

Impact of Activity-Based Costing on Profitability: Evidence from Service Sector Firms in India

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Abstract:

In an increasingly competitive and volatile business environment, service sector organisations face mounting pressure to enhance cost efficiency and sustain profitability. Conventional costing systems often fail to generate reliable cost information in service settings because they rely on arbitrary allocation bases such as labour or machine hours, which inadequately capture the consumption of overhead resources. Activity-Based Costing (ABC) offers a more refined approach by assigning costs to activities that generate them, thereby improving the accuracy of cost measurement and managerial decision-making. This study examines the impact of ABC implementation on profitability in selected service sector companies in India. Adopting a mixed-method research design, the study draws on primary data collected through structured questionnaires administered to 100 management accountants and finance managers from IT services, healthcare, logistics, hospitality, and banking organisations. The findings reveal that firms using ABC achieve superior cost transparency, more informed pricing decisions, and greater operational efficiency, leading to improved profitability outcomes. The study also uncovers major implementation barriers, including high setup costs, resistance to organisational change, and difficulties in identifying and measuring activities. By demonstrating the strategic role of ABC in enhancing financial performance, this research extends existing literature on cost management systems and thereby offers practical insights for service organisations seeking to strengthen competitiveness in a service-driven economy.

Keywords: Activity-Based Costing, Service Sector, Profitability, Cost Management, Cost Allocation, India

Introduction

The service sector has emerged as the cornerstone of contemporary economies, contributing substantially to employment generation, gross domestic product (GDP), and overall economic development. In India, the service sector accounts for over 55% of the national GDP. It continues to expand rapidly, led by industries such as information technology, telecommunications, financial services, healthcare, logistics, retail, and hospitality. Intensifying competition, rising customer expectations, and accelerated digital transformation have compelled service sector firms to place greater emphasis on cost efficiency and profitability. In this environment, reliable cost information has become a critical input for strategic decision-making related to pricing, process optimisation, and resource allocation.

Conventional costing systems, including absorption costing and volume-based allocation methods, were originally developed for manufacturing contexts in which direct labour and machine hours were the primary cost drivers. However, service organisations are characterised by high levels of overhead and process-oriented operations, where activities rather than physical output units consume resources. As a result, traditional costing approaches often fail to capture the true cost of service delivery. Distorted cost information can lead to inappropriate pricing decisions, misallocation of resources, and weakened profitability performance.

Activity-Based Costing (ABC), introduced by Kaplan and Cooper in the 1980s, offers a more refined framework for cost measurement by assigning costs to products, services, or customers based on the activities that generate them. By identifying cost drivers and tracing resource consumption more accurately, ABC enables organisations to distinguish between value-adding and non-value-adding activities. This enhances managerial insight into operational inefficiencies and also supports informed decisions aimed at cost control and profit improvement. The relevance of ABC is particularly pronounced in service sector firms due to their high proportion of indirect costs, diversity in customer service requirements, and dependence on process-driven operations such as patient care, order processing, reservation systems, consulting, and information technology support.

Furthermore, intense competitive pressure in service markets necessitates precise estimation of service costs to achieve optimal pricing strategies that balance competitiveness with profitability. ABC facilitates this objective by providing detailed cost visibility across service lines, customer segments, and operational processes. Despite these potential benefits, the diffusion of ABC within service sector firms remains limited. Implementation challenges such as high setup costs, technical complexity, inadequate employee training, and resistance to organisational change have constrained widespread adoption. In several cases, ABC initiatives fail to achieve sustainability due to incomplete activity identification and insufficient top managerial commitment.

Against this backdrop, the present study examines the impact of Activity-Based Costing on profitability in service sector firms in India. It provides empirical evidence on whether and how ABC adoption contributes to improved financial performance. Specifically, the study evaluates the influence of ABC on cost accuracy, managerial decision-making, process efficiency, and overall profitability outcomes. By focusing on Indian service organisations, this research addresses an important gap in the existing literature and offers practical insights for managers seeking to enhance profitability through advanced cost management practices.

