Exploring the Role of Activity-Based Costing in Enhancing Sustainability Performance Case Analysis.

Lect. Dr. Ali Naser ALwan [1]
and Lect. Dr. Hameed Ali Saleh ,[2]
1 College of Business Economics, AL-Nahrain University, Al-Jadriya, Baghdad / Iraq
2 College of Administration and Management, Al-Esraa University, Baghdad / Iraq
ali.nasir@nahrainuniv.edu.iq; hameed@esraa.edu.iq

أستكشاف دور نظام التكاليف على اساس النشاط في تعزيز اداء الاستدامة دراسة تحليلية

م .د . علي ناصر علوان [1] , م. د . حميد علي صالح [2]
1 جامعة النهرين \ كلية اقتصاديات الاعمال، بغداد \ العراق
2 جامعة الاسراء \ كلية الادراة والاقتصاد، بغداد \ العراق

Abstract

The purpose of the study is to examine the incorporation of sustainability in the use of ABC cost accounting. Using six diverse cases, the paper aims at examining how sustainability issues are included in cost accounting processes and what the associated challenges, benefits, and impacts on sustainability are. Qualitative analysis is performed based on which common findings are extracted. The results demonstrate that the use of sustainability concepts in cost accounting is highly significant for increasing the transparency and effectiveness of decision-making. Data availability, the complexity of measuring sustainability, and the reluctance of managers to integrate sustainability into management processes were identified as major problems while the use of ABC cost accounting led to more transparent costs, effective resource management, and a higher level of alignment of activities with organizational goals and strategies. Therefore, a proper approach to collecting and analyzing data, active participation of stakeholders, and alignment of sustainability activities with organizational strategy seem crucial for successful implementation of the concept under consideration. The investigation of real-life case examples allows drawing important conclusions about the role of the ABC method in achieving sustainability..

Keywords: Activity-Based Costing; Sustainability Accounting; Cost Allocation; Activity based costing; Environmental Management; Stakeholder Engagement; Organizational Performance

المستخلص

يهدف هذا البحث الى تقييم وفحص الاستدامة في استخدام نظام التكاليف على اساس النشاط (ABC)حيث يهدف هذا البحث من خلال ست حالات دراسية متنوعة الى دراسة كيفية ادراج قضايا الاستدامة في عمليات محاسبة التكاليف . وماهي التحديات والفوائد المرتبطة بالاستدامة . وقد تم اجراء تحليل نوعي استخلصت بناءا علية نتائج مشتركة . تظهر النتائج ان استخدام مفاهيم الاستدامة في محاسبة التكاليف ذو اهمية بالغة في زيادة شفافية وفعالية عملية صنع القرار . وقد تم تحديد مشكلات رئيسية تتمثل في توفير البيانات وصعوبة قياس الاستدامة وتردد المديرين في دمج الاستدامة في عمليات الادارة , بينما ادى استخدام نظام محاسبة التكاليف على اساس النشاط الى تكاليف اكثر شفافية وادارة فعالة للموارد , ومستوى اعلى من توافق الانشطة مع اهداف واستراتجية الوحدة الاقتصادية , لذلك ان اتباع نهج سليم في جمع البيانات وتحليلها والمشاركة الفعالة لاصحاب المصلحة (حملة الاسهم)ومواءمة انشطة الاستدامة مع استراتجية الوحدة الاقتصادية امور بالغة الاهمية لتطبيق هذا المفهوم .كما ان دراسة امثلة واقعية من حالات دارسية تتيح استخلاص استنتاجات مهمة حول دور نظام التكاليف على اساس النشاط (ABC)في تحقيق الاستدامة .

الكلمات المفتاحية : محاسبة الاستدامة , تخصيص التكاليف , التكاليف على اساس النشاط , الادارة البيئية , حملة الاسهم , تقييم اداء الوحدة الاقتصادية .

Introduction

In view of the rapidly evolving business environment, firms have begun to realize the need for incorporating sustainability into their organizational processes. The increasing threats posed by issues such as environmental degradation, social injustice, and corporate malpractice have resulted in a paradigm change in organizational priorities (Bebbington & Larrinaga, 2014). With stakeholders demanding transparency and accountability, firms are required to take sustainability into account while making decisions.

