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Research on the Evolution, Modern Method Applications, and Future Development Trends of Corporate Cost Accounting

Xinyao He

School of Economics and Management, Taiyuan University of Science and Technology, Taiyuan, China
hexy0212@126.com

Abstract. Amid the escalating market competition, continuous technological innovation, and evolving corporate production models, cost accounting—recognized as the cornerstone of enterprise cost control - has undergone a transformation from traditional accounting methods to modern management approaches. This paper systematically dissects the accounting logic of conventional cost accounting and its limitations in corporate cost control, analyzes the core advantages and application scenarios of modern cost accounting methods, with a specific focus on Activity-Based Costing and Target Costing. Furthermore, the paper explores the driving forces and core values behind cost accounting development, and proposes future trends for addressing challenges in the new economic environment. The research provides theoretical references for enterprises to enhance cost control capabilities and strengthen market competitiveness through optimizing cost accounting systems.

Keywords: Traditional Cost Accounting, Modern Cost Accounting Methods, Cost Control, Evolution of Cost Accounting

1. Introduction

In corporate management, cost control serves as a crucial safeguard for achieving profit growth and sustainable development. As the "data hub" and "decision-making support" of cost control, cost accounting plays an irreplaceable role in this process. Traditional cost accounting emerged during the era of mass standardized production, characterized by post-event accounting that met basic cost aggregation needs at the time. However, with intensifying global economic competition, increasingly personalized consumer demands, and enterprises extending their cost structures across entire supply chains, traditional cost accounting methods have gradually revealed issues such as distorted cost information and coarse control granularity. It is in this context that modern cost accounting has emerged: it has shifted from the traditional "post-event feedback" to "pre-planning, in-process control, and full-cycle management," thereby reshaping the logic of corporate cost control.

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2. Traditional cost accounting methods

2.1. Traditional cost accounting method

The product method is a cost calculation approach that uses product categories as units to determine production costs. It is suitable for mass-produced items with single-step manufacturing processes and no significant intermediate semi-finished goods. The batch method divides products into distinct batches based on specific criteria, aggregating costs and expenses for each batch. This method is suitable for enterprises in single-piece or small-batch production, such as shipbuilding, heavy machinery manufacturing, and precision instrument production. The step-by-step method uses production stages and product varieties as cost calculation objects, determining the cost of semi-finished products at each stage.

2.2. Limitations of traditional cost accounting methods in cost control

2.2.1. The deviation of indirect cost allocation leads to the distortion of cost information and misleads the decision of cost control

Traditional methods typically allocate indirect costs using single criteria like "direct labor hours," "machine hours," or "production volume." However, in modern manufacturing where indirect costs account for a significant portion and show weak correlation with output, these conventional allocation methods often lead to distorted cost information. Uniform indirect cost allocation standards in multi-product manufacturing lead to cost mispricing, with complex products often undervalued and simple products overvalued, causing misleading decisions about pricing and profitability [1].For instance, allocating manufacturing overheads based on wage ratios fails to account for equipment wear differences across workshops, resulting in either underestimation or overestimation of costs. In multi-product manufacturing scenarios, applying uniform indirect cost allocation standards to both complex and simple products leads to cost mispricing—underestimating complex products while overestimating simple ones—which ultimately misguides corporate pricing and profitability decisions [1].

2.2.2. Cost control is too coarse to identify specific waste points

Traditional costing methods rely on "product type, batch, and process" as basic accounting units, failing to delve into micro-level operations such as "work processes, procedures, and equipment [2]." This limitation makes it difficult to pinpoint cost inefficiencies. For example: The job-order costing method can't identify material overconsumption in specific production stages of a product line; the process costing method struggles to differentiate cost variations between different products within the same production step; while batch costing may track total batch costs, it can't pinpoint specific waste activities (e.g., rework) within individual batches.

