)

5.4. Application of costing information

In another part of the survey, which was adopted from Van Triest and Elshahat (2007)'s study, respondents were asked to score the use and application of costing information on a Likert scale of 1 (never use) to 5 (always use). To evaluate the results, one sample t-test was conducted (Table 4). The results showed that pricing decisions are the most important area where costing information is used at an average of 4.16, followed by customer profitability and activity analysis at 4.07. Performance measurement and make or buy decisions with an average of 4.04 and 3.96 respectively are also important areas where costing information is used. However, costing information is not used in product mix decisions, and adding or deleting products as much as other areas.

Table 4. Results of one sample t-test for application of costing information (Test value=3.5)

Purpose	Mean	S.D.	t-test
Pricing decisions	4.16	1.146	4.333*
Customer profitability	4.07	1.034	4.109*
Performance measurement	4.04	1.071	3.714*
Activity analysis	4.07	1.120	3.793*
Make or buy decisions	3.96	0.962	3.576*
Product mix decisions	3.55	1.168	0.289
Adding or deleting products	3.46	1.370	-0.199

* Significant at 0.001 level

Furthermore, the findings are compared with the results of Van Triest and Elshahat (2007). The comparison indicated that two studies yielded parallel results. As seen in Table 5, first three items with the highest mean are the same. In both countries, pricing decisions, customer profitability, and performance measurement are the most prominent areas in which costing information is applied. Among the remaining four application areas, the rank of activity analysis is different. In this

study, activity analysis is the fourth in ranking, but it is the last in ranking in Van Triest and Elshahat (2007)'s study.

Table 5. Comparison of results with the results of Van Triest and Elshahat (2007)

Purpose	Mean	Rank	Mean*	Rank*
Pricing decisions	4.16	1	4.47	1
Customer profitability	4.07	2	4.20	2
Performance measurement	4.04	3	4.13	3
Activity analysis	4.07	4	2.38	7
Make or buy decisions	3.96	5	3.75	4
Product mix decisions	3.55	6	3.30	5
Adding or deleting products	3.46	7	2.93	6

* The results of Van Triest and Elshahat (2007)

5.5. The ratio of overhead cost to total cost

In the questionnaire survey, the ratio of overhead cost to total cost (OC/TC) was also questioned. Overall mean for all industries is 34.48 percent. In addition, One-Way ANOVA analysis (Table 6) was conducted to see the significant differences among industries. The results showed that there is a significant difference among industries (significant at 0.10). Duncan test from Post Hoc tests showed that food industry has the highest OC/TC ratio and is significantly different than paper products and publication, chemicals and plastics, and miscellaneous industries.

Table 6. The ratio of overhead cost to total cost (percent)

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4183.869	4	1045.967	2.080	0.100
Within Groups	22129.724	44	502.948		
Total	26313.593	48			

Duncan ^{a, b}			
Industry	N	Subset for alpha = .05	
		1	2
Chemicals and Plastics	9	25.22	
Paper Products and Publication	8	26.38	
Miscellaneous	6	29.50	
Textile	22	38.07	38.07
Food	4		59.25
Sig.		0.331	0.081

Means for groups in homogeneous subsets are displayed.

^a Uses Harmonic Mean Sample Size = 7.161.

^b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

5.6. The reasons for the increased interest in cost accounting

The respondents were asked to score the reasons for the increased interest in cost accounting on a Likert scale of 1 (completely disagree) to 5 (completely agree). A list of reasons was provided for the respondents so that they evaluated each. The results of one-sample t-test in Table 7 showed that decreasing profitability (4.59) is the primary reason which increases the importance of cost accounting. Other reasons which increase the importance of cost accounting are increasing costs (4.57), increasing domestic and global competition (4.30), and economic crises (4.23). Actually, means of four items above 4.00 indicate that they are all factors considered important for the increased interest in cost accounting. This means profitability of companies is decreasing, possibly due to increasing costs, and increasing domestic and global competition. Economic crises which hit companies from time to time are also important reason for the increased interest in cost accounting.

