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The Performance Impact of Management Control Systems: Assessing the Mediating Role of Organizational Culture

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Abstract

This research examines the dual-pathway impact of Management Control Systems (MCS) on Company Performance (CP) in China's liquor industry, with a focus on the mediating role of Organizational Culture (OC). The research aims to address gaps in understanding how MCS enhances both financial and non-financial performance through cultural mechanisms, a critical yet underexplored dynamic in heritage-based industries. Employing a mixed-methods approach, the research analyzes survey data from 497 firms using Structural Equation Modeling (SEM) and mediation analysis to test three hypotheses: (1) MCS directly improves CP, (2) MCS fosters OC, and (3) OC mediates the MCS-CP relationship. Key findings reveal that MCS significantly boosts CP (β=0.438, $p<0.001$), while OC partially mediates this relationship (indirect effect β=0.249, $p<0.001$). The novelty lies in demonstrating how MCS transcends operational efficiency to shape cultural assets, which in turn drive competitive advantage. This research advances contingency theory by highlighting sector-specific adaptations, such as digital MCS tools balancing tradition with market responsiveness, and offers practical insights for integrating control systems with cultural stewardship in traditional industries.

Keywords:

Management Control System;
Corporate Performance;
Organizational Culture;
Structural Equation Model;
Mediating Effect.

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1- Introduction

The contemporary global landscape has significantly intensified the functional and performance-driven role of Management Control Systems (MCS), positioning them as critical instruments for steering both financial and operational decisions essential to organizational resilience and long-term sustainability. MCS encompasses the formal and informal procedures, rules, and frameworks organizations use to align behaviors and outputs with their overarching strategic objectives [1]. In today's increasingly interconnected and volatile economic environment, firms are compelled to adapt their control systems continuously to keep pace with shifting market conditions, evolving consumer demands, and ever-changing regulatory landscapes. This imperative is especially pronounced in traditional sectors such as Chinese liquor manufacturing, where leading companies, such as Maotai and Wuliangye, must strike a delicate balance between sustaining profitability and meeting heightened stakeholder expectations regarding ecological stewardship and social responsibility. However, despite the urgency of these challenges, current scholarship remains limited in its examination of how MCS can be systematically leveraged to align both corporate performance (CP) and sustainability goals, particularly within industries marked by entrenched cultural traditions. While prior studies have recognized the value of MCS in achieving strategic coherence and operational effectiveness [2], there is a notable gap in understanding how

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these systems can be innovatively configured to integrate environmental and social considerations, involving green production practices and community engagement, within performance management frameworks that are sensitive to, and resonate with, deeply rooted organizational cultures.

Moreover, organizational culture (OC) is widely acknowledged as a critical catalyst for effective strategy implementation and the successful operation of management controls [3]. OC comprises the collective values, norms, and beliefs that shape employee conduct and define an organization's identity. Within Chinese liquor enterprises, this culture is deeply rooted in a synthesis of centuries-old artisanal practices and a commitment to broader societal and cultural responsibilities. Iconic firms such as Maotai, with its ethos of "crafting national liquor, spreading culture," and Wuliangye, championing "millennial techniques and artisan spirit," exemplify how cultural heritage can serve as both a foundation and a potential constraint for contemporary management controls. Although prior research suggests that progressive and inclusive organizational cultures foster greater internal cohesion, motivation, and adaptability [4], the nuanced interplay between OC and MCS, particularly in advancing sustainability transitions and optimizing corporate performance, remains insufficiently examined. To bridge these gaps, this study investigates how MCS can be strategically enhanced to bolster corporate performance in the Chinese liquor industry, with a particular focus on sustainability integration and the pivotal mediating influence of organizational culture. Drawing on case studies of Maotai and Wuliangye, the research elucidates the dynamic interaction between traditional values and modern control systems in shaping both financial and socio-ecological outcomes.

