
A Critical Review on Activity-Based Costing Technique: Analysis of Abundant Countries

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Jaya Kumar Shanmugam (Corresponding Author)
Faculty of Business and Management
AIMST University
Email: jayakumar@aimst.edu.my

Faculty of Entrepreneurship and
Business, Universiti Malaysia Kelantan
Locked Bag 36, 16100 Pengkalan Chepa
Kota Bharu, Kelantan, Malaysia
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Abstract – Activity-based costing has been identified as an effective costing system that helps the companies in manufacturing and service industry to reduce their cost. Due to the high reliability and accuracy of activity-based costing, without a doubt, activity-based costing had been used and implemented widely by companies in the manufacturing and service industry to replace traditional costing. This is because traditional costing has been considered by many researchers that it is no more reliable and effective to act as a costing system in this constantly changing market conditions, developing technology, and a large number of productions. Furthermore, the activity-based costing system as mentioned just now can provide a lot of benefits to the company which implements it such as providing detailed cost information which can show a clear picture to the management on the costing of their products, which leads to a better decision making as well as improvise the strategic planning of the companies to achieve better profitability and sustainability of the business in the long run.

Keywords: Activity based costing, manufacturing and service, costing system

1. Introduction

Management accounting can be known as a method of gathering costs and linking them to specific products or departments to take appropriate management action. It is also identified as a series of techniques for refining raw data into usable information for management decision-making, ascertaining the cost of products and services, and their profitability, as it establishes budgets, standard costs, and real costs. (Zamrud & Abu, 2020). In the business world today, strong competition has been faced by companies at a global level, there is huge pressure for the companies to increase their productivity and

most important, cut their operation cost (Cunha & Almeida, 2017). Therefore, a method of estimating the costs of the various products produced accurately as well as precisely is very much important for a company to meet its objective and to be sustained in this competitive environment. In accounting, there are two major types of costing systems namely Activity Based Costing and Traditional Costing (Omar & Hasan, 2020).

Nowadays, activity-based costing has been identified as one of the most widely used and popular costing techniques due to its well-known effective and accurate costing method that can help businesses to save cost. Previously, the traditional costing system can be known as the costing method that is mainly used by companies. However, traditional cost accounting has become unreliable in providing information about costs and cost prices due to modern business conditions, the application of new technology, higher consumer demands, and increased competition (Quesado & Silva, 2021). As a result, starting in the 1980s, the activity-based costing (ABC) system has emerged as a costing method that is capable of overcoming the traditional costing systems' limitations in the face of economic and technological developments-namely, charging the arbitrary and imprecise cost of indirect costs due to imputation criteria distortions (Quesado & Silva, 2021). It also provides more accurate information in the calculation of product cost compared to traditional costing, especially when there are large products to be produced in a company or the process of production becomes complex (Paksoy & Yilmaz, 2021). This shows that activity-based costing has been recognized by many researchers as being more effective and efficient as the costing system when it comes to the cost estimation or calculation for a company's products as there are many limitations that the traditional costing system needs to deal with.

In the mid-80, activity-based costing was developed by Robin Cooper who is a professor of management in the designing and practicing of costing systems area, and Robert Kaplan, who is a professor of Management Accounting at Harvard University. There are many definitions of activity-based costing provided by several researchers. According to the study by Messaoud & Mourad (2021), the researchers defined activity-based costing as a method that is useful for optimum utilization of existing resources, measuring the cost and performance of activities and cost objects, and using it to determine the total costs required in a product making. According to Al-Halabi & Shaqqour (2017), activity-based costing is defined as a modern approach to cost used by companies with a large number of products to make. The researchers stated that activity-based costing uses different quantitative and qualitative cost drivers and also differentiated between high and low-volume products taking into account the economies of scale. After that, activity-based costing is known as a cost-based system that accumulates indirect resource costs for each of the activities of the area being costed and uses and assigns the costs of these activities as building blocks or for calculating the costs of other cost items that require that activity (Hornigren, Sundem, Burgstahler, & Schatzberg, 2014).

