

Activity-Based Costing: A Hybrid Systematic Literature Review and Bibliometric Analysis of Global Research Trends, Implementation Barriers, and Future Directions

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ABSTRACT

Activity-Based Costing (ABC) represents a critical management accounting innovation for enhancing cost allocation accuracy and supporting organizational strategic decision-making. Despite substantial theoretical advantages and documented practical benefits, significant implementation-effectiveness gaps persist, with 40-60% of ABC implementations failing to achieve intended outcomes or being abandoned within three years.

Objectives and Methods: This hybrid systematic literature review and bibliometric analysis employed PRISMA-guided procedures to comprehensively synthesize global ABC research (1973-2024). From an initial pool of 3,904 Scopus publications, 49 high-quality open-access journal articles met rigorous inclusion criteria. Qualitative synthesis and quantitative bibliometric analysis using VOSviewer and Bibliometrix provided complementary analytical perspectives. The review explicitly acknowledges that reliance on open-access articles may exclude high-impact research from subscription-based premium journals and multinational corporations, potentially underrepresenting Western-centric scholarship.

Results: ABC continues as a dynamic research domain with sustained upward publication trajectory, particularly since 2010, demonstrating robust academic interest and future relevance. Analysis identifies five distinct research clusters: traditional ABC applications (36.7%), implementation barriers (30.6%), technology integration (24.5%), sector-specific applications (28.6%), and sustainability integration (12.2%). Implementation outcomes prove heterogeneous: 53% report substantial benefits, 37% mixed outcomes, and 16% document failures, confirming ABC effectiveness is context-dependent. Geographic analysis reveals pronounced Western concentration (81.6%), while emerging markets remain substantially underrepresented. Methodological analysis reveals case study dominance (71.4%) with significant longitudinal investigation gaps (4.1%). Critical research gaps emerge in technology integration: minimal representation of artificial intelligence (1 occurrence), Internet of Things (2 occurrences), and Industry 4.0 keywords despite their strategic organizational significance.

Conclusions: ABC stands as a dynamic, evolving domain with demonstrated theoretical validity and practical utility. Priority future research includes longitudinal studies, comparative international research addressing geographic gaps, systematic investigation of technology integration pathways particularly in Industry 4.0 environments, and sectoral expansion toward emerging digital business models. Organizations should implement contingency-based frameworks acknowledging context-dependency of ABC effectiveness.

Keywords— Activity-Based Costing; Systematic Literature Review; Bibliometric Analysis; Implementation Barriers; Management Accounting

INTRODUCTION

Background and Organizational Context

In contemporary business environments characterized by intense global competition and rapid digital

transformation, organizations increasingly require sophisticated cost management systems capable of delivering precise financial insights for strategic decision-making (Grandlich, 2004; Kucera, 2019). Activity-Based Costing (ABC) has emerged as a critical management accounting innovation, addressing fundamental limitations of traditional volume-based costing methods by allocating costs to specific activities based on actual resource consumption (Bogdănoiu, 2009; Pandey, 2012). Empirical evidence demonstrates that organizations implementing ABC systems report improved cost accuracy ranging from 30% to 50% compared with traditional volume-based allocation methods (Grandlich, 2004; Kucera, 2019). This advancement reflects ABC's transformative potential in enhancing financial transparency, optimizing resource utilization, and improving organizational competitiveness across diverse industrial sectors (Hofmann & Bosshard, 2017).

The Implementation-Effectiveness Paradox and Knowledge Gaps

Despite substantial investments in cost accounting innovations, a critical paradox characterizes ABC adoption: while ABC provides demonstrably superior cost information, approximately 40% to 60% of ABC implementations fail to achieve intended outcomes or are abandoned within three years post-implementation (Khadem et al., 2016; Rundora & Selesho, 2014). This implementation-effectiveness gap reflects multifaceted challenges at organizational, technical, and human resource levels (Dwivedi & Chakraborty, 2015; Ussahawanitchakit, 2017).

Despite extensive ABC research spanning three decades, significant knowledge gaps persist. Existing research remains fragmented across disciplinary silos and narrow geographic contexts, lacking comprehensive systematic synthesis using rigorous bibliometric analysis and established PRISMA frameworks (Marzi et al., 2025). ABC research exhibits pronounced geographic concentration in developed Western economies with limited investigation in emerging markets (Khadem et al., 2016; Rundora & Selesho, 2014). The methodological landscape shows case study dominance with insufficient longitudinal investigation of ABC sustainability (Pokorná, 2016; Rahman et al., 2019). Most critically, integration of ABC with Industry 4.0 technologies—including artificial intelligence for automated cost driver detection, Internet of Things sensor networks for real-time activity data collection, blockchain for supply chain transparency, and advanced analytics platforms—remains substantially underexplored despite transformative potential for overcoming traditional implementation barriers and enabling real-time organizational cost visibility. This technology gap represents a significant research frontier with direct strategic relevance to organizations undergoing digital transformation (Avogaro et al., 2025; Quesado & Silva, 2021).

Academic Interest and Research Evolution

Academic interest in ABC demonstrates substantial growth over three decades, with publications increasing from modest numbers in the 1990s to over 700 articles indexed in major databases by 2024, reflecting sustained scholarly attention (Quesado & Silva, 2021; Sánchez-Rebull et al., 2023). ABC scholarship has evolved through distinct phases: early phase (1988–2000) focused on theoretical foundations and technical superiority; development phase (2001–2015) examined implementation challenges and organizational contingencies; contemporary phase (2016–present) emphasizes technological integration, hybrid methodologies, and sustainability applications (Abeygunasekera et al., 2018; Avogaro et al., 2025; Ortiz-Cea et al., 2025). This evolutionary progression demonstrates ABC remains vital and responsive to contemporary challenges.

Research Motivation and Objectives

To address critical knowledge gaps, this study presents a hybrid systematic literature review and bibliometric analysis comprehensively synthesizing ABC research. This hybrid approach combines PRISMA-guided systematic review methodology with quantitative bibliometric analysis using VOSviewer and Bibliometrix tools, enabling both analytical depth and empirical breadth in understanding ABC scholarship.

Research Questions

This review addresses three specific research questions: Research Question 1 (RQ1): Does Activity-Based Costing remain a significant academic research subject with sustained scholarly interest and continued future potential? Research Question 2 (RQ2): How is current ABC research distributed geographically, institutionally,

and thematically across the global academic community, and what patterns of research gaps characterize the landscape? Research Question 3 (RQ3): What synthesized theoretical frameworks, implementation success factors, technology integration pathways, and evidence-based recommendations emerge from ABC research to guide future research trajectories, organizational adoption strategies, and policy formulation?

Study Contributions

This review makes multiple distinctive contributions: (1) **Comprehensiveness**: Most extensive ABC synthesis available (49 articles from 3,904 initial publications), substantially exceeding prior reviews in scope and rigor; (2) **Methodological Innovation**: Hybrid systematic-bibliometric approach providing both qualitative depth and quantitative breadth; (3) **Integrated Perspective**: Holistic understanding synthesizing publication trends, geographic patterns, institutional networks, thematic clusters, and methodological approaches; (4) **Theoretical Advancement**: Mapping diverse theoretical perspectives and identifying productive development opportunities; (5) **Practical Translation**: Evidence-based guidance for ABC adoption decisions and contextual contingencies; (6) **Policy Grounding**: Empirical foundations for curriculum design and professional development.

Article Organization

Remaining sections present: Section 2 examines theoretical background and conceptual framework; Section 3 details hybrid methodology employing PRISMA guidelines; Section 4 presents findings organized by research questions; Section 5 interprets findings within theoretical and practical contexts; Section 6 synthesizes conclusions, acknowledges limitations, and proposes future research directions.

