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RESPONSIBILITY ACCOUNTING IN IT: A FRAMEWORK FOR ACCOUNTABILITY IN THE AGE OF ERP AND AI

Dr Preeti Rajguru

Assistant Professor

Name and Full address of Institute: Brihan Maharashtra College of Commerce is a College, (Autonomous) 845, Shivajinagar, Pune, Maharashtra 411004

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ABSTRACT

This study explores the evolving role of Responsibility Accounting in the digital era, with a specific focus on its application in the IT sector. Traditionally, Responsibility Accounting functioned as a control mechanism for tracking costs and revenues assigned to different responsibility centers, relying heavily on manual reporting and periodic performance reviews. In today's technology-driven environment, the integration of Enterprise Resource Planning (ERP) systems, artificial intelligence (AI), and real-time Key Performance Indicator (KPI) dashboards has significantly enhanced the scope, accuracy, and timeliness of Responsibility Accounting. This research, based on secondary data and case studies, develops and analyses a proposed framework that links responsibility centres with ERP data capture, AI-powered analysis, real-time KPI dashboards, and data-driven managerial decision-making. Findings suggest that such integration not only improves cost, revenue, and profit control but also fosters accountability, transparency, and agility in IT organisations. The study highlights both the opportunities and limitations of implementing this modernised approach, offering actionable recommendations for practitioners seeking to optimise performance measurement systems in the digital age.

KEYWORDS: Responsibility Accounting, ERP, Artificial Intelligence, KPI Dashboards, IT Sector, Cost Control, Decision-Making

I. INTRODUCTION

Responsibility Accounting is a managerial control system that assigns planning and control of costs, revenues, and investments to specific individuals or units, called responsibility centres, and evaluates their performance against measurable outcomes. Built on the **principle of controllability, it holds managers accountable only for factors they can directly influence.**

Emerging in the mid-20th century, Responsibility Accounting was widely adopted in manufacturing

and large diversified corporations, particularly in decentralised structures where consistent performance evaluation was vital. In its early form, it was:

- **Manual and delayed:** reports were prepared monthly or quarterly, often too late for immediate corrective action.
- **Cost-centric:** little emphasis was placed on revenue generation or investment performance.
- **Top-down:** budget targets were set centrally, with limited managerial input.
- **Department-based:** cost centres were fixed around production, maintenance, or administrative units.
- **Dependent on historical data:** decisions were reactive rather than real-time.

For instance, in a manufacturing company of the 1970s, if labour overtime costs exceeded the budget, the production manager might not discover this information until weeks later through monthly reports. By that time, the overspending had already occurred, leaving no opportunity to take corrective action within the same period.

Challenges of the traditional model included slow reporting cycles, limited data granularity, low adaptability in fast-changing markets, and a lack of integration across functional areas.

Transformation in the IT Sector:

The IT industry, with its high-speed operations, project-based structures, and global reach, has redefined the scope and utility of Responsibility Accounting. This shift has been driven by **ERP integration, AI-enabled analytics, and KPI-focused performance measurement.**

- ❖ **Continuous Data Flow:** Cloud-based ERP systems automatically link transactions to responsibility centres in real time, ensuring instantaneous cost and revenue tracking. For example, an IT services firm can monitor project-specific labour costs daily and make same-week adjustments to staffing.
- ❖ **Predictive and Prescriptive Insights:** AI tools forecast cost overruns, revenue shortfalls, or SLA breaches before they occur, enabling proactive intervention rather than retrospective corrections.
- ❖ **Expanded Accountability Domains:** In IT, responsibility centres extend beyond cost and profit units to include:
 - Service delivery teams (cost efficiency)
 - Client account managers (revenue retention & growth)
 - Project offices (profit balancing)
 - R&D divisions (ROI on innovation)
- ❖ **Multi-Dimensional KPIs:** Performance is no longer judged solely on financial metrics. Indicators such as client satisfaction, downtime reduction, agile sprint success rates, and ROI on technology investments offer a holistic performance view.
- ❖ **Global Operations Control:** With cloud and business intelligence tools, geographically dispersed

teams can be monitored in real time, with KPIs standardised globally yet adaptable to local contexts.

In the IT industry, accountability is not only an internal control necessity but also a **client-facing performance promise** often formalised through service-level agreements. Short technology cycles, complex project portfolios, and a data-driven culture demand **real-time, predictive, and multidimensional performance management**. Responsibility accounting has thus evolved from a static reporting mechanism into a **strategic, technology-embedded system** that supports both operational efficiency and strategic agility.