The main purpose or function of ABC is that it can help companies to divide their production into core activities, defines the costs of those activities as well as allocates

those costs to products. Because of its ability to calculate the true cost of a product, ABC has been claimed to be able to provide high-accuracy cost management to companies (Messaoud & Mourad, 2021). Moreover, ABC costing system helps companies to estimate the costs of resources required or spent to produce products or services in a given process, which consists of a set of activities. In this system, it is assumed that resources are consumed by the activities needed to produce the products or services. In the first phase, the resources are allocated to the activities, and the activities are allocated to the products in the second phase (Cunha & Almeida, 2017). Hence, the allocation through the cost driver is made in both cases.

2. Literature Review

Activity Based Costing is a powerful tool for a firm to have a reliable and realistic expense for its business while eliminating cost distortion, which may also lead to long-term development and progress, which is necessary for today's globalized and difficult corporate environment. An activity-based costing method is a method that identifies and allocates expenses for each activity in a firm. It considers the actual consumption of all its products and services. This method allows firms to reduce their overhead costs (Drury, 1992; Cokins, 1996, 2002; Cohen, 2000). This procedure is commonly used for monitoring and costing various activities (Cooper, 1990, 1992). It involves identifying and tracking the various resources used in each activity. Following that, the actions are separated into cost objects depending on their estimated consumption (Kaplan, 1992; Everaert & Bruggeman, 2007). Activity-based costing also refers to a methodology of allocating and assigning different expenses to cost materials based on cost-generating activities.

The activity-based costing system is predicated on the assumption that actions produce costs, and costs are reallocated to cost objects according to relation to the risks of the activities performed. The activity-based costing is the cost of the basic activity utilized to manufacture the items assigned by the system. Activity-based costing defined as an amplifier charge is a way of computing costs that generates a group charge for each event or transaction (activity) in an organization. Based on (Lewis, 1995; Emblemavag & Bras, 2012), the application of an activity-based costing technique aids in the identification of and also eliminates offerings that are not profitable. It also helps in improving the efficiency of the firm by identifying and removing inefficient processes. The essential principle is that actions consume energy and gain costs, whereas products consume processes and earn costs and absorb their costs; that is, it is the activities that consume resources, not the products. According to Aranoff et al., (1998), activity-based costing provides two targets. The beginning objective is to avoid expense inequity. Pricing misconception occurs when traditional costing groups all cost drivers are combined in a single expense category. Activity-based costing uses several expense pools (activities) and costs drivers to avoid cost distortion. Waste reduction or the elimination of quasi-activities is the second purpose of offering a process view. Pricing, outsourcing, and identifying and

measuring process improvement efforts were all used to make strategic decisions that are applied in activity-based costing (Greenwood, & Reeve, 1992). By allocating overhead charges based on real resource use by each activity, activity-based costing increased operational performance. It enables management to understand where the highest costs are incurred and who is responsible for them. Implementing an activity-based costing system allows for more efficient pricing, marketing, product design, and product mix decisions. The interconnectedness of cost drivers and activities is something activity-based costing is well aware of.

Activity-based costing will reallocate a resource from a low-value activity to a high-value activity. A claim by Kaplan, Anderson, and Compton, identifying and mapping relevant actions carried out in the organization, as well as identifying the resources utilized to carry out each activity that is part of the company's operations, is the basic approach for implementing the activity-based costing system. The successful implementation of an activity-based costing system requires technical knowledge; however, it also includes issues of nature politics, and culture. Early on, it is vital to assess the business in both economic and technological terms, as the benefits are likely to outweigh the costs. There is some limitation in activity-based costing. Aside from the need to report to external parties, activity-based costing requires much more extensive data collection. As a result, obtaining the necessary data became more difficult. Whereas the traditional system only requires data sufficient to prepare financial statements and for tax purposes. This, of course, has the disadvantage of making business difficult. It is possible that data collection in the company takes a lot of time and costs a lot of money. The possibility of misunderstanding by reducing the number of cost-driving activities, such as order processing. It is tough to keep track of the operations in the work process because the tasks required to run a firm are numerous. Process monitoring also raises the business's costs. When the operations of the enterprise are not fixed or vary based on circumstances, conditions, and the shape of the enterprise, it is difficult to identify them. Managers must significantly rethink expenses when using activity-based costing methods. Because activity-based costing is designed to be a long-term strategic decision-making tool, all costs are treated as variable costs.

