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Integrating Normal Costing and Activity-Based Costing: A Structured Framework and Applied Evidence from Manufacturing Operations

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Abstract: An integrated framework for combining normal costing with activity-based costing (ABC) is developed and demonstrated to address persistent limitations in conventional cost accounting practices. Although normal costing remains widely adopted due to its operational simplicity and alignment with financial reporting, its reliance on broad overhead allocation bases has been shown to impair cost accuracy in complex production environments. Conversely, ABC offers superior causal attribution of indirect costs but is often perceived as difficult to integrate into routine costing systems. To reconcile these approaches, a structured integration methodology is proposed and illustrated through an applied case based on the machining department of an automobile parts manufacturer. Using a controlled hypothetical dataset to ensure analytical transparency, unit product costs are first determined under the traditional costing system using both full costing and normal costing approaches. Subsequently, the same cost structures are recalculated within an ABC framework, again under both full costing and normal costing assumptions, allowing systematic comparison across costing logics. The results demonstrate that integrating ABC with normal costing enhances cost precision without sacrificing the operational advantages of normal costing, particularly in departments characterized by high overhead intensity and activity heterogeneity. It is further shown that the integrated approach mitigates cost distortion arising from volume-based allocation while preserving consistency with standard cost-setting practices. From a methodological perspective, the study advances existing literature by explicitly operationalizing the coexistence of ABC and normal costing rather than treating them as mutually exclusive systems. Practical implications are highlighted for manufacturing enterprises seeking incremental adoption of ABC principles within established accounting infrastructures. In addition, the necessity of enterprise resource planning (ERP) systems is emphasized, as reliable integration depends on high-resolution activity data and automated cost tracing capabilities. The proposed framework and application procedure are expected to provide accounting practitioners and researchers with a replicable pathway for implementing integrated costing systems that balance analytical accuracy with managerial feasibility.

Keywords: Activity-based costing; Normal costing; Integrated costing systems; Cost accounting; Manufacturing operations

1. Introduction

When establishing a cost accounting system within enterprises, discussions often center on "cost accounting systems" and "cost accounting approaches." The distinction between these two concepts has been debated for many years. The aim of this article is not to explain, classify, or elaborate on cost accounting systems or approaches in general, but rather to focus on two specific methodologies: normal costing and activity-based costing (ABC).

The ABC system emerged as a prominent approach during the 1970s and 1980s. In traditional cost accounting systems, total costs are allocated to production units by first accumulating costs within expense centers, classified based on the homogeneity of tasks performed, and subsequently distributing these costs to the produced units. The

ABC approach is a widely adopted methodology that addresses the inadequacies of the traditional expense location concept by emphasizing the use of cost group cost drivers, instead of relying solely on cost pools, thereby enabling more accurate cost allocation through a focus on identifying and minimizing non-value-adding activities while prioritizing value-adding processes to enhance overall efficiency and precision in cost management.

Several decades later, American authors expanded the discourse by introducing time-driven ABC, even though many allocation bases were already time-oriented. Normal costing emerged in literature approximately 50 to 100 years ago as an alternative to the full costing method, alongside the variable costing method. However, it did not gain significant popularity in its early years compared to its current widespread application. Prominent scholars such as Charles Thomas Horngren and other American authors described normal costing in their textbooks by emphasizing the budgeting of overhead costs, which were allocated to production units. At the end of the accounting period, actual overhead costs were compared with budgeted overhead costs, and the variance was distributed among finished goods, work-in-progress, and cost of goods sold accounts. This methodology was consistently taught in cost accounting courses over the years and, where implemented, was applied similarly by practitioners. The fundamental principle underlying this is the budgeting of production overhead costs and their allocation to the cost of produced units.

After the International Financial Reporting Standards (IFRS) became well established in the accounting literature, normal costing found its place in the Inventories Standard. As is known, the practice here is to charge fixed overhead costs to the units produced according to capacity utilization. The fixed overhead costs for idle capacity that cannot be charged to the units produced are charged to the cost of goods sold. Although this approach is obeyed and applied by the practitioners, it is criticized that it is not logical to associate the provision for idle capacity with the cost of goods sold. If normal costing is applied in this way, it will continue to be criticized by practitioners.

As mentioned before, although there are many cost calculation systems and approaches, the cost calculation systems or approaches created in practice consist of the application of more than one system or approach together.

For example, those who want to apply the variable costing system can also receive reports according to the full cost system. Likewise, those who want to apply the stage costing system can see the unit costs by reporting them according to the order costing system. Those who want to calculate costs according to the ABC system, which is the subject of our study, can also prepare cost reports according to the traditional system. Those who wish to calculate costs using the normal costing system, which is the focus of our study, can also report total and unit costs under the full cost system. In summary, multiple systems or approaches can be applied within a company. For instance, a business may generate reports by combining full, variable, stage, and order costing systems.

In Turkey, accounting professionals use the full cost system to prepare financial statements for the Ministry of Finance while employing normal costing when preparing financial statements for their audited entities. As a result, companies subject to independent audits are required to prepare two sets of financial statements: one using normal costing and another using full costing.

