

# THE USE OF MANAGEMENT ACCOUNTING / STRATEGIC MANAGEMENT ACCOUNTING TOOLS AND EFFECT ON PERFORMANCE: A RESEARCH IN TURKEY\*

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## ABSTRACT

This study aims to examine the effects of the use of management accounting/strategic management accounting tools on the financial performance, non-financial performance, and the overall performance of the businesses. Besides, the difference between the demographic characteristics of the businesses and the use of management accounting/strategic management accounting tools are also examined. In the research, the data were obtained with a questionnaire from the businesses listed on Borsa Istanbul and businesses operating in various cities of Turkey's intensive industries. According to the results of the analysis, the use of strategic management accounting tools is at a certain level, but traditional management accounting tools are still in use more widely. It is found that the use of 17 management accounting/strategic management accounting tools affects the performance of businesses. Also, the demographic characteristics and the use of management accounting/strategic management accounting tools differ for 19 tools out of 53.

**Keywords:** Management Accounting, Strategic Management Accounting, Performance

**JEL Classification:** M41, L25, M49

## YÖNETİM MUHASEBESİ / STRATEJİK YÖNETİM MUHASEBESİ ARAÇLARININ KULLANIMI VE PERFORMANS ÜZERİNE ETKİSİ: TÜRKİYE'DE BİR ARAŞTIRMA

### ÖZ

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Bu çalışmanın temel amacı, yönetim muhasebesi/stratejik yönetim muhasebesi araçları kullanımının işletmelerin finansal performansı, finansal olmayan performansı ve genel performansı üzerine etkisinin incelenmesidir. Ayrıca çalışmada işletmelerin demografik özellikleri ve yönetim muhasebesi/stratejik yönetim muhasebesi araçları kullanımı arasındaki fark da incelenmektedir. Araştırmada Borsa İstanbul'a kote olmuş işletmelerden ve Türkiye'nin sanayi yoğun çeşitli şehirlerinde faaliyet gösteren işletmelerden anket yoluyla veri elde edilmiştir. Analiz sonuçlarına göre stratejik yönetim muhasebesi araçları kullanımı belirli bir düzeydedir ancak geleneksel yönetim muhasebesi araçları hala daha yaygın biçimde kullanılmaktadır. 17 yönetim muhasebesi/stratejik yönetim muhasebesi aracının kullanımının performans üzerinde etkili olduğu bulgulanmıştır. Bunun yanı sıra, demografik özellikler ve yönetim muhasebesi/stratejik yönetim muhasebesi araçları kullanımı 53 araçtan 19'u için farklılaşmaktadır.

**Anahtar Kelimeler:** Yönetim Muhasebesi, Stratejik Yönetim Muhasebesi, Performans

**JEL Sınıflandırması:** M41, L25, M49

## 1. INTRODUCTION

In the 1950s, the focus of management accounting was the cost calculation of finished goods/services. At the end of the 20th century, the need to focus on the external environment as well as the internal environment of the businesses was understood and focusing on the whole business has become one of the significant elements of management accounting. During the time of activity, businesses are guiding their future through numerous decisions taken in various levels of management. These decisions require specific planning, implementation, and control mechanisms. At this point, well-organized management accounting/strategic management accounting tools provide the necessary support to businesses. With these tools, businesses can perform their activities such as costing, budgeting/planning, performance management, investment decision support, pricing, and profitability analysis.

In this study, the effects of the use of management accounting/strategic management accounting tools on financial performance, non-financial performance, and the overall performance of businesses are examined. Also, the difference between the demographic characteristics of the businesses and the use of management accounting/strategic management accounting tools are examined. Furthermore, it is aimed to examine the usage level of traditional management accounting tools and strategic management accounting tools. With that purpose, a questionnaire was sent via an e-mail to businesses operating in Turkey. The analysis was carried out with 212 out of 226 questionnaire data obtained from participants who agreed to participate in the research.

This study consists of five parts. In the first part, management accounting and strategic management accounting and the tools used in the study are explained by groups. The non-financial performance, financial performance, and overall performance measures used in the study are mentioned in the second

part. In the third part, the literature review of management accounting/strategic management accounting tools and performance measurement in management accounting studies and hypothesis development are realized. In the fourth part, it is mentioned about research design, methodology, and findings. The fifth part is the conclusion of the research.

## 2. MANAGEMENT ACCOUNTING AND STRATEGIC MANAGEMENT ACCOUNTING

In the literature, there is no generally accepted definition of management accounting. The Chartered Institute of Management Accountants (CIMA) defines management accounting as follows (Eaton 2005, 5): *“the application of the principles of accounting and financial management to create, protect, preserve and increase value for the stakeholders of for-profit and not-for-profit businesses in the public and private sectors”*. Management accounting is a process that provides financial and non-financial information to managers and employees in activities such as decision making, resource allocation, monitoring resources, performance valuation and rewarding within an organization (Atkinson et al. 2012, 2). Budgeting/planning and estimation, measuring of product/service profitability, measuring the performance of the organization department/unit, comparing the performance, increasing efficiency/productivity, evaluation of the performance of investments constitutes the fields of activity of management accounting. Besides, product/service mix, strategic decision making, pricing, evaluation of investment alternatives are also considered within the scope of management accounting (Coombs et al. 2005, 7). In this study, management accounting tools are discussed under seven topics. These are costing, budgeting/planning, performance management, investment decision support, pricing, profitability analysis, and operating tools. The management accounting tools are used in the study are presented in Table 1.

**Table 1. Management Accounting Tools**

<b>1.Costing Tools</b>	<b>2.Budgeting/Planning Tools</b>	<b>3.Performance Management Tools</b>	<b>4.Decision Support Tools</b>	<b>5.Pricing Tools</b>
Activity based costing	Flexible budgeting	Balanced Scorecard	Post-completion audits	Cost-plus pricing
Overhead allocation	Rolling forecasts	Business process re-engineering	Net present value	Segmental pricing
Variable or marginal costing	Zero based budgeting	Economic value-added	Internal rate of return	Price skimming
Standard costing	Activity based budgeting	Profit before tax	Accounting rate of return	Penetration pricing
Kaizen costing	Incremental budgeting	<b>6.Activity Tools</b>	Discounted payback	Market sensitive pricing
Full (absorption) costing	Financial year forecasts	SWOT analysis	Payback	<b>7.Profitability Analysis Tools</b>
Costing for jobs		Customer relationship management		Product/service profitability analysis
Costing for batches		Total quality management		Relevant costing for decisions
Costing for processes or contracts		Risk management		Breakeven (CVP) analysis

Simmonds (1981) defines the concept of strategic management accounting as: *“the provision and analysis of information about a business and its competitors for use in developing and monitoring the business strategy”*. According to Bromwich (1990), strategic management accounting is: *“the provision and analysis of financial information on the firm’s product markets and competitors’ costs and cost structures and the monitoring of the business’ strategies and those of its competitors in these markets over a number of periods”*. In the literature, there is no consensus on which tools are strategic management accounting tools (Bhimani and Bromwich 2010). A literature review on strategic management accounting tools is realized for the study and 16 strategic management accounting tools from Cadez and Guilding (2008a) are used as strategic management accounting tools. These strategic tools consist of costing, planning/performance, strategic decision making, customer accounting, and competitors' accounting tools. The strategic management accounting tools are used in the study are presented in Table 2.

**Table 2. Strategic Management Accounting Tools**

1.Strategic costing tools	2.Strategic planning-controlling and performance evaluating tools	3.Strategic decision making tools	4.Competitor’s accounting	5.Customer accounting
Attribute costing	Benchmarking	Strategic cost management	Competitor cost assessment	Customer profitability analysis
Life cycle costing	Integrated performance measurement	Strategic Pricing	Competitive position monitoring	Lifetime customer profitability analysis
Quality costing		Brand valuation	Competitor performance appraisal	Valuation of customers as an asset
Target costing				
Value chain costing				

### 3. PERFORMANCE

Two primary outputs are usually analyzed for a business. These are financial performance and non-financial performance. Financial performance is measured by means such as return on assets (ROA), return on sales (ROS), return on investment (ROI), and return on equity (ROE). Non-financial performance is measured by non-monetary and quantitative criteria such as innovation, quality, and customer satisfaction (Wang and Huynh 2013; Choe 2004). With the combined evaluation of financial and non-financial performance measures, the overall performance (or operating performance) is measured.