II. RESEARCH OBJECTIVES:

1. **To trace the evolution** of Responsibility Accounting from its traditional manual systems to modern technology-enabled frameworks.
2. **To examine** the current application of Responsibility Accounting in the IT sector, with a focus on decentralised and project-driven structures.
3. **To analyse** the role of ERP systems in automating data capture, allocation, and reporting for responsibility centres in IT organisations.
4. **To explore** how AI-based analytics enhance predictive and prescriptive decision-making in Responsibility Accounting.
5. **To develop** a conceptual framework that aligns responsibility centres, ERP systems, and AI tools for improved accountability and performance measurement in the IT sector.
6. **To recommend** strategies for IT companies to implement technology-driven Responsibility Accounting effectively.

III. STATEMENT OF THE PROBLEM

While Responsibility Accounting is a proven tool for assigning accountability and measuring performance, its traditional manual and periodic approach is inadequate for the fast-paced, data-driven IT sector. Despite the widespread adoption of ERP systems and the growing potential of AI, there is limited research on how these technologies can be integrated with Responsibility Accounting to enable real-time, predictive, and KPI-driven accountability frameworks tailored to the IT industry's needs. This gap restricts IT organisations from fully leveraging technology to enhance transparency, responsiveness, and strategic decision-making.

IV. RESEARCH METHODOLOGY

This study adopts a **qualitative, exploratory research design** based primarily on **secondary data**. Data has been collected from multiple credible sources, including peer-reviewed journals, industry reports, ERP vendor white papers, AI implementation case studies, and annual reports of leading IT companies. A **case study approach** has been used to illustrate real-world applications of

Responsibility Accounting in IT environments. These case studies focus on the integration of ERP systems and AI-driven analytics to improve accountability and performance measurement. The analysis follows a **comparative framework**, first examining traditional Responsibility Accounting models, and then evaluating how these have evolved in the ERP and AI era. The conclusions and recommendations are drawn through thematic analysis and synthesis of findings from the reviewed literature and documented industry practices.

V. SCOPE OF THE STUDY

1. **Sectoral Focus:** Concentrates exclusively on the **Information Technology (IT) sector**, covering software development, IT service delivery, and technology consulting firms.
2. **Conceptual Boundaries:** Explores the shift from traditional Responsibility Accounting towards **digitally enabled accountability frameworks** integrating ERP platforms and AI analytics.
3. **Technological Focus:** Examines the role of **ERP systems** (e.g., SAP, Oracle, and Microsoft Dynamics) and **AI tools** in capturing, processing, and visualising Key Performance Indicators (KPIs).
4. **Geographical Coverage:** Incorporates examples and insights from both **Indian and global IT companies**.
5. **Time Frame:** Emphasises literature and case studies from the **last decade**, with particular attention to developments in the past five years reflecting ERP–AI integration trends.

VI. LIMITATIONS OF THE STUDY

1. **Data Source Dependence:** The research relies solely on **secondary data**; no primary data collection was undertaken.
2. **Confidentiality Constraints:** Due to competitive sensitivities, IT firms do not disclose all internal ERP configurations or AI models, which may limit the depth of analysis.
3. **Case Study Bias:** Publicly available case studies often highlight **success stories**, potentially underrepresenting challenges or failures.
4. **Rapid Technological Changes:** ERP and AI technologies evolve rapidly, so some findings may become **time-sensitive** and require future updates.
5. **Industry-Specific Context:** The findings are most relevant to the IT sector and may not be directly applicable to other industries without contextual adjustments.

VII. LITERATURE REVIEW

- ❖ Responsibility Accounting has long been recognized as a foundational practice in management control systems. As highlighted by Horngren, Datar, and Foster, it is an administrative accounting method that emphasizes planning, control, feedback, and decision-making,

integrating accountability at every organizational level by measuring results against predetermined plans. Meda (2003) reinforced this notion, identifying Responsibility Accounting as a tool linking individual performance to organizational structure.

