Üçüncü Sektör Sosyal Ekonomi Dergisi
Third Sector Social Economic Review
57(1) 2022, 1-15
doi: 10.15659/3.sektor-sosyal-ekonomi.22.01.1694

Research Article

Analysis of Resource Consumption Accounting by TAS-2 Inventories Standard: An Application in A Manufacturing Company

Kaynak Tüketim Muhasebesinin TMS-2 Stoklar Standardı Çerçevesinde İncelenmesi: Bir Üretim İşletmesinde Uygulama

Mehmet GÜNEŞ	**Mehmet Murat GUTNU**
Öğr.Gör.Dr., Adana Alparslan Türkeş Bilim ve Teknoloji Üniversitesi, İşletme Fakültesi, Uluslararası Ticaret ve Finansman Bölümü mtgunes@atu.edu.tr https://orcid.org/0000-0002-1938-6914	Dr.Öğr.Üyesi, Mardin Artuklu Üniversitesi Mardin Meslek Yüksek Okulu, Turizm ve Otel İşletmeciliği Programı muratgutnu@artuklu.edu.tr https://orcid.org/0000-0002-3547-0729

Makale Geliş Tarihi	**Makale Kabul Tarihi**
16.09.2021	**09.01.2022**

Abstract

TAS-2 inventories standard is based on normal cost method, instead of full costing method. The aim of this study is to examine the Resource Consumption Accounting (RCA) method, which has emerged as an important management accounting technique in calculating the idle capacity in recent years, within the framework of TAS-2 inventories standard. For this purpose, both the normal cost management method based on the TAS-2 inventories standard and the RCA method are applied to a production facility. The findings suggest that the RCA method estimates the idle capacity costs accurately, reliably and realistically as proposed by the standard. Therefore, for businesses that have to apply the standards, the RCA method can be easily integrated within their own systems.

Keywords: *Resource Consumption Accounting, TAS-2 inventories standard*

ÖZ

TMS-2 Stoklar standardı maliyet yönteminde tam maliyet yerine normal maliyet yöntemini esas almaktadır. Bu çalışmanın amacı; atıl kapasiteyi hesaplamada son yıllarda önemli bir yönetim muhasebesi tekniği olarak ortaya çıkan Kaynak Tüketim Muhasebesi (KTM) yöntemini TMS-2 Stoklar standardı çerçevesinde incelemektir. Bu amaçla, bir üretim işletmesinde hem TMS-2 Stoklar standardının esas aldığı normal maliyet yöntemi hem de KTM yöntemi uygulanmıştır. Çalışma sonucuna göre, KTM yönteminin standardın öngördüğü şekilde atıl kapasite maliyetlerini doğru, güvenilir ve gerçeğe uygun olarak hesapladığı sonucuna ulaşılmıştır. Bu nedenle, standartları uygulamak zorunda olan işletmeler için KTM yöntemi, kendi sistemleriyle kolay bir şekilde entegre edilebilir.

Anahtar Kelimeler: *Kaynak tüketim muhasebesi, TMS-2 stoklar standardı*

1.Introduction

Cost information is an important factor in enabling businesses to achieve their goals and make decisions. In particular, while frequently used to meet the needs of financial accounting, cost information is also utilized effectively in making management decisions.

With the improvement of production technologies, transition to quality, diverse and low-volume production has begun, which has turned accurate cost information into an absolute necessity and created a structural change in the product costs. Due to the investments made by the businesses in automation, this change has also increased the share of fixed and indirect costs in product costs.

Önerilen Atıf /Suggested Citation
Güneş, M., Gutnu, M.M., 2022 Analysis of Resource Consumption Accounting by TAS-2 Inventories Standard: An Application in A Manufacturing Company, *Üçüncü Sektör Sosyal Ekonomi Dergisi,* 57(1), 1-15.

As the cost information obtained by using traditional costing methods has become insufficient, new management and cost accounting methods such as target costing, lifecycle costing, quality costs, lean accounting and most importantly, activity based costing (ABC) have been developed to be used in different management decisions since the 1980s.

Most of the costing methods were incapable of providing an effective and sustainable cost management solution to businesses; thus, in the mid-90s, a search for a new method of cost management solutions has begun. In this context, RCA has emerged as a new-generation cost management system (Tse and Gong, 2009, p. 42). More specifically, Kaplan and Anderson (2007) argued that besides having many shortcomings, ABC method also assumes that the resources are working at full capacity and thus does not consider the idle capacity, causing incorrect cost information. This has led the emergence of RCA method, which takes the idle capacity into account (Kaplan and Anderson, 2007, p. 3). RCA is a comprehensive costing method that is a mixture of resource-based German Cost Accounting (GPK) and ABC, which focuses on activities in cost allocation (Öğünç and Tekşen, 2018, p. 392). RCA classifies costs from various aspects and provides quite detailed cost information to business managers by focusing on the resources (Öğünç and Tekşen, 2018, p. 393).

In this study, after introduction and literature review, theoretical information about TAS-2 inventories standard and RCA is given, and then the idle capacity is calculated by applying the RCA method with the normal costing method predicted by the TAS-2 in a production facility. Lastly, the conclusion section interprets the obtained outputs. The aim of the study is to introduce RCA as a new management and cost accounting method with the cost allocation process within the framework of TAS-2 inventories standard. The study describes the development and the elements of RCA and allocates the resource costs to the products as a cost object through a practical example in accordance with the TAS-2 inventories standard. Thereby, the data obtained from the application of RCA is analyzed and its advantages and superior aspects are evaluated.

2.Literature Review

Inventories constitute one of the cost components of businesses and therefore are vital for them. Having less or more inventories than necessary increases the expenditures of businesses. For this reason, businesses want to keep their inventories costs, which are directly related to profitability, at the lowest level. There are many studies on inventories, as they carry such great significance. Some of these studies are given below and their findings are also described.

Coşkun and Güngörmüş (2009) conducted a research on inventories in hospitals and regarding the service costs inventories, they identified some differences between the Tax Procedure Law and TAS-2 inventories standard in terms of accounting.

Demirel (2009) investigated the application level of TAS-2 inventories standard by companies traded on Borsa Istanbul. The findings of this study revealed that there is no complete financial reporting fully compliant with the TAS-2 inventories standard.

Güngörmüş and Boyar (2010) compared normal and full costing methods and gave examples of deviations arising from capacity. In addition, the unit cost differences between costing methods were calculated and the differences between these methods were determined.