Table 7. The reasons for the increased interest in cost accounting (Test value=3.5)

	Mean	S.D.	t-test
Decreasing profitability	4.59	.567	14.161*
Increasing costs	4.57	.662	11.929*
Increasing domestic and global competition	4.30	.933	6.448*
Economic crises	4.23	1.018	5.400*

* Significant at 0.001 level

5.7. Perceived importance of management accounting practices

Lastly, the respondents were asked to evaluate the perceived importance of management accounting practices that are utilized in the business organizations on a Likert scale of 1 (unimportant) to 5 (very important). The results of one-sample t-test in Table 8 indicated that the most important management accounting practices in decreasing order are budgeting (4.48), planning and control (4.33), cost-volume-profit analysis (4.3), target costing (4.16), quality cost reporting (4.09), performance measurement and evaluation (4.02), responsibility accounting (4.00), standard costing and variance analysis (3.89), and strategic planning (3.78). Transfer pricing (3.65) is unique practice that is significantly not important based on test value of 3.5. These findings indicate that companies perceive traditional management accounting tools still important. For example, budgeting, planning and control, and cost-volume-profit analysis are perceived the most important of all management accounting practices. Quality costing and target costing as new management accounting practices are utilized by the companies. However, strategic planning, and transfer pricing are perceived the least important ones. This may be due to size of the sample firms. Since the sample consists mostly of small and medium-sized enterprises (according to number of employees), some tools may be too sophisticated to be utilized. Szendi and Shum (1999) states that the larger the firm the more sophisticated the management accounting system and the more likely is

the firm to utilize sophisticated management accounting techniques and practices. Abdel-Kader and Luther (2008) also proved that large firms adopt more sophisticated management accounting techniques and practices than small firms.

Table 8. Perceived importance of management accounting practices (Test value=3.5)

	Mean	S.D.	t-test
Budgeting	4.48	0.755	9.915**
Planning and control	4.33	0.818	7.503**
Cost-volume-profit analysis	4.30	0.872	6.895**
Target costing	4.16	0.848	5.830**
Quality cost reporting	4.09	1.114	3.884**
Performance measurement and evaluation	4.02	1.027	3.741**
Responsibility accounting	4.00	1.056	3.447**
Standard costing and variance analysis	3.89	1.138	2.475*
Strategic planning	3.78	1.013	2.064*
Transfer pricing	3.65	1.297	0.855

** Significant at 0.001 level

* Significant at 0.05 level

6. Summary and Conclusion

The survey revealed the general cost and management accounting practices of Turkish manufacturing companies operating in Istanbul. The findings are expected to contribute to the existing literature about the subject, especially in developing markets.

The major findings of the study are as follows:

- the most widely used costing method is job costing,
- the complexity in production poses as the highest ranking difficulty in product costing,
- the most widely used overhead allocation bases are prime costs, units produced, and direct labor cost,
- pricing decisions is the most important area where costing information is used (parallel to the finding of Van Triest and Elshahat, 2007),
- overall mean of the ratio of overhead to total cost is 34.48 percent for all industries,
- the highest overhead cost/total cost ratio belongs to food industry,
- decreasing profitability, increasing costs and competition, and economic crises are reasons which increase the importance of cost accounting, and
- the most important management accounting practices is budgeting (parallel to the finding of Chenhall and Langfield-Smith, 1998)

The findings indicate that companies perceive traditional management accounting tools still important. However, new management accounting practices such as strategic planning, and transfer pricing are perceived less important than traditional ones. Therefore, they need to improve themselves in this aspect.

7. Scope for further research

Since the sample consists mostly of small and medium-sized enterprises (according to number of employees), they may not reflect the applications of large companies completely. Secondly, the results are confined to the manufacturing companies and should not be generalized to the other sectors. Thirdly, since the survey conducted on companies operating in Istanbul, the findings may not be generalized to the whole country.

For future research, a countrywide and more comprehensive survey could be conducted with the participation of more companies from distinct industries. Moreover, case studies can be conducted to make more in-depth analysis about cost and management accounting practices.