2.2.3. Focus on post-accounting, lack of pre-and in-process control

The core of the traditional cost accounting lies in collecting costs after they have been incurred, which cannot realize real-time intervention in the process of cost occurrence [3]. For example, the step-by-step method can not summarize the cost of each step until the end of the month, so it is difficult to find the problem of material overconsumption in real time; at the same time, the

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traditional method lacks the support of cost planning in the design stage of new products, so that enterprises can only passively accept the results after the cost occurs.

2.2.4. It is out of track with cost control, and the accounting results cannot support dynamic adjustment

Traditional cost accounting systems typically operate on a monthly or quarterly basis, resulting in delayed cost data that prevents managers from implementing timely control measures. Furthermore, the lack of integration between cost data and sales, inventory, and financial metrics makes it challenging to comprehensively analyze the root causes of cost fluctuations [4]. Additionally, enterprises' cost control measures often lack dynamic comparisons and feedback mechanisms with accounting results, making it difficult to evaluate the effectiveness of these controls.

2.2.5. Unable to meet the cost control requirements of multi-variety, small-batch or customized production

Modern enterprises widely adopt customized production models characterized by multiple product varieties and small batch sizes—and traditional cost accounting methods struggle to adapt to this shift. In multi-variety production, the job-order costing method tends to obscure the true costs of niche products, when handling cross-step customized orders, the batch costing method fails to achieve full-process cost tracking and control [5].

2.2.6. Ignoring the cost of non-productive links and the scope of control is narrow

Traditional accounting methods primarily focus on production-related costs (such as direct materials, labor, and overhead), while overlooking non-production costs in areas like R&D, procurement, sales, and after-sales services. For example, when a certain electronic product's R&D expenditure accounts for over 30% of total costs, traditional accounting approaches fail to account for this portion. This oversight prevents companies from achieving comprehensive lifecycle cost control.

3. Modern cost management methods

3.1. Background of modern cost management methods

3.1.1. Fierce market competition and economic globalization

The gradual reduction of global trade barriers and rapid advancement of information technology have created a new business landscape where companies must not only compete fiercely domestically but also address challenges from international counterparts [6]. The core of competition has shifted from simple price wars to a multi-dimensional contest involving pricing, quality, functionality, and service. To survive and thrive, businesses must implement unprecedentedly precise cost management to gain competitive advantages. For instance, the rise of global sourcing strategies requires enterprises to conduct accurate cost calculations across international supply chains, as traditional extensive cost accounting methods can no longer meet the requirements of global resource allocation decisions.

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3.1.2. Technological progress promotes the change of cost structure, and indirect costs increase substantially

The widespread application of automation technologies, Computer Integrated Manufacturing Systems (CIMS), and robotics has revolutionized production paradigms [7]. While direct labor costs now account for a significantly smaller portion of total product costs, associated manufacturing expenses—including depreciation of automated equipment, amortization of software systems, technical maintenance costs, and energy consumption—have surged dramatically and become increasingly complex in composition. Under this new cost structure, the traditional cost accounting approach, which relies solely on "direct labor hours" or "machine hours" as allocation criteria, inevitably leads to distorted cost information. This has driven the emergence of innovative methods that enable more precise tracing of indirect costs.

3.1.3. The product life cycle is shortened while the product diversification develops

To meet the marke's diversified demands, enterprises are rapidly expanding their product lines with increasingly complex product portfolios. Meanwhile, continuous technological advancements have significantly shortened product life-cycles, forcing businesses to introduce new products more frequently while phasing out obsolete ones. This scenario requires more frequent and precise cost estimation and pricing decisions. Traditional cost accounting methods, characterized by sluggish response times and imprecise calculations, fail to meet the cost control requirements of multi-variety, fast-paced production environments. There is an urgent need for management tools that can swiftly adapt to product changes and provide accurate cost information.

3.1.4. Consumers' personalized needs are increasing

The market's dominant power is shifting from manufacturers to consumers. People are no longer satisfied with standardized products but increasingly seek personalized and customized goods and services. This shift in demand has driven production models to transition from mass manufacturing to tailored solutions. Small-batch, multi-shipment, and single-piece customization have become the norm. Traditional cost accounting methods designed for mass production (such as job-order costing and process costing), struggle to accurately measure resource consumption for customized orders, which has accelerated the development of specialized approaches like Activity-Based Costing (ABC) that better track costs for specific orders and processes [8].

