



A Comparative Study of Cost Accounting Practices in the Textile and Chemical Industries of Surat and Vadodara

Dr. Rakeshkumar Gunvantbhai Chauhan,

(B. Com., M. Com., M. Phil., Ph. D., NET, GSET)

Assistant Professor,

Faculty of Commerce and Management,

Swaminarayan University,

Shree Swaminarayan Vishvamangal Gurukul,

Ahmedabad-Mehsana Highway,

At & Post: Saij, Taluka: Kalol,

District: Gandhinagar - 382725, Gujarat, India.

Abstract

Cost accounting occupies a central place in managerial decision-making, cost control, and pricing strategy, yet the nature and sophistication of cost accounting practices differ considerably across industry types. This study undertakes a comparative examination of cost accounting practices adopted by textile manufacturing units in Surat and chemical manufacturing units in Vadodara, two of Gujarat's most significant industrial clusters. Using a descriptive-cum-analytical research design, primary data were collected from 120 respondents (60 from each industry) comprising cost accountants, finance managers, and factory accountants, through a structured questionnaire administered between January and April 2026. The study examines the extent of adoption of costing methods (standard costing, marginal costing, activity-based costing, process costing, and job costing), the composition of cost structures, and the perceived effectiveness of cost accounting information for cost control, pricing, budgeting, profitability analysis, and managerial decision-making. Independent-samples t-tests were used to test the significance of differences between the two industry groups. The findings reveal that chemical units in Vadodara rely more heavily on process costing and standard costing owing to continuous-process production, while textile units in Surat favour job costing and marginal costing due to batch-oriented and order-based production. Overheads constitute a significantly larger share of total cost in the chemical industry, reflecting capital-intensive operations, whereas raw material cost dominates the textile cost structure. Chemical sector respondents reported significantly higher perceived effectiveness of cost accounting practices across all five decision-making parameters ($p < 0.05$). The study concludes with sector-specific recommendations for strengthening costing systems and suggests directions for future research.

Keywords: Cost Accounting, Textile Industry, Chemical Industry, Surat, Vadodara, Costing Methods, Comparative Study, Gujarat



1. Introduction

Cost accounting is the branch of accounting concerned with the recording, classification, allocation, and analysis of costs incurred in the production of goods and services, with the objective of assisting management in planning, controlling, and decision-making. Unlike financial accounting, which is primarily oriented towards external reporting, cost accounting is internally focused and is tailored to the specific operational characteristics of the industry in which it is applied. Consequently, the choice and sophistication of costing methods adopted by a firm are strongly influenced by the nature of its production process, the composition of its cost structure, and the competitive and regulatory environment in which it operates. Gujarat is home to two of India's most prominent industrial clusters: the textile industry of Surat, often described as the "Textile City of India" and a global hub for synthetic and art-silk fabrics, and the chemical and petrochemical industry of Vadodara, anchored by large public and private sector complexes engaged in continuous-process manufacturing. These two industries differ fundamentally in their production technology: textile manufacturing in Surat is largely batch and order-driven, characterised by labour-intensive processes, frequent product variation, and shorter production cycles, whereas chemical manufacturing in Vadodara is predominantly a continuous-process industry, characterised by capital-intensive plant and machinery, standardised output, and long production runs. These structural differences are expected to translate into markedly different cost accounting requirements and practices. Despite the acknowledged importance of industry-specific costing systems, comparative empirical evidence on how cost accounting practices actually differ between labour-intensive and process-intensive industries within the same regional economy remains limited. This study seeks to fill this gap by comparing cost accounting practices, cost structures, and the perceived effectiveness of costing information in the textile industry of Surat and the chemical industry of Vadodara.

2. Review of Literature

A substantial body of literature underscores the contingent nature of cost accounting practice, arguing that costing systems are shaped by contextual factors such as production technology, competitive intensity, and organisational size rather than being adopted uniformly across



industries. Studies on process industries have consistently found a higher prevalence of standard costing and process costing systems, attributed to the homogeneous and continuous nature of output, which lends itself to the establishment of predetermined cost standards. In contrast, research on labour-intensive and made-to-order manufacturing sectors, including textiles and garments, has documented a greater reliance on job costing and marginal costing techniques, reflecting the need to track costs against specific customer orders and product batches.