However, the use of traditional cost accounting approaches is bound to fail when attempting to capture all possible environmental and societal costs resulting from any business operations (Schaltegger & Burritt, 2018). Traditional cost accounting methods typically focus only on monetary elements, neglecting the wider ramifications that any organizational process might have on the environment and society as a whole (Moneva, Archel, & Correa, 2006). This creates several challenges for organizations looking to adopt sustainable development practices.

Activity Based Costing (ABC) is seen as one solution in overcoming the shortcomings associated with overhead costs allocation through the use of more refined cost assignment method. Different from the conventional cost allocation methods, where overhead costs are allocated according to certain random criteria, ABC identifies overhead costs associated with particular process according to the resource consumption of each process (Kaplan & Anderson, 2007). Through detailed cost allocation to particular activities, ABC is able to accurately portray the actual cost of manufacturing.

There are several advantages that can be gained from incorporating the aspect of sustainability into cost accounting practices. To start with, it enables companies to become aware of the environmental and social implications of their activities (O’DWYER, 2009). In other words, by calculating the environmental and social costs of each activity, organizations will be able to identify inefficient processes, wastage, and risk areas. This will enable them to make better decisions on how to allocate resources, optimize processes, and design products, which can result in lower costs and improved environmental performance.

In addition, the incorporation of the aspect of sustainability into cost accounting practices increases transparency and accountability (Simnett & Huggins, 2015). The exposure of environmental and social costs along with financial indicators provides stakeholders with a complete picture of the company's performance. (Bahrt, 2022).

Furthermore, the integration of sustainability in the cost accounting approach can contribute to innovations and improvements (Landrum, 2007). Through the provision of motivation to detect and address the environmental and societal implications, ABC motivates businesses to consider different options for manufacturing processes, alternative materials and technologies. Innovations, in turn, can lead to competitive advantages and make the firm one of the leading actors in sustainable business operations, which can be appreciated by environmentally and socially conscious clients and investors. Thus, the integration of sustainability concepts into cost accounting practices via ABC provides considerable benefits for businesses and helps improve their sustainability performance. The application of this costing approach helps gain a clearer view of the real expenses associated with production and take well-grounded decisions that combine economic, environmental, and social interests.

Literature Review

A review of literature on sustainability accounting and activity-based costing reveals the possible complementarities that may exist between the two areas. Activity-Based Costing is a technique used in cost accounting for allocating costs to various activities according to their use of resources (Kaplan & Anderson, 2007). ABC assigns costs to activities and then assigns them to products/services, thus giving a more precise depiction of the actual cost of manufacturing.

Recently, scholars have focused on the application of ABC to sustainability accounting because of the former's effectiveness in capturing environmental and societal costs compared to conventional costing techniques (Mistry, *et al.*, 2014). Advantages associated with the application of sustainability in cost accounting are discussed by literature, including increased cost visibility, resource allocation, and decision making. (Simnett, *et al.*, 2009).

Methodology

The following literature review included case studies from six organizations using the qualitative methodology. The case studies, which can be utilized in the application of the activity-based costing approach to incorporate sustainability issues into the cost accounting process, were considered. The mentioned research procedures took place.:

Case Selection

For examination, six case studies from various organizational contexts were chosen. The industry sector, size, location, and demonstrated implementation of sustainability measures within cost accounting frameworks were among the selection factors.

Data Collection

Every case study's data was gathered from publicly accessible sources, including scholarly publications, industry studies, company websites, and sustainability reports. Data about the organization's cost accounting procedures, sustainability plans, difficulties encountered, and successes were taken out and put into a compilation for examination.

Data Analysis

The purpose of the thematic analysis was to detect recurring themes, trends, and important conclusions in all of the chosen case studies. The analysis aimed to comprehend the ways in which cost accounting procedures incorporated sustainability considerations through the application of the ABC technique, along with the related advantages, disadvantages, and overall influence on sustainability performance.