3.1.5. The limitations of traditional cost accounting methods are increasingly prominent

Under the impact of the aforementioned external environments, inherent flaws in the traditional cost accounting system—including "distorted indirect cost allocation," "coarse cost control granularity," "overemphasis on post-event accounting at the expense of pre-event planning and in-process control," and "neglect of upstream and downstream cost factors in the value chain"—have become significantly more pronounced. These limitations have resulted in inaccurate cost information, decision-making errors, and declining competitiveness, which have become direct drivers for enterprises to seek management reforms and adopt modern cost management methods [9]. Enterprise managers have recognized that only through more scientific and refined cost management approaches can they overcome these challenges and achieve effective cost control and strategic objectives.

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3.2. Modern cost accounting methods

Activity-based costing is a method that focuses on operational activities and uses cost driver theory for cost allocation. It is suitable for enterprises with diverse product lines and complex production processes. This method provides accurate cost information, supports product pricing and portfolio decisions, and helps identify non-value-adding activities. The objective costing approach is a market-oriented method that focuses on cost control during product design and R&D phases. It requires high accuracy in market forecasting and risks compromising product quality. The Life Cycle Costing method extends cost management across a product's entire lifecycle, allowing companies to evaluate costs, optimize designs, and reduce operational expenses.

4. Evolutionary drivers, core values and future challenges

4.1. Core driving force of cost accounting method evolution

4.1.1. Economic environment change

Global competition continues to intensify, with enterprises facing low-price competition from international counterparts. To remain competitive, they need to reduce prices and improve cost-performance through more precise cost control. For instance, Chinese manufacturing enterprises leverage modern costing methods to cut costs and counter competition from Southeast Asian companies. At the same time, consumer demands are becoming increasingly personalized, shifting from "standardization" to "customization". As a result, traditional cost methods are no longer suitable for enterprises' production model transformation, making innovation in cost accounting methods imperative.

4.1.2. Production technology progress

The progress of automation and information technology has elevated innovative approaches like lean cost management to the status of industry standards. The lean production model enhances cost control through optimized resource allocation and end-to-end process management, achieving greater precision while reducing operational costs and boosting corporate competitiveness. As automated equipment replaces manual labor, the proportion of direct labor costs has decreased, while manufacturing overheads have increased. This shift renders the traditional "indirect cost allocation per man-hour" method obsolete, driving the evolution of Activity-Based Costing (ABC) methodologies. Additionally, the application of information technology is fueling the intelligent transformation of cost accounting. Technologies such as cloud computing and big data analytics enable real-time tracking of production data, replacing traditional manual bookkeeping methods and improving accounting efficiency and accuracy. For example, ERP systems can automatically integrate cost data such as materials and labor, reducing human errors.

4.1.3. Upgrading of enterprise management needs

Modern enterprises require cost accounting to support decision optimization. Taking manufacturing as an example, enterprises need to track dynamic data such as raw material price fluctuations and logistics costs. Intelligent tools can collect and analyze this data in real time, significantly improving the efficiency and accuracy of cost accounting.

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4.1.4. Limitations of traditional methods

Traditional cost accounting methods suffer from inherent flaws, including "distorted cost information," "coarse control granularity" and "narrow scope", which lead to the failure of enterprise cost control. Enterprises are in urgent need of more scientific cost accounting methods, which is the direct motivation for the development of modern cost accounting.

4.2. The core value of modern cost accounting in cost control

4.2.1. Provide more relevant, accurate and timely cost information

Modern cost accounting addresses information distortion in traditional methods through "multi-dimensional accounting" and "activity-based costing". Activity-based costing allocates indirect costs according to cost drivers, avoiding distortions caused by "equal allocation" and providing more accurate cost data. ERP systems enable real-time data collection, supporting in-process cost monitoring (such as detecting material over-consumption during production for immediate adjustments) and timely access to cost information. Furthermore, Life Cycle Costing covers the entire supply chain, eliminating hidden costs in non-production phases and ensuring comprehensive cost data. Precise cost information allows enterprises to implement targeted cost control strategies, preventing haphazard budgeting practices.