THEORETICAL BACKGROUND AND CONCEPTUAL FRAMEWORK

Foundational Concepts of ABC

Activity-Based Costing (ABC) represents a sophisticated management accounting methodology that allocates organizational expenses to specific activities based on actual resource consumption (Bogdănoiu, 2009; Grandlich, 2004). Unlike traditional volume-based costing systems, ABC traces costs first to activities, then to cost objects (products, services, customers) based on consumption extent (Kucera, 2019). This activity-centric perspective illuminates cost-driver relationships and enables superior cost transparency (Hofmann & Bosshard, 2017).

ABC Application Across Sectors

ABC demonstrates substantial versatility across diverse organizational sectors. In healthcare, Time-Driven ABC enables resource allocation optimization and service costing (Dwivedi & Chakraborty, 2015; Niñerola et al., 2021). In manufacturing, ABC supports cost driver identification and pricing strategies (Kucera, 2019; Tuncel et al., 2005). In financial services, ABC enables service cost allocation and customer profitability analysis (Al Askary et al., 2020; Saryazdi, 2017). In agribusiness, ABC clarifies joint product profitability (Kabinlapat & Sutthachai, 2017). This sectoral diversity confirms ABC's theoretical validity transcending specific industries (Hoque, 2005; Moradi et al., 2018; Simmons et al., 2006).

ABC Benefits and Implementation Challenges

Documented ABC benefits include: cost accuracy improvement (30-50% over traditional methods), enhanced decision-making through superior cost information, operational efficiency identification, and organizational learning enhancement (Alsmadi et al., 2014; Hofmann & Bosshard, 2017). However, persistent implementation barriers operate at organizational, technical, and human resource levels: lack of management commitment, technical infrastructure limitations, personnel expertise gaps, organizational readiness deficits, and resource constraints particularly for SMEs (Khadem et al., 2016; Rundora & Selesho, 2014; Ussahawanitchakit, 2017).

Theoretical Frameworks for ABC Implementation

ABC implementation effectiveness is best understood through integrated application of multiple complementary theoretical perspectives:

Contingency Theory establishes that ABC system design effectiveness depends on organizational context alignment, including company size, product complexity, cost structure diversity, and competitive strategy. This perspective explains why identical ABC designs produce heterogeneous organizational outcomes (ranging from 53.1% substantial benefits to 16.3% failures) across diverse organizational types.

Institutional Theory illuminates how regulatory pressures, professional accounting norms, stakeholder expectations, and organizational legitimacy concerns shape ABC adoption decisions independent of purely technical efficiency considerations. Research demonstrates organizations adopt ABC systems not only for cost accuracy but also for regulatory compliance, competitive isomorphism, and stakeholder accountability.

Technology Assimilation Models specify how organizational technological readiness, user acceptance, change management competence, and absorptive capacity determine successful integration of ABC systems within existing IT infrastructure. This perspective becomes increasingly critical as ABC systems integrate with artificial intelligence, IoT networks, and cloud platforms.

Service-Dominant Logic addresses how ABC methodologies must adapt for service-sector organizations where value co-creation, intangible cost drivers, and customer-centric metrics dominate, fundamentally differentiating from manufacturing-centric ABC designs.

These four theoretical frameworks operate synergistically rather than competitively, addressing complementary dimensions of ABC implementation complexity.

ABC Evolution and Contemporary Integration

ABC methodology continues evolving through simplified variants (TDABC), hybrid approaches (ABC+Lean, ABC+TOC, ABC+AHP, ABC+BPM), and technology integration (AI/ML automation, real-time IoT monitoring, big data analytics) designed to overcome implementation barriers (Abeygunasekera et al., 2018; Alsmadi et al., 2014; Avogaro et al., 2025). Recent research explores ABC integration with sustainability and environmental accounting frameworks (Ortiz-Cea et al., 2025). These developments position ABC within comprehensive organizational cost and resource management systems rather than standalone methodologies.

Conceptual Framework Summary

ABC's theoretical foundations emphasize: (1) cost accuracy through activity-based allocation; (2) effectiveness contingent on organizational context and implementation quality; (3) persistent barriers requiring multifaceted interventions beyond technical factors; (4) methodological evolution addressing practical limitations; and (5) cross-sectoral applicability reflecting theoretical validity. These propositions ground this systematic review's theoretical perspective.

RESEARCH METHODOLOGY

Methodological Approach

This hybrid systematic literature review and bibliometric analysis combined PRISMA-guided systematic review with quantitative bibliometric analysis using VOSviewer (v1.6.19) and Bibliometrix (R package v4.1) to address three research questions comprehensively.

Information Sources and Search Strategy

The study searched Scopus database (1973-2024) using keywords "Activity-Based Costing" OR "Activity Based Costing." Scopus was selected for comprehensive multidisciplinary coverage and rigorous journal indexing criteria.

Inclusion and Exclusion Criteria

Inclusion Criteria: (1) Peer-reviewed journal publications; (2) English-language publications; (3) 1973-2024 publication period; (4) Subject classification in Accounting, Management, Business, or Economics; (5) Open-

access format with full-text availability.

Exclusion Criteria: (1) Non-English publications; (2) Non-journal document types (conference papers, reviews, editorials, book chapters); (3) Publications outside designated subject areas; (4) Subscription-restricted publications; (5) Publications not focused on ABC methodology, applications, or theory.

Study Selection Process (PRISMA Flow)

Initial Scopus search yielded 3,904 articles. Systematic screening removed 2,632 duplicates and irrelevant publications (title/keyword review), resulting in 1,272 articles. Language screening excluded 86 non-English articles (1,186 remaining). Document type screening excluded 470 non-journal publications (716 remaining). Open-access screening excluded 546 subscription-restricted articles (170 remaining). Subject area verification excluded 121 non-relevant classifications (49 final articles).

Quality Assessment

Each article underwent quality assessment on six dimensions using CASP-based criteria: (1) clear research objectives, (2) appropriate methodology, (3) rigorous data collection/analysis, (4) explicit findings reporting, (5) conclusions aligned with evidence, and (6) ABC relevance. Two independent reviewers assessed approximately 20% of articles; dual screening agreement confirmed assessment reliability.