1.1 Research Problem

The service sector plays a dominant role in the Indian economy, contributing more than half of the national GDP and employing a significant proportion of the workforce. With increasing competition, digital transformation, and rising customer expectations, service sector firms are under continuous pressure to improve cost efficiency and sustain profitability. Accurate cost information is therefore essential for effective pricing, resource allocation, and strategic decision-making.

However, most service organisations continue to rely on traditional costing systems that allocate overheads using volume-based measures such as labour hours or machine hours. These systems were originally designed for manufacturing environments and are poorly suited to service contexts where indirect costs constitute a large share of total costs and activities drive resource consumption. As a result, service costs are often inaccurately measured, leading to distorted pricing decisions, inefficient process management, and weakened profitability.

Activity-Based Costing (ABC) offers a theoretically superior alternative by assigning costs to services based on the activities that generate them. Although ABC is expected to improve cost accuracy and managerial insight, its practical effectiveness in enhancing profitability within service sector firms remains uncertain. Moreover, many service organisations hesitate to adopt ABC due to perceived complexity, high implementation costs, and organisational resistance. Consequently, there is a need to empirically examine whether ABC actually contributes to improved profitability and operational performance in service sector firms in India.

1.2 Research Gaps: Existing literature on Activity-Based Costing has predominantly focused on manufacturing firms and developed economies. While several studies highlight the conceptual advantages of ABC, empirical evidence on its profitability impact in service sector organisations, particularly in emerging economies such as India, remains limited. Most available studies concentrate on cost accuracy or implementation issues rather than directly linking ABC adoption to financial performance outcomes.

1.3 Research Objectives:

1. To analyse the extent of Activity-Based Costing adoption among selected service sector firms in India.
2. To examine the relationship between ABC implementation and cost accuracy in service organisations.
3. To assess the influence of ABC on managerial decision-making, particularly in pricing and resource allocation.
4. To evaluate the effect of ABC on process efficiency and operational performance in service sector firms.
5. To determine whether ABC implementation leads to improved profitability outcomes in service organisations.
6. To identify the key challenges faced by service sector firms in implementing and sustaining Activity-Based Costing.

1.4 Research Questions

1. What is the extent of Activity-Based Costing (ABC) adoption among service sector firms in India?
2. To what extent does the use of ABC improve cost accuracy in service organisations?
3. How does the implementation of ABC affect operational efficiency and profitability in service sector firms?
4. What organisational and technical challenges impede the successful implementation of ABC in service companies?

1.5 Significance of the Study

This study is significant as it addresses a critical managerial issue concerning the ability of service sector firms to generate accurate cost information and utilise it effectively to enhance profitability. By empirically examining the impact of Activity-Based Costing on cost accuracy, decision-making quality, operational efficiency, and financial performance, the research provides valuable insights into the practical usefulness of advanced costing systems in service environments.

The findings of this study are expected to benefit practitioners, management accountants, and cost managers by offering evidence-based guidance on how ABC can be leveraged to improve pricing strategies, resource allocation, and process optimisation. For policy-makers and professional accounting bodies, the study highlights the need for promoting modern cost management practices suited to service-based economies. For academicians and researchers, the study contributes to the existing literature by extending empirical analysis of ABC beyond manufacturing contexts and developed economies, thereby enriching the understanding of cost management systems in emerging market service sectors.

2. Literature Review

This section reviews prior academic studies on Activity-Based Costing (ABC), cost management practices, its applicability in service sector organisations, and its influence on profitability.

2.1 Concept of Activity-Based Costing

Activity-Based Costing emerged as a response to the limitations of traditional costing systems in accurately assigning overhead costs. Kaplan and Cooper (1988) introduced ABC as a more systematic and rational approach to cost allocation, based on the premise that activities consume resources and cost objects such as products or services consume activities. Accordingly, costs should first be traced to activities and then allocated to cost objects using appropriate cost drivers.