This study advances the field by moving beyond merely reaffirming existing linkages, instead offering nuanced, context-specific insights into the mechanisms by which management control systems (MCS) and organizational culture (OC) interact within the under-explored context of traditional, culture-intensive industries. In the Chinese Baijiu sector, the research reveals a distinct performance pathway: rather than simply driving cost efficiency, as is often observed in standardized manufacturing, MCS generate substantial non-financial advantages such as brand heritage, artisanal reputation, and stakeholder trust, all of which lay the groundwork for sustainable financial performance. These findings highlight the necessity of considering industry-specific dynamics when analyzing the impact of MCS on corporate outcomes. The research also uncovers a bidirectional, co-evolutionary relationship between MCS and OC, departing from the unidirectional models commonly found in the literature [5]. Evidence from the study shows that while MCS play a role in modernizing and revitalizing traditional cultures, these systems are simultaneously shaped, guided, and occasionally constrained by deeply embedded cultural values, pointing to a dynamic, adaptive process rather than a linear chain of causality.

In addition, this research offers a theoretically sophisticated account of how OC mediates the relationship between MCS and performance outcomes. Drawing on Transaction Cost Theory, the findings demonstrate that a robust organizational culture can reduce internal monitoring and coordination costs, enhancing operational efficiency. The Balanced Scorecard perspective illustrates how cultural capital is leveraged to generate tangible market-based results, while Contingency Theory clarifies how both external pressures and internal cultural resources jointly shape the efficacy of MCS. The study further identifies digitalization as a pivotal contingency factor, revealing that digital MCS serve as essential tools for reconciling the tension between tradition and modernity. By enabling firms to preserve their cultural essence while adapting operationally to contemporary challenges, digitalization emerges not just as a technical upgrade but as a strategic facilitator of cultural and organizational alignment. The paper is structured as follows: Section 2 reviews the literature and develops the conceptual framework; Section 3 outlines the research methodology; Section 4 presents the empirical findings; Section 5 discusses theoretical and practical implications; and Section 6 concludes with limitations and directions for future research.

1-1- Liquor Manufacturing Sector

In today's globalized economy, companies face mounting challenges and opportunities as they navigate increasingly complex markets. The liquor industry, in particular, is marked by fierce competition and significant environmental and social impacts, placing corporate performance (CP) under intense scrutiny from a broad range of stakeholders [6]. Achieving success in this sector now demands more than strong financial outcomes; firms must also demonstrate a commitment to environmental stewardship, social responsibility, and robust governance practices to effectively respond to regulatory pressures and evolving stakeholder expectations. Within this context, Management Control Systems (MCS) have become essential for optimizing internal operations and enhancing CP by aligning business practices with sustainability imperatives [7]. Liquor manufacturing is inherently resource-intensive, with production processes consuming vast quantities of water, generating substantial waste, and producing considerable carbon emissions [8]. As global sustainability concerns have grown, regulatory agencies in major markets such as the European Union, the United States, and China have imposed increasingly stringent environmental standards, requiring firms to minimize ecological harm and adopt cleaner production practices [2]. At the same time, heightened consumer and investor attention to corporate social responsibility (CSR) and sustainable operations has driven companies to implement proactive sustainability initiatives, not only to comply with regulations but also to maintain a competitive advantage and long-term legitimacy in a rapidly changing industry landscape [9].

These evolving dynamics point out the importance of MCS in aligning operational strategies with sustainability goals. By integrating environmental and social metrics into performance evaluations, MCS enables liquor firms to navigate regulatory complexities while meeting market expectations. As a result, MCS enhances operational efficiency and serves as a bridge between traditional financial performance and modern sustainability imperatives, ultimately driving long-term CP improvement [10]. From a sociological perspective, liquor manufacturing firms must also address multifaceted social responsibilities, including protecting employee rights, ensuring fair trade practices, and fostering community development. Their performance in these areas not only shapes brand reputation but also directly influences market positioning and competitive edge [11]. Consequently, effectively leveraging theoretical frameworks to enhance CP in environmental and social domains has become a pressing priority for China's liquor industry. As the core mechanism for strategy execution and performance oversight, MCS extends beyond financial governance to encompass the monitoring of non-financial metrics [12]. With sustainability gaining prominence, MCS plays an increasingly vital role in steering companies toward an organization's objectives. By defining clear targets, tracking key indicators, and implementing feedback mechanisms, MCS enable firms to achieve measurable progress in non-financial performance [13].