Monea (2011) described the complexity and difficulty of recognition of the inventories within the framework of the TAS-2 standard. He argued that inventories are vitally important to businesses and their costs should be determined. To him, these determined inventories costs should also be recognized as an expense.

Akgün (2012) compared inventories in detail in terms of the Tax Procedure Law and TAS-2 inventories standard. The income statements prepared by the enterprises on the basis of full and normal costing systems were examined and the differences in the income statements were specified.

Yereli et al. (2012) compared normal and full costing methods based on TAS-2 inventories standard. Results of this comparison presented differences in terms of tax legislation. In order to eliminate the differences, harmonization records were made and the differences arising from the tax legislation were tried to be resolved.

In their research, Badem and Özbek (2013) examined costing methods, compared the Tax Procedure Law and TAS-2 inventories standard extensively and revealed the deferred tax effect for two consecutive tax years.

Tuğay (2013) investigated the concept of inventory write down. He compared the Tax Procedure Law with the TAS-2 inventories standard and identified the similarities and differences between them.

In their study on conversion costs, Marşap and Barışçı (2014) revealed that as a result of the implementation of tax laws, product costs cannot be calculated accurately using the full costing method. They also compared the full and normal costing methods and presented the advantages and disadvantages of both methods.

Onoja and Abdullahi (2015) argued that inventory valuation is both a theoretical and a practical problem. They emphasized that the amount available must be calculated correctly in order for the inventory valuation to be correct. They have advised companies to choose a costing method for inventory valuation considering their sectors and apply them. According to TAS-2 inventories standard, it has been revealed that businesses generally use Actual Costing Method, Weighted Average Cost Method or FIFO (first in, first out) Method. They stated that LIFO (last in, first out) method has not been preferred recently.

Gökçen and Öztürk (2017) comprehensively analyzed full and normal costing methods and compared them. In the light of the findings, they explained how normal costing method should be used taking the regulations in TAS/TFRS and Turkish financial reporting standards for large and medium-sized companies and groups into account and showed the required cost recording system.

Kısakürek and Ürgüp (2018) compared TAS-2 inventories standard with Tax Procedure Law (TPL) in order to overview the cost relationship comprehensively. Results of this comparison presented that the product costs of the enterprise turned out to be different. They have found that product costs change significantly if the business uses TAS-2 inventories standard.

In order to understand normal costing method more clearly, Öztürk and Güleç (2018) analyzed the reason for the emergence of this method, why this method is needed and its assumptions. The study has also stated how production costs must be calculated and recorded by using the normal costing method.

Özyapıcı (2019) looked into the relationship between TAS-2 inventories standard and other variables and conducted a research on its effect on idle capacity. In addition, in this study, the concepts of actual and unavoidable idle capacity have been examined in depth, and the interaction of TAS-2 inventories standard and idle capacity concepts in terms of managerial decisions is revealed.

3.TAS-2 Inventories Standard

Inventories are included in the income statements and balance sheets of the enterprises and are carefully monitored in their accounting records. The inventories in the accounting records cover transactions such as the return of inventories in cash, alternative cost flows and classification of inventories. The most important purpose of inventory accounting is to report the assets of the company on the balance sheet date, while ensuring that the inventories are shown with a real and correct value (Epstein and Mirza, 2006, p. 157-165).

Inventories are assets that can be converted into cash in less than a year. This also causes inventories to be referred as current assets. Each business has different types of inventories. For example, commercial enterprises have commercial inventories, and production enterprises have raw materials, semi-finished products and finished products (Shim and Siegel, 1999, p. 108-162).

TAS-2 inventories standard defines inventory as the first items and materials held and produced to be sold or used in the production process or service encounter (TAS-2, art. 6, p. 2).

The purpose of TAS-2 inventories standard is to explain the inventory-related aspect of accounting processes. In the accounting process, the most important issue that comes up in the recognition of inventories is the recognition of inventories as assets. In addition, revenues arising from the use and elimination of inventories are should also be taken into consideration. In this context, it is necessary to determine the inventory costs along with the income. The inventories standard explains how to reduce inventory costs to net realizable value, how to determine them and convert them into expense elements.

Moreover, this standard informs about the occurrence of inventory costs, their content and the valuation methods to be applied (TAS-2, art. 1, p. 2).

According to TAS-2 inventories standard, the cost of inventories includes the purchase price, import taxes and other taxes (excluding those that may be refunded by the tax administration) and transportation that can be directly associated with the acquisition of goods, materials and services, handling and other costs when evaluated in terms of purchasing costs. In addition, discounts and other items become a subject of discount while establishing purchasing costs (TAS-2, art. 11, p. 3).

Conversion costs of inventories include costs such as direct labor costs because these are directly related to production. In addition, this cost item includes the amounts that are distributed systematically from the fixed and variable overheads that arise in the conversion of the raw materials into finished products. Other costs of inventories are other expenses that arise in the process of bringing the inventories to their current status, such as product design for a special order (TAS 2, art. 12-13, p. 3).

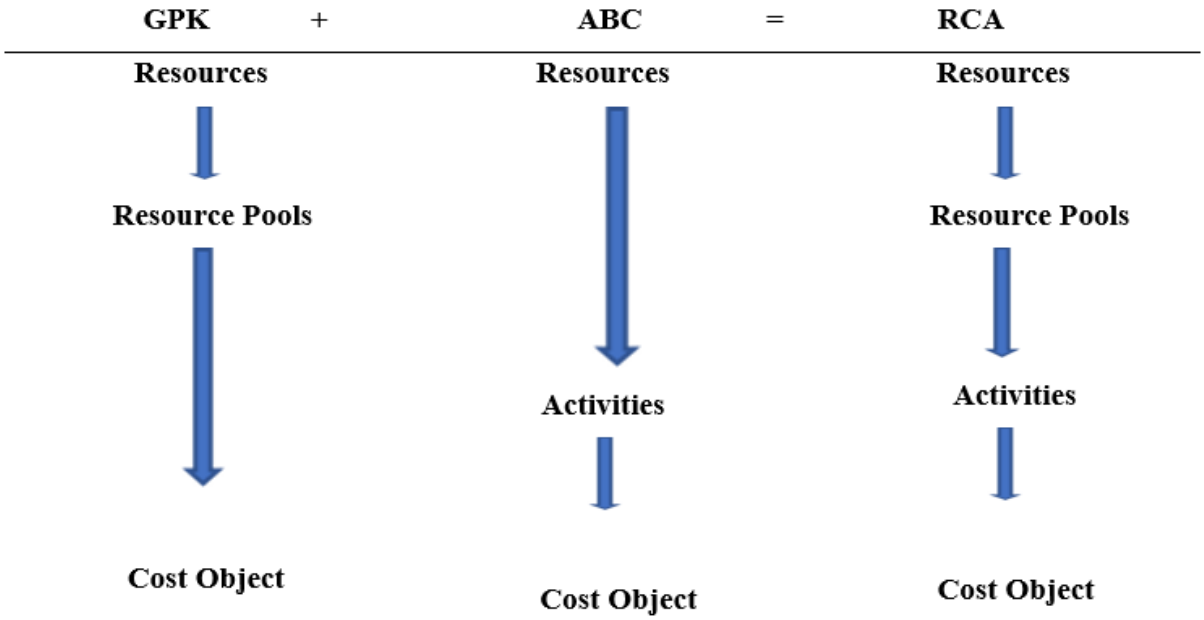
When the inventory valuation methods are analyzed, it is seen that they are valued with the lower one among cost and net realizable value (TAS-2, art. 9, p. 3). Net realizable value is the amount obtained by deducting the estimated completion cost and estimated sales expenses required to realize the sale from the estimated sales price within the workflow process (TAS-2, art. 6, p.3).