IFRS recommend normal costing but do not provide specific guidance on how to establish the infrastructure for its application. In Turkey, this gap is addressed by the General Communiqué on Accounting System Implementation and the practices of accounting professionals. Although IFRS recommends normal costing, the application of additional systems or approaches—such as stage, order, variable, or ABC—is left to the discretion of accounting professionals, depending on their experience and the capabilities of the ERP systems they use.

In this study, we aim to form an opinion on normal costing and ABC, two approaches not yet explored in the current literature, that should be applied. The study will be tested on a company operating in the Aegean Region Organized Industrial Zone, which possesses a significant machine park producing road vehicle carrier systems. This section, which serves as the practical application of our study, focuses on examining the enterprise's production system and establishing a cost calculation framework.

2. Normal Costing

Normal costing is a cost accounting system employed to monitor and allocate production costs effectively. In this system, direct costs are assigned based on actual quantities and actual unit cost rates. Conversely, indirect costs, referred to as overhead costs, are allocated using budgeted indirect cost rates and actual quantities of cost allocation bases (Horngren et al., 2015). This approach mandates that fixed overhead costs be assigned to production costs based on the capacity utilization rate, recognizing that these costs arise from establishing and maintaining production capacity (Yükçü, 2018). Fixed overhead costs associated with idle capacity are directly recorded as period expenses in result accounts (Şener, 2008).

In comparison to the full cost method, normal costing mitigates fluctuations based on production volume and facilitates period-to-period comparability by incorporating fixed overhead costs and the capacity utilization rate in the determination of production costs (Yükçü, 2018). However, normal costing also introduces additional complexities, such as the need to separate fixed and variable overhead costs and account for capacity deviations (Büyükmirza, 2016).

In the normal costing method, as previously noted, overhead costs are categorized into variable and fixed components. Variable overhead costs are incurred with production and are fully allocated to the cost of the product, which typically does not pose issues in charging these costs. In contrast, while fixed overhead costs remain constant, their distribution may not follow a regular pattern throughout the fiscal year. To address this, accurate budgeting and the precise determination of budgeted overhead cost charge rates are essential (Yükçü et al., 2018).

3. Activity-Based Costing

ABC, introduced by Robert Kaplan and Robin Cooper in the late 1980s, has been defined as both a formal accounting system and a strategic management tool (Cooper & Kaplan, 1988). ABC is an approach that measures and evaluates the performance of costs, cost elements, activities, and resources. In this framework, cost elements are considered to consume activities, and activities, in turn, consume resources. Resource costs are allocated to activities based on their consumption of resources, while activity costs are reassigned to cost elements based on the utilization of activities. Therefore, ABC establishes a causal relationship between resources and activities, as well as between activities and cost elements (Dierks & Cokins, 2001). This methodology traces resource costs to activities and subsequently allocates those costs to products, customers, services, and other cost elements according to the consumption of activities. (Kennett et al., 2007). Thus, ABC is viewed as a powerful management tool rather than merely a cost allocation method, as it provides accurate and actionable information about an enterprise's cost structure (Eker, 2002).

3.1 Basic Concepts Used in the Activity-Based Costing System

The ABC system is centered around four fundamental elements: resources, activities, cost drivers, and cost elements. The definitions for these components are provided below:

Resources are the economic elements utilized in performing an activity. Activities are actions that lead to the consumption of general production resources during the production of goods or services by an enterprise. An Activity Center is an organizational unit where similar activities and activity pools are grouped (Eker, 2002). Cost Pool (Cost Group) is the process of determining the costs of resources consumed by each activity (https://docenti.luiss.it). The cost driver is a key factor used in the allocation of costs to activities and in the distribution of activity costs to other activities or products. Cost drivers are classified into two types: resource consumption and activity consumption. The resource consumption cost driver is employed to allocate the resource consumed by an activity to that activity, while the activity consumption cost driver is used to allocate activity costs to cost elements (Blocher et al., 2010). A cost element refers to the units to which costs are assigned, such as products, services, projects, departments, or customers (Blocher et al., 2010).

3.2 Operation of the Activity-Based Costing System

The ABC system posits that the relationship between overhead costs and products can be established through the activities involved. Consequently, activities are regarded as the primary source of costs, and the focus of cost attribution is placed on these activities when assigning overhead costs to products (Eker, 2002).

The first step in the two-stage allocation process within the ABC system is the identification of activities. This involves accurately identifying and defining the activities carried out by the enterprise throughout the production process. The process of identifying activities often requires conducting an activity analysis, which helps distinguish between activities of minimal significance and those that are critical to operations (Turney, 1992). Conducting an activity analysis contributes to simplifying the grouping of activities with similar characteristics. This aids in assigning resources to activities, determining cost elements, and forming activity cost pools for activity centers (Dierks & Cokins, 2001). For instance, activities considered insignificant may be grouped into a single activity category and allocated using a single cost factor to streamline the process (Doğan, 1996). The activity analysis process can be conducted using various techniques, including group sessions, interviews, questionnaires, surveys, observations, and reviews of physical work records.

After identifying the activities, the next step involves determining the costs of the activities by allocating resource costs to these activities. The first step in this process is to calculate the labor costs associated with each activity. Following this, information regarding the tools, equipment, and consumables used during the execution of the activities must be obtained. Additionally, other indirect costs, such as heating, rent, energy, and lighting, should be distributed to each activity using appropriate cost allocation factors (Doğan, 1996).