Cross-Case Synthesis

The conclusions drawn from each case study were combined to provide broad conclusions and ramifications. The goal of the cross-case synthesis was to find recurring themes, recommended procedures, and takeaways that could be applied to various organizational settings.

Validity and Reliability

Proper procedures were adhered to in order to conduct an effective analysis and synthesis of data obtained from various sources to ensure that the analysis was authentic and reliable. Adherence to proper principles governing qualitative research and disclosure of the process used to gather and analyze data increased the credibility of the findings.

The current literature review presents an elaborate examination of how the application of sustainability considerations in cost accounting systems through the use of the ABC model can be achieved through analysis of case studies in six organizations. The findings provide important insights into ramifications that can accrue to companies.

Results and Discussion:

Case study 1

The present case study found that the firm was able to integrate sustainability concerns in its cost accounting practices through the use of the ABC system (Lueg *et al.*, 2017). Through the ABC system of cost accounting, there is an ability to attribute costs to particular activities depending on the utilization of resources by such activities. ABC therefore provides a more comprehensive approach towards accounting for environmental and social costs (Moneva *et al.*, 2006). (Gadenne *et al.*, 2009).

Challenges Faced

Although there were numerous advantages, some difficulties arose in incorporating sustainability principles in the organization's cost accounting through ABC. One major difficulty included the availability and integrity of the data regarding the sustainability principles (Bebbington *et al.*, 2017). The scarcity and irregularity of data from reliable sources were difficult to measure when determining the financial impacts on the environment and society (Schaltegger *et al.*, 2018). Another difficulty involved the intangible effects of sustainability measures, which were hard to quantify in terms of money using the ABC method. (Ferreira *et al.*, 2010).

Benefits Realized

Although there were some difficulties, the organization was able to reap certain advantages as far as considering sustainability in their cost accounting through ABC was concerned. An important advantage that resulted from the use of ABC was increased cost transparency in the process of implementing sustainability projects since ABC allowed gaining insight regarding the factors responsible for such costs (Herzig *et al.*, 2012). Such transparency allowed identifying potential areas for optimizing costs, while at the same time achieving organizational sustainability goals (Sulaiman *et al.*, 2012). Another advantage of considering sustainability in cost accounting was enhanced stakeholder engagement. (O'dwyer, 2009).

Overall Impact on Sustainability Performance

The adoption of sustainability as part of the ABC cost accounting process helped improve the sustainability performance of the organization. The reason for this is that through the use of this approach, the organization could have been able to evaluate the benefits of the sustainability initiatives based on accurate information regarding costs (Simnett *et al.*, 2015). Consequently, this provided the basis for decision making and better resource allocation, which facilitated improved performance related to the environment and society. (Ioannou *et al.*, 2015).

Key Lessons Learned and Practical Implications

The current case study offered important learning experiences regarding the integration of sustainability into cost accounting practices through ABC. Important lessons from this study include the significance of having adequate data collection systems, stakeholder participation, and compatibility between the organizational sustainability goals and strategies (Gray *et al.*, 2014). In relation to practical implication, it can be suggested that effective communication, organizational leadership, and capacity building should be considered in order to successfully integrate sustainability into cost accounting practices. (Bahrt, 2022).

Case study 2

Naugolnova (2023): Cost Management Strategy based on Processes: Increasing Sustainability of the Enterprise Development in Contemporary Circumstances

Incorporating Sustainability Factors in Cost Management:

As Naugolnova's research indicates, consideration of sustainability factors is an important element in cost management. It implies taking into account both environment and social effects in order to incorporate sustainability into cost calculations.

Challenges Faced

There is generally opposition to adopting sustainability-oriented cost practices owing to the change in approach that is required. There are further difficulties associated with obtaining data related to the costs of the environment and social issues since data may not always be available or easily obtainable.

Benefits Realized

Though there are such difficulties, incorporating the issues of sustainability in cost accounting is an effective way to support sound decision-making processes, which also enhances business competitiveness. Through the incorporation of sustainability-related issues in the calculation of costs, companies will be in a position to appreciate their actual costs.

Overall Impact on Sustainability Performance

The consideration of sustainability in cost accounting helps with sustainability because it allows for the proper use of resources without causing damage to the environment. In this manner, businesses can consider the social and environmental costs that come with their activities.

