July. 2015. Vol. 5, No.5 ISSN 2307-227X
International Journal of Research In Social Sciences

www.ijsk.org/ijrss

A COMPARISON OF ABSORPTION COSTING AND ACTIVITY BASED COSTING SYSTEMS THROUGH AN OPTIMIZATION PROBLEM

ARIKAN TARIK SAYGILI[1], CEVDET ALPTEKİN KAYALI[2]

Assoc. Prof., Department of Management, Faculty of Economics and Administrative Sciences, Economy University, İzmir, TURKEY[1]
Assoc. Prof., Department of Management, Faculty of Economics and Administrative Sciences, Manisa Celal Bayar University, Manisa, TURKEY[2]
E-mail: arikansaygili@gmail.com, E-mail: cakayali@hotmail.com

ABSTRACT

Accounting Information System (AIS) relied on for production of meaningful, reliable and timely data that will be used for various managerial decisions is an extremely important component of Management Information System (MIS). Actually, some of the most crucial data used by managers either processed through or provided by AIS. In order to have an AIS that will produce reliable data, its components and tools & techniques to be used within this system need to be chosen and system need to be designed carefully. In this study, it is aimed to show the importance of costing systems that are subsystems of AIS for providing reliable information. A comparison of traditional costing systems and activity based costing systems through an optimization problem is presented and analyzed in the study to show how different outcomes can be produced even if the same data is processed. Also, the data processed by both costing systems can be interpreted differently and different managerial decisions such as pricing and resource/asset utilization can be made.

Key words: Traditional Costing Systems, Activity Based Costing System, Cost Driver

1. INTRODUCTION

Manufacturing process has been transformed into a more technology-intense rather than labor-intense structure due to recent and continuing developments in production technologies. Modern business conditions of companies can be characterized by more diverse general expenses that significantly participate in total cost of a company which has changed the cost profile/components of companies producing both goods and services. Technological innovations and automated manufacturing systems as well as CAD and CAM have deceased the unit manufacturing costs for many products and caused fixed costs to be an important component of total manufacturing costs (Barnes 1992). Also, as stated by Cardinaels, Roodhooft and Warlop (2004) when total life cycle of a product considered, it is obvious that marketing, selling and distribution costs have become quite significant for any product and therefore managerial decisions (Saygili, 2007).

Accounting Information Systems (AIS) have been a significant component of Management Information Systems (MIS) since, management prepares both tactical and strategic plans as well as budgets and feasibility reports based on data processed and provided by AIS (Laing, 1994; Saygili, 2007). Data provided by AIS becomes extremely important when considering today's intense competition environment requiring companies to trace and calculate costs related to any product in order to come up with the accurate unit costs, right prices for each specific product along with conducting accurate and reliable investment analysis and producing solid reports. This requires a reliable costing system that enables companies to trace and assign costs to any given cost object from the very beginning until the very end, that is, from production till sale of a specific product. It has been thought that simple (absorption) costing methods have become rather insufficient in producing accurate data for pricing and other strategic managerial decisions.

Moreover ABC providing detailed analysis that will help to eliminate or the least minimize activities that do not contribute to the useful value of while emphasizing on activities that will contribute to perceived and useful value of a product. In this sense ABC, when used appropriately, contributes to

resource utilization without compromising quality and performance characteristics of the product (Maher, 1997). Especially in companies with significant indirect costs and wide range of product mixes, Activity Based Costing rather than a simple costing method is suggested (Oker, 2003; Titiz and Altunay, 2012). As stated by Karcioglu (2000), Hacirustemoglu and Sakrak (2002) and Unutkan (2010), ABC is a very useful managerial tool (Yildiz and Karaca 2011):

- To eliminate problems caused by inefficient allocation and/or misallocation of operational and production costs;
- To provide a more rational ground for better managerial and accounting and cost control procedures by determining cost causing factors and activities in a more detailed manner
- To measure production processes in terms of "efficiency, effectiveness and quality" through consideration of non-financial criteria as well.

In order to understand the significant difference in results produced by both costing systems, features of both systems will be explored briefly in the next section.