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Ali UYAR *

Abstract

The purpose of this study is to explore cost and management accounting practices utilized by manufacturing companies operating in Istanbul, Turkey. The sample of the study consists of 61 companies, containing both small and medium-sized enterprises, and large companies. The data collection methodology of the study is questionnaire survey. The content of the questionnaire survey is based on several previous studies. The major findings of the study are as follows: the most widely used product costing method is job costing; the complexity in production poses as the highest ranking difficulty in product costing; the most widely used three overhead allocation bases are prime costs, units produced, and direct labor cost; pricing decisions is the most important area where costing information is used; overall mean of the ratio of overhead to total cost is 34.48 percent for all industries; and the most important three management accounting practices are budgeting, planning and control, and cost-volume-profit analysis. Furthermore, decreasing profitability, increasing costs and competition, and economic crises are the factors, which increase the perceived importance of cost accounting. The findings indicate that companies perceive traditional management accounting tools still important. However, new management accounting practices such as strategic planning, and transfer pricing are perceived less important than traditional ones. Therefore, companies need to improve themselves in this aspect.

Keywords: Costing methods, Cost, Management, Accounting, Practices, Manufacturing industry, Small and medium-sized enterprises, Turkey

JEL Classification Codes: M41

* Assistant Professor, PhD, Faculty of Economics and Administrative Sciences, Fatih University, Istanbul, Turkey. e-mail: aliuyar@hotmail.com

1. Introduction

The importance of cost and management accounting practices has increased more than ever. The reasons for this are the domestic and global competition getting severer by globalization, decreasing profit margins, increasing input prices due the tightening energy sources, economic crises etc. Therefore, companies operating in developing countries have also begun to implement cost and management accounting practices which were first adopted by companies operating in developed countries. Parallel to these developments, research studies which have been conducted initially in developed countries are followed by the studies conducted in developing countries¹. However, Lin and Yu (2002) states that the application of management accounting in less developed countries remains unsatisfactory and studies on this area are rare in the literature. They add saying “this may be due to the relatively under-developed status of economic and business administration in less developed countries”.

Based on the economic developments, Turkish accounting profession has been in progress since the establishment of Turkish Republic (Aysan, 2006). As a result of industrialization, the need for accounting profession emerged (Aysan, 2006). For this reason, the business managers and management accountants needed in private companies were mostly transferred from State Economic Enterprises (Aysan, 2006). In the last decades, cost and management accounting has gained importance as private sector developed in almost all areas. Large industrial enterprises set up cost and management accounting segments in accounting departments. Furthermore, curricula of faculties of economics and administrative sciences included cost accounting and/or management accounting along with financial accounting.

The purpose of this study is to explore cost and management accounting practices utilized by manufacturing companies operating in Istanbul, Turkey. Although there are some published papers on cost and management accounting practices in Turkish national scientific journals of accounting, and economics and administrative sciences, there are not at all publications in international journals. This paper aims to fill in this gap. The findings are expected to contribute to the existing literature about the subject, especially in developing markets.

The remainder of the paper is organized as follows. Section two provides literature review. Section three explains the objectives of this study. Section four provides scope and methodology of the study. Section five presents analysis and interpretation. Summary and conclusion takes place in sixth section. Finally, scope for further research is presented in the last section.

¹ Some authors have used terms “less developed countries”, “newly industrialized countries”, “emerging nations”, “emerging markets” and “transitional economies” interchangeably for developing countries (Budhwar, P.S. and Debrah, Y.A., (2003), *Human Resource Management in Developing Countries*, Routledge, p.4.)

2. Literature review

Parallel to increasing importance of management accounting practices in achieving organizational goals, studies conducted in this field have increased in recent years in emerging markets (Wu et al. 2007; O'Connor et al., 2004; Joshi, 2001; Szychta, 2002) following the studies conducted in developed markets (Wijewardena and Zoysa, 1999; Chenhall and Langfield-Smith, 1998; Guilding et al., 1998; Shields, 1998).