Once the activity costs are identified, the next step involves determining appropriate cost drivers for each activity. This process focuses on selecting the most suitable cost drivers (allocation keys) to assign the costs of activities in an activity center or pool to the products. Cost drivers are an important indicator for the effective implementation and functioning of the activity-based cost system (Ertaş, 1998).

At the stage of selecting cost pools and cost drivers, the process involves grouping activities into cost pools and

selecting the most appropriate cost driver for each pool based on the sub-activities and cost drivers identified in the earlier steps. When determining cost pools, several factors are considered, including the total cost associated with a particular pool, the homogeneity of the cost pool, and the diversity in activity consumption patterns (Doğan, 1996).

The final stage of the allocation process involves assigning activity costs to products. In this step, outputs are first identified. Next, charge rates are calculated to determine the proportion of activity costs to be assigned to each product. These charge rates are applied by multiplying them with the respective cost factor amounts to compute the total activity costs allocated to the products (Bekçioğlu et al., 2014).

4. Literature Review

The literature on ABC reveals a significant body of research, both national and international. Below, an overview of key studies in this area is presented.

Cooper & Kaplan (1988), in their seminal study, introduced ABC as an alternative to traditional costing systems. They provided a comprehensive explanation of ABC design and offered examples illustrating its impact on product costs and profitability.

Doğan (1996) aimed to explore the limitations of traditional cost systems in modern production environments and assess how ABC could address these challenges, including an application of ABC in a Turkish enterprise and concluded that, when supported by contemporary low-cost information systems, ABC is a suitable costing method that can enhance decision-making processes in new production contexts.

Eker (2002) investigated methods that offer more realistic cost information and enable more precise strategic decisions than traditional costing systems and focused on the ABC method, provided a detailed explanation of the approach, and demonstrated its accounting with a practical application. The study concluded that stakeholders, including business managers, can utilize account group 8, as outlined in the General Communiqué on Accounting System Implementation, to more clearly determine the cost of each activity through the ABC method.

Köse (2005) sought to provide insights into both ABC and the theory of constraints, comparing the two approaches and exploring their integration. The study, which included a sample application, concluded that integrating these approaches could mitigate the weaknesses of each, resulting in a cohesive and compatible costing system.

Gosselin (2006) aimed to examine the development of the ABC system, leading up to the time-based variant, and to assess survey results on the adoption and implementation levels of ABC across enterprises. Additionally, the study explored the impact of ABC on the evolution of cost and management accounting. Within this framework, Gosselin reviewed the development process of ABC, analyzed empirical studies, examined 1,477 articles published on the topic, and evaluated 25 surveys conducted in various countries. The study concluded that while ABC is an intellectually compelling concept and a significant innovation in management accounting, survey results revealed that it is not widely adopted by most organizations. Furthermore, there is significant confusion regarding the practical definition of ABC.

Sartorius et al. (2007) employed a survey-case study methodology to explore the design and implementation of the ABC system in South Africa, comparing it with implementations in both developed and developing countries. The study found that ABC system adoption in South Africa lagged that of developed nations and identified challenges faced during the implementation process that were also observed in other countries.

Pavlatos & Paggios (2009) conducted a study examining the adoption, consideration, and use of ABC in the hospitality sector, administering a questionnaire to 85 hospitality enterprises. The analysis revealed that most of the enterprises had adopted the ABC system. The study found that these businesses benefited from ABC, particularly in areas such as pricing decisions and profitability analysis. Conversely, enterprises that did not implement ABC expressed satisfaction with their existing cost systems and cited the high costs associated with implementing ABC as a barrier.

Karcıoğlu & Binboğa (2010) investigated the relationship between ABC and activity-based management, evaluating their roles in shaping business strategy. The study concluded that both ABC and activity-based management facilitate access to reliable cost information, support the production of high-quality products, and aid in strategic decision-making.

Bekçioğlu et al. (2014) applied the ABC method in the olive production sector and compared it with traditional costing methods. In this context, the researchers applied the ABC method to an olive production enterprise using the company's data. They then compared the ABC results with those derived from the enterprise's traditional costing system. The comparison revealed that ABC provides more accurate cost information than traditional costing methods.

Yükçü & Yüksel (2016) explored the feasibility of customer profitability analysis using the ABC method in hospital management, focusing on patient groups in a public hospital. The study analyzed customer groups in several departments, including general surgery, ophthalmology, orthopedics, cardiology, psychiatry, and internal medicine. The findings indicated that ABC analysis could positively contribute to decision-making processes,

particularly for hospital managers considering investments in various departments.

Mashayekhi & Ara (2017) evaluated the application of the ABC system in the accommodation sector by applying ABC to the cost data of a hotel. They compared the results obtained using ABC with those derived from traditional costing methods for each hotel service unit. The study revealed differences in cost per unit between the two methods, further highlighting the distinct advantages of ABC in capturing more precise cost information. They also concluded that ABC enhances the decision-making process by providing more detailed and accurate information, particularly in areas such as budgeting, profitability analysis, and pricing.