- ❖ In empirical exploration, Biswas (2017) demonstrated that Responsibility Accounting enhances operational coordination and cost control by delegating authority to managers of responsibility centres, thereby promoting efficiency and proactive decision-making. Similarly, UPN authors Rosyidah and Trisnaningsih (2024) reviewed multiple empirical studies and concluded that while Responsibility Accounting improves budgetary control and cost segregation, its effective implementation is often hindered by ambiguities between controllable and uncontrollable costs.
- ❖ The digital landscape, however, has catalyzed a transformation in accounting practices. Kanaparthi (2024) explored the integration of AI, ML, and blockchain within financial accounting, highlighting benefits such as enhanced precision, reduced costs, real-time reporting, and automated task execution. These insights echo Bhimani's extensive research on digitization in accounting. Examining digital disruptions and AI's role in reshaping managerial accounting, Bhimani argues that emerging technologies—including AI, RPA, IoT, and business analytics—are redefining accountability and financial control mechanisms.
- ❖ The diffusion of AI and algorithmic decision support also raises critical questions around organizational responsibility. Adensamer, Gsenger, and Klausner (2021) stress that while algorithmic decision support systems enhance analytical capabilities, they also complicate responsibility attribution due to opacity and accountability gaps; they propose frameworks to map responsibility in these contexts.
- ❖ Although much of the literature on AI's accounting applications skews toward auditing and financial reporting, its implications for Responsibility Accounting are implied. For instance, the Financial Times case study by Mulyadi and Anwar highlights how AI tools, such as those used for fraud detection, transform traditional accounting functions into proactive, intelligent systems focused on prediction and anomaly detection.

Collectively, these studies reveal three critical themes:

- **Foundational Understanding:** Traditional Responsibility Accounting emphasizes delegation, performance measurement, and managerial accountability.
- **Operational Enhancements:** Digital technologies such as AI and ERP enhance efficiency, real-time monitoring, and analytical insights, directly influencing managerial accounting.

- **Accountability Complexity:** Algorithmic systems introduce transparency and governance challenges that can obscure accountability without adequate frameworks.

This literature gap between traditional Responsibility Accounting and modern, tech-driven practices, especially in the context of the IT sector, positions the present study to contribute a much-needed integrated framework.

RESPONSIBILITY ACCOUNTING IN THE AGE OF ERP & AI:

The proposed framework integrates the classical concept of Responsibility Accounting with **modern ERP systems, AI-driven analytics, and real-time KPI dashboards** to create a continuous loop of accountability and decision-making in IT organizations. The framework unfolds through five interlinked stages:

Responsibility Centres: The first and fundamental step in the framework involves clearly defining **responsibility centres** within the IT organization. Responsibility centres represent distinct organizational units or managers who are accountable for the performance of certain activities, costs, revenues, or investments.

❖ Traditional Responsibility Centres in IT:

- **Cost Centres:** Examples include IT infrastructure teams responsible for data center management, cybersecurity teams managing threat monitoring, and helpdesk operations controlling support costs.
- **Revenue Centres:** Client-facing sales teams, software subscription management, and contract renewal units focused on generating revenues.
- **Profit Centres:** Project delivery teams, SaaS product units, or consulting divisions responsible for both generating revenue and controlling costs.
- **Investment Centres:** R&D and innovation teams tasked with developing new technologies or products, responsible for both expenditure and the long-term returns on their investments.
- **Why this matters:** A Clear definition allows the organization to assign accountability precisely. Each centre can be measured against specific financial and non-financial metrics, making it easier to evaluate performance and take corrective action where needed.

Example: An IT services company might have a cost centre responsible for cloud services usage. This centre would be accountable for optimizing cloud infrastructure costs and ensuring operational efficiency.

❖ **ERP Data Capture:**

Once responsibility centres are established, the next critical phase is **data capture and consolidation** via an Enterprise Resource Planning (ERP) system. ERP platforms unify data across disparate

functions—finance, operations, sales, HR—into a single, centralized database.

- **Automated Data Collection:** ERP automates the collection of transactional data such as purchase orders, payroll, billing invoices, and resource utilization logs. This reduces manual errors and delays.
- **Cost Allocation:** The ERP system enables automated allocation of overheads, direct costs, and revenues to respective responsibility centres based on predefined rules (e.g., allocating cloud expenses based on usage metrics per project).
- **Real-Time Processing:** Unlike traditional monthly or quarterly reports, ERP systems provide near real-time data availability, enabling timely variance analysis.

Example: Using ERP, the finance team can see exactly how much cloud storage costs each project incurs daily, facilitating quick interventions if costs spike unexpectedly.

❖ **AI Analysis:** With vast amounts of data centralized, **Artificial Intelligence (AI) and Machine Learning (ML) tools** analyse this information to generate insights beyond human capabilities.