In the business world today, activity-based costing has been adopted in many service industries as a management accounting tool to monitor and manage business performance for the past four decades (Bufi, 2014). Activity-based costing which originated in the United States and the manufacturing-based technique has spread throughout the world, including France, Japan, and many other countries, and is also widely adopted in the service industry companies (Tabitha & Ogungbade, 2016). Many institutions have adopted activity-based costing as compared to traditional costing (Omar & Hasan, 2020). The main reason that caused the change was that the traditional costing system was inadequate for cost allocation so there is a need for a new and improved costing strategy system. This show that activity-based costing has been implemented widely by companies to manage cost-effectively in their businesses as the traditional costing system is not more effective to act as a costing system.

Today, the demand for activity-based costing is surging in many parts of the world, most economies such as Kurdistan, and Iran have increasingly shifted their costing system to activity-based costing with just a few remaining on the traditional costing (Omar & Hasan, 2020). Other than that, activity-based costing is the technique that is most widely used in the additive manufacturing sector nowadays which is commonly known as 3D printing (Gisario, Kazarian, Martina, & Mehrpouya, 2019). This is because activity-based costing can act as the support to additive manufacturing's improvements of production systems such as waste materials reduction which surely can help the manufacturing companies to save their cost. Not only that, but activity-based costing also helps to provide insight into inefficiencies in the supply chain and free up spare capacity. As a result, services can be tailored to provide more value to the healthcare system (Jalalabadi, Milewicz, Shah, Hollier Jr, & Reece, 2018). This had led to the wide adoption of the activity-based costing method in the sector of health care. To sum up, activity-based costing has been implemented widely in the manufacturing as well as the service industry in the world today.

Next, there are some of the differences between activity-based costing and traditional costing which had been mentioned by the researchers and make activity-based costing more preferable today. Both costing systems can be said to serve the same objective of allocating production costs about the rate of cost driver. Even though traditional costing is recognized as simpler to interpret as compared to activity-based costing which is harder for the company to comprehend. However, activity-based costing can provide managers with accurate and precise information that is very important for decision making which is unable to be achieved in the traditional costing technique (Omar & Hasan, 2020). This means that even though activity-based costing is considered a costing system that is harder to implement. However, it is capable of providing information that is accurate, relevant, and useful for the managers to make their strategic decision.

Furthermore, activity-based costing is following the principle that "*product consumes activities, and activities consume resources*". Hence, the overheads are based on activities that are considered a cost driver such as the number of labour hours worked or floor areas to allocate the cost. While the traditional costing system is based on direct labour, the cost of materials, or other simplistic methods to allocate the costs. As a result, traditional systems tend to over-cost high-volume items, services, and customers while under-costing low-volume products, services, and customers. This determines that activity-based costing will be more accurate when it comes to cost estimation or calculation than traditional costing as there is a possibility of traditional costing overestimating or underestimating the costs. Without a doubt, activity-based costing definitely can be identified as a more reliable costing system that could provide accurate and relevant costing information to the companies which are superior to the traditional costing method.

After the discussion about the differences between activity-based costing and traditional costing, now let's look into the reasons that would lead to the wide adoption of activity-based costing among the companies in the manufacturing as well as the services

industries as their costing system. Hence, it is because several advantages can be achieved by the companies. The first advantage which can be provided by activity-based costing is that it is very useful and effective in assisting the companies to identify the relative product profitability and enable the companies to understand their cost drivers better (Reyhanoglu, 2004). This is because, through the implementation of activity-based costing, the companies can measure their product's cost more accurately and efficiently which can lead to better pricing decisions to be made (Messoud & Mourad, 2021). The activity-based costing method provides relevant and helpful information for decision-making in a variety of sectors, such as the determination of cost and product sales pricing (Cunha & Almeida, 2017). Product sales pricing is very important because if there is an inaccuracy in the determinant of cost, the price also will be set inappropriately which will affect the competitive position of the company as well as the profitability. To sum up, activity-based costing can help companies identify what is the appropriate price to set on their products that allow them to maximize their profitability while at the same time capable of maintaining the attractiveness of their products or services to the customers in the market. The researchers also mentioned that activity-based costing also can assist companies in the decision-making on capital budgeting processes and make it easier to invest in new technologies.