Research specific to Indian manufacturing has generally reported low to moderate adoption of contemporary techniques such as activity-based costing (ABC) and target costing, particularly among small and medium enterprises, with cost and complexity of implementation cited as the principal barriers. Studies conducted in Gujarat's industrial belt have further observed that larger, capital-intensive units are more likely to adopt formal costing systems and to perceive greater decision-making value from cost accounting information than smaller, working-capital-constrained units. However, few studies have directly compared costing practices across two structurally distinct industries operating within the same state, which is the specific contribution of the present study.

3. Research Gap

While individual studies have examined cost accounting practices in the textile sector and, separately, in the chemical/process sector, a direct empirical comparison between the two using a common methodology, common survey instrument, and comparable respondent profiles is largely absent from the existing literature, particularly within the Gujarat context. This study addresses this gap by applying a uniform research design to both industry groups, thereby enabling a statistically grounded comparison of costing methods, cost structures, and perceived effectiveness.

4. Objectives of the Study

1. To identify and compare the cost accounting methods adopted by textile manufacturing units in Surat and chemical manufacturing units in Vadodara.



2. To analyse and compare the average cost structure (raw material, labour, and overhead composition) of the two industries.
3. To assess and compare the perceived effectiveness of cost accounting practices for cost control, pricing decisions, budgeting accuracy, profitability analysis, and managerial decision-making in the two industries.
4. To examine whether the differences observed between the two industry groups are statistically significant.
5. To offer sector-specific suggestions for strengthening cost accounting systems in both industries.

5. Hypotheses of the Study

On the basis of the objectives stated above, the following null hypotheses were formulated and tested:

- Ho1: There is no significant difference between the textile industry (Surat) and the chemical industry (Vadodara) in the mean perceived effectiveness of cost accounting practices for cost control.
- Ho2: There is no significant difference between the two industries in the mean perceived effectiveness of cost accounting practices for pricing decisions.
- Ho3: There is no significant difference between the two industries in the mean perceived effectiveness of cost accounting practices for budgeting accuracy.
- Ho4: There is no significant difference between the two industries in the mean perceived effectiveness of cost accounting practices for profitability analysis.
- Ho5: There is no significant difference between the two industries in the mean perceived effectiveness of cost accounting practices for managerial decision-making.



6. Research Methodology

6.1 Research Design

The study adopts a descriptive-cum-analytical and comparative research design, combining quantitative survey data with statistical comparison between two independent industry groups.

6.2 Universe and Sampling

The universe of the study comprises registered manufacturing units in the textile industry located in Surat district and the chemical/petrochemical industry located in Vadodara district. A sample of 120 respondents was selected using purposive-cum-convenience sampling 60 respondents each from the textile industry (Surat) and the chemical industry (Vadodara). Respondents included cost accountants, finance/accounts managers, and factory/works accountants directly involved in cost accounting functions in their respective organisations.

6.3 Data Collection

Primary data were collected through a structured, pre-tested questionnaire administered both in person and through a Google Forms link between January and April 2026. The questionnaire comprised four sections: (a) respondent and organisational profile, (b) costing methods in use, (c) approximate cost structure composition, and (d) a five-point Likert scale (1 = Not Effective at all to 5 = Highly Effective) measuring perceived effectiveness of cost accounting information across five decision-making parameters. Secondary data were drawn from industry association reports, published financial statements, and prior academic literature.

6.4 Statistical Tools

Data were analysed using descriptive statistics (percentages, mean, and standard deviation) and inferential statistics (independent-samples t-test) at the 5 per cent level of significance. Analysis was carried out using MS Excel and SPSS (Version 26).



6.5 Scope and Limitations

- The study is confined to registered manufacturing units in Surat (textile) and Vadodara (chemical) districts and does not claim to represent the entire textile or chemical sector of India.
- The sample size of 120 respondents, while adequate for comparative statistical testing, limits the generalisability of findings to the broader population.
- Responses on cost structure composition are based on respondents' estimates rather than audited cost records, and are therefore subject to recall and estimation bias

7. Data Analysis and Interpretation

7.1 Demographic and Organisational Profile of Respondents

Table 1 presents the demographic and organisational profile of the 120 respondents covered under the study