4.Resource Consumption Accounting

Activity Based Costing (ABC) method is a two-stage process that relates business resources to activities and activity costs to outputs such as products, services, and customers (Ben-Arieh and Qian, 2003, p.171). GPK (*Grenzplankostenrechnung*) method classifies resources through resource pools by focusing on resources as it suggests the main reason for the emergence of costs is resources (Yılmaz, 2018, p. 273). Resource Consumption Accounting (RCA) method combines ABC and GPK methods (Krumwiede and Suessmair, 2008, p. 37).

When analyzed by dividing the word GPK (*Grenzplankostenrechnung*), *grenzkosten* means marginal cost, and *plankosten* means cost planning. Therefore, *Grenzplankostenrechnung* is marginal planned cost accounting (Yılmaz, 2018, p. 273). The GPA method is an important method in terms of revealing capacity by focusing on resources, having a quality information system, being long-term, taking marginal costs into account, using replacement costs besides historical costs in depreciation calculations, and having other features such as contribution margin income statement (Köse and Ağdeniz, 2015, p. 53). Similarly, ABC method focuses on the activities taking place in the enterprises through questions such as what activities are carried out and why and how well they are done. It also aims to measure performance in terms of cost reduction, activity analysis, process engineering, quality costs and continual improvement with a process-oriented approach (Hansen and Mowen, 2006, p. 549). Utilizing of both these methods, RCA is a management accounting method that combines the advantages of German management accounting's emphasis on resources and ABC's emphasis on activity/process (Krumwiede and Suessmair, 2008, p. 37). Figure 1 shows the relationship between GPK, ABC and RCA. While GPK places resources firstly to resource pools and then to cost objects; ABC firstly transfers them to activities and then to cost objects. On the other hand, the steps for RCA is from resource pools to activities and lastly to cost objects.

Figure 1: The relationship between GPK, ABC and RCA



While ABC method concerns the process with a flow in the form of resources-activities-products, RCA focuses on resources by separating the resources into the resource pools as fixed and proportional resources and considering the capacity with a flow in the form of resources-resource pools-activities-products (Gutnu, 2018, p. 56).

In RCA method, costs collected in resource pools are grouped as fixed and proportional costs in order to determine the idle capacity. Fixed costs are allocated according to theoretical capacity, and proportional costs are by budgeted resource outputs (Perkins and Stovall, 2011, p. 47).

The idle capacity costs are calculated by subtracting the capacity of the resources consumed from the theoretical capacity of each resource pool. Resource costs are allocated to cost objects according to the resources consumed, and idle capacity costs are not allocated and left in resource pools. While resource costs are laid on products, idle capacity costs are considered as period expense (Tse and Gong, 2009, p. 42-43).

ABC method considers all costs as variables and does not give any information about idle capacity. RCA method, on the other hand, overcomes this imperfection of ABC method in capacity management by separating costs according to resource consumption patterns as fixed and proportional (Cengiz, 2012: 221). RCA method has three basic principles: perspective on resources, perspective on the nature of costs, and quantity-based approach in cost modeling (Van Der Merwe and Keys, 2002, p. 31).

RCA perspective on resources: Since cost information carries great significance in management decisions, and according to RCA, it is resources that create costs, understanding fundamental features of resources is extremely important in understanding RCA (Aktaş, 2013, p. 63). If there is idle capacity in a business, the costs should not be allocated to the output products or services. These costs should be allocated to the point in the business that is responsible for the idle capacity. These costs should never be reflected on products in a way that leads to higher product costs (White, 2009, p. 67).

RCA perspective on the nature of costs: Resources are divided into primary and secondary costs after they are pooled in resource pools. Primary costs are costs that occur in a resource cost pool. Secondary costs are costs that are assigned to the resource cost pool from another resource (Perkins and Stovall, 2011, p. 47). After determining primary and secondary costs, fixed and proportional costs are identified considering the relationship between the resource pool and the output (White, 2009, p. 75). There is a slight difference between variable cost and proportional cost here. While variable cost is generally associated with products and services that are cost objects, proportional cost is associated with the output of the resource pool (Webber and Clinton, 2004, p. 14).

Quantity-based approach of RCA: RCA system expresses all consumption relations on the basis of quantities (Webber and Clinton, 2004, p. 4). RCA defines the relationship between resources and cost objects on the basis of the cost object or the amount consumed by the product. It is calculated in relation to the amount of resources consumed by each cost object rather than a direct relationship between costs and cost objects. The consumption relationship is defined not by cost, but by the amount of resource consumption. This is known as the quantity structure (Paresh, 2014, p. 4).

5.Research Method

In this study, the case study method was used as the research method. With the case study method, an individual, group or business is examined in depth and in detail. In the case study method, the data obtained on the subject to be investigated and the relationships between the data are tried to be determined. In this study, TMS-2 inventories standard and RCA methods were applied using the case study method in a feed business operating in Çorum and idle capacity costs were calculated according to both methods.