Wahab et al. (2018) investigated the implementation process of the ABC system in the General Accounting Department, aiming to identify the critical factors influencing the process, evaluate the system's usability, and understand the challenges encountered during implementation. Using semi-structured interviews, a self-developed questionnaire, and document analysis in a case study approach, the study found that the most critical factors affecting the implementation of ABC were related to the system's technical features during the design phase.

Alsayegh (2020) conducted a systematic and critical literature review of studies on the ABC system, analyzing articles from both developed and developing countries. The review revealed that the system is more widely adopted in developed countries than in developing countries. The study concluded that ABC allows enterprises to better allocate costs to products and enables more accurate and transparent cost determination, which has a significant impact on planning, control, and decision-making processes.

Kitsantas et al. (2020) conducted a comprehensive literature review to comparatively examine ABC and traditional costing methods, to investigate the impact of integration between ERP and ABC systems, and to examine its effect on management performance. Their review initially identified 322 studies, of which 38 were considered relevant to the scope of the research. The findings indicated that effective integration between ERP systems and ABC contributes to cost reduction, enhances competitiveness, and improves overall business management.

Weshah et al. (2022) investigated the impact of integrating ABC systems with ERP on operational efficiency in manufacturing firms listed on the Amman Stock Exchange. Using a survey-based research design and considering sector type as a mediating variable, the authors found that sector type, as a mediating variable, significantly differentiates the impact of ABC systems and ERP integration on operational efficiency.

Polat & Tanış (2023) examined a public institution engaged in both production and service activities to reveal the long-term benefits of the ABC system. They compared the costs calculated using the ABC method in the cafeteria of the organization with those calculated using the organization's existing costing system. The study concluded that determining product costs based on activities through the ABC system would contribute to the development of a more accurate and reliable cost information system, thereby supporting more precise strategic decision-making by the organization's managers.

To investigate the impact of ABC on planning, control, decision-making, and pricing processes, Bashatweh (2024) conducted a survey among employees of the Al-Hassan Industrial Estate. The findings indicated that the implementation of ABC has a significant positive effect on planning, control, decision-making, and pricing processes and plays a crucial role in enhancing overall process efficiency.

Chen (2025) examined the practical applications of AI-supported ABC systems in modern businesses, focusing on improvements in cost accuracy, optimization of operational efficiency, and support for strategic decision-making. The study analyzed algorithmic frameworks alongside real-world case studies. The findings indicated that AI-supported ABC enhances data accuracy and reliability, improves managerial decision-making processes, and enables firms to achieve superior financial performance outcomes.

Mpanza (2025) examined how digital technologies enhance the effectiveness of ABC in terms of increasing profitability, supporting competitive strategies, and optimizing resource allocation. To this end, the researcher employed a mixed-methods approach, combining quantitative analysis with case studies and interview techniques. The findings indicate that the improved accuracy of digital ABC systems strengthens strategic decision-making processes and enhances business profitability. However, the study also highlights that factors such as high implementation costs and lack of expertise pose significant barriers to the adoption of these systems.

5. Application of the Integrated Use of Normal Costing and Activity-Based Costing

This section outlines the research topic and objectives, describes the research sample and methodology, and summarizes the main findings.

5.1 Subject of the Research

The subject of the application is to present an example of how normal costing and ABC can be used together in the same enterprise. The application will focus on a practical case within the production and accounting departments of an industrial enterprise, providing concrete insights into both costing methods.

5.2 Purpose of the Research

The aim of this study is to develop an informed perspective on the integrated application of normal costing and ABC. For this purpose, the machining department—an area particularly well suited to ABC—was selected as the focus of the analysis due to its extensive use of diverse machines performing multiple production processes. Within this framework, a case study methodology is employed to provide practitioners and academics with a practical example and guidance on how to approach the simultaneous application of normal costing and ABC in a company manufacturing automotive parts from metal sheets, profiles, and pipes as raw materials.

5.3 Sample of the Research

The research focuses on a company operating in the Aegean Region Organized Industrial Zone that manufactures road vehicle carrier systems and possesses an extensive machining equipment infrastructure. Within this scope, the company's production processes were visited on multiple occasions, and production operators were examined through passive observation. In addition, the company's period-end balance sheets, financial statements, and cost reports were reviewed. The application section of this article was developed by designing the required cost accounting structure based on an assessment of the company's existing organizational framework. In accordance with the policies set by the company's board of directors, the company's name was withheld, and hypothetical data were used in place of actual figures; accordingly, the quantity and cost information derived from accounting and production records were adjusted to ensure confidentiality.

5.3.1 Introduction of the enterprise

The enterprise is a family-run business located in an industrial site in the Aegean Region. Managed by the third generation, the company produces automobile parts. The number of employees ranges from 300 to 350 throughout the year. In addition to selling domestically, the company exports its parts to some of the world's leading automobile manufacturers. The production process occurs across several cost centers, including forging, machining, painting, assembly, and packaging, with various activities taking place within each of these areas. The activities determined in ABC in this application were selected from the activities performed in the machining department of the enterprise.