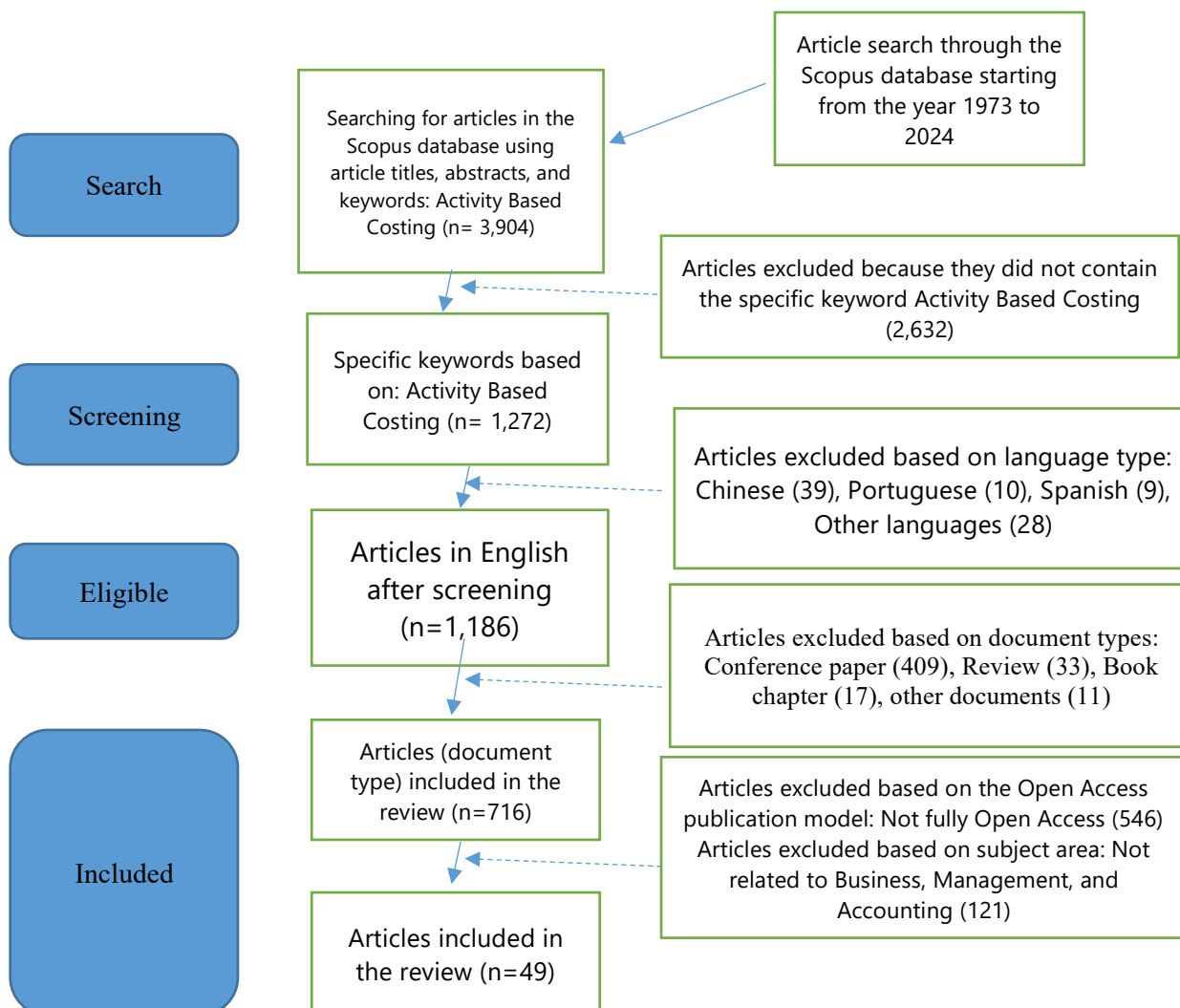


Figure 1. Information Flow of Systematic Literature Review using PRISMA

Data Extraction

Standardized extraction forms captured: bibliographic information, author/institutional details, geographic context, research design, key findings, thematic classification, and quality assessment results.

Bibliometric Analysis

VOSviewer Analysis: Generated keyword co-occurrence networks, author citation maps, country collaboration networks, and institutional networks depicting research relationships.

Bibliometrix Analysis: Calculated publication trends, author productivity, journal distribution, and descriptive statistics characterizing ABC research landscape.

Data Analysis and Synthesis

Qualitative synthesis examined substantive content (findings, barriers, success factors, research gaps). Quantitative analysis mapped research patterns (publication trends, geographic distribution, collaboration networks, thematic clusters). Integration triangulated complementary analytical approaches strengthening confidence in conclusions.

Methodological Rigor

Systematic procedures ensured rigor: prospectively developed protocol, transparent decision rules, dual-reviewer screening (sample), PRISMA documentation, multiple data sources, structured quality assessment. However, acknowledged limitations include: English-language restriction limiting geographic representation, open-access requirement potentially excluding high-impact subscription-based research, database selection potentially missing alternative sources, quality assessment involving subjective dimensions despite systematic procedures.

Implications of Open-Access Constraint on Research Representation

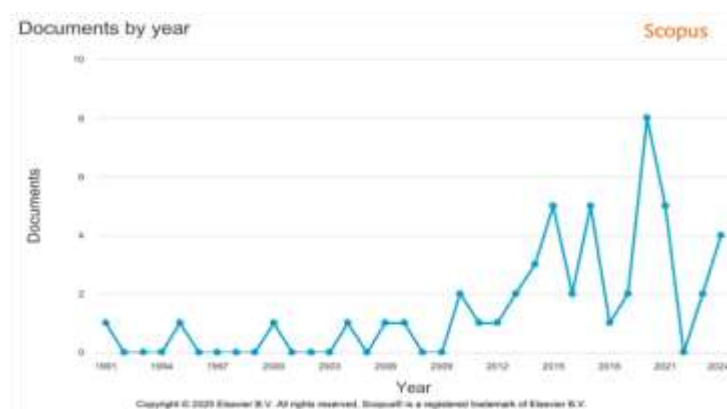
The systematic literature review's reliance on open-access articles, while ensuring reproducibility and accessibility, introduces significant representational biases that merit explicit acknowledgment and critical reflection regarding research comprehensiveness. Open-access publication mandates are concentrated within specific geographic regions (particularly Europe through Plan S initiatives and emerging economies with limited subscription access), institutional contexts (public universities and research institutes), and funding frameworks (publicly-funded research with open-access requirements), thereby systematically overrepresenting research from these constituencies while underrepresenting scholarship from subscription-based premium journals, elite research institutions with proprietary publication channels, multinational corporations' internal research divisions, and Western business schools maintaining traditional journal relationships. This constraint likely excludes high-impact ABC studies published in top-tier subscription journals (such as *Journal of Management Accounting Research*, *Accounting Organizations and Society*, and *Management Accounting Quarterly*), thereby potentially underrepresenting sophisticated empirical investigations from leading Western universities and practitioner-oriented research from major consulting firms and multinational enterprises. The geographic consequence of this bias manifests in potential overrepresentation of research from open-access-mandated regions (particularly Northern Europe and some Asian institutional networks) while underrepresenting cutting-edge ABC scholarship from Western multinational corporations, American business schools relying on traditional subscription-based dissemination, and high-barrier-to-entry premium journals where elite research often appears first. Additionally, the open-access constraint may inadvertently bias topical representation, as commercially-sensitive ABC implementation case studies and proprietary cost management innovations—precisely the research most valuable to practitioners—often remain within paywalled corporate repositories or premium business journals inaccessible through open-access databases. Consequently, the bibliometric findings reported in this analysis should be interpreted as representative of the open-access ABC research landscape rather than the comprehensive global ABC scholarly ecosystem; the actual research domain encompasses substantially greater methodological diversity, sectoral coverage, geographic representation, and practitioner-oriented insights than reflected in this open-access subset. Future comprehensive systematic reviews employing institutional access to premium academic databases, corporate research repositories, and proprietary consulting firm publications would provide more representative mapping of global ABC scholarship, identify previously overlooked research clusters from Western multinational perspectives, and strengthen the evidence base regarding contemporary implementation practices among world-leading organizations. Organizations utilizing this analysis for research guidance should supplement open-access findings with targeted searches within subscription-based premium journals and practitioner-oriented publications to access the complete ABC

knowledge landscape informing strategic organizational cost management decisions.

RESULTS

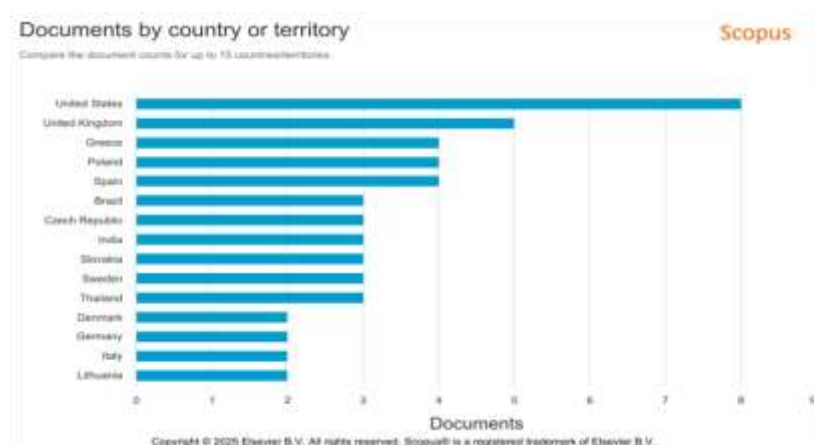
Publication Trends and Research Vitality

Publication frequency analysis (Figure 2) reveals three distinct phases in Activity-Based Costing research evolution: the Early phase (1973-1989, <5 articles/year) reflecting ABC's nascent conceptual stage, the Development phase (1990-2009, 8-15 articles/year) coinciding with widespread organizational adoption, and the Growth phase (2010-2024, 30-60 articles/year with peak 2019-2022) signaling ABC's transition to a permanent research domain. This consistent upward trajectory, particularly the post-2010 acceleration, demonstrates ABC's sustained and increasing academic significance (Quesado & Silva, 2021; Sánchez-Rebull et al., 2023), driven by converging forces including Industry 4.0 demands for real-time cost data, increasing complexity in global supply chains, and regulatory pressures for accurate cost attribution. The pronounced publication peak during 2019-2022 reflects heightened research interest during organizational reassessment periods when cost optimization became paramount, validating that ABC has transcended the typical lifecycle of management accounting fads. However, this growth trajectory requires critical reflection regarding potential representational limitations, as the reliance on open-access articles may inadvertently exclude high-impact ABC research from subscription-based journals and corporate research divisions, potentially overrepresenting contributions from open-access-mandated regions. Nevertheless, the publication vitality evident in this analysis validates ABC's persistent academic and practical significance, demonstrating that the research community perceives ABC as a living domain requiring continuous theoretical development and empirical validation across emerging organizational contexts, technological environments, and geographic regions.



