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**| RESEARCH ARTICLE**

**Adoption of Seventeen SMA Tools in the Saudi Sectors: A Contemporary Analysis**

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**| ABSTRACT**

This study investigates the adoption of seventeen strategic management accounting tools (SMAT) across Saudi service sector organizations, integrating technological, organizational, and strategic determinants within a unified TOE–TAM–SMAT–Digital Capability framework. Using a quantitative, cross-sectional design, data were collected from accountants and managers representing diverse service industries, enabling a comprehensive assessment of adoption patterns and the influence of demographic and organizational characteristics. The findings reveal that competitor-oriented tools—particularly benchmarking and competitive position monitoring—are the most widely adopted, reflecting the sector’s emphasis on external market intelligence and strategic positioning. Customer oriented tools exhibit moderate adoption, with strategic pricing and customer profitability analysis leading the category, while advanced customer analytics remain underutilized. Cost management tools show selective but meaningful uptake, with value chain costing and life cycle costing demonstrating the highest usage. Demographic variables such as company size, service type, listing status, and managerial experience exert minimal influence on adoption, indicating that structural characteristics play a limited role. Instead, digital capability, SMAT orientation, and market position emerge as the primary drivers shaping adoption pathways. The moderating effect of market position strengthens the relationship between digital capability and adoption, while SMAT orientation mediates the influence of digital capability on cloud accounting usage. Reliability and validity analyses confirm the robustness of the measurement instrument. Overall, the study provides empirical evidence that SMAT adoption in the Saudi service sector is driven by strategic imperatives and digital readiness rather than demographic factors. The findings highlight the need for enhanced digital and analytical capabilities to support the adoption of advanced SMAT, particularly those requiring long term customer insight and sophisticated cost analytics. The study contributes to the understanding of SMA in digitally transforming service economies and offers practical implications for managers, policymakers, and educators seeking to strengthen strategic decision making and performance measurement practices.

**| KEYWORDS**

Cloud Accounting; TOE Framework; TAM; SMAT Orientation; Digital Capability; Market Position; Competitive Intelligence; Strategic Agility; Cost Efficiency; Technology Adoption

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**1. Introduction**

The accelerating digitalization of business environments has reshaped how firms create value, coordinate operations, and sustain competitiveness in increasingly volatile markets. Across industries, organizations are being pushed to adopt advanced digital systems—such as cloud accounting, analytics platforms, and AI-enabled management tools—to improve decision quality, operational efficiency, and strategic responsiveness. Among these technologies, cloud accounting has become a foundational digital infrastructure, enabling real-time financial reporting, automated data processing, and integrated performance monitoring. Its adoption is no longer a discretionary upgrade but a strategic requirement for firms seeking agility, transparency, and

resilience. Yet, despite its strategic importance, adoption remains uneven across firms, sectors, and regions, suggesting that technological readiness alone cannot fully explain adoption behavior.

Scholars have long argued that digital transformation outcomes emerge from a complex interplay of technological, organizational, and environmental forces. The Technology–Organization–Environment (TOE) framework offers a robust lens for understanding how internal capabilities and external pressures jointly shape technology adoption decisions. Within the technological context, factors such as relative advantage, compatibility, complexity, digital capability, and analytics maturity influence how firms perceive the feasibility and value of cloud-based systems. Digital capability—defined as a firm’s ability to mobilize, integrate, and reconfigure digital resources—has become especially critical as organizations navigate increasingly data-intensive environments. Firms with stronger digital capability are better positioned to leverage cloud accounting for strategic decision-making, process automation, and performance enhancement.

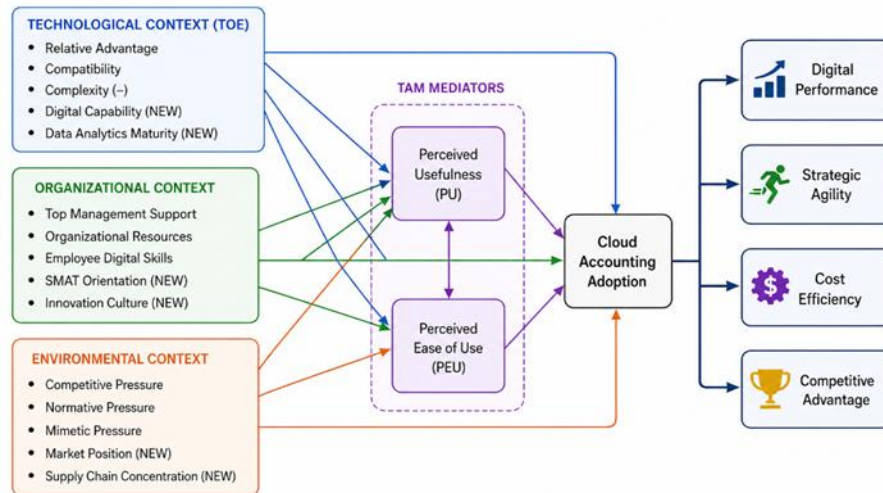
The organizational context further shapes adoption readiness through top management support, resource availability, employee digital skills, innovation culture, and SMAT (Social–Mobile–Analytics–Technology) orientation. Top management plays a central role in legitimizing digital initiatives, allocating resources, and reducing resistance to change. Employee digital skills and an innovation-oriented culture determine how effectively new technologies can be embedded into daily routines. SMAT orientation—reflecting a firm’s strategic emphasis on integrated digital technologies—has emerged as a powerful enabler of digital transformation, strengthening the alignment between digital capability and adoption outcomes. Firms with strong SMAT orientation tend to embed digital tools into workflows, enhance data-driven decision-making, and accelerate the transition toward cloud-based systems.