In a study conducted on 40 industrial companies in Egypt, Van Triest and Elshahat (2007) concluded that cost accounting information in Egypt is available at a basic level, and used more for external (pricing) purposes than for internal (performance) purposes. They also found that the use of advanced cost accounting techniques such as activity-based costing system seem absent. The comparative study conducted by Joshi (2001) revealed that Indian manufacturing companies rely heavily on the traditional management accounting techniques such as variable costing, budget for day-to-day operations, capital budgeting tools, return on investment based performance evaluation, and performance evaluation. However, the adoption rates of recently developed practices such as shareholders' value analysis, performance evaluation (qualitative measures), product life cycle costing, back flush costing, activity based budgeting, value chain analysis, benchmarking and balanced scorecard, have been rather low and slow. Meanwhile, some studies have shown that size has a major influence in determining the adoption of newly developed cost and management accounting practices; adoption rates are much higher in larger firms (Joshi, 2001; Chenhall, and Langfield-Smith, 1998).

Parallel to the developments in other countries, implementation of cost and management accounting practices are gaining momentum in Turkey. Number of books and journal articles published about the subject is increasing everyday parallel to these developments as well. There have been many published cost and management accounting books since 1950s. Following works can be cited among them: Akdoğan (2009), Altug (1982, 1985), Bursal (1968, 1990), Buyukmirza (1977, 1985, 1987, 2007), Sevgener (1986), Karakaya (2007), Ustun (1984, 1985, 1988), Caldag (2008), Gursoy (1999), Guredin et al. (2007) and Hacirustemoglu (1999). These works cover cost classifications, allocation of costs, product costing methods (i.e. job costing, process costing, activity-based costing), standard costing, budgeting, break-even analysis, and other topics in cost and management accounting.

In addition, researches about cost and management accounting practices conducted by academicians have been published in national academic journals. A study, which was conducted on 51 companies from largest 500 industrial enterprises for 2002 in Turkey, showed that (1) 29.5 percent of the respondents utilize process costing, followed by activity-based costing (25.5 percent) and job costing (23.5 percent), (2) direct materials cost has the largest portion in

manufacturing costs, followed by manufacturing overhead and direct labor costs, (3) the most widely used overhead allocation base is units produced (30 percent), followed by direct labor hours (23 percent), direct machine hours (15 percent), (4) the most frequently used management accounting practices are cost-volume-profit analysis (72.6 percent), strategic profitability analysis (47.1 percent), flexible budgeting (45.1 percent), and customer profitability analysis (45.1 percent) (Ersoy et al., 2006).

Another study conducted in Kayseri, which is one of the leading industrial prominences of Turkey, showed that 22 companies out of 30 (73.3 percent) use process costing, 7 companies (23.3 percent) use job costing, and 1 company (3.3 percent) uses both (Ayyildiz and Durna, 2005). This study showed that the most widely used overhead allocation bases are units produced (43.2 percent), followed by direct labor costs (37.8 percent).

According to the third study conducted recently in another industrial province, Denizli in Turkey, 30 companies out of 86 (35 percent) use process costing, 23 companies (27 percent) use job costing, and 17 companies (20 percent) use both methods (Uyar, 2008). The same study showed that most widely used overhead allocation base is units produced (45 companies out of 86), followed by direct material costs (14 companies out of 86), direct machine hours (7 companies out of 86), and direct labor costs (7 companies out of 86). Another important finding of this study is that the largest share in manufacturing costs belongs to direct materials costs.

3. Objectives of the study

The objective of this study is to explore cost and management accounting practices utilized by manufacturing companies operating in Istanbul, Turkey. The paper is expected to contribute to the existing literature about the subject, especially in developing markets. The paper primarily investigates the following points: product costing methods used by the companies; difficulties faced in product costing; overhead allocation bases used by the companies; usage areas of costing information; the reasons which increase the perceived importance of cost accounting; and management accounting practices usage.

4. Scope and methodology

The data for this study was obtained by means of a survey questionnaire conducted face-to-face with 61 randomly chosen manufacturing companies in Istanbul from various industries. The questionnaire includes multiple choice, open-ended, and Likert scale questions. Some questions of the survey were adopted from various previous studies (Brierly et al., 2001; Van Triest and Elshahat, 2007; Wijewardena and Zoysa, 1999). The data collection period ranges from January 2008 to April 2008.

The questionnaire consists of two parts:

- (1) general information on the business organizations and respondents; and
- (2) cost and management accounting practices.

Table 1 presents information gathered from the first part of the questionnaire.