1-2- Management Control System

A Management Control System (MCS) comprises a comprehensive set of tools and procedures that organizations use to plan, coordinate, monitor, and evaluate their activities, thereby facilitating more efficient resource utilization, process optimization, and overall performance improvement [14]. In the context of traditional cultural industries such as liquor manufacturing, effective management control necessitates a shift from rigid, purely technical frameworks toward more adaptive, context-sensitive systems. Such systems must balance quantitative controls with qualitative, culture-specific factors to address the unique challenges of these industries. A holistic MCS approach, integrating both formal mechanisms and informal organizational elements, is essential for aligning strategic objectives, optimizing resource allocation, and achieving sustainable performance outcomes [7]. The core components of MCS include strategic planning (SP), budget preparation (BP), financial reporting analysis (FRA), performance measurement (PM), and management compensation (MC). Strategic planning forms the foundation of an effective MCS, enabling organizations to set clear goals, enhance managerial efficiency, and strengthen their competitive positioning within complex market environments. Nonetheless, the real-world application of MCS is complicated by the nuanced characteristics of organizational contexts, particularly in industries where intangible assets such as brand heritage and artisanal expertise are integral to value creation.

Each component of MCS presents distinct opportunities and challenges within traditional liquor firms. Budget preparation, for example, is vital for resource planning and cost control, yet overly rigid budgeting practices can stifle strategic flexibility, an issue exacerbated by the long maturation periods and the importance of intangible assets in this sector. Financial reporting analysis provides critical data for decision-making, helping to identify operational strengths and weaknesses, but integrating qualitative, non-financial factors into these assessments remains a persistent challenge. Performance measurement systems enable firms to monitor progress and implement necessary adjustments through feedback mechanisms when they are aligned with strategic objectives and supported by key performance indicators (KPIs). Nevertheless, an excessive focus on quantitative metrics can promote short-term managerial thinking, often at the expense of nurturing long-term, intangible assets fundamental to traditional cultural enterprises. Management compensation schemes are designed to incentivize managerial performance consistent with organizational goals, and empirical research often demonstrates a positive relationship between compensation and firm performance across ownership types. Nevertheless, conventional economic theories, such as optimal contract and principal-agent models, frequently fail to capture the complexities inherent in traditional industries, where it is difficult to quantify and appropriately reward the preservation of brand legacy, craftsmanship, and other non-monetary assets over time.

The transaction cost theory of management control systems (MCS) emphasizes the importance of designing control mechanisms that minimize the costs associated with exchanges, coordination, and enforcement within a firm. Its role in MCS is to guide organizations in implementing tools and procedures, such as strategic planning, budgeting, financial analysis, performance measurement, and management compensation, in a way that reduces the expenses related to monitoring, supervision, and enforcement of managerial actions. Specifically, the theory advocates for a balance between formal, measurable controls and informal, cultural factors, especially within traditional cultural industries like liquor firms. This entails developing adaptive, context-sensitive systems that are flexible enough to accommodate the unique characteristics of the industry, such as long asset life cycles, intangible assets, and cultural heritage, while still maintaining efficient resource utilization.

This theoretical framework offers an essential lens for analyzing the role of management control systems (MCS) within the liquor industry, where minimizing transaction costs is a central organizational objective. The industry's distinctive features, such as extended supply chains, intricate production processes, and stringent quality standards, amplify the challenges related to supervision, negotiation, and coordination costs. MCS addresses these challenges by implementing systematic supply chain audits, digital traceability technologies, and standardized operating procedures, all of which help reduce information asymmetry and mitigate opportunistic behavior. By integrating real-time information and monitoring processes, MCS enhance supply chain transparency and facilitate more effective coordination across upstream and downstream activities, resulting in greater process stability and production control

[15]. The adoption of standardized protocols further streamlines the brewing process, improving both the reliability and the efficiency of operations. Ultimately, MCS empowers liquor firms to achieve significant cost savings and resource optimization while upholding rigorous product quality standards. By reducing uncertainty and operational risk throughout the transaction process, MCS enables organizations to realize higher levels of operational efficiency and consistent quality, which are critical for long-term competitiveness in this complex industry.

By taking into account transaction costs, companies cannot just cut down on optimal allocation of assets by avoiding redundant monitoring or rigid controls that will be expensive, but also enhance planning and decision flexibility, necessary for long-term strategic business with intangible assets. Furthermore, companies can enhance coordination by tailoring incentives and controls to the particular structural and cultural characteristics of the industry to decrease the cost of conflict and misunderstandings. Furthermore, companies can enhance sustainable performance by integrating formal controls with softer, culture-imbedded controls that enhance long-term commitment and innovation.