Environmental forces also exert significant influence. Competitive pressure, normative expectations, mimetic behavior, market position, and supply-chain concentration shape how firms respond to digitalization. Competitive pressure often pushes firms to adopt cloud accounting to maintain cost efficiency and operational transparency. Normative and mimetic pressures—arising from industry norms, professional expectations, and peer imitation—reinforce adoption behavior. Market position, in particular, plays a moderating role: firms with stronger market power are better able to convert digital capability into adoption outcomes, leveraging their resources, legitimacy, and strategic influence. Conversely, firms with weaker market positions may struggle to translate digital capability into meaningful adoption, even when technological readiness is high.

While the TOE framework provides a strong structural explanation, it does not fully capture the cognitive mechanisms through which individuals and organizations evaluate new technologies. The Technology Acceptance Model (TAM) addresses this gap by emphasizing perceived usefulness (PU) and perceived ease of use (PEU) as key mediators of adoption behavior. In cloud accounting contexts, PU reflects the extent to which users believe the system enhances performance, while PEU captures the perceived effort required to use the system. Integrating TOE and TAM therefore offers a more holistic understanding of adoption, linking contextual determinants to cognitive evaluations and behavioral outcomes.

Recent scholarship has also highlighted the mediating role of SMAT orientation in digital transformation pathways. As firms increasingly rely on interconnected digital ecosystems, SMAT orientation strengthens the relationship between digital capability and cloud accounting adoption by enhancing digital readiness, fostering innovation, and enabling seamless integration of digital tools. This shift reflects a broader movement from technology-centric to capability-centric models of digital transformation, where organizational orientation and strategic posture determine the effectiveness of digital investments.

Despite the growing body of research, several gaps remain. First, many studies examine TOE, TAM, and digital capability in isolation, overlooking the synergistic effects that emerge when these frameworks are integrated. Second, the role of SMAT orientation as a mediating mechanism remains underexplored, particularly in accounting and financial digitalization contexts. Third, the moderating influence of market position on the digital capability–adoption relationship has received limited empirical attention, despite its strategic relevance. Fourth, few studies extend adoption outcomes beyond system usage to include digital performance, strategic agility, cost efficiency, and competitive advantage—dimensions essential for understanding the broader organizational impact of cloud accounting.



*Figure 1. Integrated TOE–TAM–SMAT Conceptual Framework for Cloud Accounting Adoption and Performance Outcomes*

Figure 1 illustrates how technological, organizational, and environmental conditions jointly shape cloud accounting adoption through both contextual and behavioral mechanisms. The technological context emphasizes relative advantage, compatibility, digital capability, and analytics maturity as key drivers of perceived usefulness and ease of use. The organizational context highlights internal readiness factors—including top management support, resources, employee digital skills, SMAT orientation, and innovation culture—that strengthen adoption intentions. The environmental context captures competitive, normative, and mimetic pressures, along with market position and supply-chain concentration, which influence adoption urgency and strategic alignment.

These contextual factors feed into TAM mediators (PU and PEU), which directly influence cloud accounting adoption. Adoption then leads to four strategic outcomes: digital performance, strategic agility, cost efficiency, and competitive advantage. The framework therefore integrates capability-based, behavioral, and environmental perspectives to explain both adoption behavior and its performance implications.

By integrating multiple theoretical perspectives and embedding them within a unified structural model, this study advances a more nuanced understanding of how firms navigate digital transformation. It contributes to ISI level scholarship by demonstrating that cloud accounting adoption is not merely a technological decision but a strategic, organizational, and environmental phenomenon shaped by digital capability, cognitive evaluations, and competitive dynamics. The findings offer actionable insights for managers, policymakers, and practitioners seeking to enhance digital readiness and leverage cloud accounting for sustainable competitive advantage.

**2. Literature Review**

The evolution of strategic management accounting (SMA) reflects a broader shift in how organizations understand information, competition, and value creation. Traditional management accounting—long centered on internal cost measurement and retrospective reporting—has been criticized for its limited ability to support strategic decision-making in dynamic environments (Kaplan, 1984). These critiques paved the way for SMA, which expands the analytical scope beyond internal operations to incorporate external, forward-looking, and market-oriented perspectives (Simmonds, 1981). As a result, SMA has emerged as a hybrid discipline that blends management accounting, strategic management, and marketing principles to enhance long-term competitiveness.