2. ABSORPTION COSTING METHOD

Simple costing method is widely used by majority of the companies in the world in order to calculate costs of Work-In Process (WIP) Inventory and Finished Goods Inventory figures in Balance Sheet along with Cost of Goods Sold (COGS) figure in Income Statement. However, it is argued whether simple costing system can produce accurate and reliable data for managerial decisions (Karatas *et al*., 2014; Charaf and Rahmouni, 2014; Kalicanin and Knezevic, 2013). Actually, as stated by Kaplan and many other researchers and believed by a majority of new generation managers that simple costing method is producing misleading data related to costing, pricing as well as other managerial decisions due to two important reasons:

The first problem with simple costing methods is about allocation of Manufacturing Overhead (MO) expenses composed of various variable and fixed manufacturing costs apart from Direct Material and Direct labor costs. Even, some components of MO have mixed cost structure possessing features of both variable and fixed costs. However, the allocation of all these different cost categories composing total MO is done by a single cost driver such as direct labor/direct machine hour considering solely production volume. However, this is believed to cause false information related to both unit costs and total product group costs especially in companies with diverse sales mix.

The second issue that is problematic with simple costing systems is the way marketing selling and distribution costs are handled. In simple costing system, these costs are treated as period costs and therefore expensed at the end of each fiscal year. They are not included in costing calculations and/or pricing decisions. However, marketing, selling and distribution operations of companies are spread over extremely large geographical areas and their costs should not be ignored for any managerial decision making process in order to be competitive. However, when marketing selling and distribution expenses are taken into consideration, proper methods need to be employed. Some companies try to allocate marketing selling and distribution costs based on sales volume solely, some even do not consider seasonal fluctuations. These kinds of application are subject to a great mistake though. Usually new products need more advertising and promotional costs even though they are sold at smaller quantities and generate smaller sales revenues compared to existing products'. This causes newer products to absorb lesser from total marketing, selling and distribution costs even though simple logic suggests the opposite.

3. ACTIVITY BASED COSTING (ABC)

The fundamental difference between traditional simple costing system and activity based costing system (ABC) is evident at the process of allocating MO costs to each cost object. As stated before, traditional simple costing system uses a single allocation base and cost driver in order to allocate indirect MO costs to cost objects. However, ABS system allocates indirect costs by using multi allocation bases and cost drivers, that is, a suitable cost driver for allocation of a certain cost. The whole process can simply be summarized as follows:

1. Determine the key activities
2. Determine a cost driver for each key activity
3. Calculate the cost of each key activity group
4. Calculate cost driver/allocation rate for each activity by dividing activity cost into allocation base
5. Allocate costs to each cost object via allocation rates.

Different products in the sales mix of a company might be subject to same activities at different

levels. Therefore, allocating total cost of that activity requires a specific cost driver. A cost driver suitable for an activity may not be suitable for another. ABC system favors this idea essential for accurate costing and pricing decisions. ABC improves coordination among different units and departments within a company. Also, unit costs are calculated more accurately and do change according to seasonal fluctuations since they are not calculated by use of a single cost driver related to sales/production volume such as direct labor/machine hours (Baxendale, 2001; Saygili 2007). Finally, ABS systems enables inclusion of all product related activity and operation costs, such as marketing selling and distribution costs, in costing, pricing, budgeting and other decision making process in a very systematic and logical manner (Cardinaels, Roodhooft and Warlop, 2004). All of these features make ABC to be perceived as a more reliable and accurate costing system than the traditional simple costing.

4. A COMPARATIVE EXAMPLE

In order to see the differences of traditional simple costing and ABC systems and to display the advantages provided by ABC a simple example is designed. In the example, Company A producing two types of products, X and Y will be analyzed both as to simple costing and ABC methods. It is assumed that Company A traces the costs on a weekly manner. According to simple costing system cost driver is machine hours, since Company A has a technology intense manufacturing facility. Total budgeted weekly direct material and direct labor costs are estimated to be $ 50,000 and $45,000 respectively. Budgeted weekly MO expense composed of various manufacturing related expenses is $173,100. Data need to calculate unit manufacturing costs of each product according to traditional simple costing system is given below:

Table 1. Variables

Cost Components	Product X	Product Y
Direct Material	$15	$18
Direct Labor	$10	$22
Machine A	15 Minutes	10 Minutes
Machine B	15 Minutes	30 Minutes
Machine C	15 Minutes	5 Minutes
Machine D	15 Minutes	5 Minutes
Total Machine Hours	60 Minutes	50 Minutes

When unit selling prices of $150 for X and $160 for Y are considered along with these data, an optimization problem of maximizing profit can be modeled as follows:

MODEL I:

$$\text{Max } Z = 150X + 160Y$$

Subject to

$$15X + 18Y \leq 50{,}000$$
$$10X + 22Y \leq 45{,}000$$
$$60X + 50Y \leq 173{,}100$$
$$X, Y \geq 0$$

On the other hand when ABC method is applied by the same situation, the concentration will be on costs of specific activities within total manufacturing overhead rather than the cost of whole manufacturing overhead. Therefore, every significant activity constituting manufacturing overhead and its cost need to be determined and calculated separately. Then, overhead costs and other indirect costs will be allocated based on related activity volume not solely production volume. Then, a specific cost driver/allocation base and a cost allocation rate for each activity need to be calculated for each activity group. Finally, indirect costs will be allocated to each cost object. The cost data displayed in Table 1 above need to be converted into something like this:

Table 2. Cost-Time Variables

Activity	Cost (Weekly)	Cost Driver	Cost Driver Rate
Activity A	$ 4,500	18,000 minutes (weekly capacity)	$0,25/minute
Activity B	$ 9,000	30,000 minutes (weekly capacity)	$0.30/minute
Activity C	$ 12,000	30,000 minutes (weekly capacity)	$0,40/minute
Activity D	$ 19,500	97,500 minutes (weekly capacity)	$0,20/minute
Product Design	$ 13,600	34,000 product design hours	$0,4/design hour
Process Design	$ 13,500	90,000 process design hours	$0,15/design hours
Product Development	$ 39,000	60,000 hours	$0,65/prototype
Product Line Set Up	$ 27,000	13,500 hours	$2/set up
Default Control	$ 35,000	70,000 control hours	$0,50/control hour

July. 2015. Vol. 5, No.5 ISSN 2307-227X
International Journal of Research In Social Sciences

www.ijsk.org/ijrss

The table above covers the four steps of ABC. However, there is one more step to accomplish, that is, calculation of activity costs to be allocated to each cost object that are product X and Y in this example. The next table summarizes cost allocation process:

Table 3. The Variables of Product

Cost Driver Rate	Usage By Each Product		Amount Allocated ($)	
Products	X	Y	X	Y
Activity A	15 min	10 min	3.75	2.5
Activity B	15 min	30 min	4.5	9
Activity C	15 min	5 min	6	2
Activity D	15 min	5 min	7.5	2.5
Product Design	20 hrs	30 hrs	8	12
Process Design	30 hrs	40 hrs	4.5	6
Product Development	40 hrs	20 hrs	26	13
Product Line Set Up	1.8 hrs	3 hrs	3.6	6
Default Control	4 hrs	3 hrs	2	1.5

When these data is to be used for an optimization problem such as minimizing cost, the model will be as follows:

MODEL II:
Max Z = 150X + 160Y
Subject to
$15X + 18Y \leq 50,000$
$10X + 22Y \leq 45,000$
$3.75X + 2.5Y \leq 4,500$
$4.5X + 9Y \leq 9,000$
$6X1 + 2X2 \leq 12,000$
$7.5X + 2.5Y \leq 19,500$
$8X + 12Y \leq 13,600$
$4.5X + 6Y \leq 13,500$
$26X + 13Y \leq 39,000$
$3.6X + 6Y \leq 27,000$
$2X + 1{,}5Y \leq 35,000$
$X, Y \geq 0$

5. SOLUTIONS AND FINDINGS[1]

The optimal solution based on the Model I above is seen below:

Figure I. Model I Solution

Variable	Status	Value
X1	Basic	1900.244
X2	Basic	1181.707
Direct Material	Basic	225.6094
Direct Labor	NONBasic	0
Total MO	NONBasic	0
Optimal Value (Z)		474,109.8

As it is seen at Figure I, according to Model I production of 1,900 units ox X1 and 1,181 units of X2 are suggested. This production volume will maximize profitability at an amount of $474,109.8. Also, it is seen from the Figure I that, $225.6094 worth direct material is unused while other resources are totally utilized. More detailed data about ranging are displayed in Figure II:

Figure II. Model I Ranging

Variable	Value	Reduced Cost	Original Val	Lower Bound	Upper Bound
X1	1900.244	0	150	72.7273	192
X2	1181.707	0	160	125	330
Const.	Dual Value	Slack/ Surplus	Original Val	Lower Bound	Upper Bound
Direct Material	0	225.6094	50000	49774.39	Infinity
Direct Labor	2.561	0	45000	28850	45560.61
Total MO	2.0732	0	173100	102272.7	174333.3