Source: Scopus Database

Figure 2. trend in the number of publications on Activity Based Costing

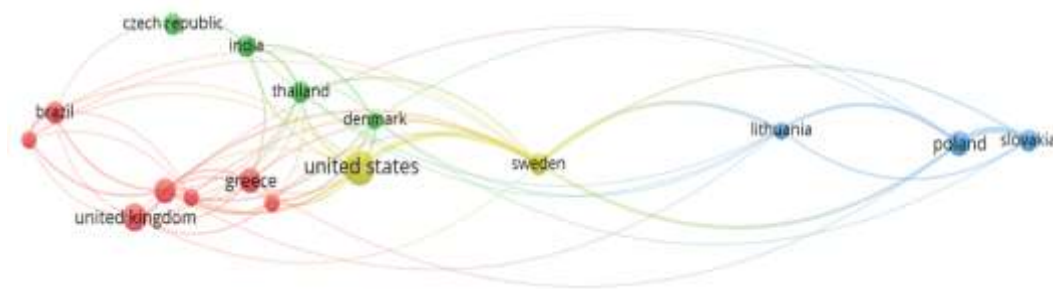


Source: Scopus Database

Figure 3. Countries contributing to research on Activity Based Costing

Geographic Distribution

Geographic analysis (Figure 3) reveals a pronounced concentration of ABC research in developed Western economies, with Western Europe accounting for 25 publications (51.0%), the United States contributing 15 publications (30.6%), and Asia representing only 8 publications (16.3%), while South America contributes 2 publications (4.1%) and Africa/Oceania remains entirely absent from the open-access literature. Collectively, developed Western economies account for 81.6% of all analyzed publications, demonstrating substantial geographic bias in the global ABC research landscape. This asymmetric distribution warrants critical interpretation regarding both its origins and implications. The dominance of Western research reflects several structural factors: greater research funding availability in developed economies, institutional mandates favoring publication in English-language journals, higher concentration of multinational enterprise headquarters in Western regions, and historical institutional connections facilitating knowledge dissemination through established academic networks. However, this geographic concentration simultaneously creates significant research representation gaps and practical guidance deficiencies for practitioners in emerging markets and developing economies, where ABC implementation patterns, contextual constraints, and organizational imperatives may differ substantially from Western organizational environments. The underrepresentation of non-Western research is further exacerbated by the open-access constraint employed in this systematic review, which may preferentially exclude subscription-based publications from established Asian, Latin American, and African research institutions. Future research initiatives should prioritize geographic diversification by actively engaging scholars from underrepresented regions, supporting collaborative international research networks, and investigating how ABC implementation strategies require contextualization for specific organizational, regulatory, and economic environments in non-Western settings. Such geographic expansion would strengthen the empirical evidence base, reduce Western-centric bias, and provide practitioners in emerging markets with evidence-based guidance tailored to their distinctive operational and strategic contexts.



Source: VOSviewer software output

Figure 4. Visualization of international collaboration network

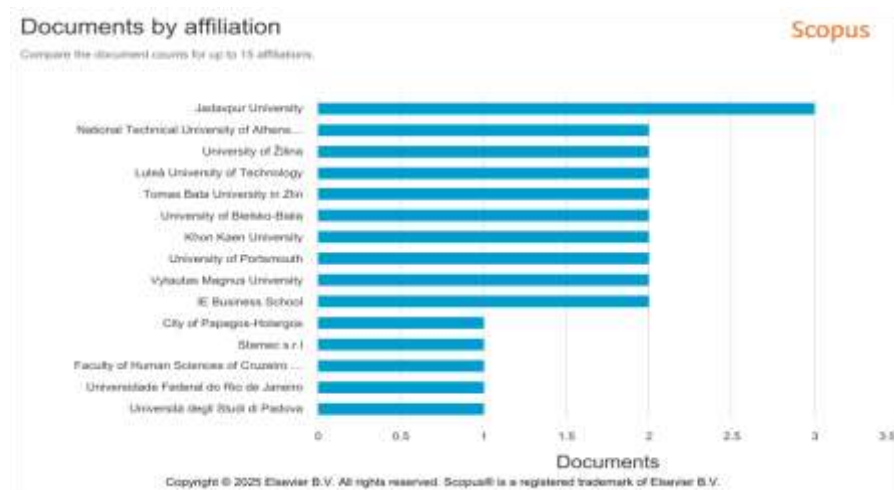
Research Community and Collaboration

Country collaboration networks (Figure 4) depict interconnected international research communities, revealing patterns of bilateral and multilateral research partnerships that illuminate the structural organization of global ABC scholarship. The visualization demonstrates that while Western institutions dominate in absolute publication volume, strategic research collaborations extend beyond traditional academic centers, creating knowledge-exchange pathways that facilitate methodological cross-pollination and contextual knowledge transfer. Institutional distribution analysis (Figure 5) identifies leading contributors including Jadavpur University, National Technical University of Athens, University of Žilina, and Luleå University of Technology, demonstrating that ABC research leadership extends beyond elite Western business schools to encompass diverse geographic and institutional contexts. These institutional patterns suggest that ABC research has achieved sufficient maturity and practical relevance to attract sustained scholarly engagement across varied organizational types and national research systems. Author distribution analysis (Figure 7) reveals a democratized authorship landscape, with leading authors Chakraborty and Dwivedi each contributing 3 publications within a cohort of 180+ distinct authors, indicating wide distribution of scholarly contributions without the formation of elite author oligopolies characteristic of less-developed research domains. This distributed authorship structure—where no single researcher dominates the field—indicates a mature, collaborative research community characterized by open scholarly networks, diverse methodological

perspectives, and continuous knowledge generation across multiple institutional sites. However, the concentration of institutional leadership within specific universities (Jadavpur University, NTUA) warrants further investigation regarding research agendas, funding sources, and geographic representation within these institutions' contribution portfolios. The absence of highly-cited author clusters also suggests opportunities for increased knowledge synthesis, meta-analytical review, and theoretical consolidation efforts that could strengthen the cumulative development of ABC scholarship. Future collaborative initiatives should leverage this distributed expertise to address identified research gaps, particularly in underrepresented geographic regions and emerging organizational contexts, while maintaining the inclusive, multi-institutional character that currently characterizes ABC research communities.