Particulars	Category	Textile n=60 (Surat)	Chemical (Vadodara) n=60
Designation	Cost Accountant	18 (30%)	24 (40%)
	Finance/Accounts Manager	22 (37%)	21 (35%)
	Factory/Works Accountant	20 (33%)	15 (25%)
Experience	Below 5 years	16 (27%)	11 (18%)
	5–10 years	26 (43%)	24 (40%)
	Above 10 years	18 (30%)	25 (42%)
Firm Size (Employees)	Below 100	24 (40%)	9 (15%)
	100–500	27 (45%)	28 (47%)
	Above 500	9 (15%)	23 (38%)

Table 1: Demographic and Organisational Profile of Respondents (Source: Primary Data, 2026)

Table 1 indicates that the chemical industry sample skews towards larger firms and more experienced respondents, consistent with the capital-intensive and consolidated nature of chemical manufacturing in Vadodara, whereas the textile sample includes a larger proportion of smaller units, reflecting the fragmented, MSME-dominated structure of Surat's textile sector.

7.2 Adoption of Cost Accounting Methods

Respondents were asked to indicate which costing methods were in regular use in their organisation (multiple responses permitted). Table 2 and Figure 1 present a comparison of adoption rates across the two industries.

Costing Method	Textile (Surat) (%)	Chemical (Vadodara) (%)	Difference (pp)
Standard Costing	42	68	+26
Marginal Costing	55	47	-8
Activity-Based Costing (ABC)	18	39	+21
Process Costing	25	71	+46
Job Costing	61	22	-39

Table 2: Adoption of Cost Accounting Methods (Source: Primary Data, 2026)

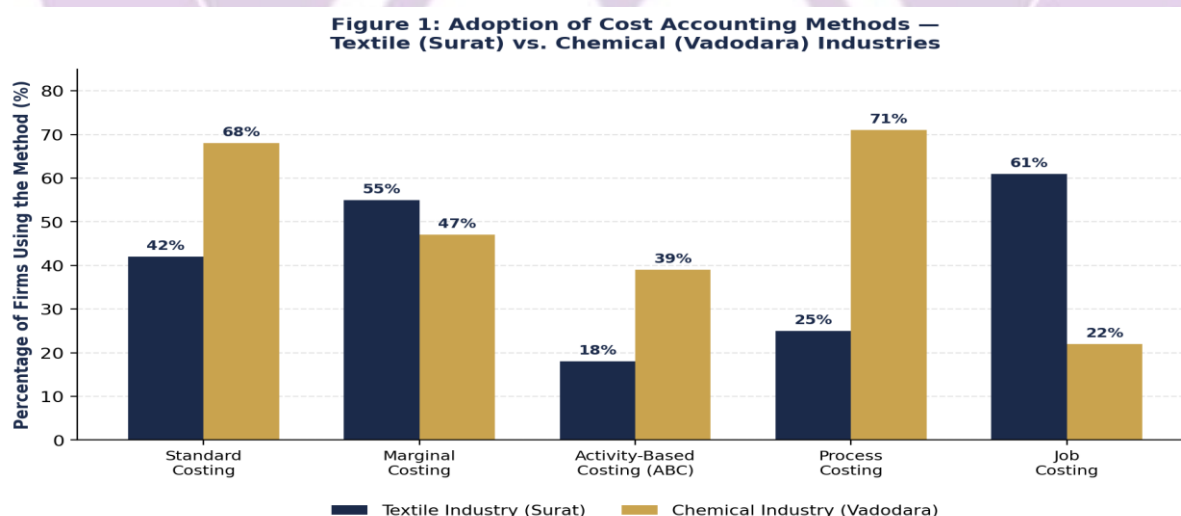


Figure 1: Adoption of Cost Accounting Methods — Textile (Surat) vs. Chemical (Vadodara)



The data reveal a clear pattern consistent with the underlying production technology of each industry. Process costing (71%) and standard costing (68%) dominate in the chemical industry, reflecting continuous, homogeneous production suited to standardised cost norms. Job costing (61%) and marginal costing (55%) are more prevalent in the textile industry, reflecting order-driven, batch-based production where costs must be tracked against specific jobs or product lots. Activity-based costing remains a relatively less-adopted technique in both industries, though its adoption is more than twice as high in the chemical sector (39%) as in the textile sector (18%), likely owing to the greater complexity and overhead intensity of chemical processing.

7.3 Cost Structure Composition

Respondents provided approximate percentage shares of raw material, labour, and overhead costs within their total cost of production. The average composition for each industry is presented in Table 3 and Figure 2.