The data above shows that the suggested production volume for X1 will not change as long as its price ranges between $72.72 and $192. The similar price range is also provided for X2. These data helps managers for pricing decisions. In addition, the data suggests that 1 unit increase in direct labor source will cause an increase of $2.56 whereas 1 unit increase in MO will cause an increase of $2.0732 in profit figure.
The optimal solution based on the Model II is seen below:

Figure III. Model II Solution

Variable	Status	Value
X1	Basic	800
X2	Basic	600
Direct Material	Basic	27,200
Direct Labor	Basic	23,800
Activity A	NONBasic	0
Activity B	Basic	6,000
Activity C	NONBasic	0
Activity D	Basic	12,000
Product Design	Basic	0

[1] POM-QM for Windows was used for solution of optimization models.

Process Design	Basic	6,300
Product Development	Basic	10,400
Product Line Set Up	Basic	20,520
Default Control	Basic	32,500
Optimal Value (Z)		216,000

Solution set displayed in Figure III suggests production of 800 units of X1 and 600 units of X2, which will maximize profit to an amount of $216,000. Data about ranging can be seen in Figure IV in details:

Figure IV. Model II Ranging

Variable	Value	Reduced Cost	Original Val	Lower Bound	Upper Bound
X1	800	0	150	80	240
X2	600	0	160	100	300
Const.	Dual Value	Slack/ Surplus	Original Val	Lower Bound	Upper Bound
Direct Material	0	27,200	50,000	22,800	Infinity
Direct Labor	0	23,800	45,000	21,200	Infinity
Activity A	28	0	4,500	2,500	4,500
Activity B	0	6,000	12,000	6,000	Infinity
Activity C	10	0	9,000	5,400	9,000
Activity D	0	12,000	19,500	7,500	Infinity
Product Design	0	0	13,600	13,600	Infinity
Process Design	0	6,300	13,500	7,200	Infinity
Product Development	0	10,400	39,000	28,600	Infinity
Product Line Set Up	0	20,520	27,000	6,480	Infinity
Default Control	0	32,500	35,000	2,500	Infinity
Optimal Value					216,000

Price ranges of $80 to $240 for X1 and $100 to $300 for X2 will not change the optimal solution set. The price ranges are quite different than the ones in optimal solution set of Model I. Also, as it is seen in Figure IV, none of the sources are fully utilized. However, there is some interesting data regarding Activity A and Activity C. There is lower limit for each source, that is, if availability of source is below that lower bound, then optimal solution will be altered. However, there are no upper bounds for any resource except for activities A and C. In other words, unlimited availability of resources will not change optimal solution set except for activities A and B. But, an extra unit of Activity A will increase profit by $28 and similarly one unit increase in Activity C will increase profit by $10. These are quite interesting data for resource planning. However, the suggestions provided by each model differ greatly.

As it can be seen from data above, simple absorption costing and activity based costing systems lead to different sets of solutions in optimization problems. Suggested production mix in Model I is quite different than the one in Model II. Also, figures of maximum profits differ greatly between both models. Price ranges, that are lower and upper price level, that will cause a change in production and resource utilization decisions in both models can be interpreted very differently. In addition these differences, slack variables and matters related to resource utilization are totally unrelated. So, which one is more reliable?

It is for sure that simple absorption costing is very practical and it is really a lot of time and work to go through steps of activity based costing. However, in today's competitive environment, managers need to be more precise and consider even the slightest details in order to position their companies, price their products and utilize their resources in order to be successful. Therefore, it is believed, accost allocation system allowing assignment of costs to cost objects in a more detailed, rational and precise manner will enable managers to come up with better business decisions. Activity Based Costing system when designed and operated properly is believed to be producing more reliable decisions for managers and other decision makers in a company.

6. CONCLUSION

Accounting Information Systems' main purposes are to provide decisions makers with accurate, related, reliable and full information (Drury 2008). AIS offer a set of very useful tools and techniques such as financial reports, budgets, ratio analysis, etc. ABC, as one AIS innovation, has become quite popular for over two decades and implemented in various sectors including manufacturing, retailing and service providing such as banking/insurance companies especially in emerging economies where accurate and reliable accounting information is more crucial to survive. The most important reasons for adopting ABC by companies in emerging economies can be cited as: the inability of traditional financial system to provide relevant information where pricing, investment, product design and promotion decisions affect the market share and financial position of companies that need to be more careful than their opponents with more solid financial, economical, legal and technological environments in developed economies (Salawu and Ayoola, 2012; Bt Fadzil and Rababah 2012, Charaf

and Rahmouni, 2014). The research conducted by Chongruksut (2002), Bt Fadzil and Rababah (2012), Charaf and Bescos (2013) and Rios-Manriquez (2014) stated that users of ABC are quite satisfied by this system whereas majority of users of traditional costing methods often complain about their costing system (Charaf and Rahmouni, 2014).