The ABC methodology involves two primary stages: (1) assigning resource costs to activity cost pools, and (2) assigning activity costs to cost objects such as services, customers, or projects, based on activity drivers. Cooper (1990) emphasised that ABC generates more reliable cost information, particularly in complex, diversified, and overhead-intensive operating environments where traditional costing systems are prone to distortion.

2.2 Traditional Costing versus Activity-Based Costing

Traditional costing systems typically allocate overhead costs using volume-based measures such as direct labour hours, machine hours, or units of output. These methods assume a proportional relationship between production volume and overhead consumption. However, in service organisations, indirect costs are often driven by transaction volume, service complexity, and process diversity rather than physical output (Drury, 2016). As a result, conventional costing systems frequently misrepresent the true cost of services.

Comparative studies by Turney (1996) demonstrated that ABC enhances cost allocation accuracy by linking costs to the activities that consume organisational resources. This approach reduces cost distortion and improves the reliability of service cost information, thereby strengthening managerial decision-making.

2.3 Activity-Based Costing in the Service Sector

The structural characteristics of service organisations, such as customisation, intangible outputs, process orientation, and a high proportion of indirect costs, make ABC particularly suitable for this sector. Innes and

Mitchell (1995) identified banking, healthcare, information technology, and logistics as service industries where ABC adoption has yielded measurable benefits.

In the healthcare sector, ABC has been used to estimate patient treatment costs more accurately, enabling hospitals to design cost-efficient clinical pathways and improve financial sustainability (Kaplan et al., 2014). Similarly, in financial services, ABC assists in evaluating customer profitability by tracing costs associated with activities such as loan processing, account maintenance, fraud detection, and customer service.

2.4 Benefits of ABC Implementation

Prior research identifies several advantages of ABC adoption. First, ABC improves cost accuracy by assigning indirect costs based on actual resource consumption rather than arbitrary allocation bases. Second, it supports superior managerial decision-making by enabling managers to assess service-line and customer-level profitability (Kaplan, 2009). Third, ABC facilitates cost control by distinguishing between value-adding and non-value-adding activities, thereby supporting waste reduction and process improvement.

Furthermore, ABC has been linked to enhanced operational efficiency, as activity analysis reveals bottlenecks and inefficiencies in service delivery processes. Strategic pricing decisions are also strengthened, as managers gain clearer insights into service and customer cost structures. Empirical evidence provided by Al-Omri and Drury (2007) indicates that organisations implementing ABC report improved profitability and greater competitive advantage compared to firms relying solely on traditional costing systems.

2.5 Challenges in ABC Implementation

Despite its conceptual strengths, several challenges hinder the effective implementation of ABC. These include high initial implementation costs, complexity in identifying and classifying activities, ambiguity in selecting appropriate cost drivers, employee resistance to change, and the need for continuous system updating (Cagwin & Bouwman, 2002). Successful implementation, therefore, requires adequate employee training, robust data systems, and sustained top management support.

Cagwin and Bouwman (2002) further found that firms integrating ABC with performance measurement systems are more likely to achieve positive outcomes than those treating ABC as a standalone accounting tool.

2.6 Activity-Based Costing and Profitability

Empirical studies generally report a positive association between ABC adoption and profitability. Kennedy and Affleck-Graves (2001) observed that firms implementing ABC experienced improvements in return on investment due to enhanced cost visibility and improved cost control. Similarly, Mehrabi et al. (2013) reported that ABC adoption contributed to overhead cost reduction and more efficient resource utilisation.

However, some scholars caution that the profitability effects of ABC depend on contextual factors such as organisational size, operational complexity, managerial capability, and the degree to which ABC information is incorporated into strategic decision-making processes (Drury, 2016; Kaplan, 2009). This suggests that ABC alone does not guarantee improved financial performance unless supported by appropriate managerial practices.

