

The assessment of how businesses that offer accounting services might include time-driven activity-based costing

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Abstract. The evaluation of the Time-Driven Activity-Based Costing (TDABC) model for accounting service providers explores the origins of modern cost accounting models, their calculation methodologies, and their respective strengths and limitations. Drawing on theoretical insights, the study applies the TDABC model in a real-world setting within an accounting firm that manages financial records for nineteen companies. The findings offer a comprehensive perspective on the model's potential benefits and challenges in practical application. The analysis underscores its effectiveness in refining cost allocation processes and optimizing resource utilization. Furthermore, the study identifies key obstacles to implementation and provides strategic recommendations for maximizing the model's efficiency in accounting firms.

Key words: TD ABC, accounting services, costs.

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1. Introduction

In today's rapidly changing business environment, accurate cost calculation and resource allocation are crucial for maintaining competitiveness. Traditional cost accounting methods often fail to provide precise insights into service-based businesses, leading to inefficiencies and inaccurate pricing decisions. As companies strive to optimize their financial management, modern costing models that incorporate real-time data and detailed activity tracking have become increasingly important. Modern methods are widely discussed by many authors: Kaplan, R. S. and Anderson, S. R. (2004), Wegmann, G. (2009), Chapman, C.S. (2012), Lakis V., Mackevičius J., Gaižauskas L., Šapkauskienė (2010), and others. Various authors have explored and practically applied the possibilities of implementing the new modern Time-Driven Activity-Based Costing method in logistics (Gervais, M., Levant, Y., Ducrocq, C. 2010; Afonso, P., Santana, A. 2016, and others), libraries (Siguenza-Guzman, L., Van den Abbeele, A., Vandewalle, J., Verhaaren, H., and Cattrysse, D 2013), marketing departments (Yonpae, P., Sungwoo, J., Yousef, J. 2019), the hotel sector (Hajiha, Z., Alishah, S.S. 2011), and many other industries. The Time-Driven Activity-Based Costing model offers a more dynamic and adaptable approach to cost allocation, helping businesses improve decision-making and enhance profitability. While this model has been widely explored in various industries, its application in accounting service firms remains underexamined.

This research aims to evaluate the Time-Driven Activity-Based Costing (TDABC) model for accounting service providers. Understanding how TDABC can be effectively implemented in this sector is essential for increasing operational efficiency and ensuring fair and transparent cost distribution.

2. Theoretical implementation phases of the TDABC model for accounting service providers

Modern cost accounting methods have allowed a more accurate calculation of product and service cost. These methods enable businesses to analyze efficiency, identify weaknesses, and opportunities for improvement and make informed management decisions to remain competitive. The first modern cost accounting method developed was Activity-Based Costing (ABC), which aimed to overcome the limitations of traditional models. Over time, particular attention was paid to time, which is of the utmost importance for a company's management. Increasingly, time is seen as the most critical factor in management decisions. Neither the traditional nor the ABC cost accounting methods were sufficient for corporate management because they did not consider the time factor, and the calculated results did not correspond to reality (Kucera, 2007).

As a result, a time-driven activity-based costing system (TDABC) was developed, which makes it possible to eliminate some of the shortcomings of the ABC method. The abundance of research in service firms demonstrates that the TDABC model suits firms in a wide range of service sectors. However, it has not been applied in accounting firms, although TDABC has been applied extensively in other service sectors. For example, Hajiha, Alishah, (2011) applied the TDABC model in the hotel sector and obtained valuable data on costs and customer profitability, which is very relevant for the hotel sector. Adenle, Valverde (2014) implemented the TDABC model in the information technology (IT) sector and thus helped to identify the most costly business processes and solutions for cost management. According to Kont (2015), the TDABC model is one of the most appropriate models for evaluating the performance of the library sector. According to research by Sabti Najim Al Askary, Oudah Kadhim, Ali Alesaac (2020), the TDABC approach can be applied in banks by relying on cost carriers and time equations to accurately estimate the cost of banking services in each department. The authors also identify the difficulties encountered in the implementation of the model. However, it is important to note that in the conclusions, the authors emphasize that the model has proven successful and is considered suitable for further use.