ABC is believed to be a valuable managerial tool by most of the researchers and basic advantages provided by ABC can be summarized as (Kalicanin and Knezevic, 2013):

- Enables more accurate cost allocation to cost objects through multi cost drivers
- Provides better understanding and monitoring of business activities and production processes through considering company's operations
- Provides more valuable data to management through considering not only resource consumption but also process and activity output
- Provides a better performance assessment for the company through considering numerous financial and, more importantly, non-financial variables
- Helps to eliminate or reduce non-value added activities through monitoring and evaluating efficiency and effectiveness of company activities.

However, ABC is not fully utilized by managers who are in favour of this system. Although, ABC can be successfully integrated in various managerial tools and techniques such as budgeting and Balance Scorecard applications, the findings of researchers including Charaf and Rahmouni (2014), Titiz and Altunay (2012), Rios-Manriquez et al. (2014) along with others revealed that ABS, currently, is not utilized in these areas as much as it should be. The main reasons behind this situation seems to be a) lack of knowledge, b) cost and time involved in founding a new system with new components and educating personnel operating them. On the other hand, there some studies conducted by various researchers that seem to promote ABC applications in the future such as researches of Cannavacciuolo et al. (2012) integrating ABC and Analytical Hierarch Process (AHP) in order to assess the value of competencies in production process; Karatas et al. (2014) integrating fuzzy logic applications in ABC area; Yildiz and Karaca (2011) integrating Economic Value Added System and ABC and Ostadi et al. (2008) integrating ABC and Flexible Manufacturing Systems. It is strongly believed that the studies mentioned above along with studies exploring issues such as Time Driven Activity Based Costing and its integration to other managerial tools and techniques will contribute to decision making processes of managers and related groups through providing opportunity of working with more reliable and accurate data in the near future.

REFERENCES:

1. Ainsworth, Penne, (1994), "When Activity-Based Costing Works", The Practical Accountant, 27(7), 28-36.
2. Barnes, Frank C., (1992), "Management's Stake in Improved Decision Making with Activity Based Costing", S.A.M. Advanced Management Journal, 57(3), 20-26.
3. Baxendale, Sidney J., (2001), "Activity-Based Costing for the Small Business: A Primer", Business Horizons, 44(1), 61-68.
4. Björnak, T. and Mitchell, F., (2002), "The Development of Activity Based Costing Journal Literature, 1987-2000", The European Accounting Review, 11(3), 481-508
5. Brierly, J. A.; Cowton, C. J. and Drury C., (2001), "Research into Product Costing Practice: A European Perspective", The European Accounting Review, 10(2), 215-256.
6. Bt Fadzil, F. H. & Rababah, A. (2012) "Management Accounting Change: ABC Adoption and Implementation", Journal of Accounting and Auditing: Research & Practice, vol. 2012: 1-17.
7. Cannavacciuolo, L.; Landoli, L.; Ponsiglione, C. and Zollo,G.; "An analytical framework based on AHP and activity-based costing to assess the value of competencies in production processes", International Journal of Production Research, Vol. 50, No. 17, 1 September 2012, pp. 4877–4888
8. Cardinaels, Eddy; Roodhooft, Filip and Warlop Luk, (2004), The Value of Activity-Based Costing in Competitive Pricing Decisions", Journal of Management Accounting Research, 16, 133-148
9. Charaf, K. & Bescos, P-L. (2013) "The Role of Organizational and Cultural Factorsin the Adoption of Activity-Based Costing: The Case of Moroccan Firms", Accounting and Management Information Systems, vol. 12, no. 1: 4-21