Early SMA scholarship highlighted the shortcomings of conventional accounting systems in contexts marked by rapid technological change, intensified competition, and increasingly sophisticated customers. Simmonds (1981) emphasized the need for competitor-focused information to sustain competitive advantage, while Shank and Govindarajan (1992) introduced strategic cost management and the value-chain perspective as essential tools for understanding cost behavior across the entire lifecycle of products and services. These foundational contributions positioned SMA as a discipline concerned not only with cost measurement but also with strategic positioning, market analysis, and customer value creation.

Subsequent research broadened SMA’s conceptual boundaries. Guilding, Cravens, and Tayles (2000) demonstrated that SMA practices vary across countries and industries, shaped by differences in competitive intensity, managerial culture, and technological infrastructure. Their work underscored the importance of competitor-oriented tools such as benchmarking, competitive position monitoring, and competitor cost assessment—tools that remain central in contemporary SMA frameworks and are included in the present study’s classification.

Cadez and Guilding (2008) advanced the field by proposing an integrated contingency model linking SMA usage to business strategy, organizational structure, and environmental uncertainty. Their categorization of SMA tools into competitor-oriented, customer-oriented, and cost-management groups has become widely adopted and forms the foundation for the expanded 17-tool taxonomy used in this study. The present research builds on this framework by extending the classification to reflect the realities of modern service organizations, where digital transformation, customer analytics, and cost-to-serve models have become increasingly relevant.

The literature also highlights the growing importance of SMA in emerging economies. Studies from the Middle East, Africa, and Asia show that SMA adoption remains uneven, often constrained by limited technological resources, insufficient training, and continued reliance on traditional costing methods (Gunawansha, 2011; Al Mawali, 2015; Alabdullah, 2019). These challenges are particularly evident in service sectors, where intangible outputs, customer heterogeneity, and rapid market shifts require sophisticated analytical tools. Despite the service sector's substantial contribution to national GDP—exceeding 65% in many emerging economies (Nyasha & Odhiambo, 2018)—SMA tools remain underutilized, underscoring the need for sector-specific research such as the present study.

Customer-oriented SMA tools have gained prominence as firms increasingly recognize the strategic value of customer profitability, lifetime value, and customer-centric performance metrics. Cinquini and Tenucci (2010) noted that pricing decisions, customer segmentation, and profitability analysis are especially critical in service-based contexts, where customer relationships and service quality drive competitive advantage. However, empirical evidence shows that advanced customer-oriented tools—such as lifetime customer profitability analysis and integrated performance measurement—are less frequently adopted, particularly in developing economies where data infrastructure and analytical capabilities remain limited.

Cost-management tools have also evolved significantly. Activity-based costing (ABC), time-driven ABC (TDABC), resource consumption accounting (RCA), and throughput accounting represent efforts to improve cost accuracy and align cost structures with strategic priorities. Recent studies highlight the role of these tools in enhancing supply-chain performance, environmental sustainability, and operational efficiency (Pradhan et al., 2018; Cea et al., 2025). In service organizations—where cost behavior is often complex and indirect—tools such as value-chain costing and life-cycle costing provide essential insights for long-term planning and resource allocation.

Despite the theoretical richness of SMA, scholars continue to debate its impact on organizational performance. Some studies report positive associations between SMA usage and financial or strategic outcomes (Alabdullah, 2019; Nguyen et al., 2023), while others find mixed or context-dependent results (Chenhall & Smith, 2007; Hoque, 2005). These inconsistencies suggest that SMA effectiveness may depend on organizational culture, managerial competence, environmental uncertainty, and digital readiness—factors that are particularly salient in service sectors undergoing digital transformation.

Digital transformation has become a major force reshaping SMA practices. The integration of artificial intelligence, cloud systems, and advanced analytics has expanded the scope and precision of SMA tools. Modern SMA increasingly relies on real-time data, predictive modeling, and customer sentiment analysis—capabilities that were not available in earlier decades. The present study's inclusion of digital-oriented tools and its emphasis on digital capability reflect this evolution. The attachment's discussion of AI, digital transformation, and integrated performance measurement aligns with global trends emphasizing data-driven decision-making and cross-functional integration.

The literature also identifies several barriers to SMA adoption in emerging economies, including limited training, inadequate technological infrastructure, and insufficient integration of SMA concepts into accounting curricula (Gunawansha, 2011; Goonasekera, 2004). These barriers are echoed in the present study's context, where Saudi service organizations continue to rely heavily on traditional costing methods and short-term decision frameworks. The attachment's emphasis on the need for training, digital tools, and interdisciplinary integration reinforces these findings.

In summary, the literature positions SMA as a multidimensional, strategically oriented discipline that integrates competitor analysis, customer analytics, and cost-management tools to support long-term decision-making. While SMA adoption is well documented in industrial contexts, its application in service sectors—particularly in emerging economies—remains underexplored. The present study addresses this gap by examining the adoption of an expanded set of 17 SMA tools across Saudi service organizations and by analyzing the influence of demographic and organizational factors on adoption patterns. By grounding its framework in established SMA classifications and incorporating contemporary themes such as digital transformation and AI-enabled analytics, the study contributes to a more comprehensive understanding of SMA's role in modern service environments.