It is challenging to mention performance measurement criteria available for all businesses. Each business should use a sufficient number of criteria for itself. Financial performance and non-financial performance reveal the overall performance of the business. Within the scope of this research, the criteria to be used for the measurement of the financial performance of the businesses is determined by

literature review and pilot research study. The non-financial and financial tools are used in the study are presented in Table 3.

**Table 3. Non-financial Performance Measures and Financial Performance Measures**

Non-financial Performance Measures	Financial Performance Measures
1. Productivity level - capacity utilization	1. Return on assets (ROA)
2. Product/service quality	2. Asset turnover
3. Customer satisfaction	3. Return on equity (ROE)
4. New product development-innovation	4. Gross profit rate
5. Market share	5. Return on investment (ROI)
6. Delivery on time	6. Sales growth rate
7. Continuous improvements	7. Cash flow
8. Employee morale, job satisfaction and adoption	8. Return on sales (ROS)

#### **4. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

##### **4.1. Management Accounting/Strategic Management Accounting Tools**

In the literature, there are many research studies on management accounting/strategic management accounting tools. In these studies, the use of management accounting tools, its relationship with internal and external factors, and the relationship between sector and performance are emphasized. According to the findings of the studies conducted in developed countries, the use of traditional management accounting tools is more than the tools developed recently. According to the findings of research conducted in developed countries, the use of traditional management accounting tools is more than the tools developed recently. In other words, traditional management accounting tools are in use more than strategic management accounting tools (<http://www.ey.com>; Kovachev and Ross 2009; Chenhall et al. 1998; Abdel-Kader and Luther 2006; Pavlatos and Paggios 2009; Pierce and O’Dea 1998; Angelakis et al. 2010; Yalçın 2012; El-Ebaishi et al. 2003; Ghasem et al. 2015; Al and McLellan 2013; Zoysa et al. 2014; Joshi 2001).

In developing countries, in the research studies conducted on management accounting tools, it is seen that the use of traditional management accounting tools -with exceptions- is more than strategic management accounting tools (Zoysa et al. 2014; Joshi 2001; Al and McLellan 2013; Akmeşe and Bayrakçı 2016; Yalçın 2012). In the studies on management accounting tools and performance, it is mostly stated that there are positive relations between these two variables (Ajibolade 2013; Ahmad 2012; Aksoylu and Akın 2013; El-Ebaishi et al. 2003; Ghasem et al. 2015; Mat 2010; Duh et al. 2009). Additionally, a relationship is found in research studies conducted in developing countries, between the demographic characteristics of businesses like the number of employees, length of operation and the legal status of the business and the use of management accounting tools.

As the studies in the literature are considered, it is seen that similar and different findings are obtained. Erserim (2012) claims that there is a relationship between the use of management accounting tools and the number of employees, length of operation, and the legal status of the entity. Cassia et al. (2005) point out that well-developed management accounting tools can be used even in simple organizational structures. Also in some studies, it is concluded that there is a relationship between the size of the businesses and the use of management accounting tools (Kovachev and Ross 2009; Pavlatos 2015; Pierce and O’Dea 1998; Šiška 2016; Ahmad 2017; Nair and Nian 2017; Ahmad 2012). Neubauer et al. (2013) point out that business size is one of the factors that is effective in the use of management accounting tools. Despite Cadez et al. (2005)’s finding that the use of management accounting/strategic management accounting tools differs by sector, Cinquini and Tenucci (2007) conclude that there is no relationship between business size and sector variables with the use of management accounting/strategic management accounting tools. Kovachev and Ross (2009) point out that manufacturing businesses use more management accounting tools than service businesses. Cadez et al. (2005) claim that the businesses in the manufacturing sector use strategic management accounting tools at a higher level than the businesses in the other sectors. Al and McLellan (2013) argue that the use of management accounting tools does not differ by industry. Based on these findings, hypotheses are developed as below.

*“H<sub>1</sub> The use of management accounting tools differs according to the demographic characteristics of the businesses.”*

*“H<sub>2</sub> The use of strategic management accounting tools differs according to the demographic characteristics of the businesses.”*

#### **4.2. Performance Measurement**

The use of performance criteria for research studies differs from one to another. The first difference in performance measurement is the number of criteria used. For example, Hult et al. (2004) use three measures as profitability, sales growth, and market share to measure operational performance. On the other hand, Mat (2010) uses 12 performance measures as business revenue, sales growth, return on investment (ROI), cash flows from operations, market share, market development, new product development, research and development, cost reduction and control, employee development, workplace relations, employee health and security to measure it. This difference can be interpreted as a result of the contingency theory because it is difficult to talk about a certain number and constant performance measurement criteria to apply to all kinds of businesses. The performance data that meet expectations can be obtained by using different criteria in terms of number and variety.

The second difference is the evaluation of performance measurement criteria. For example, a business manager can observe the changes in ROA and ROI via financial statements over the years when evaluating the financial performance of the business. However, in terms of researchers, research

processes should be completed by secondary data or opinions of business managers when it is not possible to access financial data. Dess and Robinson (1984) points out a strong positive correlation between objective and subjective data by determining the financial performance with objective and subjective criteria. In other words, it is found that objective and subjective data can provide the same results on the measurement of financial performance. In the literature, the opinions of participants (Abdel-Maksoud et al. 2016; Ahmad 2017; Cadez and Guilding 2008b; Wang and Huynh 2013; Fullerton et al. 2014; Anh 2016; Mat 2010) are extensively used on performance measurement in the use of management accounting/strategic management accounting tools and performance research studies. In addition, there are some studies that perform performance measurement by using secondary data sources (Duh et al. 2009; Friedl and Biloslavo 2009; Kober et al. 2012) such as financial statements. In those studies, the participants are asked to rate performance according to their own business and sector averages.

In the literature, Aksoylu and Akın (2013) point out that there is a weak but positive relationship between the use of strategic management accounting tools and perceived performance. Ahmad (2012) concludes a weak positive relationship between management accounting/strategic accounting tools and organizational performance. According to Anna (2015), there is a strong positive correlation between the use of strategic management accounting tools and organizational performance. Al and McLellan (2013) show that there is a positive correlation between the use of management accounting tools and organizational performance. Macinatia and Anessi-Pessina (2014) claim that there is a weak positive relationship between the use of management accounting tools and financial performance. In addition to these findings, in the literature, there are also research studies show that there is a positive relationship between the use of management accounting tools and the performance of the business (Anh 2016; Ahmad 2017; Duh et al. 2009). Based on these findings, hypotheses are developed as below.

*“H<sub>3</sub> The use of management accounting tools has an impact on the financial performance of businesses.”*

*“H<sub>4</sub> The use of strategic management accounting tools has an impact on the financial performance of businesses.”*

*“H<sub>5</sub> The use of management accounting tools has an impact on the non-financial performance of businesses.”*

*“H<sub>6</sub> The use of strategic management accounting tools has an impact on the non-financial performance of businesses.”*

*“H<sub>7</sub> The use of management accounting tools has an impact on the overall performance of businesses.”*

*“H<sub>8</sub> The use of strategic management accounting tools has an impact on the overall performance of businesses.”*

## **5. RESEARCH**

### **5.1. Research Design and Methodology**

This study aims to examine the effects of the use of management accounting/strategic management accounting tools on the financial performance, non-financial performance, and the overall performance of the businesses. Also, the difference between the demographic characteristics of the businesses and the use of management accounting/strategic management accounting tools are examined. A literature review was conducted at the beginning of the research. A questionnaire form was formed with the management accounting/strategic management accounting tools and performance measures. The questionnaire consists of three parts. In the first part, there are eight questions regarding the demographic characteristics of businesses. The second part includes the use of management accounting tools and strategic management accounting tools, and a brief explanation of these tools. The expressions for measuring the use of the tools are arranged as the 5-point Likert scale (1-Never; 5-Always). In the third part, the 16 expressions for measuring for the performance are designed based on the 5-point Likert scale (1-Low; 5-High).