Table 1. Profile of the respondents

	Frequency	Percent
<i>Industry Classification</i>		
Textile	26	42.6
Paper Products and Publication	9	14.8
Chemicals and Plastics	11	18.0
Food	5	8.2
Miscellaneous	10	16.4
Total	61	100.0
<i>Size (Annual Sales)</i>		
Less than 25.000.000 TL	26	42.6
25.000.000-50.000.000 TL	14	23.0
More than 50.000.000 TL	21	34.4
Total	61	100.0
<i>Ownership Structure</i>		
100 percent Domestic	55	90.2
Domestic-Foreign	6	9.8
Total	61	100.0
<i>Position of Respondent</i>		
Owner	6	9.8
General Manager	3	4.9
Controller	28	45.9
Fiscal Manager	8	13.1
Cost Accountant	6	9.8
Certified Public Accountant	1	1.6
Missing	9	14.8
Total	61	100.0
<i>Number of Employees</i>		
10-49	13	21.3
50-249	39	63.9
250+	9	14.8
Total	61	100.0
<i>Age of Firm</i>		
Less than 10 years	17	27.9
10-20 years	23	37.7
More than 20 years	21	34.4
Total	61	100.0

In the Table 1, industry classification, size of the firms (in terms of annual sales), ownership structure, position of respondent, number of employees, and age of firms are presented. In the industry classification, the highest percentage belongs to textile industry (26 firms), and “miscellaneous” includes firms operating in information technology (1 firm), leather and shoes (2 firms), unknown (1 firm),

construction (1 firm), metal (2 firms), wood products (1 firm), automotive (1 firm), and cotton (1 firm) in industry classification. Most of the respondents (85.2 percent) are small and medium-sized enterprises (according to the number of employees), domestically owned, and more than ten-year old. 65.6 percent of the respondents have annual sales less than or equal to 50.000.000 Turkish Liras (TL). The average export/sales ratio of the respondents is 41.7 percent.

5. Analysis and interpretation

5.1. Product costing methods

In the second part of the questionnaire, the respondents were asked to specify the methods they implement in product costing. According to the answers, the most widely used costing method is job costing (31 firms), followed by activity-based costing (19 firms) and process costing (7 firms). In Table 2, which shows the detailed answers to this question, the most significant points are the usage of job costing widely by textile industry, and the usage of activity-based costing largely by chemicals and plastics industry. Possible reason for the usage of job costing by companies is that they manufacture distinct products.

Table 2. Product costing methods

Industry	Job costing	Process costing	ABC	Not specified	Total
Textile	17	1	4		22
Paper Products and Publication	5	3	1		9
Chemicals and Plastics	2	1	8		11
Food	2	2	1		5
Miscellaneous	5	0	5		10
Not specified				4	4
Total	31	7	19	4	61

5.2. Difficulties faced in product costing

The respondents were also asked to point out the difficulties they encounter in product costing. Out of 42 respondents, 22 companies see the complexity in production as the highest ranking difficulty (52.4 percent), followed by lack of needed information (33.3 percent), and lack of necessary software (14.3 percent).

5.3. Overhead allocation bases used to calculate product costs

Table 3 shows the details of the answers given to the question "Which overhead allocation bases are used in product costing in the business?". The most widely used overhead allocation bases are prime costs (65.6 percent), units produced (19.7 percent), and direct labor cost (19.7 percent). The table presents the findings of some other studies about cost allocation basis. Prime costs which is the most widely used allocation base is not stated in other studies, therefore, a comparison is not made. Comparison of other allocation basis indicates mixed results. Usage percentages of cost allocation basis differ from country to country. However, in the

textbook written by Horngren et al. (2000, p. 101), direct labor hours is the most widely used overhead allocation base among the countries United States, Australia, Ireland, Japan, and United Kingdom.