Other than that, according to Arora and Raju (2018), as information is more detailed through the implementation of activity-based costing, this can facilitate the decision-making of the company's management. The implementation of the activity-based costing system enables companies to obtain a wide set of information with usefulness, relevance, and high detail (Cunha & Almeida, 2017). Detailed information makes it possible for the companies to determine activities that do not add value to reduce or eliminate them which directly reduces the cost of production. Therefore, this shows that activity-based costing is capable of enhancing a company's performance through the ways of supplying information on where resources are spent, and helps the management team to identify clearly which activities can add or not add value to the product or service which allow them to make effective decisions and take appropriate action.

Furthermore, detailed information provided by activity-based costing also can enhance the strategic planning of the company. This is because activity-based costing can present the cost of each product or service of the company. As activity-based costing is based on activities performed, it can provide more accurate cost estimates which allow the managers to estimate the costs of each product or service more accurately (Haroun, 2015). The activity-based costing can highlight the actual cost calculation and helps the decision-making process by providing reliable information to the companies (Quesado & Silva, 2021). From this, the managers can come up with strategic plans to improve the profitability of their company based on the detailed information on costs provided through the implementation of activity-based costing. For example, the managers can determine which particular product of the company is less costly compared to other products but has a high demand in the market so that the company can focus and emphasize the production

of that product rather than other products. This can help the company to maximize its profit and at the same time try to reduce its production cost.

Even though there are many advantages of activity-based costing as stated by the researchers. There are also some limitations of this particular costing system mentioned. In the study of Pietrzak, Wnuk-Pel, and Christauskas (2020), the researchers stated that activity-based costing is a complex and difficult costing system that requires expertise and good experience to implement effectively. This is because the activity-based costing method has a large number of cost pools as well as cost drivers. Hence, difficulties may be faced by the companies, such as determining cost drivers, assigning joint costs, and fluctuating rates of cost drivers (Paksoy & Yilmaz, 2021). Therefore, in case the companies lack the expertise to adopt and maintain the activity-based costing, the costing system might not be able to perform effectively as it should be which might be affecting the accuracy of cost estimation or calculation of costs of the product or service.

According to Ouassini (2019), the implementation of activity-based costing has a very high software cost such as requiring investment for staff training. This is because activity-based costing is considered a costing system that is more complicated than traditional costing as mentioned above. Therefore, adequate and proper training should be provided to the employees to ensure that the proper function of activity-based costing in the company can be performed effectively. Thus, the investment cost for the employee's training is unavoidable when the companies adopt the activity-based costing system and it is not considered a small amount of cost required to spend by the companies. After that, the application of an activity-based costing system also needs a significant amount of time due to its complexity. The researcher stated that it is time-consuming for activity-based costing to collect information (Pietrzak, Wnuk-Pel, & Christauskas, 2020). Therefore, companies might need to spend more time when applying the activity-based costing system to ensure the functionality of the costing system can be performed effectively and efficiently.

3. Activity-Based Costing in Abundant Countries

In Istanbul, Turkey they have applied activity-based costing in a private hospital. The purpose of the activity-based costing is the commitment to the medical sector also academia is face draws attention by providing a relevant detailed literature review, which the authors believe has not been done to date for health care entities, as well as a description of how to use activity-based costing in the health care industry for both profit and non-profit hospitals and clinics, the authors bring attention to the importance of using activity-based costing in the health care industry for both profit and non-profit medical centres. They implement activity-based costing to see the effectiveness in a cost calculation in Gynecology Department. Based on Shapiro (1999), hospital management can achieve more precise and relevant indirect cost allocations by implementing an activity-based costing system, which allows for improved revenue and cost analyses. In Turkey, manufacturing firms have adopted and implemented activity-based costing systems also.

Based on Drury (2013) and Kaplan and Atkinson (1998), only a few applications were thought to be more successful with activity-based costing than with other approaches.

Based on Cinquini et al., (1999), a large Italian manufacturing firm has surveyed the comparison of both costing methods. The execution of current techniques in Italian companies to analyze the degree to which the "modern" compare the results of cost management approaches such as activity-based costing. Brooks and Nguyen (1997), suggest which is bigger companies are more vulnerable to having access to people who know how to build and implement activity-based costing. Activity-based costing implementation is expensive, larger businesses are more likely to achieve economies of scale by spreading the expenses over a larger number of products. Activity-based costing system implementation and manageability while avoiding the possibility of being neglected due to excessive complexity of the system (Cooper, 1989 Atkinson et al., 2001).