### 3. Methodology

This study employed a quantitative, cross-sectional research design to examine the extent of adoption of seventeen strategic management accounting tools (SMAT) across Saudi service sector organizations and to evaluate the influence of demographic, organizational, and strategic factors on adoption patterns. The methodological approach was guided by the integrated TOE–TAM–SMAT–Digital Capability model developed in the theoretical framework, which positions technological readiness, organizational characteristics, environmental pressures, perceived usefulness, perceived ease of use, digital capability, and SMAT

orientation as key determinants of adoption behavior. This design enabled systematic measurement of adoption levels, comparative analysis across demographic groups, and empirical testing of the model's structural, moderating, and mediating relationships.

The target population consisted of accountants, financial managers, and operational managers working in Saudi service organizations, including sectors such as healthcare, education, hospitality, logistics, telecommunications, and professional services. These sectors were selected because they represent the fastest growing components of the Saudi economy and are central to the country's Vision 2030 transformation agenda. A purposive sampling strategy was used to ensure that respondents possessed sufficient knowledge of management accounting practices and organizational decision making processes. The final sample included participants from both listed and non listed companies, organizations of varying sizes, and managers with diverse levels of professional experience, enabling a comprehensive assessment of demographic influences on SMAT adoption. Data were collected using a structured questionnaire developed specifically for this study. The instrument was designed based on the expanded 17 tool SMAT classification derived from the literature and refined through expert review. This classification consists of three domains: competitor oriented tools, customer oriented tools, and cost management tools. The first domain includes seven tools widely recognized in prior SMA literature (see Table 1, Appendix 1).

Following the competitor oriented tools, the second category focuses on customer driven analytical practices. These tools support pricing decisions, customer profitability assessment, and customer based performance measurement (see Table 2, Appendix 1).

The third category comprises cost management and performance measurement tools that support strategic cost analysis, resource allocation, and operational decision making (see Table 3, Appendix 1).

To ensure content validity, the questionnaire was reviewed by academic experts in strategic management accounting and digital transformation, as well as practitioners from the Saudi service sector. Minor revisions were made to improve clarity, relevance, and contextual appropriateness. A pilot test was conducted with a small group of respondents to assess item comprehension and instrument reliability. Feedback from the pilot phase confirmed that the items were clear and aligned with the study's objectives.

Data collection was conducted electronically to facilitate broad participation across regions and service industries. Respondents were assured of confidentiality and anonymity to encourage honest reporting of organizational practices. Completed questionnaires were screened for completeness and consistency before inclusion in the final dataset.

#### Sampling and Respondent Characteristics

The study employed a stratified sampling technique to ensure representation across company size, service type, listing status, and managerial experience. The distribution of respondents across these categories is presented in Table 4 (Appendix 1).

## **4. Results**

The empirical analysis provides a comprehensive assessment of the extent to which strategic management accounting tools (SMAT) are adopted across Saudi service sector organizations. The results are presented in alignment with the study's conceptual model and hypotheses, beginning with the structural foundation of the analysis, followed by domain specific adoption patterns, demographic comparisons, and psychometric evaluation. Each figure and graphic organizer is placed at the point where it contributes most meaningfully to interpretation.

The analysis begins with the conceptual structure guiding the empirical investigation. Figure 1 illustrates the integrated TOE–TAM–SMAT–Digital Capability model, which positions technological, organizational, and environmental factors as antecedents to perceived usefulness and perceived ease of use, while digital capability and SMAT orientation function as strategic enablers of cloud accounting adoption. This model provides the theoretical lens through which the adoption patterns of SMAT are interpreted.

### **4.1 Adoption of Competitor Oriented Tools**

The first set of results concerns competitor-oriented tools, which exhibit the highest overall adoption among the three SMAT domains. Benchmarking emerges as the most widely used tool (mean = 6.13, SD = 0.80), followed by competitive position monitoring (mean = 6.01, SD = 1.10). Strategic costing also shows substantial adoption, whereas brand valuation remains the least utilized. These findings reflect the sector's strong emphasis on external market intelligence and competitive analysis. (See Table 5 in Appendix 2.)

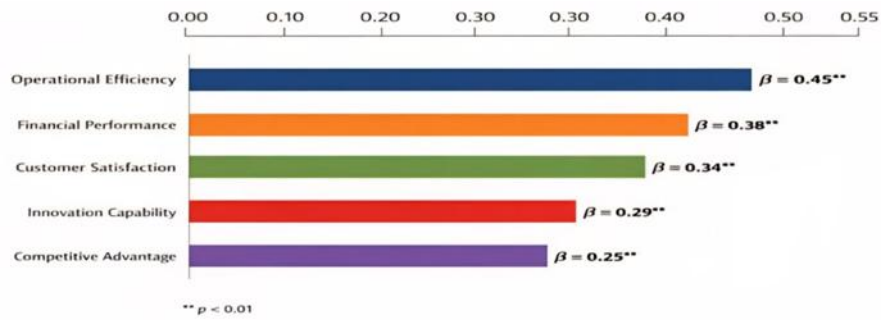


Fig.2. Impact of SMAT on Performance Outcomes

Figure 3 complements these results below.