1-3- Company Performance (CP)

Corporate performance (CP) reflects a company's operational efficiency and managerial effectiveness over a defined period, serving as a multidimensional construct that encompasses profitability, asset utilization, solvency, and growth potential. As an integrative assessment framework, CP is essential not only for gauging business sustainability but also for guiding investor decision-making by offering details about long-term value creation. It encourages companies to balance economic returns with environmental stewardship and social responsibility, aligning short-term outcomes with broader stakeholder expectations [16]. Financial performance is a foundational element of CP, capturing quantifiable outcomes through key metrics such as profit margins, revenue growth, return on assets (ROA), and return on equity (ROE). These indicators are instrumental in evaluating economic viability, resource allocation efficiency, and the firm's ability to generate shareholder value. Within this context, management control systems (MCS) play a critical role in transforming strategic objectives into measurable financial results, offering tangible evidence of their effectiveness in optimizing operations and enhancing fiscal performance [17].

Equally important is the non-financial dimension of CP, which captures qualitative achievements such as customer loyalty, brand equity, employee engagement, innovation capacity, and corporate social responsibility (CSR) [18]. These elements are especially relevant in the liquor industry, where cultural heritage, artisanal skill, and community engagement form the basis of sustainable competitive advantage. Non-financial performance indicators provide a more comprehensive understanding of a firm's market positioning and long-term resilience, illustrating how MCS contribute to value creation beyond traditional economic metrics [17]. The Balanced Scorecard (BSC) framework further strengthens this perspective by offering a multidimensional strategy evaluation tool that integrates both financial and non-financial performance measures [19]. At its core, BSC emphasizes the strategic value of organizational culture as a key intangible asset. It recognizes that cultural attributes, such as brand legacy, historical identity, and the institutionalization of craftsmanship, can be systematically leveraged and transformed into enduring competitive advantages. In the context of the liquor industry, the BSC offers methodological support for capturing and evaluating the conversion of cultural capital into performance outcomes, thereby bridging the gap between intangible value and strategic management.

1-4- Impact of Management Control System on Company Performance

Management Control Systems (MCS) drive corporate performance (CP) through three interconnected mechanisms: optimizing resource allocation and operational efficiency, facilitating strategic implementation, and reinforcing risk management practices [19]. By enhancing resource utilization and tightening cost controls, MCS directly contribute to increased profitability and a stronger competitive edge. Their capacity to align strategic objectives with day-to-day operations is realized through systematic performance monitoring and feedback loops, ensuring that organizational goals are consistently translated into actionable outcomes [20]. Also, MCS are important in mitigating operational risks and maintaining regulatory compliance, which are essential for protecting brand reputation and sustaining market position in volatile environments [21]. In the context of China's liquor industry, where competition is fierce and market dynamics are rapidly evolving, MCS have moved beyond traditional budgeting and auditing to embrace dynamic, market-oriented approaches [22]. The integration of digital technologies such as big data analytics and artificial intelligence has revolutionized MCS, enabling firms to access real-time market intelligence and make data-driven decisions that enhance both production and marketing efficiency. This digital transformation not only improves the quality of managerial decision-making and resource deployment but also significantly lowers operational risks [23]. As a result, modern MCS function as agile and adaptive platforms that drive sustainable competitive advantage and continuous CP improvement in increasingly complex business landscapes.

The transaction cost theory provides a robust theoretical framework for understanding how MCS enhances CP in the liquor industry by systematically reducing various transaction costs throughout production and operational processes [24]. According to this perspective, MCS establishes formalized rules and standardized procedures that

mitigate inefficiencies across multiple business dimensions, particularly in areas prone to information asymmetry and opportunistic behavior [25]. In raw material procurement, MCS implements transparent bidding mechanisms and supplier evaluation systems that reduce search costs and prevent price manipulation while ensuring consistent quality standards [26]. During brewing processes, standardized operating procedures and real-time monitoring systems minimize coordination costs between departments while preventing quality deviations that could lead to costly rework or product recalls. Quality inspection protocols embedded within MCS reduce measurement costs through automated testing equipment and digital traceability systems that eliminate disputes over product specifications [27].