Table 3. Overhead allocation bases used to calculate product costs

Overhead rates	Frequency	Percent	Ireland ^a	United Kingdom ^b	Norway ^c
Direct labor hour	9	14.8%	39%	19.2%	28%
Direct labor cost (DLC)	12	19.7%	13%	4.7%	37%
Machine hour	7	11.5%	22%	22.5%	29%
Units produced	12	19.7%	28%	19.4%	40%
Direct material cost (DMC)	3	4.9%	7%	8.1%	26%
DMC+ DLC (Prime costs)	40	65.6%	-	-	-
Other	-	-	22%	26.1%	23%

^a Clarke (1997); ^b Brierley, Cowton, and Drury (2001); ^c Bjørnenak (1997)

5.4. Application of costing information

In another part of the survey, which was adopted from Van Triest and Elshahat (2007)'s study, respondents were asked to score the use and application of costing information on a Likert scale of 1 (never use) to 5 (always use). To evaluate the results, one sample t-test was conducted (Table 4). The results showed that pricing decisions are the most important area where costing information is used at an average of 4.16, followed by customer profitability and activity analysis at 4.07. Performance measurement and make or buy decisions with an average of 4.04 and 3.96 respectively are also important areas where costing information is used. However, costing information is not used in product mix decisions, and adding or deleting products as much as other areas.

Table 4. Results of one sample t-test for application of costing information (Test value=3.5)

Purpose	Mean	S.D.	t-test
Pricing decisions	4.16	1.146	4.333*
Customer profitability	4.07	1.034	4.109*
Performance measurement	4.04	1.071	3.714*
Activity analysis	4.07	1.120	3.793*
Make or buy decisions	3.96	0.962	3.576*
Product mix decisions	3.55	1.168	0.289
Adding or deleting products	3.46	1.370	-0.199

* Significant at 0.001 level

Furthermore, the findings are compared with the results of Van Triest and Elshahat (2007). The comparison indicated that two studies yielded parallel results. As seen in Table 5, first three items with the highest mean are the same. In both countries, pricing decisions, customer profitability, and performance measurement are the most prominent areas in which costing information is applied. Among the remaining four application areas, the rank of activity analysis is different. In this

study, activity analysis is the fourth in ranking, but it is the last in ranking in Van Triest and Elshahat (2007)'s study.

Table 5. Comparison of results with the results of Van Triest and Elshahat (2007)

Purpose	Mean	Rank	Mean*	Rank*
Pricing decisions	4.16	1	4.47	1
Customer profitability	4.07	2	4.20	2
Performance measurement	4.04	3	4.13	3
Activity analysis	4.07	4	2.38	7
Make or buy decisions	3.96	5	3.75	4
Product mix decisions	3.55	6	3.30	5
Adding or deleting products	3.46	7	2.93	6

* The results of Van Triest and Elshahat (2007)

5.5. The ratio of overhead cost to total cost

In the questionnaire survey, the ratio of overhead cost to total cost (OC/TC) was also questioned. Overall mean for all industries is 34.48 percent. In addition, One-Way ANOVA analysis (Table 6) was conducted to see the significant differences among industries. The results showed that there is a significant difference among industries (significant at 0.10). Duncan test from Post Hoc tests showed that food industry has the highest OC/TC ratio and is significantly different than paper products and publication, chemicals and plastics, and miscellaneous industries.

Table 6. The ratio of overhead cost to total cost (percent)

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4183.869	4	1045.967	2.080	0.100
Within Groups	22129.724	44	502.948		
Total	26313.593	48			

Duncan ^{a, b}			
Industry	N	Subset for alpha = .05	
		1	2
Chemicals and Plastics	9	25.22	
Paper Products and Publication	8	26.38	
Miscellaneous	6	29.50	
Textile	22	38.07	38.07
Food	4		59.25
Sig.		0.331	0.081

Means for groups in homogeneous subsets are displayed.

^a Uses Harmonic Mean Sample Size = 7.161.

^b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

5.6. The reasons for the increased interest in cost accounting

The respondents were asked to score the reasons for the increased interest in cost accounting on a Likert scale of 1 (completely disagree) to 5 (completely agree). A list of reasons was provided for the respondents so that they evaluated each. The results of one-sample t-test in Table 7 showed that decreasing profitability (4.59) is the primary reason which increases the importance of cost accounting. Other reasons which increase the importance of cost accounting are increasing costs (4.57), increasing domestic and global competition (4.30), and economic crises (4.23). Actually, means of four items above 4.00 indicate that they are all factors considered important for the increased interest in cost accounting. This means profitability of companies is decreasing, possibly due to increasing costs, and increasing domestic and global competition. Economic crises which hit companies from time to time are also important reason for the increased interest in cost accounting.