6.An Application of Resource Consumption Accounting in a Feed Manufacturing Company

6.1.An Overview of The Business

X enterprise, started its feed production activities in Çorum in 2013, is a manufacturing company consisting of two separate independent lines with a capacity of approximately 80 tons/hour and is built on 40 thousand m^2; 14 thousand m^2 of which is indoors. The facility has an investment budget of 18 million TL, and the raw material storage capacity is approximately 50 thousand tons. The enterprise, which employs a total of 24 people - 14 blue collar and 10 white collar employees - produces various feeds including calf feed, fattening feed, milk feed, special feed and sheep feed.

6.2.Accounting the Costs by TAS-2 Inventories Standard

The data of November 2020 is used for the application in X facility. The monthly normal production capacity of the enterprise is 100,800 pieces/sack, while the actual production amount was 57,650 pieces/sack in November. In November, the enterprise produced only cattle feed. Bran, wheat, barley, corn, cotton seed, soybean pulp, sunflower pulp, salt, marble powder, vitamins and minerals are mixed in certain proportions in the facility. Table 1 presents a comparison of full and normal costs.

Table 1. Comparison of Full and Normal Costs for November

Elements of Costs	**Full Cost**	**Normal Cost**
Direct Materials Cost	X.. TL	X.. TL
Direct Labor Cost	X.. TL	X.. TL
-Fixed MO	296,560 TL	169,610 TL
-Variable MO	36,900 TL	36,900 TL
Factory Overhead Cost	**333,460 TL**	**206,510 TL**
Unit FOC	**5.78 TL**	**3.58 TL**

Capacity utilization rate = Actual production quantity / Normal production capacity

Capacity utilization rate = 57.650 / 100.800 = 0,572

Fixed FOC * Capacity utilization rate = 296,560 TL * 0,572 = 169,610 TL is also included in production costs.

Idle capacity cost = 333,460 TL – 206,510 TL = 126,950 TL

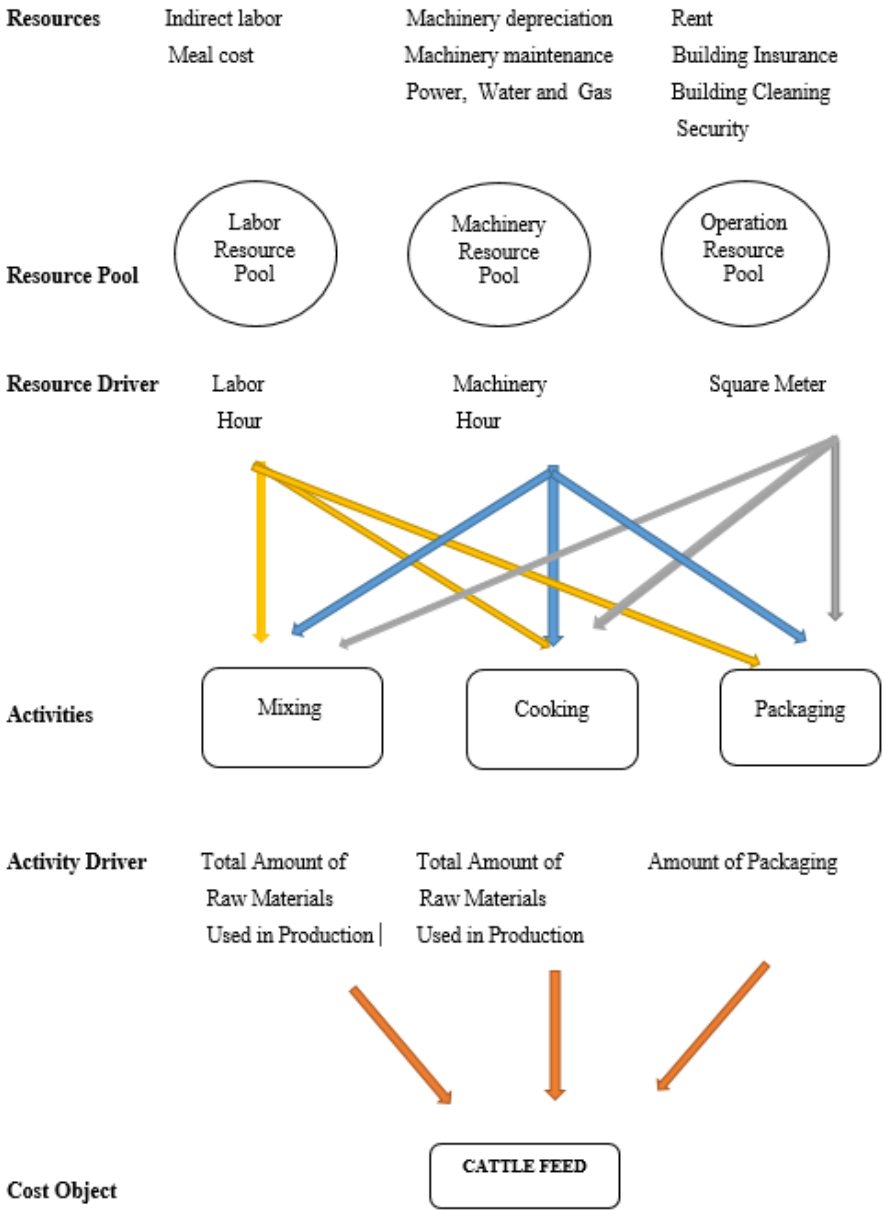
It is essential to apply the full costing method according to the Tax Procedure Law, and the normal costing method according to the Turkish Accounting Standards (TAS). In full costing, all DMC (Direct Material Costs), DLC (Direct Labor Costs) and FOC (Factory Overhead Cost) costs are included in the products, while these costs are included in the product cost in normal costing. The fixed FOC is a part of product costs at the rate of capacity utilization. In Table 1, the cost of FOC was calculated 333,460

TL by full costing method. The cost of FOC by normal costing was 206,510 TL and the idle capacity cost was 126,950 TL.

6.3.Application of resource consumption accounting

While RCA method allocates the FOC to the products in accordance with the standards, it includes the proportional FOC directly to the product costs, taking the capacity use of the fixed FOC into account and revealing the idle capacity. Thus, RCA method first allocates resources in the resource pools as proportional and fixed so that resources that are similar to each other are in the same pools, then allocates them to activities and lastly to cost objects through cost drivers. Figure 2 presents the cost allocation process of the company in question. It clearly shows that in RCA method, before resource costs are transferred to activity pools, resource pools are formed, and costs placed in resource pools are transferred to activity pools and then allocated to cattle feed as cost object.