For distribution networks, MCS enforces contractual compliance and performance metrics that curb channel conflicts and prevent free-riding among distributors, thereby optimizing logistics costs [28]. Crucially, MCS incorporates knowledge management mechanisms and incentive alignment structures that retain brewing expertise within organizations while discouraging technical personnel from exploiting information monopolies for personal gain [8]. These comprehensive control mechanisms collectively transform potential transaction costs, including negotiation, enforcement, and adaptation costs, into measurable efficiency gains. By converting ambiguous operational risks into quantifiable management parameters, MCS not only improve short-term operational efficiency but also create enduring competitive advantages that sustainably elevate financial and non-financial performance metrics [29]. The theory thus conclusively demonstrates that well-designed MCS serve as institutional arrangements that lower overall transaction costs while simultaneously strengthening strategic capabilities, thereby validating the hypothesized positive correlation between MCS sophistication and CP enhancement in capital-intensive, technology-sensitive industries like liquor production. Therefore, the research shows that there is a significant positive correlation between MCS and CP, especially in the Chinese liquor industry. The effectiveness of MCS plays an important role in the improvement of financial and non-financial performance.

Hypothesis H1: *MCS is positively correlated with the financial performance of Chinese liquor firms.*

1-5- Impact of Management Control System on Organizational Culture

In recent years, scholars and managers have paid attention to the positive correlation between MCS and OC. Research shows that MCS is not only a tool for the internal operation of companies but also an important factor in shaping and reflecting OC [3]. First, the strategies and means by which MCS are implemented in a company are often deeply influenced by OC. A culture that emphasizes teamwork and innovation can encourage more encouraging and supportive controls in the MCS. When OC favors hierarchy and control, MCS are more likely to employ strict supervision and punishment. It can be seen that OC is directly related to the design and implementation of management control, and researchers generally believe that culture is the basis for the effective operation of MCS [30]. Secondly, MCS also plays a significant role in the formation and strengthening of OC. When companies implement a refined MCS, increased transparency and controllability promote employee motivation and responsibility in the process, which fosters a culture of openness, trust, and high performance [31]. In addition, different types of MCS have different degrees of influence on OC. When choosing and designing MCS, firms need to consider their own cultural characteristics comprehensively so as to realize the positive interaction between management and culture [32]. Finally, with the advent of globalization and digitalization, the relationship between OC and MCS has become increasingly complex. More and more companies are exploring how to use MCS to support new OCs such as flexibility, innovation, and diversity in a changing environment [33].

The transaction cost theory holds that the MCS can effectively shape and strengthen the cultural characteristics of a company by establishing formal organizational rules and behavioral norms [34]. In the knowledge-intensive field of the liquor industry, the systematic control mechanism not only regulates the behavior of employees but also institutionalizes the core values of the company through performance assessment and incentive mechanisms, thereby promoting the formation of a unified cultural identity. Especially for tacit knowledge such as the inheritance of traditional techniques, the MCS establishes standardized knowledge management processes, enabling the skills and experiences originally scattered among individuals to be systematically passed down, thereby strengthening the cultural traits of the company [35]. It indicates that in the context of the liquor industry facing environmental changes, such as policy adjustments, the MCS needs to continuously adjust its cultural guidance strategies in response to external environmental changes [36]. This dynamic adjustment ability enables the OC of the company to both maintain the continuity of core traditions and adapt to new development needs [37]. Therefore, future research needs to further explore how to optimize MCS on OC.

Hypothesis H2: *The MCS is positively related to the OC of Chinese liquor firms.*

1-6- Impact of Organizational Culture on Corporate Performance

The positive correlation between OC and the performance of Chinese liquor companies has attracted extensive attention from academic and practical circles [14]. With the increasingly fierce market competition, especially in recent years, consumers attach importance to brand, quality, and cultural experience. Chinese liquor firms gradually realize that a good OC can not only enhance the internal cohesion of the firm, but also directly affect the performance of the firm [38].

OC establishes common values and codes of conduct for the company [39]. Liquor is the carrier of traditional culture, and its brand and products often contain rich cultural connotations. Research shows that a company culture that focuses on inheritance and innovation can enhance employees' sense of identity and belonging, thus improving the overall team motivation and performance [40].