In the literature, it is seen that the 5-point Likert (Cinquini and Tenucci 2007; Pierce and O’Dea 1998; Angelakis et al. 2010; Aksoylu and Akin 2013; Al and McLellan 2013; Ahmad 2012; Rufino 2014; Anh 2016; Duh et al. 2009) and the 7-point Likert (Cadez and Guilding 2008b; Cadez et al. 2005; Pavlatos and Kostakis 2015; Šiška 2016; Guilding et al. 2000) are used for data collection from the primary data sources on research studies about management accounting/strategic management accounting tools and performance. Therefore, based on the literature and expert opinions, the questionnaire about the use of management accounting/strategic management accounting tools was arranged as the 5-point Likert scale (1-Never-5-Always, 1-Low, 5-High).

The data used in the research are obtained by implementing the questionnaire on the micro, small, medium, and large businesses that are operating in various regions of Turkey. A random sampling method is used in the study. While collecting the data within the scope of the study, the questionnaire is applied to a small group (n = 38). Then, the questionnaire is finalized with analysis and expert opinions. The questionnaire was sent via an e-mail to 218 businesses operating in Turkey and listed on the Borsa Istanbul such as food, weaving, forest products and furniture, paper and paper products, metal industry, metal goods, machinery, other manufacturing, technology, transportation, transport-communication-storage, wholesale and retail trade, electricity-gas-water, construction and public works, agriculture and forestry sectors. In addition, 3421 questionnaire form sent via an e-mail to the businesses are operating



in organized industrial zones at Bursa, Konya, Kayseri, Gaziantep, İstanbul, Kocaeli, Manisa, Malatya, Adana, Çorum, Sakarya, Mersin, Denizli, Ankara, Hatay, İzmir, Antalya, and Balıkesir. Also, the questionnaire was applied through one-to-one interviews during the data collection process. The analysis was carried out with 212 out of 226 questionnaire data obtained from participants who agreed to participate in the research. One-Way ANOVA, Independent Samples T-test, and Multivariate regression analysis were used to test the hypotheses.

The findings of the research are undoubtedly affected by the sample and its size. In the study, although there were no questions related to the trade name and the business secret in the questionnaire, there was negative feedback about participation in the research. Due to time and cost constraints, the number of businesses that data collected has remained at a certain level. In addition, the reluctant attitudes towards sharing the financial data of the businesses led us to the measurement of performance perceptions<sup>1</sup> of research participants instead of gathering financial data. There are also many other management accounting/strategic management accounting tools in the literature, but we used limited numbers after a pilot research study because taking all the tools into the scope of the research would cause difficulties in terms of the applicability of the questionnaire, during the analysis, and interpretation of the findings.

## 5.2. Analysis and Findings

Table 4 shows the results obtained from the frequency analysis of the demographic characteristics of the businesses providing data to the research.

**Table 4. The Demographic Features**

<b>Activity Period</b>	<b>N</b>	<b>%</b>	<b>Annual Revenue (TL)</b>	<b>n</b>	<b>%</b>
1-10 year(s)	26	12,3	1 – 500.000	55	25,9
11-20 years	49	23,1	500.001 – 1.000.000	63	29,7
21-30 years	57	26,9	1.000.001 – 8.000.000	63	29,7
31-40 years	53	25,0	8.000.001 – 40.000.000	19	9,0
41 years and more	27	12,7	40.000.001 and more	12	5,7
Total	212	100,0	Total	212	100,0
<b>Number of Employee</b>			<b>Product/Service Diversity</b>		
1-50	127	59,9	1-50	43	20,3
51-100	35	16,5	51-100	37	17,5
101-150	16	7,5	101-150	26	12,3
151-200	17	8,0	151-200	35	16,5
201-250	2	0,9	201-250	16	7,5
251 and more	15	7,1	251 and more	55	25,9
Total	212	100,0	Total	212	100,0
<b>Position of the Participant in the Business</b>			<b>Education Level of the Participant</b>		
Owner of the business	26	12,3	Elementary school	4	1,9

<sup>1</sup> In the study, due to the supportive findings in the literature, performance measurement was performed on the performance perception. The term of performance is used instead of performance perception.

General manager	11	5,2	High school	62	29,2
Accounting manager	56	26,4	Associate degree	35	16,5
Accounting staff	92	43,4	Bachelor's degree	67	31,6
Certified public accountant	19	9,0	Master's degree	44	20,8
Other	8	3,8	PhD degree	-	-
<b>Total</b>	<b>212</b>	<b>100,0</b>	<b>Total</b>	<b>212</b>	<b>100,0</b>
<b>Sector</b>					
<b>Manufacture of Consumer Goods</b>	<b>68</b>	<b>32,1</b>	<b>Industrial Goods</b>	<b>80</b>	<b>37,7</b>
Food, Beverages and Tobacco	25	11,8	Main Metal Industry	12	5,7
Textiles, Clothing, and Leather	18	8,5	Metal Goods, Machinery, and Equipment Manufacturing	34	16,0
Forest Products and Furniture	13	6,1	Other Manufacturing Industry	27	12,7
Paper and Paper Products, Printing and Publishing	12	5,7	Technology	4	1,9
			Mining	1	0,5
			Agriculture, Forestry, and Fisheries	2	0,9
<b>Service</b>	<b>64</b>	<b>30,2</b>	<b>Business Type</b>		
Education, Health, Sports, and Other Social Services	3	1,4	Labor-intensive	92	43,4
Transportation, Communication, and Storage	11	5,2	Capital-intensive	120	56,6
Wholesale and Retail Trade	36	17,0			
Electricity, Gas & Water	1	0,5			
Construction and Public Works	13	6,1			
			<b>Total</b>	<b>212</b>	<b>100,0</b>

It can be seen from the data in Table 4 that the majority of businesses are in the period of activity between 11 and 40 years. When the annual revenues of the businesses are taken into consideration, it is seen that the majority of the businesses have revenues in the range of TL1 to TL8.000.000. This result shows that the research has higher participation in micro, small, and medium-sized businesses. The majority of the businesses (59,9%) have the number of employees in the range of 1-50. When considering the type of product/service produced/sold, it is seen that there is a majority of businesses in the range of 1-50.

When considering the representative of the business responding to the questionnaire, it is observed that the accounting manager/chief and accounting staff have the largest percentages. When considering the education level of the participants, it is seen that university graduates constitute the majority. When considering the sectors where businesses operate, it is seen that the metal goods, machinery, and equipment construction sector and wholesale and retail trade sectors are in the majority. One hundred twenty of the research participants stated that their businesses are capital-intensive, and 92% of them stated that theirs are labor-intensive.

One of the leading assumptions for applying parametric tests in data analysis is the normal distribution of the data. In the studies, it is accepted that the data are normal distributed if Skewness and Kurtosis values are in the range of -2.00 to +2.00 (George and Mallery 2010; Trochim and Donnelly

2006; Gravetter and Wallnau 2014; Field 2009). Before the analysis of the data, in order to determine the normal distribution, the use of management accounting/strategic management accounting tools and performance data are tested, and it is concluded that the data is normal distributed due to the Skewness and Kurtosis values. After that, in order to test the reliability of the data, reliability analysis is applied to each data groups, and Cronbach's Alpha values are calculated. Table 5 presents the results of the reliability analysis of management accounting/strategic management tools.

**Table 5. Results of Management Accounting Tools Reliability Analysis**

Tools	Cronbach's Alpha	Number of Items
Costing Tools	0,728	9
Budgeting/Planning Tools	0,830	6
Performance Management Tools	0,794	4
Decision Support Tools	0,855	6
Pricing Tools	0,654	5
Profitability Analysis Tools	0,662	3
Activity Tools	0,776	4
Strategic Management Accounting Tools	0,923	16

In research studies in the social sciences, data is considered to be reliable if Cronbach's Alpha value is 0.60 or higher (Loewenthal 2004). As Cronbach's Alpha values are over 0.60 in Table 5, it is concluded that the data are reliable and suitable for analysis.

In order to determine the suitability of the eight-item scale used in the measurement of non-financial performance for further analysis and hypothesis testing, the validity and reliability analyses of the scale are performed, and the results set out in Table 6.