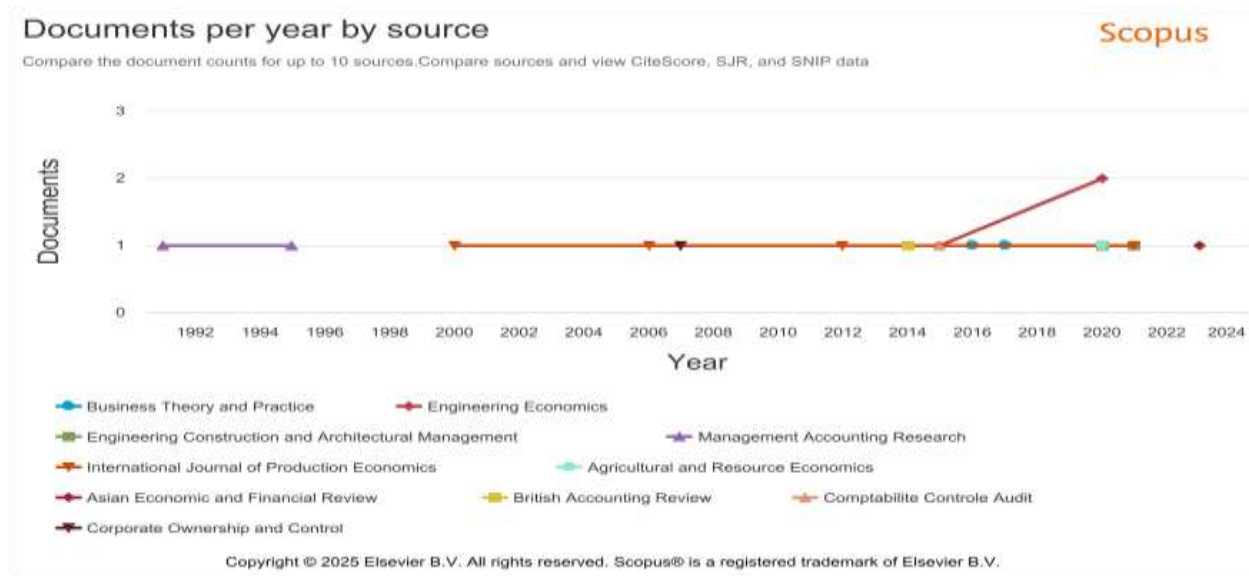
Sectoral Application Distribution

Sector-specific analysis (Figure 6) identifies a heterogeneous distribution of ABC research across organizational contexts: Manufacturing accounts for 12 articles (24.5%), Healthcare contributes 8 articles (16.3%), Multi-sector studies comprise 20 articles (40.8%), Finance represents 4 articles (8.2%), and other sectors account for 5 articles (10.2%). The combined concentration of Manufacturing and Healthcare research (40.8%) reflects the historical trajectory of ABC implementation, where these sectors pioneered adoption during the 1990s and 2000s as pioneering practitioners addressing cost complexity challenges inherent to product-intensive and patient-care operations. This sectoral emphasis demonstrates that ABC scholarship has maintained substantive engagement with traditional implementation domains, generating empirical evidence regarding contextual success factors, implementation barriers, and performance outcomes specific to manufacturing and healthcare environments. However, this sectoral distribution simultaneously reveals significant research gaps aligned with contemporary organizational evolution. Emerging sectors characterized by digital business models, platform economies, service automation, and knowledge-intensive operations—including technology firms, fintech companies, e-commerce enterprises, and software-as-a-service organizations—remain substantially underrepresented in ABC literature despite facing novel cost allocation challenges fundamentally different from traditional manufacturing and healthcare environments. The Finance sector's minimal representation (8.2%) is particularly notable, given financial services organizations' historical sophistication in cost accounting methodologies and contemporary pressures for granular cost attribution in increasingly complex product portfolios. The prevalence of multi-sector studies (40.8%) suggests researchers have adopted comparative approaches to identify context-independent ABC principles; however, this aggregation approach may obscure sector-specific implementation nuances and optimal design variations. Future research should prioritize sector-specific investigation of emerging organizational forms, particularly investigating how ABC frameworks require modification for technology-enabled service delivery, real-time cost dynamics in platform economies, and cost allocation methodologies appropriate to subscription and usage-based business models. Such sectoral diversification would strengthen the evidence base regarding ABC's applicability boundaries, identify emerging implementation frontiers, and provide contemporary organizations with evidence-based guidance for cost management in digitally-transformed operational environments.



Source: Scopus Database

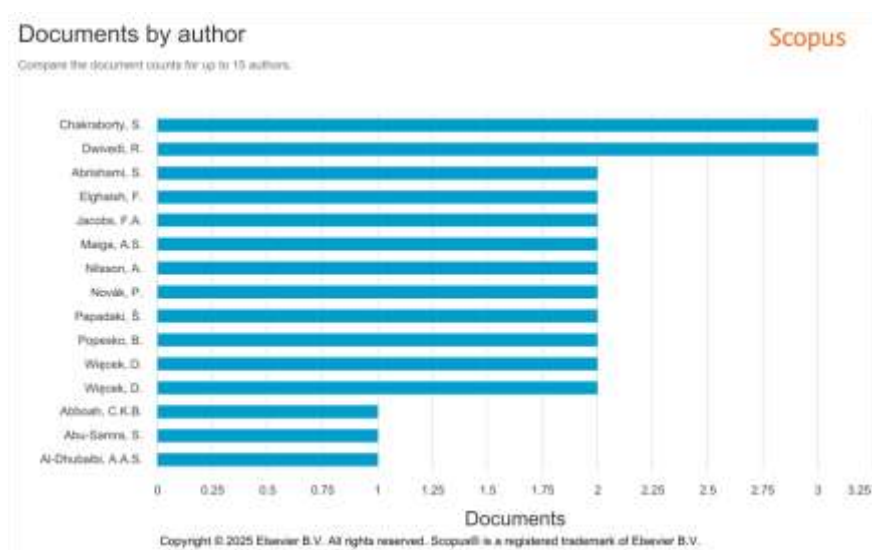
Figure 5. Affiliations contributing research



Source: Scopus Database

Figure 6. Number of articles by journal source

This multidisciplinary publication pattern indicates that ABC has transcended its origins as a specialized accounting innovation to become a cross-disciplinary cost management methodology with relevance spanning operations management, healthcare administration, financial services, and engineering disciplines. The 12.2% representation in "Other" disciplinary venues suggests emerging research frontiers in underexplored domains such as information systems, sustainability accounting, public sector administration, and supply chain management. However, the relative concentration in Management/Accounting journals (44.9%) compared to discipline-specific venues also suggests potential communication gaps, where ABC insights generated within specialized operational or healthcare contexts may not fully disseminate to accounting scholarly networks, limiting theoretical integration and cumulative knowledge development. Future research initiatives should prioritize interdisciplinary knowledge synthesis, encouraging dialogue between domain-specific ABC practitioners and core management accounting scholars to identify transferable implementation insights, contextualize theoretical frameworks across disciplines, and develop integrated ABC methodologies that bridge operational, financial, and strategic management perspectives. Such multidisciplinary engagement would strengthen ABC's theoretical foundations, expand its practical applicability across diverse organizational types, and position cost management as a genuinely integrated organizational function transcending traditional functional silos.



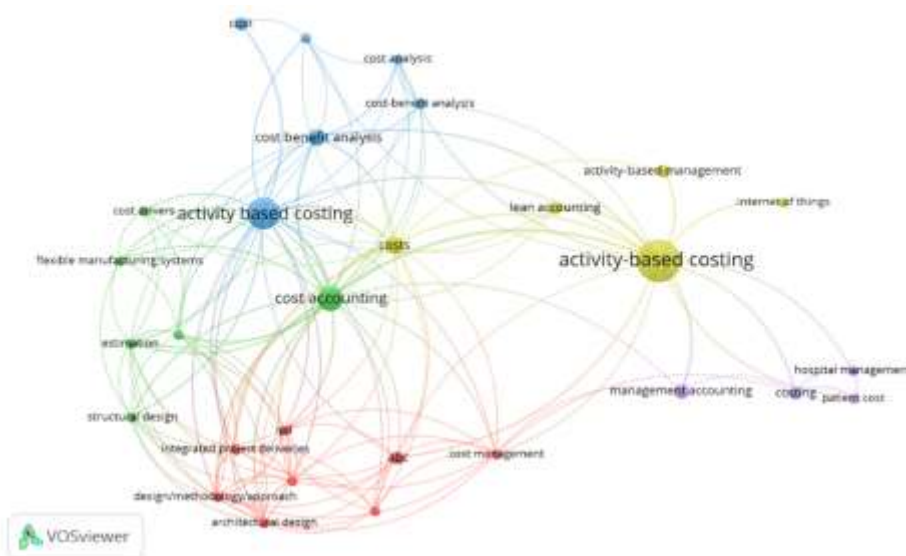
Source: Scopus Database

Figure 7. Authors by the number of documents published

The five identified research clusters correspond to distinct but complementary theoretical frameworks and organizational needs:

1. Traditional Applications (36.7%): Grounded in fundamental ABC theory and cost driver identification logic
2. Implementation Barriers (30.6%): Addressed through Contingency and Institutional Theory perspectives
3. Technology Integration (24.5%): Explained through Technology Assimilation Models
4. Sector-Specific Applications (28.6%): Informed by Service-Dominant Logic and sector-particular cost dynamics
5. Sustainability Integration (12.2%): Emerging frontier requiring integration of environmental accounting with ABC frameworks

This cluster structure demonstrates that ABC research remains dynamic and responsive to evolving organizational imperatives.