A strong OC helps to improve the efficiency of team cooperation and communication [41]. Liquor production and sales process involves many links and departments; good communication and cooperation are the key to improving production efficiency and market responsibility. By establishing an open and inclusive culture, companies can effectively break down information barriers between departments and promote knowledge sharing and cooperation, thereby improving overall work efficiency and firm performance [15].

OC is closely related to firm innovation ability [42]. In the liquor industry, faced with the challenges of consumption upgrading and market changes, companies need to constantly innovate to maintain a competitive edge. Research has found that a culture that encourages innovation and risk-taking stimulates creativity in employees and drives upgrades in products and services [43]. For example, some companies have accompanied the philosophy of continuous improvement and learning into the OC, enabling the company to better respond to market changes and introduce new products that meet consumer needs in a timely manner, which has a positive impact on both financial and non-financial performance [44].

OC has a direct impact on employee loyalty and turnover rate [45]. Research shows that a good OC can improve employees' job satisfaction, reduce employee demission, and maintain the stability of human resources. In the increasingly competitive market environment for talents, companies can attract and retain outstanding talents by cultivating a positive OC, thus improving the overall performance. This is particularly evident in the special field of the liquor industry. The profound cultural heritage and unique craftsmanship inheritance constitute the core competitive advantage of liquor companies. This cultural capital is directly transformed into the market performance and financial returns of the company through enhancing brand value, strengthening consumer recognition, and optimizing employee cohesion. Especially for time-honored liquor companies, the completeness and innovation of their cultural inheritance often determine the product premium ability and market competitiveness [46].

The transaction cost theory holds that a strong OC can significantly reduce the management costs and coordination costs within the company. In the production and operation of liquor companies, shared values and behavioral norms can reduce quality supervision costs, minimize the loss of craftsmanship inheritance, and optimize the efficiency of departmental collaboration. When the company forms a cultural consensus such as "the spirit of craftsmanship", the self-discipline and initiative of employees are enhanced, thereby reducing the efficiency loss caused by opportunistic behavior. This culture-driven self-management mechanism, compared to relying solely on institutional constraints, can achieve higher operational efficiency at a lower cost and ultimately reflect an overall improvement in CP [47]. Based on the above content, the following two research hypotheses are proposed:

Hypothesis 3: *OC is positively correlated with the CP of Chinese liquor firms.*

1-7- Proposed Conceptual Framework

Figure 1 provides a conceptual framework for this research. Firstly, MCS is positively correlated with the financial performance of Chinese liquor firms. Secondly, the MCS is positively related to the OC of Chinese liquor firms. Lastly, OC is positively correlated with the CP of Chinese liquor firms.

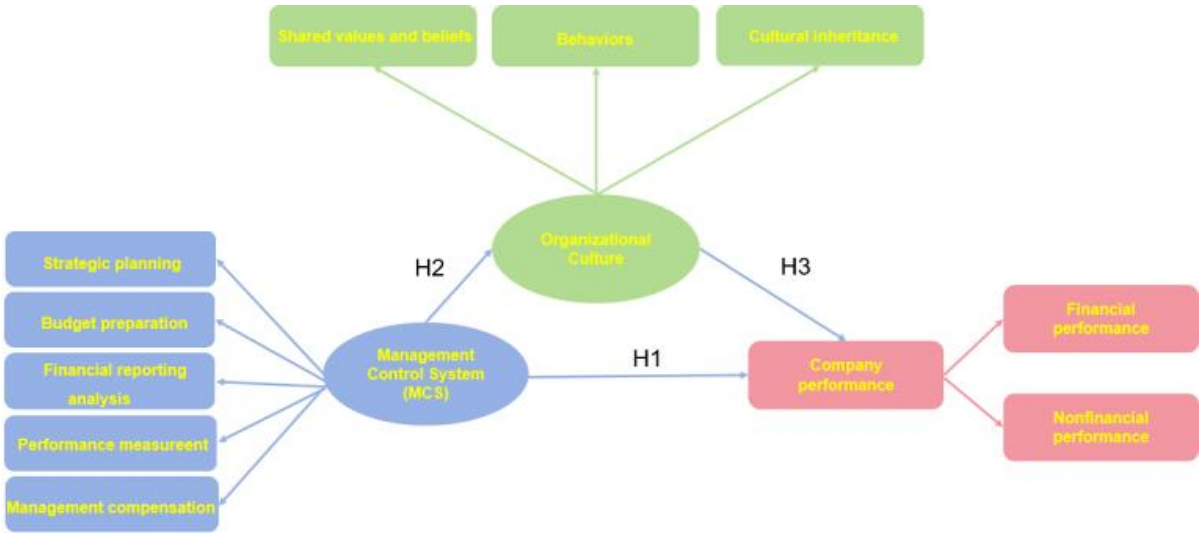

Figure 1. Conceptual Framework

2- Research Methodology

This research investigates how MCS influences the sustainable development of Chinese liquor firms, with particular focus on examining the mediating effects of OC. The subsequent sections outline the population, sample size, and the sampling.