TDABC provides companies with a clear and practical way to determine the costs, capacity, and profitability of their activities, services, products, and customers and to calculate a fair cost. The authors of the TDABC model consider time a key factor in cost allocation because the capacity of most resources, such as personnel and equipment, can be easily measured by the time it takes them to do their work. TDABC systems can be implemented more quickly, hence more cheaply, and upgraded more easily than the traditional ABC (Pernot, Roodhooft, and Van den Abbeele, 2007). This is mainly because this approach allocates costs to cost objects using only two indicators (Kaplan, Anderson, 2004): the time required to perform the activities related to the cost objects and the cost per unit of time. Identifying these indicators occurs when the TDABC framework is implemented: 1) Identification of Resource Groups: The TDABC approach reduces the number of activities when resource groups are formed. A resource group can be an organizational unit or a department composed of many different activities with different lead times (Everaert, Bruggeman, 2007); for example, it could be staff, equipment, fixed assets, etc. There is no limit to the number of activity groups, which can be very large, depending on the nature of the company's activities and mindset. Therefore, this approach reduces data collection complexity and measurement errors compared to the ABC approach (Hoozee, Hansen, 2014). 2) Cost Efficiency Analysis (Practical Capacity): This efficiency analysis calculates the practical capacity of all the activities identified. Practical capacity is a precisely calculable percentage. Studies have estimated that the practical capacity is about 80–85% of the ideal (theoretical) capacity (Kaplan, Anderson, 2004). In most cases, it is up to the company managers to decide how much time to eliminate from the practical capacity. It is important to underline that practical capacity is not related to an employee's time doing a particular activity. The main idea behind practical capacity is to determine the time required to perform each type of activity (Tanis, Ozypici, 2012), either through direct observation, surveys of employees and management teams, or by analyzing the organization's historical data (Kaplan, Anderson, 2004, 2007). 3) Calculation of the Cost of Occupancy (Cost Per Unit of Time): i.e., what is the estimated cost per unit of time to be calculated? 4) Identifying Activities and Creating Time Equations: Essentially, the entire activity of a firm consists of individual activities, which are aggregated into costs (Cooper, Kaplan, 1998). Depending on the size of the enterprises, many activities can be identified. This requires a chart of the total number of activities required to produce a product or service. 5) Estimating the Time Required to Carry Out the Activities: How many employees (or machines) have been employed in a given period? The accuracy of the time estimate determines the accuracy of the cost price. This is done with the help of the relevant managers, who estimate the average time needed to carry out the activities. The most common methods used to calculate time are direct observation and time estimation, surveys, or analysis of available factual information. In addition, there are cases where the time taken to complete virtually the same activity can vary significantly (Sherratt, 2005). For example, the same goods may have different packaging methods and different packaging times. In such a case, measuring these activities with a single lead time is incorrect. Therefore, the authors of the

model recommend using time equations, which not only help estimate the time of an activity more accurately but also reduce the number of activities (Kaplan, Anderson, 2004). Identifying indirect costs is one of the most critical components of costing systems. Costs incurred in a given period are allocated to groups of activities to identify the reasons for their occurrence (Kaplan, Cooper, 2004). Only by correctly identifying indirect costs can the cost of a product or service be accurately calculated, its selling price correctly priced, the proper management decisions be made, or costs be effectively managed or controlled, and internal reserves be identified. Incorrect data leads to erroneous management decisions to produce low-margin or even loss-making products, which is why the allocation of indirect costs is of paramount importance (Tamulevičienė, Subačienė, 2013). 6) Calculation of Activity Costs Per Product or Service: Activity costs per product or service. 7) Calculation of the Cost Price: The final cost of the product or service produced. The calculation is made by multiplying the number of cost carriers of the product or service activity by the time required to carry out the activity and the cost per unit of time.

Anderson, Levant (2008) point out that TDABC determines the capacity of each unit or process and allocates the cost of capacity to cost objects in groups of costs, considering the time required to perform the activity. According Öker, Adigüzel (2010), TDABC determines the capacity of each unit or process. Soltani, Kalani (2012) investigated that TDABC simplifies the costing process and allocates indirect costs to activities. Lorena Siguenza-Guzman et al. (2013) argue that TDABC better allocates indirect costs to cost objects to obtain more accurate information and to prioritize process improvements. Valverde, Adenle (2014) argue that TDABC is an effective tool for identifying high-cost processes, allowing managers to make essential decisions on cost control, service, or product pricing. Tse (2014) investigated how the TDABC model can help support efficient, time-based cost management systems that generate more accurate and relevant cost information. Oklu, Haas, Kaplan, Brinegar, Bassoff, Harvey, Brink, Prabhakar (2015) indicated that TDABC is a strategic accounting and profitability tool. According to Garcia, Mistry, Hardy, Fracchia, Hersh, Wentland, Hartnik (2017), TDABC is a novel approach to cost analysis and predicting the financial impact of potential quality improvement initiatives. Everaert, Levant, Sarens (2008) point out one of the advantages of no longer having to conduct regular surveys to determine the distribution of working time between different activities.

3. Research design and findings

The company applies the exact pricing for all companies, i.e., 1 hour of work costs EUR 500 + VAT. Nineteen different companies were selected for the detailed study. The first step in implementing TDABC was identifying cost groups and indirect costs. All costs incurred by the enterprise are classified as indirect costs. The indirect costs incurred by the company amount to almost EUR 16,000 per month and include accountants' salaries, rent and security of premises, postage, utilities, stationery, telephone, payroll, and accounting software costs.

The next step is the calculation of practical capacity. The theoretical working capacity must first be determined. The working time of the whole unit, i.e., six employees, is estimated.