2.7 Summary of Literature Review

The existing body of literature establishes ABC as a superior cost management tool relative to traditional costing systems, particularly in overhead-intensive and process-driven environments. Prior studies highlight its benefits in improving cost accuracy, operational efficiency, and profitability. However, most empirical investigations have focused on manufacturing firms and developed economies. Evidence relating specifically to service sector firms in emerging economies, especially India, remains limited. This study seeks to address this gap by providing updated empirical evidence from diverse Indian service industries and by explicitly linking ABC adoption with profitability outcomes.

3. Research Methodology

3.1 Research Design:

This study employs a **quantitative research design** supported by descriptive and inferential analysis. The goal is to assess the impact of ABC on profitability and evaluate its effectiveness as a cost management tool.

3.2 Population and Sample:

The population includes service sector companies in India across: IT services, Healthcare, Logistics, Hospitality, Banking, and financial services.

A **sample of 100 respondents** (management accountants, finance managers, and cost analysts) was selected using purposive sampling based on their involvement in costing functions.

3.3 Data Collection

Primary data was collected using a structured questionnaire consisting of:

- Demographic information
- ABC implementation status
- Perceived impact of ABC on cost accuracy
- Assessment of process improvements
- Profitability assessment before and after ABC

Five-point Likert scales (1 = strongly disagree to 5 = strongly agree) were used. Secondary data came from journals, published reports, books, and company documents.

3.4 Data Analysis Techniques

The following techniques were applied:

- Descriptive statistics (mean, SD, frequencies)
- Reliability analysis (Cronbach's alpha > 0.7)
- Correlation analysis
- Regression analysis to measure ABC's impact on profitability

3.5 Variables Used

Independent Variables:

1. Cost accuracy
2. Activity identification
3. Cost driver relevance
4. Process efficiency
5. Managerial decision-making support

Dependent Variable: Profitability improvement

3.6 Hypotheses

Hypothesis 1 (Main Effect)

H_{01} : Activity-Based Costing implementation has no significant effect on profitability in service sector firms.

H_{11} : Activity-Based Costing implementation has a significant positive effect on profitability in service sector firms.

Hypothesis 2 (Cost Accuracy)

H_{02} : Activity-Based Costing implementation does not significantly improve cost accuracy in service sector firms.

H_{12} : Activity-Based Costing implementation significantly improves cost accuracy in service sector firms.

Hypothesis 3 (Operational Efficiency)

H_{03} : Activity-Based Costing implementation does not significantly improve operational efficiency in service sector firms.

H_{13} : Activity-Based Costing implementation significantly improves operational efficiency in service sector firms.

Hypothesis 4 (Cost Accuracy → Profitability)

H_{04} : Cost accuracy has no significant relationship with profitability in service sector firms.

H_{14} : Cost accuracy has a significant positive relationship with profitability in service sector firms.

Hypothesis 5 (Decision-Making Support)

H_{05} : Managerial decision-making support has no significant effect on profitability.

H_{15} : Managerial decision-making support has a significant positive effect on profitability.