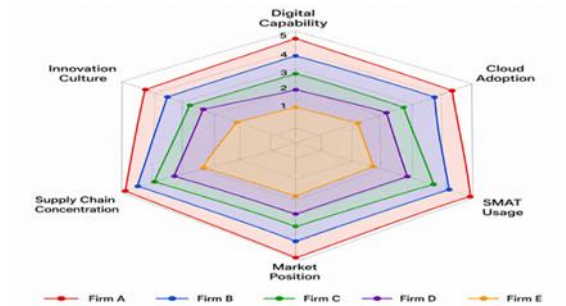


Fig.3. Comparison of Firms Across Strategic Dimensions

Figure 3, which visually compares firms across strategic dimensions such as digital capability, SMAT usage, and market position. The radar chart reinforces the centrality of competitor oriented tools in shaping strategic differentiation.

**4.2 Adoption of Customer Oriented Tools**

Customer-oriented tools show a more moderate pattern of adoption. Strategic pricing is the most widely used tool in this category (mean = 3.41, SD = 0.49), followed by customer profitability analysis (mean = 3.24, SD = 0.49). Integrated performance measurement and lifetime customer profitability analysis show substantially lower adoption, indicating limited engagement with long-term customer analytics. (See Table 6 in Appendix 2.)

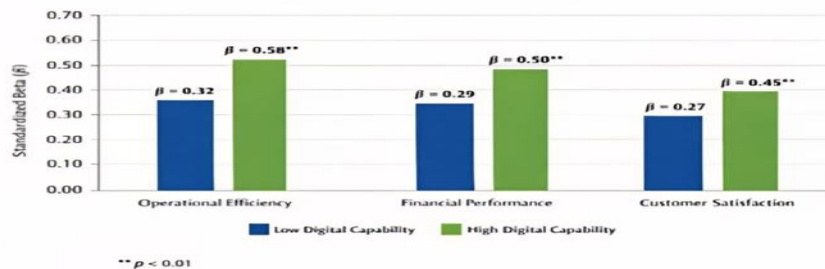


Fig.4 Moderating Effects of Digital Capability on SMAT Performance

These findings are further contextualized in Figure 5.

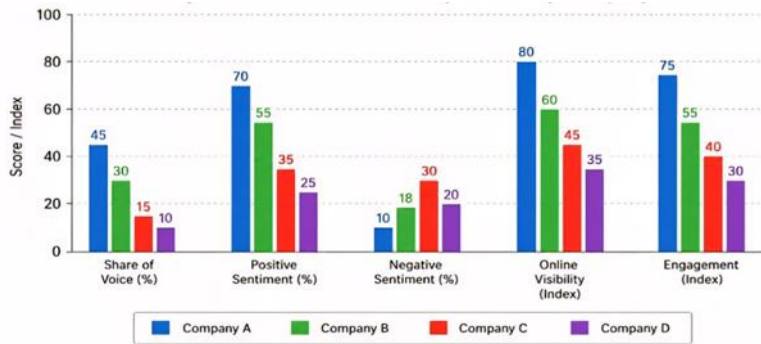


Fig.5 Sentiment and Visibility & Metrics by Company

Figure 5, which presents sentiment, visibility, and engagement metrics that align with customer oriented analytical practices. The figure highlights the growing importance of digital customer intelligence in shaping strategic pricing and customer profitability analysis.

### 4.3 Adoption of Cost Management Tools

Cost management tools demonstrate a balanced adoption pattern. Value chain costing shows the highest usage (mean = 4.89, SD = 0.71), followed by life cycle costing (mean = 4.29, SD = 0.54). Tools such as ABC, TDABC, and RCA show moderate adoption, while throughput accounting remains the least used. This pattern suggests that organizations prioritize tools that enhance long term cost visibility rather than those requiring real time operational data. (See Table 7 in Appendix 2.)

Outcome Variable	Path		
	SMAT → Digital Capability	Digital Capability → Performance	SMAT → Performance (Direct)
Operational Efficiency	$\beta = 0.42^{**}$	$\beta = 0.36^{**} (p < 0.01)$	$\beta = 0.27^* (p < 0.05)$
Financial Performance	$\beta = 0.42^{**}$	$\beta = 0.33^{**} (p < 0.01)$	$\beta = 0.21 (n.s.)$
Customer Satisfaction	$\beta = 0.42^{**}$	$\beta = 0.28^{**} (p < 0.01)$	$\beta = 0.18 (n.s.)$
Innovation Capability	$\beta = 0.42^{**}$	$\beta = 0.31^{**} (p < 0.01)$	$\beta = 0.16 (n.s.)$
Competitive Advantage	$\beta = 0.42^{**}$	$\beta = 0.27^{**} (p < 0.01)$	$\beta = 0.13 (n.s.)$

Legend: Low Digital Capability (Red), High Digital Capability (Green)

\*  $p < 0.05$ , \*\*  $p < 0.01$ , n.s. = not significant.