- **Predictive Analytics:** AI models forecast future costs and revenues by learning from historical patterns. For example, predicting when a software project may exceed budget based on current burn rates.
- **Anomaly Detection:** AI identifies irregularities that may indicate inefficiencies or risks, such as an unusual spike in overtime hours or unexpected vendor charges.
- **Prescriptive Analytics:** Beyond prediction, AI suggests optimal actions—for instance, recommending workload redistribution among teams to prevent delays or cost overruns.
- **Natural Language Processing (NLP):** AI can analyze textual data from customer feedback or incident reports, linking qualitative insights with quantitative metrics for holistic responsibility evaluation.

Example: An AI system alerts management that a particular client account's profitability is likely to decline due to increasing support costs and recommends renegotiating contract terms.

❖ **Real-Time KPI Dashboards:** AI-generated insights are made accessible through **interactive KPI dashboards** tailored for each responsibility centre manager.

- **Customization:** Each manager views KPIs relevant to their specific responsibilities. For example, a cost centre manager might track 'Cost per User' or 'Incident Resolution Time,' while a profit centre manager focuses on 'Gross Margin' or 'Client Retention Rate.'
- **Visual Analytics:** Dashboards display key metrics in graphical formats—charts, heat maps, trend lines- that enable quick comprehension.
- **Drill-Down Capability:** Managers can explore the data behind high-level KPIs to identify

root causes of variances.

- **Alerts and Notifications:** Dashboards can send real-time alerts if KPIs deviate beyond acceptable thresholds, prompting immediate action.

Example: A dashboard for a project manager may show a real-time burn rate, upcoming milestones, and client satisfaction scores, allowing balanced performance oversight.

❖ **Accountability & Decision-Making:** The final step closes the feedback loop by ensuring that responsibility centre managers **act on the insights provided** to improve organizational performance.

- **Performance Evaluation:** Managers' performance is assessed based on the KPIs relevant to their centres, fostering ownership and accountability.
- **Corrective Action:** Negative variances trigger targeted interventions—e.g., reallocating resources, revising budgets, renegotiating supplier contracts.
- **Strategic Decisions:** At higher levels, aggregated data informs investment decisions, such as scaling up R&D funding or discontinuing underperforming product lines.
- **Continuous Improvement:** Feedback from decision outcomes refines data models and Responsibility Accounting practices over time.

Example: If the AI system predicts a cost overrun in a client project, the project manager can proactively adjust staffing levels or scope, prevent losses and improve client satisfaction.

❖ **Integration with KPIs for Cost, Revenue, and Profit Control:** This framework relies heavily on **carefully selected KPIs** that align with organizational goals and the specific roles of responsibility centres:

- **Cost Control KPIs:**
 - Cost per transaction
 - Cloud service utilization efficiency
 - Overtime labour cost as a percentage of the budget
- **Revenue Control KPIs:**
 - Monthly Recurring Revenue (MRR) growth
 - Client acquisition cost (CAC)
 - Contract renewal rates
- **Profit Control KPIs:**
 - Gross profit margin per project
 - Contribution margin by service line
 - Return on investment (ROI) for innovation initiatives

By continuously monitoring these KPIs through ERP and AI tools, IT firms can ensure each responsibility centre is aligned with broader financial and strategic objectives, fostering **operational agility, cost efficiency, and revenue growth**.

IX. CASE STUDY: IMPLEMENTING RESPONSIBILITY ACCOUNTING IN TECHNOVA SOLUTIONS

Company Background: TechNova Solutions is a mid-sized IT services firm specializing in cloud-based application development and managed IT services. With 500 employees and multiple simultaneous client projects, TechNova faced challenges in tracking project costs, optimizing resource utilization, and ensuring profitability across its business units.

Step 1: Defining Responsibility Centres: TechNova identified its responsibility centres as follows:

- **Cost Centres:** Cloud infrastructure management, Quality Assurance (QA) team, IT Support Desk
- **Revenue Centres:** Sales and Client Acquisition Team
- **Profit Centres:** Project Delivery Teams responsible for individual client projects
- **Investment Centres:** Innovation Lab focused on R&D and new product development

Each centre was assigned specific KPIs aligned with organizational goals. For example:

- ✓ The Cloud Infrastructure team tracked *cost per virtual machine, system uptime, and incident response time*.
- ✓ Sales tracked *monthly new client acquisition and average contract value*.
- ✓ Project Delivery teams monitored *budget variance, client satisfaction scores, and project profitability*.
- ✓ The Innovation Lab focused on *R&D expenditure vs. revenue generated from new products*.