2-1- Population and Sample

The research population primarily encompasses companies within China's liquor industry. Specifically, the research targets the following categories of companies:

- A liquor firm includes producers holding a substantial market share in either national or regional markets. As per the 2024 Chinese Liquor Industry Holistic Analysis Report, China had 8,147 registered liquor manufacturing companies by the end of 2023.
- Liquor distributors and retailers: This category covers wholesale distributors operating within China's liquor supply chain, along with large-scale retailers such as supermarket chains and specialty liquor stores. The 2024 Semi-Annual Report of Listed Liquor Companies revealed that the combined distributor network of 20 major listed liquor companies exceeded 54,000, marking a year-on-year increase of 2,000. The ongoing expansion of dealer networks among leading liquor companies during the first half of 2024 demonstrates robust industry growth potential, with distributor networks serving as crucial drivers for sustained market development.

Sample size determination is a critical factor in ensuring the statistical significance and generalizability of research findings. This research employs the following sampling approach: The primary research subjects comprise current and former employees across China's liquor industry, to whom targeted invitations have been extended, including operational staff and managerial professionals, to participate in comprehensive questionnaire surveys. The selection methodology aims to capture diverse perspectives across organizational hierarchies while maintaining representative industry coverage.

- Sample size calculated using ($n = (0.95^2/0.05^2) \times p\ (1-p)$). According to the above calculation, the total number of samples selected is not less than 385.
- Based on the experience of previous similar studies, the response rate to the questionnaire is usually in the range of 20%-40%. To ensure that sufficient valid data can be obtained eventually, 1500-2000 questionnaires were sent out in the actual sample collection process, and invalid questionnaires are excluded in the questionnaire processing to achieve the expected effective sample size.

Given this research's focus on China's liquor industry, implementing appropriate sampling techniques is extremely important for guaranteeing sample representativeness. The research employs stratified random sampling as its primary methodology. It allows for nuanced examination of how MCS operate within varying organizational contexts, revealing helpful information regarding the contingent nature of MCS effectiveness across China's heterogeneous liquor industry segments. The approach facilitates both comprehensive industry-wide understanding and specific subgroup analyses, particularly valuable for identifying Structural Equation Modeling (SEM) and Mediation Analysis.

2-2- Data Collection

The primary target group for this research consisted of managers and key decision-makers within the domestic liquor industry, including financial executives, operations managers, and strategic planners, whose insights were critical for understanding the implementation and impact of Management Control Systems (MCS). To efficiently collect data, the study utilized professional online survey platforms such as Questionnaire Star, and distributed the survey through industry-specific social media channels, forums, and targeted mailing lists to maximize respondent reach and diversity. The survey instrument employed a five-point Likert scale to assess the extent of MCS adoption and to examine the mediating effect of Organizational Culture (OC) on firm performance. To ensure the robustness and credibility of the findings, the questionnaire underwent expert review for content validity and reliability, thereby enhancing the methodological rigor and practical relevance of the research outcomes.

2-3- Data Analysis

The questionnaire data collected were analyzed using advanced statistical software such as SmartPLS, which supported descriptive statistics, correlation analysis, and structural equation modeling (SEM) to examine complex relationships among variables. SEM, as an advanced multivariate technique, allowed the researchers to investigate causal linkages among observed and latent constructs by integrating confirmatory factor analysis with path analysis. The analytical process involved two main phases: model specification and parameter estimation. In the first phase, the study established a theoretical framework that mapped the relationships between latent variables, such as MCS, OC, and corporate performance, and their observed indicators, based on established theories. In the second phase, parameters

were estimated using methods such as Maximum Likelihood Estimation (MLE), although alternative approaches were applied as needed, depending on data distribution and sample characteristics. This process enabled the quantification of both the magnitude and statistical significance of the hypothesized paths. SEM proved particularly suitable for this research, as it accommodated interdependent variables, accounted for measurement error, and enabled the simultaneous testing of direct and indirect effects, making it highly effective for exploring how MCS affected firm performance through the mediating role of Organizational Culture.