4.2.2. Strengthen decision support

Modern Activity-Based Costing provides data-driven support for key corporate decisions, enabling enterprises to develop scientific cost control strategies. It ensures accurate cost accounting for each product, preventing both "low-price losses" and "high-price market failures" (e.g., applying activity-based costing to determine reasonable pricing for customized products). Additionally, this method identifies "high-cost, low-profit" products, facilitating product structure optimization—for instance, Life Cycle Costing may reveal that a product incurs losses throughout its life cycle, leading enterprises to discontinue its production. Through value chain analysis, it evaluates whether specific processes are suitable for outsourcing (e.g., a company identifying high "component manufacturing" costs and outsourcing to reduce expenses).

4.2.3. Optimize business processes, identify waste, and drive continuous improvement

Modern activity-based costing (ABC) and value chain analysis help businesses identify non-value-adding processes. By pinpointing non-value-adding activities like "equipment idleness" and "rework of components," ABC enables waste reduction through optimized production planning and process improvements. Strategic cost management further analyzes both internal operations and industry value chains to eliminate inefficiencies—such as collaborating with suppliers to lower raw material costs and partnering with customers to reduce inventory levels.

4.2.4. Expand the scope of control to achieve cost management across the value chain and life cycle

Modern cost accounting covers the entire product lifecycle, enabling long-term cost control. It includes methods like Target Costing, Activity-Based Costing, and Life Cycle Costing. These

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methods prevent design overruns, monitor operational costs, and evaluate total lifecycle costs to improve product design and reduce after-sales maintenance costs [10].

4.3. Current challenges and future development trends

The rise of the service, digital, and experience economies has necessitated new requirements for traditional cost accounting, including a unified standard for service, data, and experience costs. Sustainable development also necessitates a unified measurement standard for environmental and social responsibility costs. Despite the use of ERP and big data technologies, there is a persistent disconnect between technology and business operations, leading to inaccurate cost calculations. The high implementation costs of ERP and big data systems make them unaffordable for small and micro enterprises, resulting in low adoption rates of modern costing methods. Behavioral factors, such as employee resistance to cost control measures, further hinder the effectiveness of cost accounting and control. To address these challenges, future development trends in enterprise cost control can be summarized as four aspects: deep application of big data and AI for intelligent cost control, building a sustainable development cost accounting system, and integrating cloud computing and ERP to break down data barriers. First, AI can analyze historical cost data and market intelligence, predicting future cost trends and automatically detecting cost anomalies. Second, integrating environmental costs into accounting systems and defining social responsibility costs can help achieve a balance between cost control and social responsibility. Third, cloud computing can help departments share real-time data, promoting the adoption of modern costing methods in small businesses. Finally, focusing on organizational behavior and employee motivation can enhance collaboration efficiency by training employees on cost control's importance and linking cost control effectiveness to employee performance.

5. Conclusions

Cost accounting, as the core tool for corporate cost control, has continuously evolved in response to changes in internal and external environments. While traditional cost accounting played a crucial role during the era of mass standardized production, its limitations. However, with the intensification of market competition, the transformation of production models, and shifts in cost structures, its inherent limitations—including "distorted information, coarse granularity, and narrow scope"—have become increasingly prominent. In contrast, modern cost accounting methods Looking ahead, the deep integration of big data and AI technologies, coupled with growing sustainability demands, will drive cost accounting toward intelligent, end-to-end, and human-eccentric development. This evolution not only enables more accurate cost calculation and control but also supports enterprises in achieving dual objectives of "economic value and social value." Companies should proactively embrace this trend by selecting cost accounting methods tailored to their unique characteristics, transforming cost control from passive accounting to proactive value creation, ultimately elevating their core competitiveness.

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