5.3.2 Information on the cost calculation system of the enterprise

The company has established a cost calculation system that allows reporting according to the variable cost system, enabling costs to be monitored and reported as both fixed and variable. The enterprise uses an international ERP program to track costs, and reports are generated monthly. This system makes it easier for the company to apply normal costing than others. Permission was obtained to use information from the enterprise in this study, provided the name of the enterprise was omitted. However, the original amounts from the trial balances could not be used, so the figures in the study were created for illustrative purposes.

During the relevant period, the enterprise operated at approximately 60% capacity. In this period, 600 units were produced from order number 101, and 3,000 units from order number 102. The following cost data reflects the financial information for the period.

5.3.3 Cost and amount data for application

As shown in Table 1 and Table 2, the actual costs and cost drivers at the end of the fiscal period in question are as follows.

In the company, direct labor wages are calculated on a piecework basis, and direct labor hours corresponding to the idle capacity are also included in the cost calculations to ensure accurate allocation of overhead expenses.

5.3.4 Creating an integrated solution proposal with the use of application data

The table above provides the costs and cost drivers of an enterprise utilizing an ABC system. In this context, the unit costs of the enterprise were calculated using both the full cost and normal cost methods based on the traditional system, followed by calculations according to the ABC system.

Table 1. Costs and cost drivers

Field of Activity	Cost Drivers	Variable G.P.E.	Fixed G.P.E.
Material Preparation	Number of Items	21.000 TL	26.250 TL
Adjustment	Time	47.304 TL	52.500 TL
Abrasion	Machine Hours	380.000 TL	418.000 TL
Assembly	Number of Products	9.750 TL	43.700 TL
Total		458.054 TL	540.450 TL
Total Factory Overhead		998.504 TL	

Table 2. Order costs

Expense	Order No: 101	Order No: 102	Idle Capacity	Total
Direct Raw Materials and Supplies	160.000 TL	800.000 TL	-	960.000 TL
Direct Labor	15.000 TL	225.400 TL	-	240.400 TL
Direct Labor Hours (DLH)	600	9.000	-	9.600
Number of Items (number)	1.475	5.200	4.450	11.125
Adjustment (hour)	80	220	200	500
Abrasion (machine hour)	4.600	10.100	9.800	24.500
Assembly (Number of Products)	600	3.000	2.400	6.000

Determination of Order Costs According to the Full Cost and Normal Cost Method Based on Traditional System:

- According to the Full Cost Method

Before calculating the order costs (Table 3), the charge rate of the total overhead costs based on direct labor hours must be determined.

$$Factory\ Overhead\ Loading\ Rate\ = \frac{998.504\ TL}{9.600\ dis} = 104.010833\ TL/dis \tag{1}$$

Table 3. Ordering costs based on full cost (Classical method)

Expenses	Order No: 101	Order No: 102	Total
Direct Raw Materials and Supplies	**160.000 TL**	**800.000 TL**	**960.000 TL**
Direct Labor	**15.000 TL**	**225.400 TL**	**240.400 TL**
Factory Overhead	**62.406 TL**	**936.098 TL**	**998.504 TL**
(Order No: 101) 600 dis × 104,010833 TL/dis	62.406 TL		
(Order No: 102) 9.000 dis × 104,010833 TL/dis		936.098 TL	
Total Costs	**237.406 TL**	**1.961.498 TL**	**2.198.904 TL**
Unit Costs	**395,68 TL**	**653,83 TL**	
(Order No: 101) $\frac{237.406\ \text{TL}}{600\ \text{adet}} = 395{,}68\ \text{TL/piece}$			
(Order No: 102) $\frac{1.961.498\ \text{TL}}{3.000\ \text{adet}} = 653{,}83\ \text{TL/piece}$			

- According to the Normal Cost Method

In calculating order costs using the normal cost method, overhead costs must be divided into variable and fixed components and allocated separately to orders. Furthermore, the cost of unused or idle capacity should be determined. Given that the enterprise operates at 60% capacity, the fixed overhead cost associated with the unused 40% capacity should be calculated to accurately reflect the cost impact of idle resources, as presented in Table 4. (When the enterprise operates at 60% capacity, it produces 9,600 dis; If it worked with 100% capacity, 16.000 dis would be produced).

$$Variable\ Factory\ Overhead\ Loading\ Rate = \frac{458.054\ TL}{9.600\ dis} = 47.7139583\ TL/dis \tag{2}$$

$$Fixed\ Factory\ Overhead\ Loading\ Rate = \frac{540.450\ TL}{16.000\ dis} = 33.778125\ TL/dis \tag{3}$$

Table 4. Ordering costs based on normal cost (Classical method)

Expenses	Order No: 101	Order No: 102	Idle Capacity	Total
Direct Raw Materials and Supplies	**160.000 TL**	**800.000 TL**		**960.000 TL**
Direct Labor	**15.000 TL**	**225.400 TL**		**240.400 TL**
Variable Factory Overhead	**28.628 TL**	**429.426 TL**		**458.054 TL**
(Order No: 101) 600 dis × 47,7139583 TL/dis	28.628 TL			
(Order No: 102) 9.000 dis × 47,7139583 TL/dis		429.426 TL		
Fixed Factory Overhead	**20.267 TL**	**304.003 TL**	**216.180 TL**	**540.450 TL**
(Order No: 101) 600 dis × 33,778125 TL/dis	20.267 TL			
(Order No: 102) 9.000 dis × 33,778125 TL/dis		304.003 TL		
Idle capacity 6.400 dis × 33,778125 TL/dis			216.180 TL	
Total Costs	**223.895 TL**	**1.758.829 TL**	**216.180 TL**	**2.198.904 TL**
Unit Costs	**373,16 TL**	**586,28 TL**		