Figure 2: Allocation Process by RCA



6.4.Cost Object

In Table 2, business expenses are divided to labor, machinery and operation resource pools. Indirect labor and meal expenses are in the labor resource pool; machinery depreciation, machinery maintenance, power, water and gas expenses are in the machinery resource pool; and rent, building insurance, security and building cleaning expenses are in the operation resource pool.

Table 2. Business Expenses and Resource Pools

Expenses	Sum (TL)	Resource Pools
Indirect Labor	18,700	LABOR RESOURCE POOL
Meal Expenses	9,860	
Machinery Depreciation[1]	210,000	MACHINERY RESOURCE POOL
Machinery Maintenance	50,000	
Power	19,550	
Water	1,600	
Gas	15,750	
Rent	21,000	OPERATION RESOURCE POOL
Building Insurance	2,700	
Security	4,000	
Building Cleaning	5,300	

Table 3 shows the resource drivers and the fixed and proportional grouping of costs collected in resource pools. Labor resource pool has 28,560 TL fixed costs, while 260,000 TL of the machine resource pool is fixed and 36,900 TL is proportional costs, and the operation resource pool consists of 33,000 TL fixed costs.

Table 3. Fixed and Proportional Cost Groups Collected in Resource Pools

Resource Pools	Fixed Costs	Proportional Costs	Resource Driver
Labor	28,560	-	Labor hour
Machinery	260,000	36,900	Machinery hour
Operation	33,000	-	Square meter

In Table 4, the capacities of the resource pools are calculated theoretically and practically, and the fixed and proportional cost ratio is found. The theoretical and practical capacities of the labor and machine resource pools for November are shown below.

Theoretical capacity of labor resource pool: 8 hours * 30 days * 14 workers = 3,360 hours

Capacity of labor resource pool in practice: 6.5 hours * 21 days * 14 workers = 1,911 hours

Theoretical capacity of machinery resource pool: 8 hours * 30 days = 240 hours

The facility produced 2,306 sacks of cattle feed and operated 25 days in November. Therefore, their actual production is 2,306 * 25 days = 57,650 sacks/month. The facility is able to produce 7 sacks of

[1] While the machinery depreciation expense was 185,000 TL, the machinery depreciation cost was calculated as 210,000 TL according to depreciated replacement cost used in resource consumption accounting.

cattle feed in 1 minute in practice. It produces 2,306 sacks in approximately 329 minutes (2,306 / 7=329). Its monthly machinery resource pool capacity in practice is 329 minutes*25 days = 8,225 minutes / 60 = 137 hours.

Since operation resource pool consists of expenses that concern the whole facility, it does not have a theoretical capacity. The practical capacity of the costs in this pool will be distributed over square meters.

For the fixed cost rate, the fixed cost is divided by the theoretical capacity, and for the proportional cost rate, the proportional cost is divided by the practical capacity.

Table 4. Resource Pool Capacities and Proportions

Resource Pools	Theoretical Capacity	Practical Capacity	Fixed Cost Rate	Proportional Cost Rate
Labor	3,360 hours	1,911 hours	8.5	-
Machinery	240 hours	137 hours	1083	269
Operation	3,750 m^2	3,750 m^2	8.8	-

Table 5 presents the resources consumed by activities. The capacity of mixing, cooking and packaging activities in practice is:

-Capacity of labor resource pool's mixing and cooking activities in practice is 1,911 hours / 14 workers = 136.5 hours * 2 workers = 273 hours. 1,911 hours – 273 hours = 1638 hours / 3 = 546 hours.

-Capacity of labor resource pool's packaging activities in practice is 546 hours + 273 hours = 819 hours. While 12 workers work in all three activities, 2 extra workers work for the packaging activity.

-Capacity of machinery resource pool's mixing activities in practice is (137 hours / 60[2]) * 15 = 34.25 hours.

-Capacity of machinery resource pool's cooking activities in practice is (137 hours / 60) * 35 = 79.92 hours.

- Capacity of machinery resource pool's packaging activities in practice is (137 hours / 60) * 10 = 22.83 hours.

The practical capacity of operation resource pool activities is observed and calculated on square meters: 2.400 m^2 for mixing, 900 m^2 for cooking and 450 m^2 for packaging.

Table 5. Resources Consumed by Activities

Resource Pools	Mixing	Cooking	Packaging	TOTAL
Labor	546 hours	546 hours	819 hours	1,911 hours
Machinery	34.25 hours	79.92 hours	22.83 hours	137 hours
Operation	2,400 m^2	900 m^2	450 m^2	3,750 m^2

Table 6 shows the allocation of costs in resource pools to activities. The formula below is used to achieve this.

Allocation of Resource Pool to Activities = (Labor Hour of the Activity * Fixed Cost Labor Rate) + (Activity Labor Hour * Proportional Cost Labor Rate)

[2] The facility produces 7 sacks of cattle feed in 60 seconds. As a result of our observations, 15 of 60 seconds are spent in mixing, 35 in cooking and 10 in packaging.

Allocation of labor resource pool to mixing activity: (546 hours * 8.5) = 4,641 TL

Allocation of labor resource pool to cooking activity: (546 hours * 8.5) = 4,641 TL

Allocation of labor resource pool to packaging activity: (819 * 8.5) = 6,961 TL

Allocation of machinery resource pool to mixing activity: (34.25 hours * 1083) + (34.25 * 269) = 46,305 TL

Allocation of machinery resource pool to cooking activity: (79.92 hours * 1,083) + (79.92 hours * 269) = 108,051 TL

Allocation of machinery resource pool to packaging activity: (22.83 hours * 1083) + (22.83 hours * 269) = 30,866 TL

Allocation of operation resource pool to mixing activity: (2,400 m^2 * 8.8) = 21,120 TL

Allocation of operation resource pool to cooking activity: (900 m^2 * 8.8) = 7,920 TL

Allocation of operation resource pool to packaging activity: (450 m^2 * 8.8) = 3,960 TL

Table 6. Allocation of Costs in Resource Pools to Activities

Resource Pools	Mixing	Cooking	Packaging	TOTAL
Labor	4,641 TL	4,641 TL	6,961 TL	16,243 TL
Machinery	46,305 TL	108,051 TL	30,866 TL	185,222 TL
Operation	21,120 TL	7,920 TL	3,960 TL	33,000 TL
Total	**72,066 TL**	**120,612 TL**	**41,787 TL**	**234,465 TL**

Table 7 shows the activity costs and activity drivers. The activity driver to be used for mixing and cooking activities, the total amount of raw materials used in production and the amount of packaging for the packaging activity have been presented.