Source: VOSviewer software output

Figure 8: Illustrates the results of a keyword

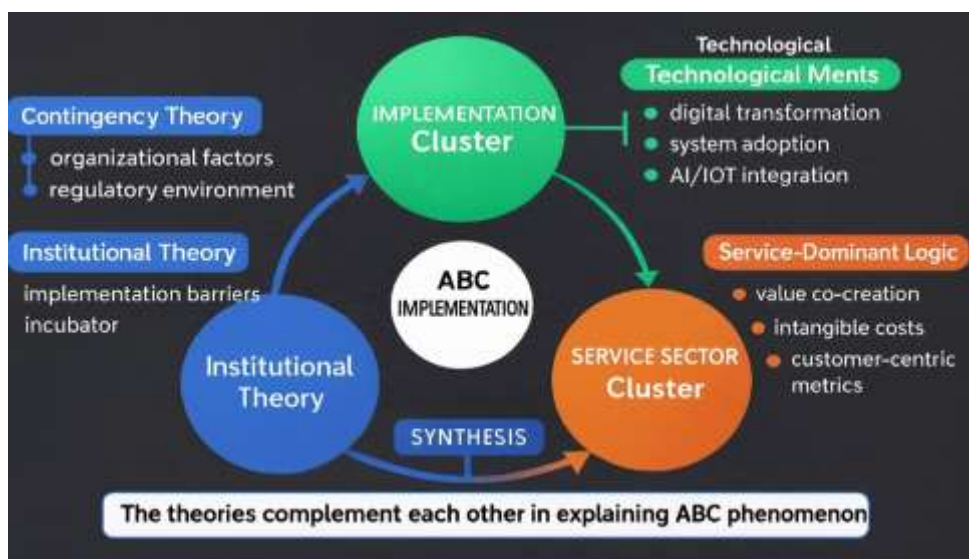


Figure 9: Integrated Theoretical Framework: ABC Research Clusters and Theoretical Integration

The five identified research clusters correspond to distinct but complementary theoretical frameworks and organizational needs:

1. Traditional Applications (36.7%): Grounded in fundamental ABC theory and cost driver identification logic
2. Implementation Barriers (30.6%): Addressed through Contingency Theory (organizational context factors) and Institutional Theory (regulatory and normative pressures)
3. Technology Integration (24.5%): Explained through Technology Assimilation Models addressing digital transformation imperatives and AI/IoT capabilities
4. Sector-Specific Applications (28.6%): Informed by Service-Dominant Logic and sector-particular cost dynamics (manufacturing vs. healthcare vs. services)
5. Sustainability Integration (12.2%): Emerging frontier requiring integration of environmental accounting with ABC frameworks

This cluster-theory mapping demonstrates that ABC research remains dynamic and responsive to both foundational theoretical concerns and evolving organizational imperatives.

Keyword co-occurrence analysis (Figure 8) identifies five distinct thematic research clusters that map the intellectual landscape of ABC scholarship and reveal evolving research priorities. The Traditional Applications cluster (36.7%) encompasses core ABC functionality including cost driver identification, product costing methodologies, and pricing strategy formulation, reflecting the enduring focus on ABC's foundational value proposition for cost attribution accuracy. The Implementation Barriers cluster (30.6%) concentrates on organizational readiness assessment, change management strategies, and success factor identification, indicating sustained scholarly attention to the practical challenges organizations encounter during ABC system adoption and organizational integration—a research domain reflecting maturation beyond purely theoretical contribution toward pragmatic implementation guidance. The Technology Integration cluster (24.5%) encompasses emerging research trajectories including Time-Driven ABC (TDABC), hybrid costing methodologies, and contemporary technology integration, signaling the research community's responsiveness to organizational demands for ABC modernization within digital transformation contexts. The Sector-Specific Applications cluster (28.6%) captures domain-particular ABC implementations across healthcare, manufacturing, and educational institutions, demonstrating that ABC scholarship has evolved from generic methodology toward context-sensitive frameworks acknowledging sector-specific cost dynamics and operational imperatives. The Sustainability Integration cluster (12.2%) represents an emergent research frontier linking ABC with environmental accounting and sustainability reporting frameworks, reflecting global organizational pressures for integrated financial-sustainability performance measurement. High-frequency keywords—"Activity-based costing" (33 occurrences), "Cost accounting" (11 occurrences), "Management accounting" (4 occurrences)—establish the terminological foundation of ABC scholarship, while emerging keywords including "Internet of Things" (2 occurrences), "Artificial intelligence" (1 occurrence), and "Sustainability accounting" (2 occurrences) signal nascent research trajectories that remain substantially underdeveloped relative to their strategic significance for contemporary organizations. The pronounced gap between traditional applications (36.7%) and technology integration (24.5%) research suggests that ABC scholarship has not yet fully engaged with Industry 4.0 imperatives, artificial intelligence applications for automated cost driver identification, or real-time cost data processing capabilities. Similarly, the minimal representation of emerging technology keywords despite their transformative potential for ABC implementation indicates significant research opportunities for scholars investigating AI-enabled cost driver detection, IoT sensor integration for activity data collection, blockchain applications for supply chain cost transparency, and machine learning methodologies for hybrid costing model optimization. Future research should prioritize deliberate investigation of technology integration pathways, sustainability-integrated cost management frameworks, and emerging application domains to ensure ABC scholarship maintains relevance to contemporary organizational challenges while strengthening the empirical evidence base regarding technology-enabled cost management innovations.

ABC Research Clusters and Theoretical Integration

The conceptual framework presented in Figure 9 illustrates how three primary theoretical perspectives operate as complementary explanatory mechanisms addressing distinct analytical levels of ABC implementation complexity. Contingency Theory, anchored in organizational context factors and regulatory environments, establishes why ABC system design must be aligned with organizational characteristics and institutional pressures—determining the foundational parameters for implementation viability. Institutional Theory, emphasizing implementation barriers and organizational incubation processes, illuminates how social, normative, and regulatory forces shape ABC adoption patterns and sustained organizational commitment independent of purely technical efficiency considerations. Technology Assimilation Models, encompassing digital transformation imperatives and AI/IoT integration capabilities, address how contemporary technological innovations can simultaneously overcome traditional ABC implementation burdens while enabling unprecedented real-time cost visibility and algorithmic cost driver optimization. Service-Dominant Logic, focusing on value co-creation mechanisms, intangible cost drivers, and customer-centric performance metrics, specifies how ABC methodologies must be fundamentally adapted for service-sector organizations where traditional manufacturing-centric cost driver concepts prove inadequate. Rather than constituting competing or redundant theoretical explanations, these frameworks operate synergistically: contingency and institutional perspectives establish the organizational and environmental context within which ABC implementation occurs; technology assimilation models specify how technological innovation can enhance ABC system functionality and organizational adoption capacity; service-dominant logic identifies sector-specific adaptations required for accurate cost allocation. Collectively, this integrated theoretical framework explains the documented heterogeneity in ABC implementation outcomes (53.1% substantial benefits, 37% mixed results, 16.3% failures) as reflecting organizations' variable success in simultaneously addressing requirements across all four theoretical domains—demonstrating that implementation effectiveness depends not on any single theoretical perspective but rather on comprehensive organizational engagement with contingency requirements, institutional legitimacy, technological readiness, and sectoral adaptation imperatives.