(Order No: 101)

$$\frac{223.895\ \text{TL}}{600\ \text{adet}} = 373{,}16\ \text{TL/piece}$$

(Order No: 102)

$$\frac{1.758.829\ \text{TL}}{3.000\ \text{adet}} = 586{,}28\ \text{TL/piece}$$

Determination of Order Costs According to the Full Cost and Normal Cost Method Based on ABC System:

- According to the Full Cost Method

In this method, all costs are allocated to the orders, excluding idle capacity. Only the capacity utilization rates of the orders are considered. Accordingly, the charge ratios of variable and fixed overhead costs to orders are calculated and presented in Table 5 and Table 6.

Table 5. Load ratios of variable overhead costs

Field of Activity	Variable G.P.E.	Charge Rate
Material Preparation	21.000 TL/6.675 pieces	3,14606742 TL/pieces
Adjustment	47.304 TL/300 hours	157,68 TL/hours
Abrasion	380.000 TL/14.700 mh	25,8503401 TL/mh
Assembly	9.750 TL/3.600 pieces	2,70833333 TL/pieces
Total	458.054 TL	

Table 6. Charge rates of fixed overhead costs

Field of Activity	Fixed G.P.E.	Charge Rate
Material Preparation	26.250 TL/6.675 pieces	3,93258427 TL/pieces
Adjustment	52.500 TL/300 hours	175 TL/hours
Abrasion	418.000 TL/14.700 mh	28,4353741 TL/mh
Assembly	43.700 TL/3.600 pieces	12,1388889 TL/pieces
Total	540.450 TL	

Ordering costs based on full cost are presented in Table 7.

Table 7. Order costs based on full cost (Activity-based costing system)

Expenses	Order No: 101	Order No: 102	Total
Direct Raw Materials and Supplies	**160.000 TL**	**800.000 TL**	**960.000 TL**
Direct Labor	**15.000 TL**	**225.400 TL**	**240.400 TL**
Variable Factory Overhead	**137.791 TL**	**320.263 TL**	**458.054 TL**
Material Preparation (1.475 pieces × 3,14606742 TL/pieces; 5.200 pieces × 3,14606742 TL/piece)	4.640 TL	16.360 TL	
Adjustment (80 hours × 157,68 TL/hours; 220 hours × 157,68 TL/hours)	12.614 TL	34.690 TL	
Abrasion (4.600 mh × 25,8503401 TL/mh; 10.100 mh × 25,8503401 TL/mh)	118.912 TL	261.088 TL	
Assembly (600 pieces × 2,70833333 TL/piece; 3.000 pieces × 2,70833333 TL/piece)	1.625 TL	8.125 TL	
Fixed Factory Overhead	**157.887 TL**	**382.563 TL**	**540.450 TL**
Material Preparation (1.475 pieces × 3,93258427 TL/pieces; 5.200 pieces × 3,93258427 TL/piece)	5.801 TL	20.449 TL	
Adjustment (80 hours × 175 TL/hours; 220 hours × 175 TL/hours)	14.000 TL	38.500 TL	
Abrasion (4.600 mh × 28,4353741 TL/mh; 10.100 mh × 28,4353741 TL/mh)	130.803 TL	287.197 TL	
Assembly (600 pieces × 12,1388889 TL/piece; 3.000 pieces × 12,1388889 TL/piece)	7.283 TL	36.417 TL	
Total Costs	**470.678 TL**	**1.728.226 TL**	**2.198.904 TL**
Unit Costs (470.678 TL/ 600 pieces; 1.728.226 TL/ 3.000 pieces)	**784,46 TL/pieces**	**576,075 TL**	

- According to the Normal Cost Method

In this method, the charge rates of variable and fixed overhead costs are calculated by considering the idle capacity in determining the costs of orders. Accordingly, the loading rates of variable and fixed overhead costs are shown in Table 8 and Table 9.

Table 8. Charge rates of variable overhead costs

Field of Activity	Variable G.P.E.	Charge Rate
Material Preparation	21.000 TL/6.675 pieces	3,14606742 TL/pieces
Adjustment	47.304 TL/300 hours	157,68 TL/hours
Abrasion	380.000 TL/14.700 mh	25,8503401 TL/mh
Assembly	9.750 TL/3.600 pieces	2,70833333 TL/pieces
Total	458.054 TL	

Table 9. Fixed factory overhead

Field of Activity	Fixed G.P.E.	Charge Rate
Material Preparation	26.250 TL/11.125 piece	2,35955056 TL/piece
Adjustment	52.500 TL/500 hours	105 TL/hours
Abrasion	418.000 TL/24.500 mh	17,06122445 TL/mh
Assembly	43.700 TL/6.000 piece	7,28333333 TL/piece
Total	540.450 TL	

Order costs based on normal cost are presented in Table 10.