10. Charaf, K. and Rahmouni, A. F. (2014), "Using importance performance analysis to evaluate the satisfaction of Activity-Based Costing adopters", Accounting and Management Information systems, Vol. 13, No. 4, pp. 665-685.
11. Chongruksut, W. (2002) "The adoption of activity-based costing In Thailand", doctoral thesis, School of Accounting and Finance, Faculty of Business and Law, Victoria University, June, 2002.
12. Clarke, P. J.; Thorley Hill, N. and Stevens K., (1999), "Activity Based Costing in Ireland: Barriers to and Opportunities for Change", Critical Perspective on Accounting, 10(4), 443-468.
13. Colwyn, J. and Dugdale, D., (2002), "The ABC Bandwagon and the Juggernaut of Modernity", Accounting, Organization and Society
14. Cooper, R. and Kaplan, R., (1998), "Measure Cost Right: Make the Right Decision", Harvard Business Review, September-October.
15. Drury, C. (2008) Management and cost accounting, 7th Edition, South Western.
16. Drury, C. and Tayles, M., (1995), "Issues arising from Surveys of Management Accounting Practice" Management Accounting Research, 6(3), 267-280.
17. Groth, John C. and Kinney, Michael R., (1994), "Cost Management and Value Creation", Management Decision, 32(4), 52-57
18. Hacirustemoglu, Rustem - Munir Sakrak (2002), Maliyet Muhasebesinde Guncel Yaklasimlar, Turkmen Kitabevi, Istanbul.
19. Hicks, Douglas T., (1992), "A Modest Proposal for Pricing Decisions", Management Accounting, 74(5), 50-53
20. Kalicanin,D.; Knezevic, V.; "ACTIVITY-BASED COSTING AS AN INFORMATION BASIS FOR AN EFFICIENT STRATEGIC MANAGEMENT PROCESS" ECONOMIC ANNALS, Volume LVIII, No. 197 / April – June 2013
21. Kaplan, Robert S., (1992), In Defense of Activity-Based Cost Management", Management Accounting, 74(5), 58-63.
22. Karatas,O.N.; Bekci, I, Omurbek,V.; "BULANIK FAALIYET TABANLI MALIYETLEME VE BIR UYGULAMA", MODAV, 2014/1.
23. Karcioglu, Resat (2000), Stratejik Maliyet Yönetimi-Maliyet Ve Yönetim Muhasebesinde Yeni Yaklasimlar, Aktif Yayinevi, Erzurum.
24. Laing, Eric, (1994), "Accounting Tools Can Really Help: Product Profitability Analysis", Management Accounting, 72(9), 50-51.
25. Maher, M., Cost Acoounting, the Mc Graw-Hill Companies, inc., Chicago, 1997
26. Martha Ríos-Manríqueza, Clara I. Mu˜noz Colominab, M. Lourdes Rodríguez-Vilari˜no Pastorb, "Is the activity based costing system a viable instrument for small and medium enterprises? The case of Mexico", Estudios Gerenciales 30 (2014) pp. 220–232
27. Oker, Figen (2003), Faaliyet Tabanli Maliyetleme-Uretim Ve Hizmet Isletmelerinde Uygulamalar, Birinci Basim, Literatur Yayinlari:109, Kasim, Istanbul.
28. REZAIE, K.; OSTADI, B. and TORABI, S.A.; "Activity-based costing in flexible manufacturing systems with a case study in a forging industry", International Journal of Production Research, Vol. 46, No. 4, 15 February 2008, 1047–1069
29. Salawu, R. O. & Ayoola, T. J. (2012) "Activity Based Costing Adoption among Manufacturing Companies in Nigeria", Journal of Modern Accounting & Auditing, vol. 8, no. 1: 40-45.
30. Saygili, Arikan Tarik, (2007), "YONETSEL KARARLAR ACISINDAN GELENEKSEL VE FALIYET TABANLI MALIYETLEME YAKLASIMLARI", E-Akademi, 60
31. Titiz,I.; Altunay,M.A.; "CAGDAS MALIYETLEME SISTEMLERINDEN FAALIYET TABANLI MALIYETLEME SISTEMI VE BIR TEKSTIL ISLETMESI UYGULANMASI" Muhasebe ve Finansman Dergisi, Temmuz, 2012.
32. Unutkan, Ozcan (2010), "Faaliyet Tabanli Maliyet Sistemi Ve Bir

Uygulama", Mali Cozum Dergisi, Sayi 97, s.87-105.
33. Yang, Gilbert Y.; Wu, Roger C., (1993), "Strategic Costing & ABC", Management Accounting, 74(11), 33-37.
34. Yildiz, S.; Karaca, N., "Stratejik Yonetim Bakis Acisiyla Butunlesik Faaliyet Tabanli Maliyetleme ve Ekonomik Katma Deger Sistemi" Muhasebe ve Finansman Dergisi, Temmuz, 2011