3.7 Limitations

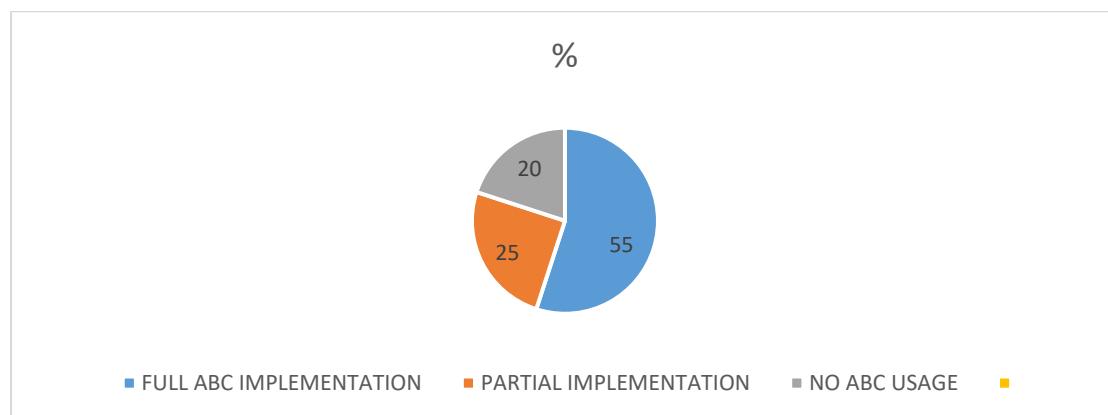
Despite its contributions, the present study is subject to certain limitations. First, the findings are based on self-reported responses obtained through questionnaires, which may be influenced by respondent bias, social desirability effects, or perceptual differences, potentially affecting the objectivity of the results. Second, the scope of the study is confined to service sector firms operating in India; therefore, the generalizability of the findings to other countries or economic contexts may be limited. Third, variations in organizational characteristics, particularly firm size, operational complexity, and managerial capability, may influence the observed impact of Activity-Based Costing on profitability. Consequently, the results may not be uniformly applicable across small, medium, and large service organisations.

4. Results and Analysis

4.1 Level of ABC Adoption

The extent of Activity-Based Costing (ABC) adoption among the surveyed service sector firms is presented in this section. Out of the 100 respondents, 55 per cent reported that their organisations had fully implemented ABC, while 25 per cent indicated partial implementation of the system. The remaining 20 per cent stated that their organisations did not use ABC for cost allocation purposes.

Sector-wise analysis reveals that ABC adoption is particularly prominent in the information technology and healthcare industries. These sectors exhibit higher levels of implementation due to the complexity and diversity of their service activities, which require more refined cost tracing mechanisms. In contrast, lower adoption levels were observed in sectors characterised by relatively standardised service processes. The findings suggest that the likelihood of ABC adoption increases with operational complexity and the intensity of indirect costs.



4.2 Reliability Analysis

The internal consistency of the measurement scales was assessed using Cronbach's alpha coefficients. The results indicate strong reliability across all major constructs. Specifically, the Cronbach's alpha value for the cost accuracy scale was 0.81, for process improvement, it was 0.87, and for profitability impact, it was 0.85. All coefficients exceed the recommended threshold of 0.70, demonstrating acceptable to high internal consistency of the survey instrument. These results confirm that the measurement items used in the study reliably capture the underlying constructs and are suitable for further statistical analysis.

4.3 Impact of Activity-Based Costing on Cost Accuracy

The findings indicate a strong positive effect of Activity-Based Costing on cost accuracy in service sector firms. A substantial majority of respondents (82 per cent) agreed that the implementation of ABC enhanced the precision of cost allocation. The mean response score of 4.20 on a five-point Likert scale further confirms a high level of agreement regarding the effectiveness of ABC in improving cost accuracy. Respondents reported a noticeable reduction in cost distortion and improved identification of overhead cost drivers, suggesting that ABC enables a more realistic representation of resource consumption across service activities.

4.4 Impact of Activity-Based Costing on Operational Efficiency

With respect to operational performance, 76 per cent of respondents indicated that ABC contributed to improved process mapping and facilitated the identification of non-value-adding activities. The mean score for this construct was 4.00, reflecting a positive perception of ABC's role in enhancing operational efficiency. Key efficiency gains reported by the participating organisations included reductions in administrative delays, faster service delivery, and more effective allocation of organisational resources. These results suggest that ABC not only improves cost information but also serves as a diagnostic tool for process improvement in service operations.

4.5 Impact of Activity-Based Costing on Profitability

The results further demonstrate a significant association between ABC implementation and profitability improvement. Approximately 67% of respondents reported measurable increases in profitability within one to three years following the adoption of ABC. The average profitability enhancement ranged between 8% and 12%, indicating a meaningful financial impact of the costing system.