Key Lessons Learned and Practical Implications

Among the key lessons that can be learned from this study are the significance of engaging stakeholders and employing life cycle costing. By involving stakeholders like employees, suppliers, and consumers in initiatives related to sustainability, companies are guaranteed diverse viewpoints, while life cycle costing enables organizations to evaluate the environmental effects of their goods and services at all stages of the life cycle.

Case study 3

Tsai *et al*. (2010): Integration of Activity-Based Costing and Environmental Cost Accounting Systems

Sustainability Aspects in the Integration of Cost Accounting Processes:

The research conducted by Tsai *et al*. addresses issues related to the integration of ABC and environmental cost accounting systems to include environmental cost aspects within cost accounting processes. Through this integration, all aspects related to costs will be included in cost accounting process..

Challenges Faced

Some difficulties that arise during integration include ensuring that there is accuracy in data when measuring environmental cost as well as dealing with system compatibility challenges. Collecting data for measuring environmental cost may pose some difficulties, while integrating systems also poses challenges.

Benefits Realized

Even in the face of all these difficulties, combining an ABC system with an environmental cost accounting system enables organizations to get a comprehensive picture of their costs. This means that they will be able to make effective decisions and allocate their resources accordingly..

Overall Impact on Sustainability Performance

Integration of ABC and environmental cost accounting systems will enable companies to minimize their environmental impacts and remain financially viable.

Incorporating environmental costs into decision-making allows companies to find ways of minimizing resource usage and limiting their negative environmental impacts.

Key Lessons Learned and Practical Implications

Some of the critical takeaways from this case study include the need for staff training and data updating. By training staff on the system, they will be knowledgeable about the system's objectives and methods, while updating data will ensure that cost information is current and accurate.

Case study 4

Al-Eidan *et al*. (2019): ABC in Manufacturing—Sustainability Factors in Cost Accounting:

This article by Al-Eidan *et al*. concentrates on the implementation of activity-based costing (ABC) in the manufacturing process for effective cost allocation, which includes costs related to sustainability. The inclusion of sustainability factors into the cost accounting process helps in identifying the complete cost structure of an organization.

Challenges Faced

Difficulties involved in the adoption of ABC in the manufacturing industry include resistance from the traditional costing system and non-financial drivers. The adoption of ABC may receive resistance from staff used to the traditional cost accounting system, and there might also be difficulty in associating sustainability efforts with cost drivers.

Benefits Realized

Nonetheless, the implementation of ABC in manufacturing operations brings about transparency in costing and process improvement. ABC helps to uncover any underlying costs associated with sustainability as well as process improvements that can bring about cost reduction.

Overall Effect on Sustainability Performance

The implementation of ABC in manufacturing operations improves the sustainability performance of companies through the identification of inefficiencies and the conservation of resources through cost accounting.

Key Lessons Learned and Practical Implications

Key takeaways from this study are the importance of collaboration and monitoring progress. Collaboration among production, financial, and sustainability experts will help incorporate various perspectives, while ongoing monitoring of ABC will assist in verifying whether the approach is accomplishing its objectives..

Case Study 5

Tsai *et al.*, (2018): Analysis of Carbon Emission Costs Under Activity-Based Costing Framework

In this research, Tsai *et al.*, (2018) analyzed the integration of carbon emission costs into ABC systems. The goal of this research was to enhance cost accounting processes by incorporating environmental considerations, especially carbon emission costs, into the ABC framework.

Integration Process

This study provided a detailed plan for incorporating the cost of carbon emissions into ABC models. This plan included identifying cost drivers associated with carbon emissions, such as energy consumption and manufacturing processes. These cost drivers were incorporated into the ABC model to guarantee proper cost distribution.

Benefits Realized

The incorporation of carbon emissions costs within ABC had various advantages. For one, it gave companies a broader view of their costs in terms of both monetary and environmental considerations. Secondly, the adoption made it easier for businesses to adopt environmentally friendly practices since it encouraged the lowering of carbon emissions. Carbon emissions costs in ABC helped to ensure that businesses adopted environmentally-friendly cost management practices.