The total number of employees is three in the case of a typical working time of 8 hours per day. One accountant works half-time, i.e., 80 hours per month and 4 hours per day, and two accountants work three-quarters-time, i.e., 120 hours per month and 6 hours per day. The company has decided that the practical capacity will be 80 % of the theoretical capacity. 20 % of the working time is eliminated because, in the bookkeeping process, it is standard to look for and correct mistakes or specific tasks that are very rare, and that part of the time is devoted to the employees' time. The theoretical capacity is 4,000 minutes, so the practical capacity is 38,400 minutes. Once all the indirect costs have been identified and the practical capacity has been calculated, the cost per unit of time can be calculated in the next step: cost per minute = EUR 15 755/38 400 minutes. = EUR 0.41. The activities are then identified, and time equations are developed for each activity (table 1) to reflect the times taken to complete the activities as accurately as possible.

Approximate fixed times have been established for a number of the activities identified. Based on practice, management has concluded that the time for these activities varies by up to 5 minutes and is therefore not significantly affected and that a more accurate calculation is practically impossible. As far as customer counseling is concerned, it was not possible to measure this activity either by a time equation or by an approximate time, as practice shows that this depends on the customer's level of knowledge. Some clients receive tax advice for 10 minutes, but others receive advice for up to an hour. Finally, the time equations were used to calculate the time taken to complete the activities for each company. Indirect costs can then be allocated to cost objects when the activity times calculated by the time equations are multiplied by the cost per unit of time.

Table 1.

Activities of accounting services companies

№	Activity	Time Equation (Y)	Variables
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1	Inputting Purchase Documents into Accounting	$Y = 2 + 0.5 \cdot X1 + 1 \cdot X2$	X1 – number of different items; X2 – number of accrual periods
2	Inputting Sales Documents into Accounting	$Y = 3 + 0.5 \cdot X1$	X1 – number of revenue lines
3	Inputting Bank Statements	$Y = 1 + 0.5 \cdot X1$	X1 – number of entries
4	Calculating Salaries	$Y = 10 + 5 \cdot X1 + 10 \cdot X2$	X1 – if on vacation – 1, if not – 0; X2 – if sick – 1; if not – 0
5	Client Consulting	Equation not possible	
6	Hiring Employees	$Y = 10 + 1 \cdot X1$	X1 – if previously worked – 1, if not – 0
7	Issuing Invoices	$Y = 3 + 1 \cdot X1$	X1 – number of revenue lines
8	Calculating/Declaring VAT	$Y = 15 + 1 \cdot X1$	X1 – number of purchase/sales documents
9	Calculating Income Taxes	10–20 min	–
10	Calculating Social Security Taxes	10–20 min	–
11	Mandatory Legal Checks	$Y = 5 + 5 \cdot X1 + 5 \cdot X2 + 3 \cdot X3 + 3 \cdot X4$	X1 – if accounts receivable – 1, if not – 0; X2 – if accounts payable – 1, if not – 0; X3 – number of different bank statements; X4 – if cash – 1, if not – 0
12	Reconciling Accounts Payable/Receivable	$Y = 5 + 1 \cdot X1$	X1 – number of suppliers, clients

Source: Own calculations

The resulting data can then be used to estimate the profitability margins of the service provision of individual firms. Such information is of great value to an undertaking in assessing the profit earned by individual undertakings. Based on such data, it is relevant to consider changes in pricing or to make sure that the pricing applied by the firm is appropriate and that the company does not need to make any adjustments.

4. Conclusion

This study highlights the potential of the Time-Driven Activity-Based Costing (TDABC) model in enhancing cost allocation and operational efficiency in accounting service firms. The findings demonstrate that TDABC provides a more accurate and flexible approach to cost management, allowing firms to allocate indirect costs appropriately among different clients and gain deeper insights into service profitability. By simplifying the costing process, TDABC helps accounting firms make more data-driven decisions.

The case study confirms that implementing TDABC brings more advantages than disadvantages, though challenges may arise in firms with heterogeneous processes and a strong focus on advisory services. In such cases, establishing precise time equations and estimating activity durations can be complex. While the initial setup of TDABC requires detailed data collection and system configuration, updating the model for new clients becomes significantly easier once the framework is in place.

One of TDABC's key strengths is its ability to identify costly operational processes, enabling managers to make informed decisions regarding service pricing and resource allocation. Additionally, the model facilitates the calculation of spare or depleted capacity, a crucial factor in ensuring employee workload balance. This is particularly relevant for accounting firms, where excessive workloads can negatively impact employee satisfaction and overall efficiency. By integrating TDABC, firms can optimize resource utilization, improve pricing strategies, and enhance competitiveness in the market.

Ultimately, TDABC provides a structured and data-driven approach to cost management, allowing firms to streamline their operations and improve client profitability. Its emphasis on time as a key cost driver not only enhances financial decision-making but also supports long-term business sustainability.

This study offers valuable insights into the application of the TDABC model in accounting firms; however, certain limitations must be considered. The research focuses on a single firm, limiting the generalizability of the findings to other businesses with different structures and operations. Additionally, the accuracy of TDABC depends on precise time estimations, which may be affected by variations in employee work habits and workload fluctuations. Implementing the model requires significant data collection and training, which may be challenging for smaller firms. Moreover, the study's timeframe does not allow for an in-depth evaluation of TDABC's long-term impact. Despite these constraints, the research provides a solid foundation for further studies and highlights the model's potential benefits and challenges in the accounting sector.

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