Step 2: ERP Data Capture Implementation: TechNova deployed an ERP system integrating financial, operational, and project management modules. This enabled:

- Automated recording of all purchase orders, resource hours logged, vendor payments, and billing.
- Allocation of costs such as cloud hosting expenses and employee salaries to relevant responsibility centres automatically.
- Real-time data feeds on project progress and financial status.

Step 3: AI-Powered Analytics: Leveraging AI tools integrated with ERP data, TechNova introduced:

- **Predictive Analytics** to forecast project budget overruns based on current expenditure patterns.
- **Anomaly Detection** that flagged unusual spikes in cloud usage or overtime hours.
- **Prescriptive Suggestions** for reallocating resources between projects to avoid delays and reduce costs.
- Sentiment analysis on client feedback emails to detect early signs of dissatisfaction.

Step 4: Real-Time KPI Dashboards: Dashboards were created for each responsibility centre

manager, providing:

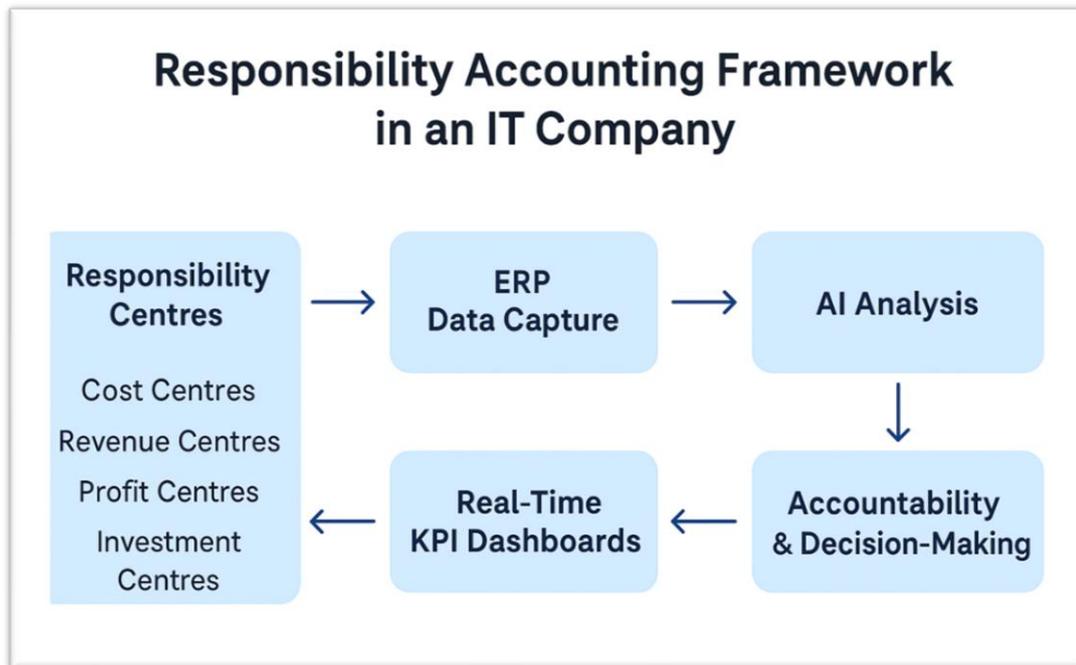
- Visual KPIs like burn rates, resource utilization percentages, revenue growth trends, and cost variances.
- Alerts when KPIs exceeded pre-set thresholds, such as cloud costs rising above budget by 10%.
- Drill-down capability to investigate specific cost components or project phases causing variances.

Step 5: Accountability and Decision-Making in Action: When AI predicted a 15% budget overrun in a major client project, the project manager reviewed the dashboard and found increased overtime due to underestimated testing requirements. The manager decided to:

- Adjust the project scope with client approval to reduce testing cycles.
- Reallocate QA resources from lower-priority projects temporarily.
- Negotiate with cloud providers for discounted rates based on volume.
- As a result, TechNova avoided a cost overrun, maintained client satisfaction, and improved profitability. Simultaneously, the sales team monitored client renewal likelihood via the dashboard and proactively offered tailored contract extensions, increasing retention rates by 8% annually.