Table 10. Order costs based on normal cost (Activity-based costing system)

Expenses	Order No: 101	Order No: 102	Idle Capacity	Total
Direct Raw Materials and Supplies	**160.000 TL**	**800.000 TL**		**960.000 TL**
Direct Labor	**15.000 TL**	**225.400 TL**		**240.400 TL**
Variable Factory Overhead	**137.791 TL**	**320.263 TL**		**458.054 TL**
Material Preparation (1.475 pieces × 3,14606742 TL/pieces; 5.200 pieces × 3,14606742 TL/piece)	4.640 TL	16.360 TL		
Adjustment (80 hours × 157,68 TL/hours; 220 hours × 157,68 TL/hours)	12.614 TL	34.690 TL		
Abrasion (4.600 mh × 25,8503401 TL/mh; 10.100 mh × 25,8503401 TL/mh)	118.912 TL	261.088 TL		
Assembly (600 pieces × 2,70833333 TL/piece; 3.000 pieces × 2,70833333 TL/piece)	1.625 TL	8.125 TL		
Fixed Factory Overhead	**94.732 TL**	**229.538 TL**	**216.180 TL**	**540.450 TL**
Material Preparation (1.475 pieces × 2,35955056 TL/piece; 5.200 pieces × 2,35955056 TL/piece; 4.450 pieces × 2,35955056 TL/piece)	3.480 TL	12.270 TL	10.500 TL	
Adjustment (80 hours × 105 TL/hours; 220 hours × 105 TL/hours; 200 hours × 105 TL/hours)	8.400 TL	23.100 TL	21.000 TL	
Abrasion (4.600 mh × 17,06122445 TL/mh; 10.100 mh × 17,06122445 TL/mh; 9.800 mh × 17,06122445 TL/mh)	78.482 TL	172.318 TL	167.200 TL	
Assembly (600 pieces × 7,28333333 TL/piece; 3.000 pieces × 7,28333333 TL/piece; 2.400 pieces × 7,28333333 TL/piece)	4.370 TL	21.850 TL	17.480 TL	
Total Costs	**407.523 TL**	**1.575.201 TL**	**216.180 TL**	**2.198.904 TL**
Unit Costs (407.523 TL/ 600 pieces; 1.575.201 TL/ 3.000 pieces)	**679,21 TL**	**525,07 TL**		

Regarding the use of the ABC system, the calculation was made under the assumption of full and normal costing. The application of different methods is due to the effort to calculate more accurate unit costs. The comparison of the calculated unit costs is presented in Table 11, with the graph for Order 101 illustrated in Figure 1 and the graph for Order 102 illustrated in Figure 2.

In the normal costing system, fixed overhead costs related to idle capacity are excluded from unit cost calculations compared to the full costing system, resulting in a significant cost shift to account for idle capacity. In the ABC system, more accurate costs are calculated as cost drivers, and allocations are based on specific activities rather than generalized approaches. As shown in the table above, the use of ABC leads to a cost shift from Order 102 to Order 101. In contrast, when ABC is not applied and order costs are calculated using the full cost method, a cost shift occurs from Order 101 to Order 102 due to inaccuracies in cost allocation.

Table 11. The comparison of the calculated unit costs

Systems	Costing	Order 101	Order 102
Traditional System	Full Costing	395,68 TL	653,83 TL
Traditional System	Normal Costing	373,16 TL	586,28 TL
ABC Full Costing	Full Costing	784,46 TL	576,08 TL
ABC Costing Full Costing	Normal Costing	679,21 TL	525,07 TL

Note: ABC = Activity-based costing

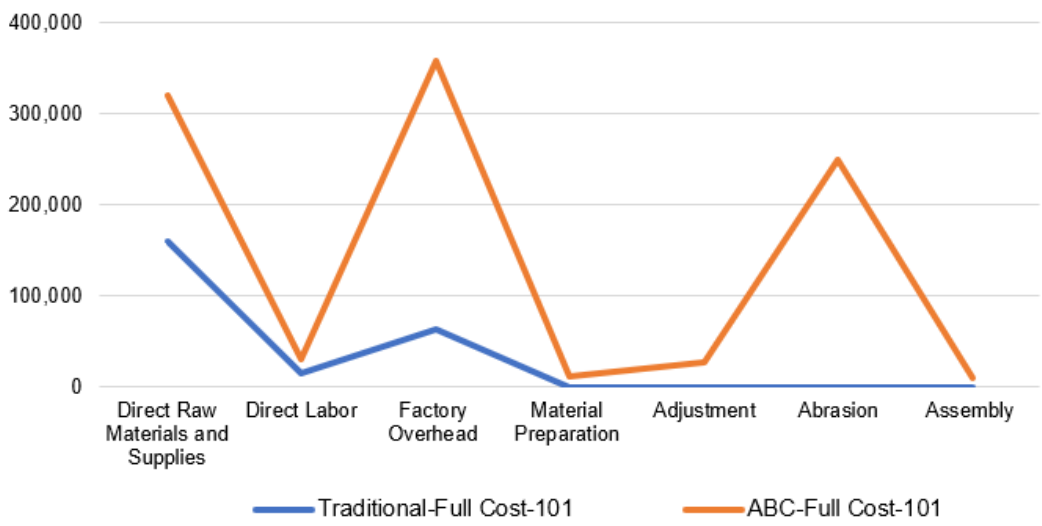

Figure 1. The comparison of the traditional and activity-based (ABC) costing systems for Order 101