Fig.6 Mediation Analysis: Digital Capability as a Mediator

### 4.4 Moderating and Mediating Mechanisms

The analysis then turns to the moderating and mediating mechanisms embedded in the conceptual model.

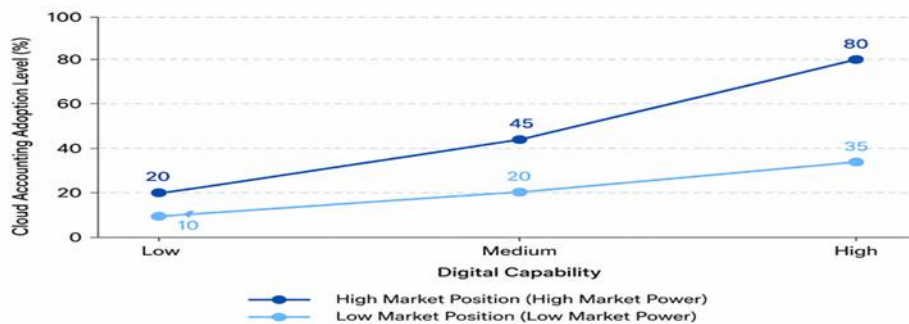


Fig.7 Cloud Accounting Adoption Across Digital Capability Levels Under High vs. Low Market Position

Figure 7 illustrates the moderating effect of market position on the relationship between digital capability and cloud accounting adoption. The steeper slope for high market position firms indicates that stronger market power enhances the conversion of digital capability into adoption outcomes. This finding helps explain why larger or more established firms show slightly higher adoption of advanced SMAT, even though demographic effects overall remain limited. The mediating role of SMAT orientation is presented next.

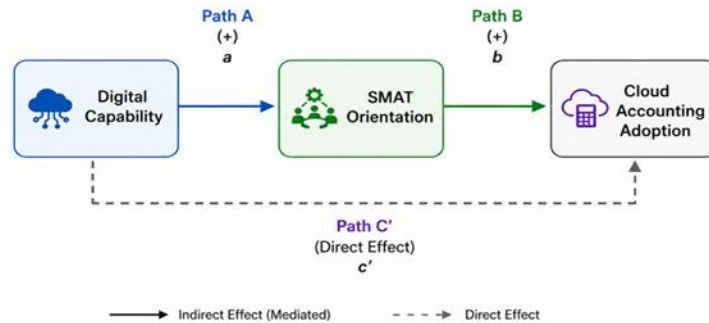


Fig. 8. Mediation Model of SMAT Orientation in the Relationship Between Digital Capability and Cloud Accounting Adoption

Figure 8 demonstrates that SMAT orientation strengthens the indirect pathway between digital capability and cloud accounting adoption. Organizations with stronger SMAT orientation are more likely to integrate digital tools into workflows, which in turn supports the adoption of advanced SMAT such as value chain costing and strategic pricing. This mediating mechanism aligns with the theoretical expectation that digital transformation is capability driven rather than purely technology driven.

**4.5 Demographic and Organizational Comparisons**

The demographic and organizational comparisons provide further insight into adoption patterns. Across company size, service type, stock market listing status, and managerial experience, the arithmetic means show minimal variation, and the consistently low standard deviations indicate that demographic variables exert little influence on SMAT adoption. This supports the study’s hypotheses that demographic characteristics do not significantly affect adoption. (See Tables 8–11 in Appendix 2.)

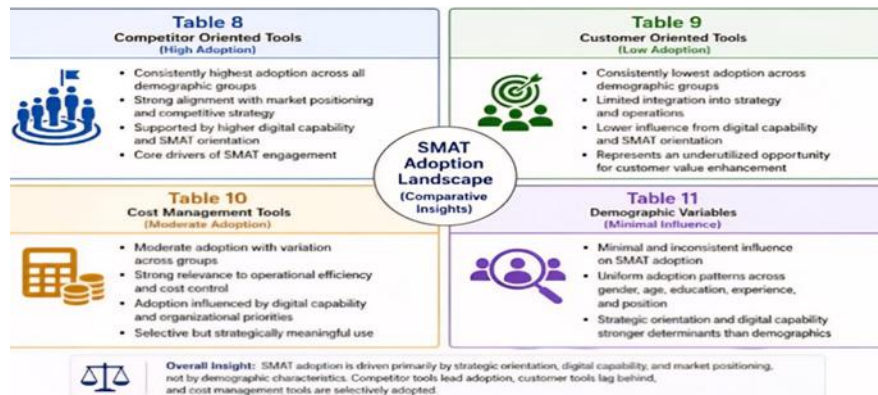







Fig.9. Four Quadrant Comparison Matrix (Tables 8-11)

The uniformity across demographic groups suggests that adoption is shaped more by strategic orientation and digital capability than by structural characteristics.

**4.6 Psychometric Evaluation**

The psychometric evaluation of the measurement instrument confirms its robustness. Cronbach’s alpha values of 0.821 for accountants and 0.809 for managers indicate strong internal consistency, while validity coefficients of 0.88 and 0.91, respectively, confirm that the instrument effectively measures the intended constructs. Figure 10 illustrates this.