Key Learnings from TechNova's Implementation: Clear responsibility centre definitions aligned with KPIs enhanced managerial accountability.

- ERP integration eliminated manual errors and provided a unified data source.
- AI analytics enabled proactive, rather than reactive, management of costs and revenues.
- Real-time dashboards focused managerial attention on critical metrics, facilitating faster decisions.
- The framework supported strategic and operational agility essential in the dynamic IT sector.



X. FINDINGS:

1. Shift from Traditional to Tech-Enabled Responsibility Accounting

- In earlier decades, Responsibility Accounting in IT (and other industries) was primarily manual and periodic, with financial reports prepared monthly or quarterly.
- The study finds that **ERP systems** have transformed this process into a **continuous, real-time mechanism**, allowing managers to monitor responsibility centres instantly.

2. Enhanced Data Accuracy through ERP Integration:

- ERP modules like SAP, Oracle NetSuite, and Microsoft Dynamics automatically allocate revenues, costs, and assets to specific responsibility centres.
- This automation reduces clerical errors, enhances traceability, and provides **audit-ready data** without manual reconciliation.

3. AI as a Decision-Enhancing Tool:

- AI-powered analytics platforms (e.g., IBM Watson, Azure AI) analyse historical patterns and predict cost/revenue trends for each responsibility centre.
- These predictive insights allow IT companies to shift from reactive cost control to **proactive cost prevention**.

4. KPIs Driving Accountability:

The integration of **financial KPIs** (e.g., cost variance, revenue per client, and profit margin per project) with **non-financial KPIs** (e.g., code quality, customer response time) ensures a **balanced scorecard** approach to Responsibility Accounting.

5. Cultural Impact in IT Firms:

Responsibility Accounting backed by ERP & AI fosters a **data-driven accountability culture** in IT organizations, where managers have clear ownership of outcomes and are empowered with real-time insights.

XI. SUGGESTIONS:

- **Adopt Responsibility Accounting from Project Initiation Stage:** IT firms should link responsibility centres to projects from the very start of client onboarding, ensuring that cost/revenue allocation happens from day one.
- **Invest in AI-Driven KPI Monitoring:** Real-time KPI dashboards should be customized for each level of management—top executives, project managers, and team leads—so decisions are aligned with strategic goals.
- **Integrate Financial and Operational Data:** ERP systems should not just track costs and revenues; they should also integrate operational metrics like delivery timelines, bug resolution rates, and client satisfaction scores.
- **Training for Data-Driven Decision-Making:** Managers should be trained to interpret KPI dashboards and AI-generated insights effectively, preventing over-reliance on raw numbers without contextual understanding.
- **Continuous Review & Feedback Loops:** Responsibility Accounting in IT must evolve through **feedback loops**, where KPI results trigger discussions, improvement plans, and updated targets on a quarterly or monthly basis.

XII. CONCLUSION:

The present study underscores that Responsibility Accounting, once a predominantly manual and financial-control mechanism, has evolved into a **strategic, technology-enabled framework** in the IT sector. By integrating ERP systems, AI-powered analytics, and real-time KPI dashboards, IT organizations can now achieve unprecedented levels of **transparency, accountability, and responsiveness**.

Historically, Responsibility Accounting focused on periodic cost and performance reporting. In contrast, the modern IT-driven approach enables **continuous performance monitoring** across responsibility centres, whether cost centres, revenue centres, or investment centres. ERP platforms ensure that financial and operational data is captured accurately at the source, while AI augments

managerial decision-making by forecasting trends and detecting anomalies.

The integration of **financial KPIs** (e.g., cost control, revenue growth) with **non-financial KPIs** (e.g., service quality, client satisfaction) ensures a balanced performance assessment. This alignment strengthens accountability by linking strategic objectives to measurable outcomes. Furthermore, the cultural impact within IT organizations is significant, and decision-making shifts from intuition-based to evidence-based, creating a **data-driven accountability culture**.

In an increasingly competitive and dynamic IT environment, Responsibility Accounting is no longer a static reporting tool; it is a **real-time strategic management system**. The findings suggest that IT firms adopting ERP- and AI-driven Responsibility Accounting can enhance operational efficiency, improve cost control, and foster stronger managerial ownership of results. As technology continues to evolve, Responsibility Accounting will remain highly relevant, not as a traditional accounting process but as an **integrated decision-support framework** that bridges financial discipline with technological intelligence.

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