Table 7. Activity Costs and Activity Drivers

Activities	Activity Drivers	Activity Costs
Mixing	Total amount of raw materials used in production	72,066 TL
Cooking	Total amount of raw materials used in production	120,612 TL
Packaging	Amount of packaging	41,787 TL
TOTAL		**234,465 TL**

Loading rates of activities are calculated by dividing the cost of each activity by the activity driver associated with that activity. While total amount of raw materials used in production for mixing activity is 57,650 sacks * 50.1 kg = 2,888,265 kg; it is 57,650 * 50[3] kg = 2,882,500 kg for cooking activity. In addition, the amount of packaging in November is 57,650 piece/sack.

Loading Rate of Mixing Activity: 72,066 TL / 2,888,265 kg = 0.0249 TL/kg

Loading Rate of Cooking Activity: 120,612 TL / 2,882,500 kg = 0.0418 TL/kg

Loading Rate of Packaging Activity: 41,787 TL / 57,650 piece/sack = 0,72 TL/sack

When the loading rate of each activity is multiplied by the amount consumed, the unit cost of a 50 kg sack of cattle feed is found. Table 8 shows the calculations regarding the cattle feed MO unit cost.

[3] In cooking activity, there is a waste rate of 0.1 in each sack.

Table 8. FOC of Cattle Feed Unit Cost

Mixing	0.0249 TL/kg * 50 kg= **1.24 TL**
Cooking	0.0418 TL/kg * 50 kg = **2.09 TL**
Packaging	0,72 TL/sack * 1 = **0.72 TL**
FOC Unit Cost	**4.05 TL**

Table 9 presents the summary of cost allocation by RCA. Therefore, 234,465 TL of the 358,460 TL incurred cost is allocated to the activities, and 123.995 TL is considered as idle cost.

Table 9. Summary of Cost Allocation by RCA

Resource Pools	Incurred Cost	Allocated Cost	Idle Cost
Labor	28,560 TL	16,243 TL	12,317 TL
Machinery	296,900 TL	185,222 TL	111,678 TL
Operation	33,000 TL	33,000 TL	-
TOTAL	**358,460 TL**	**234,465 TL**	**123,995 TL**

7.Conclusion

In this study, RCA, a new management and cost accounting method, is introduced and its scope, elements and operation within the context of TAS-2 inventories standard are analyzed. Also, the cost calculation process is explained through an applied instance.

The inadequacy of traditional costing methods to fulfill the expected functions has led to the emergence of many new management and cost accounting methods. In particular, the insufficiency of traditional accounting methods to meet the needs of businesses has led to new searches in costing methods. At this point, new methods have been developed aiming to present accurate cost information meeting the needs of businesses. One of these methods, RCA, was developed and made available for business managers. RCA focuses on resources in cost allocation. First, it does not allocate resources directly to activities, but collects them in resource pools and then allocates them to activities and from there to cost objects. Thus, it facilitates the stage of allocating a large number of resources to activities. On the other hand, RCA tracks the costs collected in resource pools by initially grouping primary and secondary costs, and then by grouping these two cost groups as fixed and proportional costs. This enables detailed monitoring of costs and contributes to managers in decision-making stages by providing different cost information in different decisions.

Providing information about idle capacity is one of the most important features of RCA because the idle capacity information is of great importance in increasing the efficiency and productivity of a business. RCA provides businesses with detailed cost tracking, strong cost control and accurate cost information. The findings of this study suggest that the RCA method calculates the idle capacity costs accurately, reliably and in accordance with the standard, and has revealed that the businesses that have to apply the standards can easily integrate RCA method into their systems.

References

Aktaş, R. (2013). Yeni Bir Maliyet ve Yönetim Muhasebesi Yöntemi Olarak Kaynak Tüketim Muhasebesi. *Muhasebe ve Finansman Dergisi*, Nisan, s. 55-75.

Ben-Arieh, D. & Li, Qian. (2003). Activity-Based Cost Management for Design and Development Stage. *International Journal Production Economics*, 83, s.169-183.

Cengiz, E. (2012). Gelişmiş Bir Maliyetleme Yaklaşımı Olarak Kaynak Tüketim Muhasebesi. *Muhasebe Bilim Dünyası Dergisi, 14*(1), s.215-233.

Gutnu, M.M. (2018). Kaynak Tüketim Muhasebesinin Geleneksel Ve Faaliyet Tabanlı Maliyetleme Yöntemleriyle Karşılaştırılması Ve Bir Hizmet İşletmesinde Uygulanması. Osmaniye Korkut Ata Üniversitesi, Sosyal Bilimler Enstitüsü, Yayınlanmamış Doktora Tezi.

Hansen, D.R. & Mowen M.M. (2006). *Cost Management Accounting and Control*. Fifth Edition, China.

Köse, T. ve Ağdeniz, Ş. (2015). Kaynak Tüketim Muhasebesinde Kapasite Maliyet Yönetimi. *Muhasebe ve Denetime Bakış Dergisi,* Sayı: 45, Haziran, s.51-74.

Krumwiede, K. R. & Suessmair, A. (2008). A Closer Look At German Cost Accounting Methods. *Management Accounting Quarterly*, *10*(1), pp.37-49.

Paresh, J. B. (2014). Resource Consumptıon Accountıng (Rca): An Abc Of Overheads. *Midas Touch International Journal of Commerce, Management and Technology* Volume 2, No. 10, October, ISSN: 2320 -7787, pp.1-12.

Tse, M. & Gong, M. (2009). Recognition Of Idle Resources In Time-Driven Activity Based Costing And Resource Consumption Accounting Models. *Journal of Applied Management Accounting Research, 7*(2), p.41-54.

Van Der Merwe, A. & Keys, D. E. (2002). The Case For Resource Consumption Accounting. *Strategic Finance, 83*(10), pp.30-36.

Webber, S. & Clinton, B. D. (2004). Resource Consumption Accounting Applied: The Clopay Case. *Management Accounting Quarterly, 6*(1), pp.1-14.

White, L. (2009). Resource Consumption Accounting: Manager-Focused Management Accounting. *Journal of Corporate Accounting & Finance, 20*(4), p.63–77.

Yılmaz, Rifat. (2018). Alman Maliyet Muhasebesi Sistemi: Esnek Analitik Maliyet Planlama ve Muhasebesi. *Akademik Araştırmalar ve Çalışmalar Dergisi*, 10(18):270-287.