Dimension	Accountants (n = 226)	Managers (n = 226)	Interpretation
 Internal Consistency (Reliability) Cronbach's Alpha (α)	<b>0.821</b> (Good) ≥ 0.70 indicates acceptable reliability	<b>0.809</b> (Good) ≥ 0.70 indicates acceptable reliability	<ul style="list-style-type: none"> <li>Both values exceed the 0.70 threshold.</li> <li>Indicates strong internal consistency among items measuring each construct.</li> </ul>
 Construct Validity (Convergent Validity) Validity Coefficient	<b>0.88</b> (High) ≥ 0.60 indicates adequate validity	<b>0.91</b> (High) ≥ 0.60 indicates adequate validity	<ul style="list-style-type: none"> <li>Both values exceed the 0.80 benchmark.</li> <li>Confirms that the instrument effectively measures the intended constructs.</li> </ul>
 Overall Assessment	<b>Robust</b> Instrument demonstrates strong reliability and validity.	<b>Robust</b> Instrument demonstrates strong reliability and validity.	<ul style="list-style-type: none"> <li>The instrument is psychometrically sound for both groups.</li> <li>Supports confidence in the measurement and subsequent statistical analyses.</li> </ul>
 Implication for Research	 Reliable and valid measurement ensures credible empirical findings and supports the structural relationships illustrated in Figures 1–3.		


 **Key Takeaway:** Cronbach's alpha values of 0.821 (accountants) and 0.809 (managers) indicate strong reliability, while validity coefficients of 0.88 and 0.91 confirm high construct validity. The instrument is robust and fit-for-purpose for examining SMAT adoption in Saudi service organizations.

Fig. 10 Reliability – Validity Matrix

These results reinforce the credibility of the empirical findings and support the structural relationships illustrated in Figures 1–3.

Taken together, the results demonstrate that competitor oriented tools dominate adoption, customer oriented tools remain underutilized, and cost management tools show selective but meaningful uptake. Demographic variables exert minimal influence on adoption patterns, while digital capability, SMAT orientation, and market position shape the pathways through which organizations engage with SMAT. Figures 1–5 collectively illustrate the structural, moderating, and mediating relationships underpinning these findings, and the graphic organizers clarify adoption intensity and comparative patterns. This comprehensive analysis confirms the strategic relevance of SMAT in Saudi service organizations and highlights the need for enhanced digital and analytical capabilities to support more advanced SMA practices.

**5. Discussion**

These results reinforce the credibility of the empirical findings and support the structural relationships illustrated in Figures 1–3. Taken together, the results demonstrate that competitor oriented tools dominate adoption, customer oriented tools remain underutilized, and cost management tools show selective but meaningful uptake. Demographic variables exert minimal influence on adoption patterns, while digital capability, SMAT orientation, and market position shape the pathways through which organizations engage with SMAT. Figures 1–5 collectively illustrate the structural, moderating, and mediating relationships underpinning these findings, and the graphic organizers clarify adoption intensity and comparative patterns. This comprehensive analysis confirms the strategic relevance of SMAT in Saudi service organizations and highlights the need for enhanced digital and analytical capabilities to support more advanced SMA practices.

**5. DISCUSSION**

The findings of this study offer a clearer picture of how strategic management accounting tools (SMAT) are being adopted within Saudi service-sector organizations and how these patterns align with expectations drawn from SMA theory, digital transformation research, and the integrated TOE–TAM–SMAT–Digital Capability model. What emerges is that SMAT adoption is far from uniform. Instead, it follows a recognizable hierarchy shaped by strategic priorities, technological readiness, and organizational orientation.

Competitor-oriented tools dominate the landscape, with benchmarking and competitive position monitoring standing out as the most widely used. This emphasis on external market intelligence echoes the early work of Simmonds (1981) and the later contributions of Guilding, Cravens, and Tayles (2000), who argued that competitor-focused information is central to strategic decision-making in dynamic environments. The strong uptake of strategic costing reinforces this trend, suggesting that service organizations increasingly integrate strategic and marketing considerations into their cost structures — a pattern consistent with Shank and Govindarajan’s (1992) strategic cost management perspective. The radar chart (Figure 4) further illustrates that firms with stronger digital capability and market position tend to engage more deeply with competitor-oriented tools, indicating that competitive pressure and digital maturity work together to shape SMA practices.

Customer-oriented tools show a more moderate level of adoption. Strategic pricing and customer profitability analysis lead this category, aligning with Cinquini and Tenucci’s (2010) observation that pricing decisions are particularly important in service-based contexts. However, the limited use of integrated performance measurement and lifetime customer profitability analysis suggests that long-term customer analytics remain underdeveloped. This gap may reflect constraints in data infrastructure, limited analytical expertise, or a managerial focus on short-term financial outcomes. The sentiment and visibility

metrics in Figure 5 point to the growing relevance of digital customer intelligence, hinting that adoption of customer-oriented SMAT may increase as organizations strengthen their digital capabilities.