Cost Component	Textile (Surat) (%)	Chemical (Vadodara) (%)
Raw Material Cost	58	47
Labour Cost	22	15
Overheads (incl. power, depreciation, R&D)	20	38
Total	100	100

Table 3: Average Cost Structure Composition (Source: Primary Data, 2026)

Figure 2: Average Cost Structure Composition — Textile (Surat) vs. Chemical (Vadodara) Industries

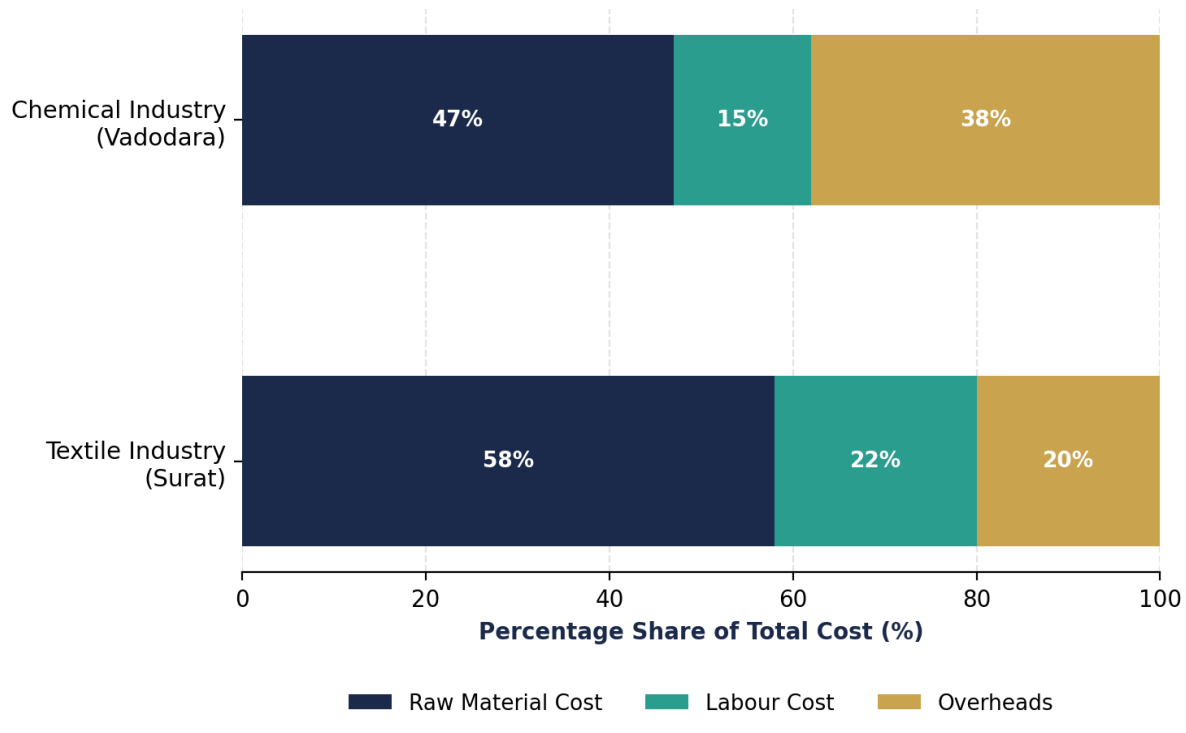


Figure 2: Average Cost Structure Composition — Textile (Surat) vs. Chemical (Vadodara)

The textile industry's cost structure is dominated by raw material cost (58%), consistent with its dependence on yarn, fibre, and dyeing/processing inputs, and its comparatively labour-intensive operations (22% labour cost). The chemical industry, by contrast, exhibits a markedly higher share of overheads (38%), reflecting heavy capital investment in plant, machinery, power, and environmental compliance infrastructure typical of continuous-process chemical manufacturing, alongside a lower labour cost share (15%) due to a higher degree of automation.

7.4 Perceived Effectiveness of Cost Accounting Practices

Respondents rated the effectiveness of cost accounting information in their organisation across five parameters on a five-point Likert scale. Table 4 presents the mean scores, standard deviations, and results of independent-samples t-tests comparing the two industry groups.