Akgün, A.İ. (2012). TMS 2 stoklar standardı kapsamında tam maliyet ve normal maliyete göre düzenlenen gelir tabloları karşılaştırması. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 17(2), 229-246.

Badem, A.C. ve Özbek, C.Y. (2013). Tam maliyet ile normal maliyet yöntemlerinin TMS 2 stoklar standardı ile VUK açısından karşılaştırması ve muhtemel ertelenmiş vergi etkisi. *Muhasebe ve Vergi Uygulamaları Dergisi*, 6(2), 65-92.

Coşkun, A. ve Güngörmüş, A.H. (2009). Hastanelerde hizmet üretim maliyetlerinin TMS 2'ye göre muhasebeleştirilmesi. *Mali Çözüm Dergisi*, 95, 19-34.

Demirel, N. (2009). Stoklara ilişkin Türkiye Muhasebe Standartları'nın Sermaye Piyasası Kurulu'na kayıtlı halka açık anonim şirketlerde uygulama örnekleri. *KMU İİBF Dergisi*, 11(17), 42-68.

Epstein, B.J. & Mırza A.A. (2006). IFRS 2006: Interpretation and Application of International Accounting and Financial Reporting Standards, John Wiley &Sons, Inc., New Jersey

Gökçen, G. ve Öztürk, E. (2017). Tam Maliyet Ve Normal Maliyet Yöntemlerinin UFRS (TFRS) ve BOBİ FRS'deki Düzenlemeler Çerçevesinde İncelenmesi. *Finans Ekonomi ve Sosyal Araştırmalar Dergisi*, 2 (2), ss. 105-114.

Güngörmüş, A.H. ve Boyar, E. (2010). TMS-2 stoklar standardına göre, standart maliyet yönteminin uygulanması. *Mali Çözüm Dergisi*, 102 (Kasım-Aralık), 109-127.

Kısakürek, M.M. ve Ürgüp, S.E. (2018). TMS-2 stoklar standardı ile Vergi Usul Kanunu'nun maliyet açısından ilişkisinin karşılaştırılması ve bir üretim işletmesinde uygulama. *International Journal of Academic Value Studies*, 4(19), 247-256.

Marşap, B. ve Barışçı, A. (2014). TMS-2 stoklar standardına göre dönüştürme maliyetlerinin ürün maliyetlerine etkisi. *Muhasebe ve Vergi Uygulamaları Dergisi*, 7(1), 1-16.

Monea, A. (2011). Some aspects regarding implications of IAS 2 inventory in Romanian acounting. *Annals of the University of Petroşani, Economics*, 11(4), 183-190.

Onoja, E.E. & Abdullahi, Y.U. (2015). Inventory valuation practices and reporting: Nigerian textile industry experience. *Mediterranean Journal of Social Sciences*, 6(4), 74-82.

Öztürk, E. ve Güleç, Ö.F. (2018). Normal Maliyetleme Yaklaşımının Gelişimi Ve Uygulanmasına Yönelik Bir İnceleme. *Mali Çözüm Dergisi*, 148 (Temmuz-Ağustos), ss. 11-27.

Özyapıcı, H. (2019). TMS 2 Stoklar Standardı'nın Atıl Kapasite Analizine Etkisi. *Muhasebe ve Vergi Uygulamaları Dergisi*, 12 (3) ss. 651-666.

Shim, J.K. & Siegel J.G. (1999). *Financial Accounting*, Second Edition, McGraw-Hill Companies, Inc. Schaum's Outline Series, New York.

TMS/TFRS 2021 Seti. (2021). https://kgk.gov.tr/Portalv2Uploads/files/Duyurular/v2/TMS_TFRS_Setleri/2021/K%C4%B1rm%C4%B1z%C4%B1_Kitap/TMS%202(1).pdf (Erişim Tarihi: 11.02.2021).

Tuğay, S. (2013). Stok değer düşüklüklerinin TMS 2 stoklar standardına göre güncellenmesi. *Selçuk Üniversitesi İktisadi ve İdari Bilimler Fakültesi Sosyal ve Ekonomik Araştırmalar Dergisi (The Journal of Social and Economic Research)*, 13(26), 207-230.

Yereli, A.N., Kayalı, N. ve Demirlioğlu, L. (2012). Maliyetlerin tespitinde normal maliyet yöntemi: TMS 2 stoklar standardı ile vergi mevzuatının karşılaştırılması ve uyumlaştırılması. *Mali Çözüm Dergisi*, 110, 21-41.

Öğünç, H. ve Tekşen, Ö. (2018). Kaynak Tüketim Muhasebesi Yaklaşımının Tuğla Üretim İşletmesinde Uygulanması ve Karşılaştırmalı Analizi, *Muhasebe Bilim Dünyası Dergisi*, Haziran 2018; 20(2); 389-417.

Araştırma Makalesi

Analysis of Resource Consumption Accounting by TAS-2 Inventories Standard: An Application in A Manufacturing Company

Kaynak Tüketim Muhasebesinin TMS-2 Stoklar Standardı Çerçevesinde İncelenmesi: Bir Üretim İşletmesinde Uygulama

Mehmet GÜNEŞ	Mehmet Murat GUTNU
Öğr.Gör.Dr., Adana Alparslan Türkeş Bilim ve Teknoloji Üniversitesi, İşletme Fakültesi, Uluslararası Ticaret ve Finansman Bölümü mtgunes@atu.edu.tr https://orcid.org/0000-0002-1938-6914	Dr.Öğr.Üyesi, Mardin Artuklu Üniversitesi Mardin Meslek Yüksek Okulu, Turizm ve Otel İşletmeciliği Programı muratgutnu@artuklu.edu.tr https://orcid.org/0000-0002-3547-0729