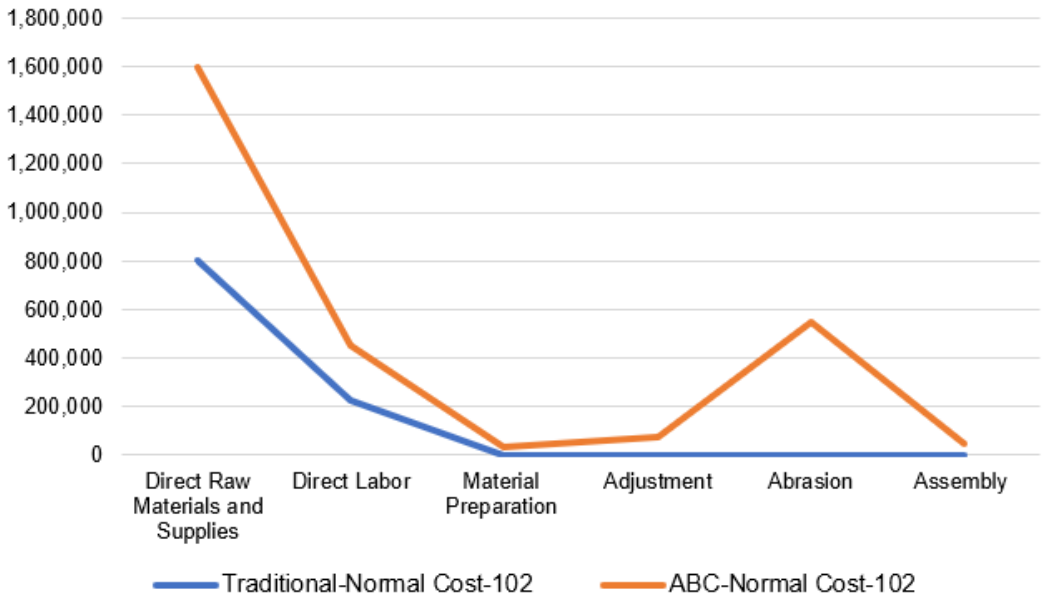

Figure 2. The comparison of the traditional and activity-based costing (ABC) systems for Order 102

6. Conclusions

Businesses subject to independent audit globally are required to implement IFRS. Given the current landscape, financial statements must undergo independent audits to facilitate international trade, partnerships, investments, mergers, acquisitions, and similar transactions. Consequently, accounting practices without IFRS compliance are no longer feasible. This requirement inherently mandates the use of the normal costing method specified in IFRS.

Even when not directly complying with IFRS, businesses are obligated to apply normal costing in cost accounting. Therefore, accounting professionals must establish the framework for implementing normal costing and determine its method and structure. The integration of normal costing with other cost systems or approaches depends on the expertise and experience of accounting professionals. For businesses engaging in international trade, adopting the normal costing method is imperative, while the selection and implementation of supplementary systems or approaches remain discretionary.

The ABC system, a critical topic in accounting for the last 50 years, remains an essential approach, yet there is limited guidance in the literature on how to integrate it with the normal costing method.

This study aims to contribute to the literature by demonstrating the integrated application of normal costing and ABC through a case study of a business. The company examined does not currently employ either normal costing or ABC within its cost system. In this context, when unit costs calculated on an order basis using classical costing and ABC systems—under the assumptions of full and normal costing—are compared, substantial differences in unit costs are observed. Given that the ABC approach provides more accurate cost information and that fixed costs are more realistically allocated under normal costing, it can be argued that the correct and integrated application of these two approaches yields more reliable cost results.

A review of the literature reveals no theoretical or empirical studies that combine the application of normal costing and ABC. Therefore, the limited number of activities included in the analysis constitutes a limitation of the study. Practitioners and researchers seeking to apply normal costing in conjunction with ABC are encouraged to develop more extensive and comprehensive implementations than the example presented here. Moreover, it should be noted that contemporary applications of such integrated costing approaches should be supported by ERP systems to ensure effective data collection and processing. We believe that the application section of this study will offer practical guidance for accounting professionals. Future studies could develop more comprehensive examples by incorporating numerous activities—potentially numbering in the hundreds or thousands—across multiple businesses operating in similar or different sectors.

Author Contributions

Conceptualization S.Y. and S.K.; methodology S.Y. and S.K; validation S.Y.; analysis S.Y. and S.K; investigation S.Y. and S.K; resources S.Y. and S.K; data curation S.Y. and S.K; writing—original draft preparation S.Y. and S.K; writing—review and editing S.Y. and S.K; visualization S.Y. and S.K; supervision S.Y. All authors have read and agreed to the published version of the manuscript.

Data Availability

The data used to support the research findings are available from the corresponding author upon request.

Conflicts of Interest

The authors declare no conflict of interest.

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