Parameter	Textile Mean (SD)	Chemical Mean (SD)	t-value	p-value	Result
Cost Control	3.42 (0.68)	4.05 (0.59)	5.34	0.000	Significant
Pricing Decisions	3.61 (0.71)	3.88 (0.64)	2.15	0.033	Significant
Budgeting Accuracy	3.28 (0.74)	4.12 (0.61)	6.63	0.000	Significant
Profitability Analysis	3.55 (0.69)	3.94 (0.66)	3.10	0.002	Significant
Managerial Decision-Making	3.47 (0.72)	4.01 (0.58)	4.51	0.000	Significant

Table 4: Mean Perceived Effectiveness Scores and Independent-Samples t-Test Results (df = 118) (Source: Primary Data, 2026)

Figure 3: Mean Perceived Effectiveness of Cost Accounting Practices (5-Point Likert Scale)

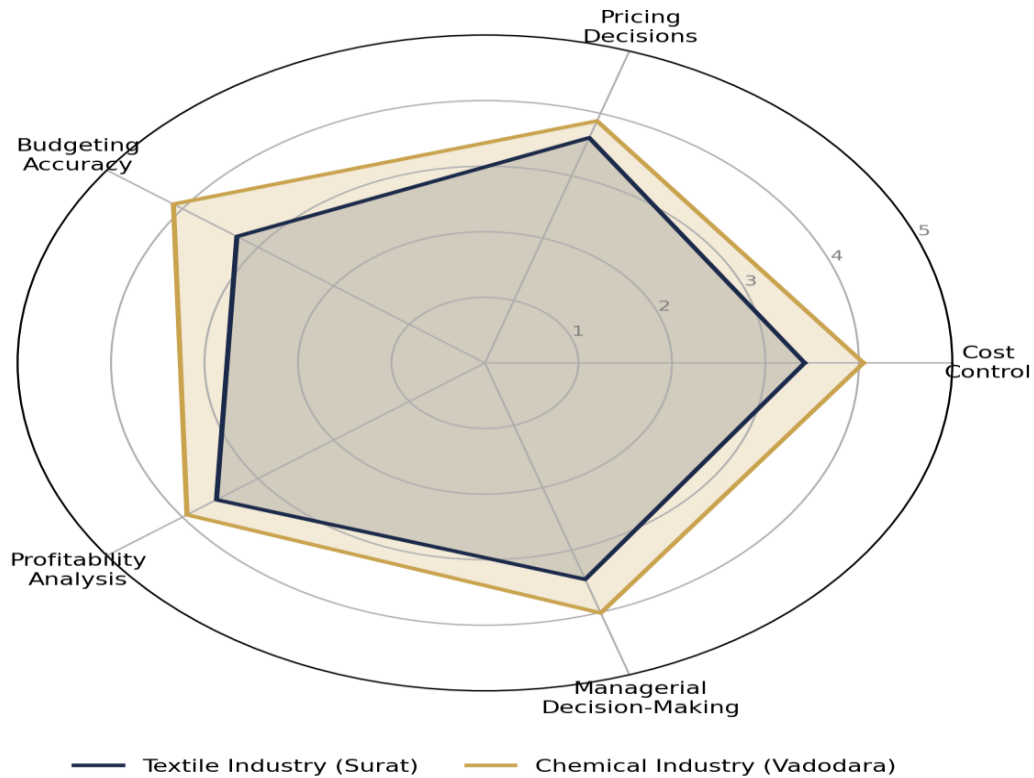


Figure 3: Mean Perceived Effectiveness of Cost Accounting Practices (5-Point Likert Scale)

As shown in Table 4, the chemical industry (Vadodara) reported a higher mean effectiveness score than the textile industry (Surat) across all five parameters, and in each case the difference is statistically significant at the 5 per cent level ($p < 0.05$). The largest gap is observed for budgeting accuracy (Textile $M = 3.28$ vs. Chemical $M = 4.12$), followed by cost control ($M = 3.42$ vs. 4.05) and managerial decision-making ($M = 3.47$ vs. 4.01). Accordingly, all five null hypotheses (H_01 to H_05) are rejected, indicating that the industry context has a statistically significant bearing on how effective cost accounting information is perceived to be by practitioners.