Genişletilmiş Özet

Giriş

TMS-2 Stoklar standardı stokların maliyeti; satın alma maliyeti, dönüştürme maliyeti ve diğer maliyetleri içermektedir. Stokların dönüştürme maliyeti üretimle ilgili olarak Direkt İlk Madde ve Malzeme Giderleri (DİMM), Direkt İşçilik Giderleri (DİŞ), Sabit ve Değişken Genel Üretim Giderleri (GÜG)'nden oluşmaktadır. TMS-2 Stoklar standardı maliyet yönteminde tam maliyet yerine normal maliyet yöntemini esas almaktadır. Tam maliyet yöntemi; DİMM, DİŞ ve GÜG giderlerinin tümünü üretim maliyetlerine dahil etmektedir. Normal maliyet yöntemi ise, DİMM, DİŞ ve Değişken GÜG giderlerini üretim maliyetlerine eklemekte, Sabit GÜG giderlerini ise kapasite kullanım oranına göre üretim maliyetlerine aktarmaktadır. Dolayısıyla, üretimin düşük olduğu veya atıl kapasitenin söz konusu olduğu dönemlerde atıl kapasiteye denk düşen Sabit GÜG üretim maliyeti içinde değil, dönem gideri olarak değerlendirilmektedir. Bu çalışmanın amacı; atıl kapasiteyi hesaplamada son yıllarda önemli bir yönetim muhasebesi tekniği olarak ortaya çıkan Kaynak Tüketim Muhasebesi (KTM) yöntemini TMS-2 Stoklar standardı çerçevesinde incelemektir. Bu amaçla, bir üretim işletmesinde hem TMS-2 Stoklar standardının esas aldığı normal maliyet yöntemi hem de KTM yöntemi uygulanmıştır. Çalışma sonucuna göre, KTM yönteminin standardın öngördüğü şekilde atıl kapasite maliyetlerini doğru, güvenilir ve gerçeğe uygun olarak hesapladığı sonucuna ulaşılmıştır. Bu nedenle, standartları uygulamak zorunda olan işletmeler için KTM yöntemi, kendi sistemleriyle kolay bir şekilde entegre edilebilir.

Bu çalışmada, TMS-2 stoklar standardı ve KTM hakkında teorik bilgiler verilmiş, daha sonra bir üretim işletmesinde TMS-2 stoklar standardının öngördüğü normal maliyet yöntemi ile KTM yöntemi uygulanarak atıl kapasite hesaplanmıştır. Çalışmanın amacı, yeni bir yönetim ve maliyet muhasebesi yöntemi olarak KTM'yi, TMS-2 stoklar standardı çerçevesinde, maliyet dağıtım süreciyle açıklamaktır. Çalışmada, öncelikle KTM'nin gelişimi ve unsurları anlatılmış, TMS-2 stoklar standardına göre, uygulamalı bir örnek üzerinden kaynak maliyetlerinin maliyet objesi olarak mamullere dağıtımı yapılmıştır.

Araştırmanın Yöntemi

Bu çalışmada araştırma yöntemi olarak örnek olay yöntemi kullanılmıştır. Örnek olay yöntemiyle bir kişi, grup veya işletme derinlemesine ve ayrıntılı bir şekilde incelenmektedir. Örnek olay yönteminde araştırılacak konuyla ilgili elde edilen veriler ve veriler arasındaki ilişkiler saptanmaya çalışılmaktadır. Bu çalışmada, Çorum'da faaliyet gösteren bir yem işletmesinde örnek olay yöntemini kullanarak TMS-

2 stoklar standardı ve KTM yöntemleri uygulanmış ve her iki yönteme göre de atıl kapasite maliyetleri hesaplanmıştır.

Uygulama

X işletmesinde uygulama için 2020 yılının kasım ayı verileri kullanılmıştır. Buna göre, işletmenin aylık normal üretim kapasitesi 100.800 adet/çuval iken, kasım ayında fiili üretim miktarı 57.650 adet/çuval olarak gerçekleşmiştir. Kasım ayında işletme, sadece büyükbaş yemi üretmiştir. Çalışmanın bulgularından ilki, tam maliyet yöntemine göre GÜG maliyeti 333.460 TL olarak hesaplanmıştır. Normal maliyete göre GÜG maliyeti 206.510 TL, atıl kapasite maliyeti 126.950 TL olarak hesaplanmıştır. Bu sonuç atıl kapasitenin işletmeler için ne kadar önemli bir problem olduğunu göstermesi bakımından önemlidir. Araştırmanın diğer bulgusuna göre, işletme günlük 2.306 çuval büyükbaş yemi üretmiş ve kasım ayında 25 gün çalışmıştır. 2.306 * 25 gün = 57.650 çuval/aylık fiili üretim gerçekleşmiştir. İşletmenin aylık makine kaynak havuzu pratik kapasitesi olarak, 329 dakika*25 gün = 8.225 dakika / 60 = 137 saat olarak hesaplanmıştır. Çalışma bulgularından bir diğerine göre ise, işletme kaynak havuzu faaliyetlerinin pratik kapasitesi yapılan gözlemler neticesinde metrekare üzerinden hesaplanmıştır. Buna göre karıştırma 2400 m^2, pişirme 900 m^2, paketleme 450 m^2 olarak bulunmuştur. Bununla beraber, karıştırma faaliyeti için üretimde kullanılan toplam hammadde miktarı 2.888.265 kg olarak, pişirme faaliyeti için 2.882.500 kg olarak, paketleme sayısı ise kasım ayı içinde toplam 57.650 adet/çuval olarak hesaplanmıştır. Araştırmanın bulgularından bir diğeri, 50 kg'lık bir çuval büyükbaş yeminin birim maliyetinin 4,05 tl olarak hesaplanmasıdır. Çalışmanın son bulgusu olarak, KTM'de maliyet dağıtımına göre, 358.460 TL katlanılan maliyetin 234.465 TL'si faaliyetlere dağıtılmış, 123.995 TL atıl maliyet olarak ortaya çıkmıştır.

Sonuç

Bu çalışmada, yeni bir yönetim ve maliyet muhasebesi yöntemi olan KTM'nin kapsamı, unsurları ve TMS-2 stoklar standardı kapsamında işleyişi incelenerek, maliyet hesaplama süreci bir uygulama örneği ile açıklanmıştır.

Atıl kapasite ile ilgili bilgi vermesi, KTM'nin en önemli özelliklerinden biridir. Çünkü atıl kapasite bilgisi, işletmenin etkinliğinin ve verimliliğinin arttırılmasında büyük öneme sahiptir. KTM, işletmelere, ayrıntılı maliyet takipleri ile güçlü bir maliyet kontrolü ve doğru maliyet bilgileri sağlamaktadır. Çalışma sonucuna göre, KTM yönteminin standardın öngördüğü şekilde atıl kapasite maliyetlerini doğru, güvenilir ve gerçeğe uygun olarak hesapladığı sonucuna ulaşılmış ve standartları uygulamak zorunda olan işletmelerin KTM yöntemini kullanarak, kendi sistemlerine kolay bir şekilde entegre edilebileceği ortaya çıkmıştır.