Regression analysis provides additional empirical support for these findings. The model yielded an R^2 value of 0.58, indicating that variations in ABC-related factors explain 58% of the variance in profitability. Among the predictor variables, cost accuracy exhibited the strongest influence on profitability ($\beta = 0.42$, $p < 0.05$), followed by process efficiency ($\beta = 0.34$, $p < 0.05$) and decision-making quality ($\beta = 0.28$, $p < 0.05$). All coefficients were statistically significant at the 5% level, confirming the presence of a positive and meaningful relationship between ABC implementation and financial performance.

Collectively, these findings provide empirical support for Hypotheses H₁, H₂, H₃, and H₄, thereby reinforcing the proposition that Activity-Based Costing contributes to improved cost accuracy, operational efficiency, and profitability in service sector firms.

4.6 Challenges Identified

Despite the reported benefits of Activity-Based Costing, respondents identified several obstacles that hinder effective implementation. The most frequently cited barrier was the high cost associated with adopting ABC, reported by 65% of respondents. There were difficulties in accurately identifying and classifying organisational activities (55 %), reflecting the complexity of service delivery processes. Nearly half of the respondents (48 per cent) indicated that ABC implementation is time-consuming, requiring substantial effort in data collection and system maintenance.

Moreover, employee resistance to change emerged as a significant organisational challenge, reported by 40% of participants. This resistance was often attributed to increased workload and lack of familiarity with the ABC framework. Technical constraints related to software and information systems were also reported by 30% of the

respondents, suggesting that inadequate technological infrastructure can impede the successful integration of ABC into existing accounting systems. These findings underscore the need for managerial commitment, employee training, and appropriate technological support to ensure sustainable ABC implementation in service sector firms.

5. Discussion

The results clearly demonstrate that ABC is an effective cost management tool for service sector organisations. The majority of companies using ABC experienced improved cost accuracy, which directly contributed to enhanced pricing strategies and profit margins. These results align with the literature stating that ABC improves visibility into overhead consumption and leads to more rational cost allocation.

Traditional costing systems often distort cost information because they rely on arbitrary allocation bases. This distortion negatively affects pricing decisions and profitability. The findings confirm that ABC resolves this issue by aligning cost drivers with actual resource usage.

Operational efficiency improvements emerged as a key benefit. By identifying non-value-adding activities, organisations were able to streamline processes, reduce waste, and enhance productivity. For example, IT service firms identified redundant validation processes, while hospitals were able to analyse cost-to-serve for different patient categories.

Another important finding is that ABC improves the quality of managerial decision-making. Managers receive more accurate service line profitability reports, enabling them to discontinue unprofitable services and enhance profitable ones.

However, challenges persist. High implementation costs and activity mapping complexity discourage some companies. Resistance from employees stems from fear of increased transparency and workload. These challenges suggest that ABC requires strong change management, management commitment, and adequate training.

The results reflect global trends showing that ABC's effectiveness is contingent on proper implementation, cross-functional collaboration, and continuous review.

6. Findings

The principal findings derived from the empirical analysis are summarised as follows:

6.1 Activity-Based Costing Enhances Cost Accuracy

The study finds that Activity-Based Costing provides a more precise and disaggregated approach to overhead cost allocation than traditional costing systems. By tracing costs through activity drivers, ABC generates more reliable service-level cost information, enabling organisations to distinguish clearly between profitable and unprofitable services. This enhanced cost accuracy strengthens the credibility of internal cost data used for managerial decision-making.

6.2 Activity-Based Costing Contributes to Profitability Improvement

Organisations that adopted ABC reported measurable improvements in profitability, with average gains ranging between 8% and 12%. These improvements were primarily attributable to more accurate pricing decisions, the elimination of non-value-adding activities, and more efficient utilisation of organisational resources. The findings indicate that ABC functions not only as a costing mechanism but also as a driver of financial performance.