**Table 6. Validity and Reliability Analyses of Performance Data**

	Mean*	Std. Dev.	Eigenvalue	Factor Loads	Variance %	Cronbach's Alpha
<b>Non-Financial Performance</b>			3,561		<b>44,515</b>	<b>,819</b>
1. Productivity level - capacity utilization	3,84	,778		,590		
2. Product/service quality	4,26	,724		,579		
3. Customer satisfaction	4,10	,708		,608		
4. New product development-innovation	3,75	1,008		,688		
5. Market share	3,52	,873		,708		
6. Delivery on time	3,91	,726		,740		
7. Continuous improvements	3,47	,905		,723		
8. Employee morale, job satisfaction and adoption	3,62	,802		,679		
<b>Kaiser-Meyer-Olkin</b>				<b>,773</b>		
<b>Bartlett test</b>				<b>545,810 (28)</b>		
<b>P</b>				<b>0,000</b>		
<b>Financial Performance</b>			3,916		<b>48,955</b>	<b>,848</b>
9. Return on assets (ROA)	3,71	,837		,642		
10. Assest turnover	3,80	,749		,649		
11. Return on equity (ROE)	3,61	,828		,720		
12. Gross profit rate	3,48	,911		,717		
13. Return on investment (ROI)	3,56	,849		,748		
14. Sales growth rate	3,34	,853		,772		

15. Cash flow	3,14	1,088	,677
16. Return on sales (ROS)	3,32	,848	,661
<b>Kaiser-Meyer-Olkin</b>			<b>,843</b>
<b>Bartlett test</b>			<b>599,214 (28)</b>
<b>P</b>			<b>0,000</b>
<i>*Measured in range of 1: Low - 5: High.</i>			

As the Chronbach's Alpha values in Table 6 are above 0.60 (Loewenthal 2004), it is determined that the scales used in the determination of non-financial performance and financial performance are reliable. As a result of the factor analysis applied to control the structural validity of the scales, it is determined that the analysis ( $p=0.000$ ) are all meaningful. In other words, the correlation between the variables is found to be suitable for factor analysis and it is determined that the sample size is sufficient according to KMO values ( $,773$ ) and ( $,843$ ). According to the results of the factor analysis, non-financial performance with the scale consisting of eight variables has the characteristic of explaining the variance of 44,515% and as for financial performance, it explains the variance of 48,955%.

The overall performance of the businesses is achieved by the evaluation of non-financial and financial performance items. Reliability analysis for the overall performance is performed with the eight expressions on non-financial performance and eight items on financial performance, and Chronbach's Alpha value is found as 0,897. Due to the Cronbach's Alpha value is over 0.60 (Loewenthal 2004), it is concluded that the data are reliable and suitable for analysis.

The  $H_1$  and  $H_2$ , which are developed to examine the interaction the use of management accounting/strategic management accounting tools with the demographic characteristics, are tested separately for different management accounting tools and demographic variables. These variables are presented in Table 7.

**Table 7. Variables of  $H_1$  and  $H_2$**

<b>Demographic Features</b>	<b>Management Accounting Tools</b>	<b>Strategic Management Accounting Tools</b>
• Activity period	• Costing Tools	• Strategic costing tools
• Sector	• Budgeting/Planning Tools	• Strategic planning-controlling ve performance evaluating tools
• Business size	• Performance Management Tools	• Strategic decision making tools
• Product/service diversity	• Decision Support Tools	• Competitor's accounting
• Business type (labor-intensive, capital-intensive)	• Pricing Tools	• Customer accounting
	• Profitability Analysis Tools	
	• Activity Tools	

In the process of hypothesis testing, H<sub>1</sub> is tested for the variables of demographic characteristics and management accounting tools subgroups. Then, H<sub>2</sub> is tested for the variables of demographic characteristics and strategic management accounting tools. The test results of H<sub>1</sub> are set out in Table 8.

**Table 8. Test Results of H<sub>1</sub>**

Management Accounting Tools	Variables	N	Mean	Std. Deviation	F and Sig. (Reason of the difference)
Variable or marginal costing	1-10 year(s)	26	3,00	,938	F=4,307 Sig= ,002 <sup>a</sup> Difference is between 11-20 years and other activity period variables
	11-20 years	49	3,76	,902	
	21-30 years	57	3,11	1,145	
	31-40 years	53	3,17	1,122	
	41 years and more	27	2,93	,917	
	Total	212	3,24	1,067	
Costing for batches	1-10 year(s)	26	2,54	1,174	F=2,510 Sig= ,043 <sup>a</sup> Difference is between 1-10 year(s) and 11-20 years
	11-20 years	49	3,41	1,171	
	21-30 years	57	3,12	1,196	
	31-40 years	53	3,26	1,211	
	41 years and more	27	3,04	1,126	
	Total	212	3,14	1,200	
Standard costing	1,00	68	3,75	,998	F=3,357 Sig= ,037 <sup>a</sup> Difference is between 2 and 3
	2,00	80	3,48	1,043	
	3,00	64	3,89	,893	
	Total	212	3,69	,996	
Costing for processes or contracts	1,00	68	3,22	1,325	F=4,740 Sig= ,010 <sup>a</sup> Difference is between 1 and 3
	2,00	80	2,99	1,238	
	3,00	64	2,53	1,368	
	Total	212	2,92	1,329	
Post-completion audits	1,00	68	2,82	1,184	F=8,05 Sig= ,000 <sup>a</sup> Difference is between 3 and other sector variables
	2,00	80	2,96	1,247	
	3,00	64	2,19	1,167	
	Total	212	2,68	1,243	
Overhead allocation	Micro and small-scaled	123	4,02	,849	F=5,092 Sig= ,007 <sup>a</sup> Difference is between micro and small-scaled and medium-scaled
	Medium-scaled	71	4,32	,732	
	Large-scaled	18	4,50	,707	
	Total	212	4,16	,816	
Kaizen costing	1-50	43	2,84	1,194	F=3,029 Sig= ,012 <sup>a</sup> Difference is between 251 and more and 51-100
	51-100	37	2,92	1,256	
	101-150	26	2,88	1,211	
	151-200	35	2,49	,981	
	201-250	16	2,75	,856	
	251 and more	55	2,18	1,020	
	Total	212	2,62	1,135	
Profit before tax	1-50	43	3,98	,771	F=3,823 Sig= ,002 <sup>b</sup> Difference is between 1-50 and 151-200, 201-250
	51-100	37	3,89	,737	
	101-150	26	3,65	1,093	
	151-200	35	3,29	,789	
	201-250	16	3,06	,998	
	251 and more	55	3,60	1,164	
	Total	212	3,64	,975	
Kaizen costing	Labor-intensive	92	2,82	1,222	Sig. (2-tailed) = ,030
	Capital-intensive	120	2,48	1,045	
Costing for jobs	Labor-intensive	92	3,57	1,269	Sig. (2-tailed) = ,014
	Capital-intensive	120	3,12	1,336	

Costing for batches	Labor-intensive	92	2,95	1,208	Sig. (2-tailed) = <b>,037</b>
	Capital-intensive	120	3,29	1,177	
Profit before tax	Labor-intensive	92	3,82	,913	Sig. (2-tailed) = <b>,023</b>
	Capital-intensive	120	3,51	1,004	

*Sig. level: 0.05. \*Sector variable 1: Manufacture of Consumer Goods, 2: Industrial Goods, 3: Service.  
<sup>a</sup>Bonferroni, <sup>b</sup>Tamhane.*

According to the results in Table 8, H<sub>1</sub> is accepted for costing tools as variable or marginal costing and costing for batches, but it is rejected for others. According to the research data, the use of variable or marginal costing tool is higher in businesses operating in the 11-20 year range compared to other ranges. The use of costing for batches tool is the lowest in businesses operating in the range of 1-10 years and the highest in businesses operating in the 11-20 year range. The use of the variable or marginal costing tool is higher in the businesses operating in the 11-20 year range compared to the length of activity of other businesses. When compared to the general average, it is observed that the businesses operating in the 11-20 years range are above the average. A generalization is difficult for this situation. This difference could cause the sample rather than the tool itself.