8. Major Findings

- Costing method adoption is strongly aligned with production technology: process costing and standard costing dominate in the continuous-process chemical industry, while job costing and marginal costing dominate in the batch/order-driven textile industry.
- Activity-based costing remains under-utilised in both industries but is adopted more than twice as often in the chemical sector (39%) as in the textile sector (18%).
- Raw material cost is the single largest component of total cost in the textile industry (58%), whereas overheads form the largest incremental difference in the chemical industry's cost structure (38% vs. 20% in textile).
- The chemical industry reports significantly higher perceived effectiveness of cost accounting practices than the textile industry across all five measured parameters — cost control, pricing decisions, budgeting accuracy, profitability analysis, and managerial decision-making — at the 5% level of significance.
- Larger firm size and greater respondent experience in the chemical industry sample may partly explain the higher confidence in, and effectiveness ratings of, costing systems observed in that sector.
- Smaller textile units, being more fragmented and working-capital-constrained, appear to rely on simpler, less formalised costing approaches.

9. Discussion

The findings of this study reinforce the contingency perspective in cost accounting research, which holds that the appropriateness and sophistication of a costing system is a function of the underlying production technology and organisational context rather than a matter of uniform best practice. The chemical industry's reliance on process and standard costing is consistent with the homogeneous, continuous nature of its output, which allows for the establishment of stable cost standards and variance analysis. The textile industry's preference for job and marginal costing reflects the need for order-specific cost tracking in a business environment characterised by



frequent design and specification changes, shorter runs, and closer linkage between costing and price quotation for individual buyer orders.

The significantly higher overhead share in the chemical industry's cost structure — and the correspondingly higher perceived effectiveness of its cost accounting systems — together suggest that greater capital intensity may create both the necessity and the organisational capacity for more formalised costing practices. Chemical units, facing substantial fixed and semi-variable overhead costs (power, depreciation, environmental compliance, and process control), have a stronger incentive to invest in robust costing systems capable of accurately allocating these costs to products and processes. Textile units, by contrast, operating with thinner margins and a higher proportion of variable, order-linked raw material cost, may find the marginal benefit of investing in sophisticated costing systems less immediately apparent, despite the potential gains such systems could offer for pricing and profitability analysis in an increasingly competitive and export-oriented market.

10. Suggestions

10.1 For the Textile Industry (Surat)

- Textile units, particularly small and medium enterprises, should consider phased adoption of activity-based costing for overhead-heavy processes such as dyeing, printing, and finishing, where traditional volume-based allocation may distort product costs.
- Industry associations and academic institutions could jointly conduct low-cost training programmes on modern costing techniques to address the skill and awareness gap among smaller units.
- Given the dominance of raw material cost, textile units should strengthen material cost variance analysis and vendor cost benchmarking to improve cost control.

10.2 For the Chemical Industry (Vadodara)

- Given the already-high adoption of standard and process costing, chemical units should focus on deepening variance analysis and integrating costing data more closely with enterprise resource planning (ERP) systems for real-time decision support.



- Further expansion of activity-based costing could help chemical units more precisely allocate the substantial overhead component of their cost structure across diverse product lines.
- Continued investment in costing-system training for mid-level accounting staff would help sustain and extend the sector's relatively strong performance on budgeting accuracy and profitability analysis.

11. Conclusion

This study set out to compare cost accounting practices in the textile industry of Surat and the chemical industry of Vadodara, two industrially significant but structurally distinct sectors of the Gujarat economy. The findings confirm that costing method adoption, cost structure composition, and the perceived effectiveness of cost accounting information all differ significantly between the two industries, in ways that are broadly consistent with their respective production technologies. The continuous-process, capital-intensive chemical industry exhibits greater reliance on standard and process costing and reports significantly higher perceived effectiveness of its costing systems, while the batch-oriented, labour- and material-intensive textile industry relies more heavily on job and marginal costing. These findings underscore the importance of tailoring cost accounting system design to industry-specific production characteristics rather than applying a one-size-fits-all approach, and point to specific, sector-relevant opportunities for strengthening costing practice in both industries.

12. Scope for Future Research

Future studies could extend this comparative framework to additional industry pairs within Gujarat, incorporate audited cost records rather than respondent estimates to validate cost structure findings, and examine the relationship between costing system sophistication and financial performance indicators such as profitability and return on capital employed. Longitudinal research tracking the adoption of activity-based costing and digital costing tools over time would also be valuable, given the currently low uptake of ABC observed in both sectors.



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