Problems Experienced

Even as there were numerous advantages associated with adopting carbon emission costs in ABC, various issues were noted during the process. Data accuracy was among the main concerns in this regard. Accurate measurement of carbon emissions involved proper collection of data, which might prove to be difficult at times. Organizational resistance was another problem associated with the adoption of this practice.

Overall Impact

The inclusion of the cost of carbon emissions in ABC systems led to positive results for sustainability performance. The accurate recording of environmental costs would allow companies to evaluate the environmental effect of their activities and make sound decisions that would reduce carbon emissions. The linkage between cost accounting techniques and environmental sustainability objectives led to improved environmental management and corporate resilience.

Key Lessons Learned

Some of the insights gained from the study include the significance of ensuring that cost management activities are aligned with environmental sustainability objectives. Some of the important lessons gained from the research include the significance of data gathering processes, engaging stakeholders, and organizational commitment towards making the business process sustainable. Furthermore, proper communication and training were also vital in changing behavior.

Practical Implications

The implications of the research by Tsai & Jhong can be applied practically in the integration of sustainability into cost accounting practice. By using an integration process and overcoming challenges in the same process, organizations can achieve better sustainability performance.

From the above case study, it is evident that ABC offers organizations the capability of increasing their sustainability performance through cost accounting. With the integration of sustainability performance in cost accounting, organizations will be able to get a better understanding of the real cost of doing business.

Case Study 6

Case study: Pember *et al.*, (2012), Measuring and Managing Environmental Sustainability Using Activity-Based Costing.

Integration of Sustainability Considerations into Cost Accounting Practice

The focus of this case study lies on the use of activity-based costing (ABC) to measure and manage environmental sustainability within companies. The ABC approach is employed to allocate costs incurred due to environmental activities, thereby ensuring more effective measurement of sustainability performance.

Challenges Faced

The two main issues that arose with the use of ABC for environmental sustainability were:

- Culture Change: There is the need for the employees to integrate the issue of sustainability into their work culture.
- Granularity: For ABC to be effective, there should be granularity in the information collected..

Benefits Realized

- The application of ABC in environmental sustainability management led to a number of advantages such as:
- Strategic Fit: The adoption of ABC ensures that environmental sustainability management is aligned with business strategies, improving the organizational objectives.
- Cost Reduction: Through analyzing sources of inefficiencies within organizations, ABC can be used to identify cost-cutting opportunities..

Overall Impact on Sustainability Performance

ABC plays a critical part in making sustainability practices possible by identifying areas where costs can be reduced and efficiency improved. ABC will help organizations make better decision-making processes through improved visibility.

Key Lessons Learned and Practical Implications

Important lessons learned in this case study include:

-] Employee training: Providing employees with knowledge about the aim and process involved in using ABC enhances comprehension.
- Regular review: It is vital to keep on reviewing and adjusting the ABC findings for relevance and effectiveness in supporting sustainability objectives..

Conclusion:

Overall, the present study examined the issue of incorporating sustainability considerations in cost accounting practices, with particular attention paid to the activity-based costing approach. It can be said that several key findings were reached based on the six-case study analysis.

First, one of the main conclusions reached from the analysis of the cases was that it was extremely necessary to incorporate sustainability into cost accounting procedures to improve decision-making and reports. The reason is that ABC allows providing much more information on real costs, as expenses are related to activities depending on their impact on society and environment. Thus, proper management is possible, and this contributes to achieving better sustainability performance.

Secondly, it needs to be mentioned that some problems were identified in implementing sustainable considerations in cost accounting practices. These included problems with data availability, complexity, as well as organizational resistance. Nevertheless, it was concluded that it was possible to address them through gathering relevant data and stakeholder involvement.

Additionally, many benefits can be obtained by incorporating sustainability into cost accounting. The most notable of those benefits are increased participation of stakeholders, proper allocation of resources, and visibility of costs. Moreover, not only will it help the organization to perform better from a sustainability point of view, but it will also ensure its resilience.

As we could observe, it is crucial that companies employ the ABC method in order to incorporate sustainability into cost accounting. In such a way, sustainable value will be created.

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