In terms of the sector variable, H<sub>1</sub> is accepted for the standard costing, costing for processes or contracts, and post-completion audits, but it is rejected for other management accounting tools. The use of the standard costing tool differs from the industrial goods manufacturing to the service sector. The use of the standard costing tool in the service sector is higher than the industrial goods manufacturing sector. The use of costing for processes or contracts tool differs from the consumer goods industry to the service sector. In the production of the consumer goods sector, the use of the costing for processes or contracts tool is higher than in other sectors. In the manufacturing of the consumer goods sector, it is possible to say that the use of the costing for processes or contracts tool is higher due to the fact that the production of consumer goods is carried out in serial production that production has successive phases (stages).

In terms of business size variable, H<sub>1</sub> is accepted for overhead allocation, but it is rejected for other management accounting tools. In the micro and small-scale businesses, the use of the overhead allocation is lower than large-scale businesses. The use of this tool increases as the business size grows.

H<sub>1</sub> is accepted for the kaizen costing and profit before tax tools in terms of the diversity of the manufactured/sold product/service, but it is rejected for other management accounting tools. According to research data, the use of kaizen costing tool is lower in businesses operating with 251 or more products/services than others.

In terms of the business type variable, H<sub>1</sub> is accepted for kaizen costing, costing for jobs, costing for batches, and profit before tax tools, but it is rejected for other management accounting tools. According to research data, the use of kaizen costing and the costing for jobs tools is higher in labor-intensive

businesses. The use of costing for batches tool is higher in capital-intensive businesses. The test results of H<sub>2</sub> set out in Table 9.

**Table 9. Test Result of H<sub>2</sub>**

Strategic Management Accounting Tools	Variables	N	Mean	Std. Deviation	F and Sig. (Reason of the difference)
Competitive position monitoring	1-10 year(s)	26	3,46	,811	F=3,043 Sig= <b>,018<sup>a</sup></b> Difference is between 1-10 year(s) and 31-40 years
	11-20 years	49	2,82	,928	
	21-30 years	57	3,09	1,040	
	31-40 years	53	2,77	1,086	
	41 years and more	27	3,22	,847	
	Total	212	3,01	,998	
Competitor performance appraisal	1-10 year(s)	26	3,15	,925	F=3,735 Sig= <b>,006<sup>a</sup></b> Difference is between 31-40 years and other activity period variables except for 11-20 years
	11-20 years	49	2,90	1,279	
	21-30 years	57	2,96	1,239	
	31-40 years	53	2,30	1,137	
	41 years and more	27	3,11	1,188	
	Total	212	2,83	1,213	
Value chain costing	1,00	68	2,72	1,220	F=4,630 Sig= <b>,011<sup>a</sup></b> Difference is between 2 and 3
	2,00	80	3,09	1,265	
	3,00	64	2,47	1,195	
	Total	212	2,78	1,251	
Brand valuation	Micro and small-scaled	123	2,42	1,397	F=5,861 Sig= <b>,003<sup>b</sup></b> Difference is between micro and small-scaled and medium-scaled
	Medium-scaled	71	1,85	,905	
	Large-scaled	18	1,83	,924	
	Total	212	2,18	1,245	
Lifetime customer profitability analysis	Micro and small-scaled	123	2,41	1,367	F=3,189 Sig= <b>,043<sup>a</sup></b> Difference is between medium-scaled and large-scaled
	Medium-scaled	71	1,96	1,200	
	Large-scaled	18	2,56	1,338	
	Total	212	2,27	1,324	
Valuation of customers as an asset	Micro and small-scaled	123	2,27	1,325	F=4,151 Sig= <b>,017<sup>b</sup></b> Difference is between micro and small-scaled and medium-scaled
	Medium-scaled	71	1,76	,948	
	Large-scaled	18	1,94	1,162	
	Total	212	2,07	1,216	
Benchmarking	Labor-intensive	92	3,03	1,021	Sig. (2-tailed) = <b>,021</b>
	Capital-intensive	120	2,70	1,042	
Strategic Pricing	Labor-intensive	92	2,98	1,139	Sig. (2-tailed) = <b>,024</b>
	Capital-intensive	120	2,62	1,154	
Brand valuation	Labor-intensive	92	2,41	1,423	Sig. (2-tailed) = <b>,021</b>
	Capital-intensive	120	2,00	1,061	
Competitor cost assessment	Labor-intensive	92	2,98	1,186	Sig. (2-tailed) = <b>,050</b>
	Capital-intensive	120	2,67	1,103	
Valuation of customers as an asset	Labor-intensive	92	2,34	1,320	Sig. (2-tailed) = <b>,006</b>
	Capital-intensive	120	1,87	1,092	

*Sig. level: 0.05. \*Sector variable 1: Manufacture of Consumer Goods, 2: Industrial Goods, 3: Service.*

*<sup>a</sup>Bonferroni, <sup>b</sup>Tamhane.*

According to the results in Table 9, H<sub>2</sub> is accepted for competitive position monitoring and competitor performance appraisal in terms of the activity time variable, but it is rejected for other strategic management accounting tools. H<sub>2</sub> is accepted for value chain costing tool in terms of the sector variable and accepted for brand valuation, lifetime customer profitability analysis, and valuation customers as an asset in terms of business size variable, but it is rejected for other strategic management accounting tools. H<sub>2</sub> is accepted for benchmarking, strategic pricing, brand valuation, competitor cost assessment, and valuation of customers as an asset in terms of the business type variable.

H<sub>3</sub>, H<sub>4</sub>, H<sub>5</sub>, H<sub>6</sub>, H<sub>7</sub>, and H<sub>8</sub> hypotheses are developed to examine the impact of the use of management accounting/strategic management accounting tools on performance are tested separately for different management accounting tools and performance variables. These variables are presented in Table 10.

**Table 10. Variables of H<sub>3</sub>, H<sub>4</sub>, H<sub>5</sub>, H<sub>6</sub>, H<sub>7</sub>, and H<sub>8</sub>**

Dependent Variables	Independent Variables	
	Management Accounting Tools	Strategic Management Accounting Tools
<b>Performance</b>		
<ul style="list-style-type: none"> <li>• Financial performance</li> <li>• Non-financial performance</li> <li>• The overall performance</li> </ul>	<ul style="list-style-type: none"> <li>• Costing Tools</li> <li>• Budgeting/Planning Tools</li> <li>• Performance Management Tools</li> <li>• Decision Support Tools</li> <li>• Pricing Tools</li> <li>• Profitability Analysis Tools</li> <li>• Activity Tools</li> </ul>	<ul style="list-style-type: none"> <li>• Strategic costing tools</li> <li>• Strategic planning-controlling ve performance evaluating tools</li> <li>• Strategic decision making tools</li> <li>• Competitor’s accounting</li> <li>• Customer accounting</li> </ul>

For the variables in Table 10, hypothesis tests are performed separately. While the management accounting tools and strategic management accounting tools express the independent variables, the types of performance are dependent variables. In the process of hypothesis testing, hypotheses for management accounting tools subgroups and performance have tested. Table 11 shows the test results of H<sub>3</sub>.

**Table 11. Test Results of H<sub>3</sub>**

<i>Costing Tools</i>	F	p	R <sup>2</sup>	Adj. R <sup>2</sup>	β	T	p
		7,039	,000	,239			
Constant						8,054	,000
Overhead allocation					,250	3,882	,000
Full (absorption) costing					,233	3,249	,001
Dependent Variable: Financial_Perf_Mean					VIF values (max=1,799; min=1,100)		
Independent Variables: Activity based costing, Overhead allocation, Variable or marginal costing, Standard costing, Kaizen costing, Full (absorption) costing, Costing for jobs, Costing for batches, Costing for processes or contracts							
<i>Budgeting/Planning Tools</i>	F	p	R <sup>2</sup>	Adj. R <sup>2</sup>	β	T	p
		4,820	,000	,124			
Constant						21,358	,000
Flexible budgeting					,242	2,547	,012
Dependent Variable: Financial_Perf_Mean					VIF values (max=3,179; min=1,920)		