6.3 Activity-Based Costing Strengthens Managerial Decision-Making

The results demonstrate that ABC significantly improves the quality of managerial decision-making by providing greater transparency into cost structures. Managers were able to make informed decisions regarding service mix, pricing strategies, customer profitability, and resource deployment. The availability of detailed activity-level cost information enhanced the strategic relevance of accounting data within participating organizations.

6.4 Activity-Based Costing Promotes Process Efficiency

ABC implementation facilitated the identification of non-value-adding and redundant activities, enabling organizations to streamline workflows and reduce operational bottlenecks. This process optimization contributed to higher productivity levels and improved service delivery performance, which in turn supported customer satisfaction and competitive positioning.

6.5 Implementation Challenges Remain Substantial

Despite its demonstrated benefits, ABC adoption continues to be constrained by several practical challenges. These include high implementation costs, technical complexity, insufficient employee training, and resistance to organisational change. The findings suggest that overcoming these barriers requires systematic planning, strong top management support, and sustained organisational commitment to cost management innovation.

7. Conclusion and Recommendations

Conclusion

The present study concludes that Activity-Based Costing constitutes a highly effective cost management system for service sector organisations, particularly in enhancing cost accuracy, managerial decision-making, operational efficiency, and profitability. In an increasingly competitive and knowledge-driven service economy, cost management systems must capture the true economic behaviour of resource consumption. Activity-Based Costing addresses the inherent limitations of traditional costing methods by allocating costs on the basis of activities that directly generate resource usage.

Empirical evidence obtained from Indian service sector firms demonstrates a strong and statistically significant relationship between ABC adoption and profitability improvement. The majority of respondents reported enhanced cost transparency, more informed pricing strategies, and superior operational performance following ABC implementation. Although implementation challenges such as high initial costs, technical complexity, and employee resistance persist, the overall benefits derived from ABC substantially outweigh these constraints. The findings, therefore, affirm the strategic relevance of Activity-Based Costing as a performance-enhancing tool in service sector environments.

Recommendations

Based on the findings of the study, the following recommendations are proposed to facilitate effective ABC implementation in service organisations:

1. **Strengthen Training and Awareness:**

Organizations should invest in structured training programs to ensure that employees understand the objectives, processes, and strategic value of Activity-Based Costing. Enhanced awareness is essential for reducing resistance and fostering acceptance of the system.

2. **Leverage Technology to Support ABC:**

The adoption of specialised costing software and enterprise systems can simplify activity identification, automate cost driver selection, and improve the accuracy and timeliness of cost reporting.

3. **Integrate ABC with Performance Measurement Systems:**

Combining ABC with strategic tools such as the Balanced Scorecard can strengthen the linkage between operational performance and financial outcomes, thereby improving strategic decision-making.

4. **Adopt a Phased Implementation Approach:**

Organisations are advised to initiate ABC through pilot projects within selected departments or service lines before extending the system across the entire organisation. This approach minimises risk and facilitates learning.

5. **Ensure Continuous Review and Updating:**

ABC models should be regularly revised to reflect changes in service processes, technology, and organisational structure to maintain the relevance and accuracy of cost information.

6. Secure Strong Top Management Support:

Sustained leadership commitment is critical for allocating adequate resources, addressing employee concerns, and ensuring long-term institutionalisation of ABC practices.

Future Scope for Research

Future research may extend this study in several directions. First, empirical investigations could examine the applicability and effectiveness of Activity-Based Costing in small and medium-sized service enterprises, which face distinct resource and structural constraints. Second, scholars may explore the integration of ABC with emerging digital technologies such as artificial intelligence, automation, and big data analytics to enhance real-time cost management capabilities. Third, longitudinal studies tracking organisations over extended periods could provide deeper insights into the long-term profitability and sustainability effects of ABC adoption. Such avenues would further enrich the understanding of advanced cost management systems in evolving service-based economies.

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