Table 7. The reasons for the increased interest in cost accounting (Test value=3.5)

	Mean	S.D.	t-test
Decreasing profitability	4.59	.567	14.161*
Increasing costs	4.57	.662	11.929*
Increasing domestic and global competition	4.30	.933	6.448*
Economic crises	4.23	1.018	5.400*

* Significant at 0.001 level

5.7. Perceived importance of management accounting practices

Lastly, the respondents were asked to evaluate the perceived importance of management accounting practices that are utilized in the business organizations on a Likert scale of 1 (unimportant) to 5 (very important). The results of one-sample t-test in Table 8 indicated that the most important management accounting practices in decreasing order are budgeting (4.48), planning and control (4.33), cost-volume-profit analysis (4.3), target costing (4.16), quality cost reporting (4.09), performance measurement and evaluation (4.02), responsibility accounting (4.00), standard costing and variance analysis (3.89), and strategic planning (3.78). Transfer pricing (3.65) is unique practice that is significantly not important based on test value of 3.5. These findings indicate that companies perceive traditional management accounting tools still important. For example, budgeting, planning and control, and cost-volume-profit analysis are perceived the most important of all management accounting practices. Quality costing and target costing as new management accounting practices are utilized by the companies. However, strategic planning, and transfer pricing are perceived the least important ones. This may be due to size of the sample firms. Since the sample consists mostly of small and medium-sized enterprises (according to number of employees), some tools may be too sophisticated to be utilized. Szendi and Shum (1999) states that the larger the firm the more sophisticated the management accounting system and the more likely is

the firm to utilize sophisticated management accounting techniques and practices. Abdel-Kader and Luther (2008) also proved that large firms adopt more sophisticated management accounting techniques and practices than small firms.

Table 8. Perceived importance of management accounting practices (Test value=3.5)

	Mean	S.D.	t-test
Budgeting	4.48	0.755	9.915**
Planning and control	4.33	0.818	7.503**
Cost-volume-profit analysis	4.30	0.872	6.895**
Target costing	4.16	0.848	5.830**
Quality cost reporting	4.09	1.114	3.884**
Performance measurement and evaluation	4.02	1.027	3.741**
Responsibility accounting	4.00	1.056	3.447**
Standard costing and variance analysis	3.89	1.138	2.475*
Strategic planning	3.78	1.013	2.064*
Transfer pricing	3.65	1.297	0.855

** Significant at 0.001 level

* Significant at 0.05 level

6. Summary and Conclusion

The survey revealed the general cost and management accounting practices of Turkish manufacturing companies operating in Istanbul. The findings are expected to contribute to the existing literature about the subject, especially in developing markets.

The major findings of the study are as follows:

- the most widely used costing method is job costing,
- the complexity in production poses as the highest ranking difficulty in product costing,
- the most widely used overhead allocation bases are prime costs, units produced, and direct labor cost,
- pricing decisions is the most important area where costing information is used (parallel to the finding of Van Triest and Elshahat, 2007),
- overall mean of the ratio of overhead to total cost is 34.48 percent for all industries,
- the highest overhead cost/total cost ratio belongs to food industry,
- decreasing profitability, increasing costs and competition, and economic crises are reasons which increase the importance of cost accounting, and
- the most important management accounting practices is budgeting (parallel to the finding of Chenhall and Langfield-Smith, 1998)

The findings indicate that companies perceive traditional management accounting tools still important. However, new management accounting practices such as strategic planning, and transfer pricing are perceived less important than traditional ones. Therefore, they need to improve themselves in this aspect.

7. Scope for further research

Since the sample consists mostly of small and medium-sized enterprises (according to number of employees), they may not reflect the applications of large companies completely. Secondly, the results are confined to the manufacturing companies and should not be generalized to the other sectors. Thirdly, since the survey conducted on companies operating in Istanbul, the findings may not be generalized to the whole country.

For future research, a countrywide and more comprehensive survey could be conducted with the participation of more companies from distinct industries. Moreover, case studies can be conducted to make more in-depth analysis about cost and management accounting practices.

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