Independent Variables: Flexible budgeting, Rolling forecasts, Zero based budgeting, Activity based budgeting, Incremental budgeting, Financial year forecasts							
<b>Performance Management Tools</b>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>T</b>	<b>p</b>
	8,525	,000	,141	,125			
Constant						16,924	,000
Dependent Variable: Financial_Perf_Mean				VIF values (max=2,858; min=1,102)			
Independent Variables: Economic value-added, Balanced scorecard, Business process re-engineering, Profit before tax							
<b>Decision Support Tools</b>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>T</b>	<b>p</b>
	4,963	,000	,127	,101			
Constant						19,270	,000
Discounted payback					,283	3,172	,002
Dependent Variable: Financial_Perf_Mean				VIF values (max=3,348; min=1,420)			
Independent Variables: Post-completion audits, Net present value, Internal rate of return, Accounting rate of return, Payback, Discounted payback							
<b>Pricing Tools</b>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>T</b>	<b>p</b>
	2,134	,063	,049	,026			
Constant						12,824	,000
Dependent Variable: Financial_Perf_Mean				VIF values (max=1,614; min=1,092)			
Independent Variables: Cost-plus pricing, Segmental pricing, Price skimming, Penetration pricing, Market sensitive pricing							
<b>Profitability Analysis Tools</b>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>T</b>	<b>p</b>
	3,967	,009	,054	,040			
Constant						14,956	,000
Dependent Variable: Financial_Perf_Mean				VIF values (max=1,500; min=1,149)			
Independent Variables: Product/service profitability analysis, Relevant costing for decisions, Breakeven (CVP) analysis							
<b>Activity Tools</b>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>T</b>	<b>p</b>
	6,484	,000	,111	,094			
Constant						19,965	,000
Total quality management					,285	3,083	,002
Dependent Variable: Financial_Perf_Mean				VIF values (max=1,985; min=1,402)			
Independent Variables: Customer relationship management, SWOT analysis, Total quality management, Risk management							
<i>Test level: p&lt;.05</i>							

VIF values in Table 11 are checked for the presence of multiple connection problems. If the VIF values are less than 10, it is concluded that there is no multiple connection problem (Vupa and Alma, 2008). The VIF values in Table 11 are checked, and the regression models are found to be smooth<sup>2</sup>. As a result of the analysis, models are found to be statistically significant -excluding pricing tools- based on F and p values (p=,000). Corrected R<sup>2</sup> values show how many independent variables explain the percentage of total change. When the independent variables are analyzed, the overhead allocation (β=,250; p=,000), full (absorption) costing (β=,233; p=,001), flexible budgeting (β=,242; p=,012), discounted payback (β=,283; p=,002), and total quality management (β=,285; p=,002) tools are determined to have a positive effect. H<sub>3</sub> is accepted for distribution of overall production costs, full

<sup>2</sup> Since the normality tests of the data are performed before, it is not re-mentioned with the regression analysis.

costing, flexible budgeting, and discounted repayment variables, but it is rejected for other independent variables. H<sub>5</sub> test results are shown in Table 12.

**Table 12. Test Results of H<sub>5</sub>**

<i>Costing Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>p</b>
	10,093	,000	,310	,279			
Constant						11,688	,000
Overhead allocation					,171	2,790	,006
Full (absorption) costing					,285	4,177	,000
Costing for jobs					-,184	-2,877	,004
Costing for processes or contracts					,220	2,805	,006
Dependent Variables: Nonfinancial_Perf_Mean					VIF values (max=1,799; min=1,100)		
Independent Variables: Activity based costing, Overhead allocation, Variable or marginal costing, Standard costing, Kaizen costing, Full (absorption) costing, Costing for jobs, Costing for batches, Costing for processes or contracts							
<i>Budgeting/Planning Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>p</b>
	11,116	,000	,245	,223			
Constant						26,601	,000
Flexible budgeting					,265	3,014	,003
Dependent Variables: Nonfinancial_Perf_Mean					VIF values (max=3,179; min=1,920)		
Independent Variables: Flexible budgeting, Rolling forecasts, Zero based budgeting, Activity based budgeting, Incremental budgeting, Financial year forecasts							
<i>Performance Management Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>p</b>
	8,487	,000	,141	,124			
Constant						21,749	,000
Economic value-added					,221	2,110	,036
Dependent Variables: Nonfinancial_Perf_Mean					VIF values (max=2,858; min=1,102)		
Independent Variables: Economic value-added, Balanced scorecard, Business process re-engineering, Profit before tax							
<i>Decision Support Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>p</b>
	9,059	,000	,210	,186			
Constant						23,737	,000
Discounted payback					,330	3,897	,000
Dependent Variables: Nonfinancial_Perf_Mean					VIF values (max=3,348; min=1,420)		
Independent Variables: Post-completion audits, Net present value, Internal rate of return, Accounting rate of return, Payback, Discounted payback							
<i>Pricing Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>p</b>
	7,019	,000	,146	,125			
Constant						16,189	,000
Cost-plus pricing					-,140	-2,084	,038
Price skimming					,200	2,573	,011
Penetration pricing					,205	2,531	,012
Dependent Variables: Nonfinancial_Perf_Mean					VIF values (max=1,614; min=1,092)		
Independent Variables: Cost-plus pricing, Segmental pricing, Price skimming, Penetration pricing, Market sensitive pricing							
<i>Profitability Analysis Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>p</b>
	6,204	,000	,082	,069			
Constant						18,487	,000
Product/service profitability analysis					,194	2,428	,016
Break-even (CVP) analysis					,153	2,155	,032
Dependent Variables: Nonfinancial_Perf_Mean					VIF values (max=1,500; min=1,149)		
Independent Variables: Product/service profitability analysis, Relevant costing for decisions, Breakeven (CVP) analysis							
<i>Activity Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>p</b>
	9,636	,000	,157	,141			

Constant		24,973	,000
Total quality management		,265	,004
Dependent Variables: Nonfinancial_Perf_Mean	VIF values (max=1,985; min=1,402)		
Independent Variables: Customer relationship management, SWOT analysis, Total quality management, Risk management			
<i>Test level: p&lt;.05</i>			

VIF values in Table 12 are checked, and the regression models are found to be smooth. As a result of the analysis, it is determined that the models are statistically significant in terms of F and p values ( $p=,000$ ). Corrected  $R^2$  values show how many independent variables account for a percentage of the total change. When the independent variables are analyzed, overhead allocation ( $\beta=,171$ ;  $p=,006$ ), full (absorption) costing ( $\beta=,285$ ;  $p=,000$ ), costing for processes or contracts ( $\beta= -,184$ ;  $p=,004$ ), flexible budgeting ( $\beta=,265$ ;  $p=,003$ ), economic value-added ( $\beta=, 221$ ;  $p=,036$ ), and discounted payback ( $\beta=,330$ ;  $p=,000$ ) are determined to have positive effects however, costing for jobs ( $\beta= -,184$ ;  $p=,004$ ) is determined to have negative effects. In addition, price skimming ( $\beta=,200$ ;  $p=,011$ ), penetration pricing ( $\beta=,205$ ;  $p=,012$ ), product/service profitability analysis ( $\beta=,194$ ;  $p=,016$ ), break-even point analysis ( $\beta=,153$ ;  $p=,032$ ), and total quality management ( $\beta=,265$ ;  $p=,004$ ) tools are determined to have positive effects, but cost-plus pricing ( $\beta=-,140$ ;  $p=,038$ ) has a negative effect on the tool.  $H_5$  is accepted for overhead allocation, full costing, costing for processes or contracts, flexible budgeting, economic value-added, discounted payback, costing for jobs, price skimming, penetration pricing, product/service profitability analysis, break-even point analysis, total quality management, and cost-plus pricing but it is rejected for other independent variables.

One of the performance management tools, the economic value-added, is useful on non-financial performance means that business management focuses on increasing corporate performance and maximizing the wealth of stakeholders by increasing the market value of the business instead of maximizing profit in the short term. This will also enable business management or stakeholders to choose the method that takes into account the time value of the money and the opportunity cost to make the right decision in performance measurement.

The price skimming tool is a strategy that is followed by companies that are leaders in the market or who offer new products/services to achieve high profits. The penetration pricing tool is a strategy followed by businesses that are new to the market and try to dominate, not aiming to profit in the first place. The positive impact of these two instruments on the measurement of non-financial performance indicates that there are businesses that have completed their investments and engaged in research and development. Also, that means they are growing businesses that are newly established and are trying to penetrate the market. In addition, it is understood that they follow the right strategy according to their business characteristics in measuring non-financial performance. The cost-plus pricing tool is likely to

have a negative impact on non-financial performance since it is entirely profit-driven. The test results of H<sub>7</sub> are shown in Table 13.