Other than that, in Egypt, according to customers expect more product choices, lower prices, higher quality, and faster delivery, El-Gibaly, and Diab (2012). Egyptian companies are now operating in a highly competitive environment, requiring significant process improvements in areas such as quality, productivity, and innovation and because of that, the Egyptian firms wanted to implement activity-based costing due to accurate and timely information. They face some obstacles to applying activity-based costing and a survey has been conducted in Egyptian manufacturing industries. According to Piper and Walley (1991) because the activities consist of a group of works that are practiced within the organization effective strategic and tactical decisions about pricing, product line development, process improvements, product mix, investment decisions, and so on, selecting cost drivers is tough. and so on. Based on the survey the manufacturing firms find out that there are several obstacles which are the random behavior of the indirect costs, the cost of design, resistance to change, the weakness of the top management, and the weakness of human expertise. So, Egyptian manufacturing decided that, even though the activity-based costing method is one of the most popular cost strategies for manufacturing companies, it is not widely used in Egypt. The same case happens in Egyptian manufacturing firms for target costing too.

4. Conclusions and Recommendations

The activity-based costing concepts are incredibly useful and powerful, and when implemented in an organization, they are capable of attaining rapid performance, higher profits, production efficiency, and decision-making efficiency (Messaoud & Mourad, 2021). Even though there are some of the limitations mentioned by the researchers that the companies might have to deal with, it is still worthy for companies to encounter to derive a better costing estimation that can help in many aspects of the companies especially cost reduction. There is nothing perfect in this world. The users of activity-based costing also argue that the advantages outweigh its cost (Al-Dhubaibi, 2021). According to Messaoud & Mourad (2021), it is suggested that accounting departments in companies should

implement and apply the activity-based costing system and universities should emphasize teaching it due to its highly effective and usefulness in corporations today. In conclusion, activity-based costing is a truly useful and effective costing system that leads to wide adoption among companies in the manufacturing and service industry today.

To sum up, both activity-based costing and Target costing play an important role in industries, especially manufacturing industries. Small agribusiness firms will be in a commoditized business where cost control is critical, and a deliberate strategic approach to product and process management is unavoidable. according to Cooper and Slagmulder (1999). In this way, while adopting this artifact, for small agribusiness firms in a commoditized business where cost is critical, a deliberate strategic approach to product and process management will eventually be incorporated. In many cases, choosing a strategic direction would be a point of differentiation on its own. According to Feil et al. (2004), because it is driven by substantial competitive pressure, short product life cycles, and intricate manufacturing processes, target costing, like many other management accounting methodologies, is environment-specific. According to Kocsoy (2008), the target costing application exist better suited to Turkish manufacturing organizations than to those in the financial and services sectors, where assembly-oriented manufacturing accounts for around 63 percent of the participating companies. The adoption of activity-based costing systems takes time and involves cooperation from various parts of the company; nonetheless, it can assist enterprises in identifying cost components. The activity-based costing approach can be put to use to identify and remove unprofitable products and services, as well as possibly change the costs of exorbitantly priced goods and services A recent surge in the adoption of a time-driven activity-based costing method, operating supplies, has been noted. This method directly measures expenses from clinical and administrative procedures used in patient care, providing valuable data for process improvement. Because activity-based costing can be applied to all business costs, not only those connected to the production, it is the ideal management accounting tool. A corporation, for example, can allocate its marketing costs to the particular units it produces. As a result, activity-based costing is more exact than target costing. The main goal of activity-based costing is to gain a competitive advantage by more precisely costing products (Hoa, 2010). Activity-based costing helps organizations to focus on activities that provide value while calculating costs more accurately (Duh, Lin, Wang, & Huang, 2009). That was because they provide a more thorough overview of indirect costs. Activity-based costing is a more accurate method since it assigns overhead based on the activities that drive overhead expenses. Activity-based costing has been advocated as a useful method for improving costing in an organization, with implications for scheduling, regulating, and selection (Zcan, 2020).

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