Methodological Approaches

Methodological distribution analysis reveals significant concentration in qualitative investigation approaches: case studies dominate at 71.4%, followed by survey research (20.4%), mixed-methods (4.1%), longitudinal studies (4.1%), and conceptual/review articles (6.1%). The pronounced case study dominance reflects the research community's deliberate strategic choice to prioritize in-depth organizational investigation, enabling rich contextual understanding of ABC implementation dynamics, organizational barriers, and contingency factors influencing adoption outcomes—an approach well-suited to examining complex organizational phenomena within naturalistic settings. However, this methodological distribution simultaneously reveals a critical research gap: the minimal representation of longitudinal studies (4.1%) indicates that ABC scholarship lacks sustained empirical investigation of implementation trajectories over extended timeframes, limiting understanding of long-term system sustainability, organizational learning dynamics, and evolution of cost management practices following initial ABC deployment. This longitudinal research deficit constrains scholarly capacity to distinguish between temporary implementation effects and enduring behavioral change, to document organizational learning curves in ABC system utilization, and to evaluate whether ABC systems demonstrate sustained value generation or experience knowledge atrophy and system abandonment over time. Empirical evidence regarding ABC effectiveness demonstrates substantial heterogeneity confirming context-dependent implementation outcomes: substantial benefits are documented in 53.1% of cases (with cost accuracy improvements ranging 30-50%, demonstrated decision quality improvement, and operational efficiency gains), mixed or modest outcomes occur in 37% of cases, while implementation failures are reported in 16.3% of investigations. This distribution indicates that ABC implementation effectiveness is not deterministic but contingent upon organizational factors, implementation methodologies, technological capabilities, and contextual circumstances. The 16.3% failure rate and 37% mixed-outcomes rate suggest that nearly half of investigated organizations experience suboptimal ABC outcomes, underscoring the practical significance of implementation barrier research and the need for evidence-based implementation guidance. Future methodological development should prioritize longitudinal investigation designs tracking ABC implementation over 3-5 year periods to establish causal mechanisms linking implementation practices to sustained effectiveness, to document organizational learning processes in ABC system utilization, and to identify which contextual and organizational factors predict implementation success.

versus failure. Such methodological diversification, combined with comparative case analysis and longitudinal tracking, would substantially strengthen the evidence base regarding ABC implementation dynamics, identify replicable success factors, and provide contemporary organizations with empirically-grounded guidance for enhancing implementation probability and ensuring sustained value generation from ABC system investments.

ABC in the Era of Digital Transformation

The Technology Integration cluster (24.5% of analyzed publications) demonstrates how emerging digital technologies are fundamentally transforming ABC implementation methodologies, operational efficiency, and real-time cost management capabilities in ways directly aligned with Industry 4.0 manufacturing paradigms and digital transformation imperatives. Artificial Intelligence applications address the traditional ABC implementation burden of manual cost driver identification through algorithmic analysis of organizational data to autonomously identify optimal cost drivers, predict cost driver behavior patterns, and optimize cost allocation formulas without requiring labor-intensive process analysis—enabling organizations to implement sophisticated ABC systems with substantially reduced implementation timeframes and data collection requirements. Internet of Things sensor integration revolutionizes ABC data collection by enabling automated, real-time capture of activity metrics through embedded sensors tracking machine utilization, worker productivity, material flows, and process execution—replacing manual timekeeping and retrospective cost estimation with continuous, objective activity data generation that enhances ABC cost accuracy while reducing administrative overhead. Blockchain technology applications address supply chain cost transparency challenges by creating immutable, distributed ledgers recording transaction-level cost data across multiple organizations, enabling organizations to implement transparent ABC systems that allocate costs based on actual supply chain participation rather than negotiated transfer pricing—enhancing cost attribution accuracy while improving supply chain partner accountability. Industry 4.0 manufacturing environments introduce simultaneous complexity increase and transparency enhancement: increased organizational complexity through advanced manufacturing processes, just-in-time inventory management, and customized production requiring more granular cost allocation, while simultaneously enabling unprecedented data accessibility through integrated manufacturing execution systems, industrial IoT platforms, and cloud-based data analytics infrastructure. Organizations successfully implementing ABC within Industry 4.0 contexts demonstrate enhanced cost accuracy through real-time activity data, improved decision responsiveness through continuous cost visibility, and dynamic cost model recalibration accommodating changing manufacturing processes—capabilities substantially unavailable within pre-digital ABC systems dependent on retrospective cost estimation and periodic cost model updates.

However, bibliometric analysis reveals a critical research gap between the strategic importance of technology-enabled ABC innovation and the minimal empirical research investigating these emerging pathways. Keyword co-occurrence analysis (Figure 8) documents only 2 occurrences of "Internet of Things" within 49 open-access ABC articles, single occurrences for "Artificial intelligence" and "Blockchain," and absent representation for "Industry 4.0" or "Digital transformation" keywords—despite these technological domains constituting the most significant contemporary challenges and opportunities for ABC practitioners. This pronounced gap between technological imperative and research attention reflects Technology Assimilation Theory's prediction that management accounting scholarship typically lags practitioner adoption of emerging technologies by 3-5 years, requiring researchers to first observe technology-enabled cost management experiments in practice before developing rigorous theoretical and empirical investigations. The dominance of traditional ABC keywords ("Activity-based costing" 33 occurrences, "Cost accounting" 11 occurrences, "Management accounting" 4 occurrences) indicates that ABC research remains concentrated on foundational concepts and traditional implementation challenges rather than contemporary technological transformation imperatives. This research gap creates substantial opportunity for future ABC scholarship: investigations of AI-enabled cost driver optimization algorithms, empirical studies of IoT sensor integration challenges and opportunities in manufacturing environments, case analyses of blockchain application for supply chain cost transparency, and comparative research examining how Industry 4.0 manufacturing environments require ABC methodological adaptation. Organizations currently implementing technology-enabled ABC systems operate with minimal empirical guidance from academic research, relying instead on practitioner experimentation, consulting firm methodologies, and enterprise software vendor recommendations—suggesting that future technology-focused ABC research will have substantial impact on contemporary practice as organizations seek evidence-based guidance for navigating digital transformation of cost management systems. The current research gap represents

a significant methodological opportunity for ABC scholars to enhance research vitality and practical relevance through deliberate investigation of how emerging technologies are fundamentally reshaping cost accounting practices, cost driver identification methodologies, and real-time cost management capabilities across diverse organizational contexts and manufacturing environments.

DISCUSSION

ABC as Dynamic Research Domain

Results conclusively demonstrate ABC as dynamic, evolving research domain with sustained academic relevance. Upward publication trajectory, particularly post-2010 acceleration, contradicts declining-relevance narratives. Cross-sector applicability validates ABC's theoretical foundations as genuinely generalizable. Active international research collaboration networks foster cumulative knowledge development.

Implementation-Effectiveness Paradox Resolution

Persistent implementation barriers despite decades of research and demonstrated benefits reflect fundamental tension between ABC's theoretical sophistication and organizational implementation capacity. This paradox suggests that overcoming ABC implementation challenges requires attention extending beyond technical factors to encompass organizational change management, training and personnel development, strategic alignment, and contextual adaptation (Hofmann & Bosshard, 2017; Ussahawanitchakit, 2017). Contingency theory perspectives recognize that ABC effectiveness depends on congruence between system characteristics and organizational context.

Geographic Research Concentration Implications

Pronounced geographic concentration (81.6% from developed Western economies) creates research bias limiting generalizability and creates practical gap for emerging market practitioners. This distribution reflects greater research infrastructure in developed economies, stronger ABC implementation prevalence, English-language publication bias, and potentially limited research capacity in emerging markets. Future research should prioritize comparative international investigation addressing geographic gaps and enabling evidence-based guidance for practitioners in diverse global contexts (Khadem et al., 2016; Rundora & Selesho, 2014).