**Table 13. Test Results of H<sub>7</sub>**

<i>Costing Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>p</b>
	10,145	,000	,311	,281			
Constant						10,854	,000
Overhead allocation					,231	3,771	,000
Full (absorption) costing					,280	4,102	,000
Costing for jobs					-,163	-2,561	,011
Costing for processes or contracts					,174	2,217	,028
Dependent Variable: Overall_Perf_Mean					VIF values (max=1,799; min=1,100)		
Independent Variables: Activity based costing, Overhead allocation, Variable or marginal costing, Standard costing, Kaizen costing, Full (absorption) costing, Costing for jobs, Costing for batches, Costing for processes or contracts							
<i>Budgeting/Planning Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>P</b>
	8,834	,000	,205	,182			
Constant						26,154	,000
Flexible budgeting					,275	3,040	,003
Dependent Variable: Overall_Perf_Mean					VIF values (max=3,179; min=1,920)		
Independent Variables: Flexible budgeting, Rolling forecasts, Zero based budgeting, Activity based budgeting, Incremental budgeting, Financial year forecasts							
<i>Performance Management Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>P</b>
	10,290	,000	,166	,150			
Constant						21,164	,000
Economic value-added					,207	2,000	,047
Dependent Variable: Overall_Perf_Mean					VIF values (max=2,858; min=1,102)		
Independent Variables: Economic value-added, Balanced scorecard, Business process re-engineering, Profit before tax							
<i>Decision Support Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>P</b>
	8,035	,000	,190	,167			
Constant						23,501	,000
Discounted payback					,331	3,863	,000
Dependent Variable: Overall_Perf_Mean					VIF values (max=3,348; min=1,420)		
Independent Variables: Post-completion audits, Net present value, Internal rate of return, Accounting rate of return, Payback, Discounted payback							
<i>Pricing Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>P</b>
	4,052	,002	,090	,067			
Constant						15,556	,000
Dependent Variable: Overall_Perf_Mean					VIF values (max=1,614; min=1,092)		
Independent Variables: Cost-plus pricing, Segmental pricing, Price skimming, Penetration pricing, Market sensitive pricing							
<i>Profitability Analysis Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>P</b>
	5,800	,001	,077	,064			
Constant						18,137	,000
Product/service profitability analysis					,157	1,962	,050
Dependent Variable: Overall_Perf_Mean					VIF values (max=1,500; min=1,149)		
Independent Variables: Product/service profitability analysis, Relevant costing for decisions, Breakeven analy.							
<i>Activity Tools</i>	<b>F</b>	<b>p</b>	<b>R<sup>2</sup></b>	<b>Adj. R<sup>2</sup></b>	<b>β</b>	<b>t</b>	<b>P</b>
	9,053	,000	,149	,132			
Constant						24,443	,000
Total quality management					,299	3,308	,001

Dependent Variable: Overall_Perf_Mean	VIF values (max=1,985; min=1,402)
Independent Variables: Customer relationship management, SWOT analysis, Total quality management, Risk management	
Test level: $p < .05$	

VIF values in Table 13 are checked, and regression models are found to be smooth. As a result of the analysis, it is determined that the models are statistically significant ( $p=,000$ ) based on F and p values. Corrected R<sup>2</sup> values show how many independent variables account for a percentage of the total change. When the independent variables are analyzed, overhead allocation ( $\beta=,231$ ;  $p=,000$ ), full (absorption) costing ( $\beta=,280$ ;  $p=,000$ ), costing for processes or contracts ( $\beta=,174$ ;  $p=,028$ ), flexible budgeting ( $\beta=,275$ ;  $p=,000$ ), economic value-added ( $\beta=,207$ ;  $p=,047$ ), discounted payback ( $\beta=,331$ ;  $p=,000$ ), product/service profitability analysis ( $\beta=,157$ ;  $p=,050$ ), and total quality management ( $\beta=,299$ ;  $p=,001$ ) are determined to have positive effects; however, costing for jobs tool ( $\beta=-,163$ ;  $p=,000$ ) has negative effect. H<sub>7</sub> is accepted for overhead allocation, full (absorption) costing, costing for processes or contracts, flexible budgeting, economic value-added, discounted payback, product/service profitability analysis, total quality management, and costing for jobs variables but it is rejected for other independent variables. Test results of H<sub>4</sub>, H<sub>6</sub>, and H<sub>8</sub> are shown in Table 14.

**Table 14. Test Results of H<sub>4</sub>, H<sub>6</sub>, H<sub>8</sub>**

<i>Strategic Management</i>	F	p	R <sup>2</sup>	Adj. R <sup>2</sup>	$\beta$	t	P
<i>Accounting Tools</i>	3,427	,000	,219	,155			
Constant						15,717	,000
Quality costing					,211	2,133	,034
Benchmarking					-,190	-2,183	,030
Customer profitability analysis					-,166	-1,983	,049
Dependent Variable: Financial_Perf_Mean					VIF values (max=2,930; min=1,607)		
Independent Variables: Attribute costing, Life cycle costing, Quality costing, Target costing, Value chain costing, Benchmarking, Integrated performance measurement, Strategic cost management, Strategic pricing, Brand valuation, Competitor cost assessment, Competitive position monitoring, Competitor performance appraisal, Customer profitability analysis, Lifetime customer profitability analysis, Valuation of customers as an asset							
<i>Strategic Management</i>	F	p	R <sup>2</sup>	Adj. R <sup>2</sup>	$\beta$	t	P
<i>Accounting Tools</i>	4,605	,000	,274	,215			
Constant						19,359	,000
Attribute costing					,235	2,620	,009
Dependent Variable: Nonfinancial_Perf_Mean					VIF values (max=2,930; min=1,607)		
Independent Variables: Attribute costing, Life cycle costing, Quality costing, Target costing, Value chain costing, Benchmarking, Integrated performance measurement, Strategic cost management, Strategic pricing, Brand valuation, Competitor cost assessment, Competitive position monitoring, Competitor performance appraisal, Customer profitability analysis, Lifetime customer profitability analysis, Valuation of customers as an asset							
<i>Strategic Management</i>	F	p	R <sup>2</sup>	Adj. R <sup>2</sup>	$\beta$	t	P
<i>Accounting Tools</i>	4,450	,000	,267	,207			
Constant						19,184	,000
Dependent Variable: Overall_Perf_Mean					VIF values (max=2,930; min=1,607)		
Independent Variables: Attribute costing, Life cycle costing, Quality costing, Target costing, Value chain costing, Benchmarking, Integrated performance measurement, Strategic cost management, Strategic pricing, Brand valuation, Competitor cost assessment, Competitive position monitoring, Competitor performance							

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appraisal, Customer profitability analysis, Lifetime customer profitability analysis, Valuation of customers as an asset

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*Test level:  $p < .05$*

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VIF values in Table 14 are checked, and regression models are found to be smooth. As a result of the analysis, it is determined that the models are statistically significant ( $p = .000$ ) based on F and p values. Corrected  $R^2$  values show how many independent variables account for a percentage of the total change. When the independent variables are examined, quality costing ( $\beta = .211$ ;  $p = .034$ ), attribute costing tools ( $\beta = .235$ ;  $p = .009$ ) are determined to have positive effects, but benchmarking ( $\beta = -.190$ ;  $p = .030$ ) and customer profitability analysis ( $\beta = -.166$ ;  $p = .049$ ) tools have negative effects.  $H_4$  is accepted for quality costing, benchmarking, and customer profitability analysis variables, but it is rejected for other independent variables.  $H_6$  is accepted for the attribute costing tool but it is rejected for other independent variables.  $H_8$  is rejected for all independent variables.

The use of benchmarking tool, from planning, control, and performance measurement tools, has a negative impact on financial performance. The use of other planning, control, and performance measurement tools has no statistically significant effect on three types of performance. The use of strategic decision-making tools and competitors' accounting tools does not have a statistically significant effect on three types of performance. The use of the customer profitability analysis tool in customer accounting tools has a negative impact on financial performance. The use of other customer accounting tools has no statistically significant effect on three types of performance.