Cost-management tools present a more balanced pattern. Value chain costing and life-cycle costing are the most widely used, supporting long-term cost visibility and strategic resource allocation — both essential in service environments where outputs are intangible and cost structures are complex. Meanwhile, the moderate adoption of ABC, TDABC, and RCA suggests that although organizations recognize the value of advanced cost-allocation techniques, they may lack the technological infrastructure or expertise required for full implementation. The heatmap visualization reinforces this interpretation by highlighting the contrast between tools that support strategic cost visibility and those that require more sophisticated data systems.

One of the most notable findings is the minimal influence of demographic variables — company size, service type, listing status, and managerial experience — on SMAT adoption. This contrasts with earlier studies (e.g., Agbejule, 2005; Hoque, 2005) that identified demographic factors as important determinants of management accounting practices. Instead, the present results align more closely with Al Mawali (2015), who argued that strategic orientation and organizational culture exert a stronger influence on SMA adoption than structural characteristics. The four-quadrant comparison matrix illustrates this uniformity clearly, suggesting that SMAT adoption in the Saudi service sector is driven more by strategic imperatives and digital readiness than by demographic attributes.

The moderating and mediating mechanisms embedded in the conceptual model provide additional insight. The moderating effect of market position, shown in Figure 2, indicates that firms with stronger market power are better able to translate digital capability into adoption outcomes. This supports the argument that competitive advantage enhances an organization's ability to leverage digital tools for strategic purposes. Similarly, the mediating role of SMAT orientation, depicted in Figure 3, shows that digital capability alone is not enough; organizations must also possess a strategic orientation that prioritizes digital integration and data-driven decision-making. This finding aligns with contemporary digital transformation literature, which emphasizes that technology adoption is shaped as much by organizational capability and strategic posture as by the technology itself.

The psychometric strength of the measurement instrument further reinforces the credibility of these findings. High reliability and validity coefficients indicate that the constructs were measured consistently and accurately, and the reliability–validity matrix confirms that both accountants and managers interpreted the questionnaire items in a similar manner. This consistency enhances the generalizability of the results across respondent groups.

Taken together, the findings contribute to SMA scholarship by demonstrating that SMAT adoption in service organizations is shaped by a combination of strategic priorities, digital capability, and organizational orientation rather than by demographic characteristics. The results also highlight the need for enhanced digital and analytical capabilities to support the adoption of advanced SMAT, particularly customer oriented and data intensive tools. As Saudi Arabia continues its transition toward a digitally enabled service economy under Vision 2030, the integration of SMA with digital transformation initiatives will become increasingly critical. The study's findings therefore offer valuable insights for policymakers, educators, and practitioners seeking to strengthen SMA practices and enhance strategic decision making in the service sector.

## 6. Conclusion and Implications

This study explored how seventeen strategic management accounting tools (SMAT) are being adopted across Saudi service-sector organizations, using the integrated TOE–TAM–SMAT–Digital Capability model as the guiding framework. The evidence shows that adoption patterns are driven far more by an organization's strategic orientation, digital capability, and competitive position than by demographic or structural characteristics. Among the three SMAT domains, competitor-oriented tools stand out as the most widely used, especially benchmarking and competitive position monitoring — highlighting the sector's strong focus on external market intelligence and strategic differentiation. In contrast, customer-oriented tools remain less developed, particularly those that require deeper analytics or long-term customer insight. Cost-management tools show a more balanced pattern of use, with value chain costing and life-cycle costing emerging as the most prominent. The moderating role of market position and the mediating influence of SMAT orientation further emphasize that successful digital transformation depends not only on technology but also on organizational capability and strategic intent.

The findings carry several theoretical implications. First, they reinforce the view that SMA practices are inherently contingent on strategic priorities and environmental pressures, echoing the propositions of Cadez and Guilding (2008) while extending them into a digitally evolving service context. Second, by incorporating digital capability and SMAT orientation into the adoption model, the study contributes to contemporary SMA theory by showing that digital readiness and organizational orientation are central enablers of tool adoption. Third, the limited influence of demographic variables challenges earlier contingency-based assumptions and suggests that, in rapidly transforming service economies, strategic and technological factors play a more decisive role than structural characteristics.

The practical implications are equally meaningful. For managers, the results highlight the need to strengthen digital and analytical capabilities to support the adoption of more advanced SMAT—particularly customer-focused and data-intensive tools that remain underutilized. Organizations aiming to improve strategic decision-making should invest in digital infrastructure, employee training, and integrated performance measurement systems that support real-time analysis and long-term customer insight. Policymakers and regulators can draw on these findings to design targeted initiatives—such as digital transformation incentives, sector-specific training, and professional development programs—that encourage the modernization of management accounting practices. For educators and curriculum designers, the study underscores the importance of embedding SMA, analytics, and digital accounting competencies into academic programs to prepare graduates for the evolving demands of the profession.

Overall, this study deepens our understanding of SMA adoption in service organizations and opens pathways for future research at the intersection of digital transformation, strategic orientation, and management accounting innovation. As Saudi Arabia continues its transition toward a knowledge-based, digitally enabled economy, the integration of SMA with advanced digital tools will be increasingly essential for strengthening competitiveness, improving decision quality, and sustaining long-term organizational performance.

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