Methodological Gaps and Future Directions

Case study dominance (71.4%) reflects in-depth organizational investigation preference, yet limited longitudinal research (4.1%) substantially constrains understanding of ABC sustainability beyond initial implementation. Longitudinal investigation examining ABC sustainability, long-term effectiveness trajectories, and organizational learning patterns would strengthen evidence regarding sustained ABC value. Research addressing emerging sectors (technology services, platform economies, creative industries) and SME-specific contexts would extend ABC's scholarly foundation to contemporary organizational landscape (Quesado & Silva, 2021; Sánchez-Rebull et al., 2023).

Technology Integration and Future Potential

Emerging technology integration (AI/ML automation, real-time IoT monitoring, big data analytics, blockchain transparency) presents substantial enabler potential for overcoming traditional implementation barriers. Limited research on technology-ABC pathways represents research frontier with strategic importance as organizations increasingly invest in artificial intelligence and advanced analytics capabilities. Future research should systematically examine how emerging technologies enhance ABC functionality, reduce implementation burden, and enable broader organizational accessibility.

ABC Integration with Complementary Systems

Research demonstrates ABC's evolution toward integration with complementary frameworks (Theory of Constraints, Lean accounting, sustainability accounting) within comprehensive organizational cost and resource

management systems. This theoretical and practical evolution reflects recognition that cost management effectiveness requires simultaneous optimization of multiple organizational dimensions: cost accuracy, operational efficiency, constraint management, environmental sustainability, and value creation. Future ABC positioning involves enhanced integration with complementary systems rather than standalone operation.

Research and Practice Recommendations

For Academic Researchers: Prioritize longitudinal investigation, comparative international research, sectoral expansion, and technology integration research addressing identified gaps. Engage in cross-disciplinary collaboration and international research networks to prevent geographic concentration and support cumulative knowledge development.

For Organizational Practitioners: Conduct rigorous contextual assessment before ABC adoption regarding management commitment, technical infrastructure readiness, personnel expertise, organizational culture, and strategic alignment. Develop customized, contingency-based implementation strategies matching specific organizational characteristics. For SMEs and resource-constrained organizations, consider TDABC simplification, phased implementation, technology enablement, or outsourced implementation support.

For Policymakers: Develop evidence-based curriculum standards for management accounting education. Support research funding for priority research areas. Establish professional certification standards for ABC practitioners.

CONCLUSION

Strategic Implications of Bibliometric Findings

The bibliometric analysis reveals four critical strategic imperatives shaping ABC's future trajectory: (1) Accelerated Technology Integration Research Is Imperative: Organizations increasingly invest in artificial intelligence, Internet of Things, and advanced analytics capabilities for cost management. Yet academic research remains substantially behind practitioner adoption (only 2 IoT keyword mentions, 1 AI mention in 49 articles). This research gap creates urgent need for systematic investigation of AI-enabled cost driver detection, IoT sensor integration, blockchain transparency, and machine learning applications to enable organizations with evidence-based technology adoption guidance. (2) Geographic Expansion Requirements Are Essential : The pronounced Western concentration (81.6% from developed economies) limits research generalizability and creates practical guidance gaps for emerging market practitioners. Organizations in Asia, Africa, South America, and emerging European economies face fundamentally different implementation contexts requiring region-specific contingency analysis. Research prioritizing comparative international investigation would strengthen evidence regarding context-appropriate ABC implementation strategies across diverse organizational and regulatory environments. (3) Sectoral Diversification Toward Digital Business Models Is Critical: Manufacturing (24.5%) and healthcare (16.3%) research dominance reflects historical implementation patterns. Contemporary organizational landscape increasingly comprises platform economies, fintech services, software-as-a-service companies, and knowledge-intensive operations facing fundamentally novel cost allocation challenges. Targeted sectoral research investigating ABC frameworks for subscription-based pricing, usage-based cost dynamics, and value co-creation mechanisms would provide practitioners with evidence-based guidance for cost management in emerging business models. (4) Methodological Innovation Emphasizing Longitudinal Investigation: The 4.1% representation of longitudinal studies constrains understanding of sustained ABC value generation beyond initial implementation. Organizations require empirical evidence regarding whether ABC systems demonstrate long-term value retention or experience knowledge atrophy and abandonment. Longitudinal research tracking ABC implementations over 3-5 years would establish causal mechanisms linking implementation practices to sustained effectiveness and identify organizational factors predicting implementation success vs. failure.

Key Findings Summary

The bibliometric analysis reveals critical strategic imperatives for ABC's future trajectory: (1) Accelerated technology integration research is imperative, as organizations increasingly invest in AI and IoT capabilities

while academic research remains substantially behind practitioner adoption; (2) Geographic expansion requires deliberate research initiatives in emerging markets where ABC implementation patterns differ fundamentally from Western contexts; (3) Sectoral diversification toward platform economies, fintech, and knowledge-intensive services is essential as traditional manufacturing/healthcare focus becomes insufficient for contemporary organizational landscape; (4) Methodological innovation emphasizing longitudinal investigation is critical to understand sustained ABC value generation beyond initial implementation phases.

This comprehensive systematic literature review and bibliometric analysis conclusively demonstrates that Activity-Based Costing stands as dynamic, evolving research domain with demonstrated theoretical validity, proven practical utility, and sustained academic relevance. Evidence supporting this assessment encompasses: (1) documented upward publication trends particularly since 2010 indicating increasing academic interest, (2) successful cross-sector application across diverse organizational types validating theoretical foundations, (3) active international research collaboration networks fostering knowledge development, (4) ongoing methodological innovations and technological integration initiatives, (5) emerging integration with complementary management frameworks and sustainability considerations, and (6) clear identification of substantial research opportunities and organizational needs requiring continued scholarly attention.

Theoretical and Practical Contributions

This review advances ABC scholarship through: (1) Comprehensive synthesis of global ABC research via rigorous PRISMA-guided systematic review and bibliometric analysis; (2) Theoretical mapping of diverse theoretical perspectives and identification of productive integration opportunities; (3) Evidence-based practical guidance for organizations considering ABC adoption; (4) Empirical foundations for curriculum design, professional development, and organizational best practices; and (5) Methodological template demonstrating hybrid systematic-bibliometric approach applicable to other research domains.

Key Research Gaps and Future Directions

Identified research gaps present substantial opportunities: (1) Longitudinal investigation examining sustained ABC effectiveness and implementation sustainability; (2) Comparative international research addressing geographic concentration and contextual contingencies; (3) Sectoral expansion toward emerging organizational sectors and novel business models; (4) Technology integration research systematically investigating AI/ML, IoT, blockchain integration pathways; (5) SME-specific research addressing distinctive implementation challenges and contextual requirements.

ABC's Future Trajectory

ABC will likely experience: (1) Methodological evolution through TDABC expansion, hybrid system integration, and technology enablement; (2) Technology integration with artificial intelligence, real-time monitoring, and advanced analytics; (3) Sustainability emphasis expanding scope beyond financial cost management; (4) Geographic expansion to emerging markets and developing nations; (5) Sectoral diversification into technology services, platform economies, and emerging business models.

Concluding Remarks

ABC's continued relevance depends critically upon: (1) sustained innovative research advancing theoretical understanding, (2) interdisciplinary collaboration integrating diverse academic perspectives, (3) context-sensitive implementation practice acknowledging contingency, and (4) commitment to evidence-based guidance translating research into actionable recommendations.

When these conditions are met—combining theoretical sophistication with practical implementation wisdom, technological innovation with organizational readiness, and methodological rigor with pragmatic relevance—ABC will continue serving as cornerstone of cost management excellence, enabling organizations to achieve superior cost transparency, operational efficiency, strategic agility, and sustainable value creation across evolving competitive landscapes.

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