## 6. CONCLUSION

This study is carried out to determine the usage level of the management accounting/strategic management accounting tools, investigating whether the companies differ according to their demographic characteristics, and examining the effects of the use of the tools on performance. According to the results of frequency analysis on the use of management accounting/strategic management accounting tools, it is seen that the tools developed recently have a certain level of use, but the traditional management accounting tools are still in use more widely. In other words, traditional management accounting tools are in use more than strategic management accounting tools. These results are in line with previous studies in the literature (Pavlatos and Paggios 2009; Pierce and O'Dea 1998; Chenhall and Langfield-Smith 1998; Angelakis et al. 2010; Yalçın 2012; Akmeşe and Bayrakçı 2016; El-Ebaishi et al. 2003; Ghasem et al. 2015; Zoysa et al. 2014). The overhead allocation tool from costing tools, standard costing, and costing for jobs are the most widely used tools. The tools with the lowest usage are quality costing, life cycle costing, and attribute costing. The usage of the target costing and value chain costing from strategic costing tools is above the middle range.

According to the findings, the use of management accounting/strategic management accounting tools differs for 19 tools due to the demographic characteristics of the businesses (Appendix 1 and 2 for the detailed list). In this aspect, this result supports the studies on relationship between the size of the business and the use of management accounting/strategic accounting tool in the literature (Kovachev and Ross 2009; Pavlatos 2015; Pierce and O’Dea 1998; Šiška 2016; Ahmad 2017; Nair and Nian 2017); however, for other 34 tools, it supports studies conclude that there is no relationship (Cinquini and Tenucci 2007). While the findings obtained for the standart costing, costing for processes or contracts, post-completion audits, and valu chain analysis tools in the sector variable are in parallel with the studies in the literature (Cadez et al. 2005; Kovachev and Ross 2009), the differences between the sector and the management accounting/strategic management accounting tools differ with the studies (Cinquini and Tenucci 2007; Al and McLellan 2013).

According to the findings, the use of management accounting tools and their impact on performance (financial performance, non-financial performance, and the overall performance), the use of 24 tools have no effect while 13 of them have an effect on performance (Appendix 1 for the detailed list). This result is in line with previous studies in the literature (Al-Khadash and Feridun 2006; Al and McLellan 2013; Ahmad 2012; Anh 2016; Ahmad 2017; Duh et al. 2009). The fact that the use of tools has no effect on performance is in parallel with the findings obtained from similar studies in the literature (Ittner et al. 2002).

In the study, according to the findings of the use of strategic management accounting tools and their impact on performance (financial performance, non-financial performance, and the overall performance), it is found that the use of 12 tools have no effect while the use of 4 of them have effect on performance (Appendix 2 for the detailed list). This finding is in line with the findings from similar studies in the literature (Anna 2015; Pavlatos 2015; Aksoylu and Akın 2013; Şener and Dirlik 2012; Kalkhouran et al. 2017).

With future studies, much more specific studies can be carried out on management accounting/strategic management accounting tools. Management accounting/strategic management accounting tools can be examined on the basis of demographic characteristics such as usage of tools by sector, business size, and business type. Also, quantitative (objective) data from financial statement/reports and subjective data (from manager, employees etc.) can be used to compare them and their effects on the research results.

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This paper complies with Research and Publication Ethics, has no conflict of interest to declare, and has received no financial support.

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**Appendix-1 Hypothesis test results of H<sub>1</sub>, H<sub>3</sub>, H<sub>5</sub>, and H<sub>7</sub> by tool**

Management Accounting Tools	H <sub>1</sub>					H <sub>3</sub>	H <sub>5</sub>	H <sub>7</sub>
	Activity Period	Sector	Business Size	Product /Service Diversity	Business Type			
Costing Tools	Activity based costing	X	X	X	X	X	X	X
	Overhead allocation	X	X	Accepted	X	X	Accepted	Accepted
	Variable or marginal costing	Accepted	X	X	X	X	X	X
	Standard costing	X	Accepted	X	X	X	X	X
	Kaizen costing	X	X	X	Accepted	Accepted	X	X
	Full (absorption) costing	X	X	X	X	X	Accepted	Accepted
	Costing for jobs	X	X	X	X	Accepted	X	Accepted
	Costing for batches	Accepted	X	X	X	Accepted	X	X
Budgeting /Planning Tools	Costing for processes or contracts	X	Accepted	X	X	X	Accepted	Accepted
	Flexible budgeting	X	X	X	X	X	Accepted	Accepted
	Rolling forecasts	X	X	X	X	X	X	X
	Zero based budgeting	X	X	X	X	X	X	X
	Activity based budgeting	X	X	X	X	X	X	X
	Incremental budgeting	X	X	X	X	X	X	X
Performance Management Tools	Financial year forecasts	X	X	X	X	X	X	X
	Balanced Scorecard	X	X	X	X	X	X	X
	Business process re-engineering	X	X	X	X	X	X	X
	Economic value-added	X	X	X	X	X	Accepted	Accepted
Decision Support Tools	Profit before tax	X	X	X	Accepted	Accepted	X	X
	Post-completion audits	X	Accepted	X	X	X	X	X
	Net present value	X	X	X	X	X	X	X
	Internal rate of return	X	X	X	X	X	X	X
	Accounting rate of return	X	X	X	X	X	X	X
	Discounted payback	X	X	X	X	X	Accepted	Accepted
Pricing Tools	Payback	X	X	X	X	X	X	X
	Cost-plus pricing	X	X	X	X	X	Accepted	X
	Segmental pricing	X	X	X	X	X	X	X
	Price skimming	X	X	X	X	X	Accepted	X
	Penetration pricing	X	X	X	X	Accepted	Accepted	X
Profitability Analysis Tools	Market sensitive pricing	X	X	X	X	X	X	X
	Product/service profitability analysis	X	X	X	X	X	Accepted	Accepted
	Relevant costing for decisions	X	X	X	X	X	X	X
Activity Tools	Breakeven (CVP) analysis	X	X	X	X	X	Accepted	X
	SWOT analysis	X	X	X	X	X	X	X
	Customer relationship management	X	X	X	X	X	X	X
	Total quality management	X	X	X	X	X	Accepted	Accepted
Risk management	X	X	X	X	X	X	X	

X: Rejected

**Appendix-2 Hypothesis test results of H<sub>2</sub>, H<sub>4</sub>, H<sub>6</sub>, and H<sub>8</sub> by tool**

Strategic Management Accounting Tools		H <sub>2</sub>					H <sub>4</sub>	H <sub>6</sub>	H <sub>8</sub>
		Activity Period	Sector	Business Size	Product /Service Diversity	Business Type			
Strategic costing tools	Attribute costing	X	X	X	X	X	X	<i>Accepted</i>	X
	Life cycle costing	X	X	X	X	X	X	X	X
	Quality costing	X	X	X	X	X	<i>Accepted</i>	X	X
	Target costing	X	X	X	X	X	X	X	X
	Value chain costing	X	<i>Accepted</i>	X	X	X	X	X	X
Strategic planning- controlling and performance	Benchmarking	X	X	X	X	<i>Accepted</i>	<i>Accepted</i>	X	X
	Integrated performance measurement	X	X	X	X	X	X	X	X
Strategic decision making tools	Strategic cost management	X	X	X	X	X	X	X	X
	Strategic Pricing	X	X	X	X	<i>Accepted</i>	X	X	X
	Brand valuation	X	X	<i>Accepted</i>	X	<i>Accepted</i>	X	X	X
Competitor's accounting	Competitor cost assessment	X	X	X	X	<i>Accepted</i>	X	X	X
	Competitive position monitoring	<i>Accepted</i>	X	X	X	X	X	X	X
	Competitor performance appraisal	<i>Accepted</i>	X	X	X	X	X	X	X
Customer accounting	Customer profitability analysis	X	X	X	X	X	<i>Accepted</i>	X	X
	Lifetime customer profitability analysis	X	X	<i>Accepted</i>	X	X	X	X	X
	Valuation of customers as an asset	X	X	<i>Accepted</i>	X	<i>Accepted</i>	X	X	X

X: Rejected