To further clarify the mechanisms by which MCS impacted corporate performance, the study conducted mediation effect analysis to examine the indirect influence transmitted through OC. The analysis used established methods, particularly the Baron and Kenny causal steps approach, which systematically tested for mediation via a sequence of regression models. The procedure began by verifying the total effect of the independent variable (MCS) on the dependent variable (corporate performance). The study then assessed the effect of MCS on the proposed mediator (OC), followed by the influence of the mediator on performance while controlling for MCS. Mediation was confirmed if all paths were statistically significant and the direct effect of MCS on performance became non-significant, indicating full mediation. This rigorous approach provided not only statistical validation of the mediation effect but also valuable conceptual insights into the transmission mechanisms underlying management practices. In this context, the method was instrumental in revealing how OC served as a conduit through which MCS influenced organizational outcomes, thereby offering a more profound understanding of the dynamics that shaped firm performance in traditional, culture-intensive industries.

3- Analysis and Results

This section provides the structure of the questionnaire used in this research, a four-column layout, clearly presenting the variable hierarchy, the number of questions, and the literature basis, providing a systematic measurement framework for the research as follows:

Table 1 provides specific information, including three main variables: MCS (5 sub-variables: SP, BP, FRA, PM, MC), OC (3 sub-variables: SVB, BH, CI), and company performance (2 sub-variables: FP, NP). Each sub-variable is composed of 5 questions, and the sources of these questions are studies by scholars: García Osma et al. (2022) [48], Kao et al. (2020) [49], Disse & Becker-Özcamlica (2022) [50], Sarker & Elnahas (2025) [51], Marco-Lajara et al. (2023) [52], and Patel & Chan (2022) [53].

Table 1. Questionnaire structure

Latent Variables	Observed variables	Number of questions	Source
MCS	SP	5	García Osma et al. (2022) [48]
	BP	5	García Osma et al. (2022) [48]
	FRA	5	García Osma et al. (2022) [48]
	PM	5	García Osma et al. (2022) [48]
	MC	5	García Osma et al. (2022) [48]
OC	SVB	5	Kao et al. (2020) [49]
	BH	5	Disse & Becker-Özcamlica (2022) [50]
	CI	5	Sarker & Elnahas (2025) [51]
OP	FP	5	Marco-Lajara et al. (2023) [52]
	NP	5	Patel & Chan (2022) [53]

3-1- Respondents Profile

The overall selection of this research is as follows: All employees and retired employees of the Chinese liquor industry are the main research objects, and the above relevant personnel and managers are invited to participate in the relevant questionnaire survey.

The demographic distribution of survey respondents demonstrates balanced representation across key organizational characteristics. Company type distribution shows significant variation, with breweries, wineries, logistics companies, and holding companies each constituting 16%-20% of the sample. Size distribution reveals that companies employing 601-800 workers form the largest segment (30.69%), followed by those with 401-600 employees (23.95%) and 200-400 staff members (23.78%), collectively indicating a predominance of medium-scale companies in the sample.

Organizational hierarchy analysis shows that 4-6 management tiers are most common, with 6-level structures being particularly prevalent (35.92%), suggesting well-defined organizational architectures among respondent companies. Geographic distribution spans multiple domestic and international regions, with Southern China (15.35%) and overseas operations (16.19%) representing substantial portions. Regarding operational history, companies predominantly fall

within the 30–50-year range, with relatively even distribution across four temporal categories, reflecting the sample's composition of established firms with substantial organizational experience and stability. This balanced demographic profile enhances the research findings' reliability and generalizability across the liquor industry's diverse organizational contexts.

3-2- Descriptive Analysis of Each Variable

Table 2 presents the descriptive statistics for both independent variables and their corresponding measurement items. Analysis reveals that all five independent variables consistently score within the "Agree" to "Slightly Agree" range, demonstrating respondents' overall positive perception regarding multiple dimensions of the MCS. While this indicates generally favourable evaluation across measured constructs, notable variations exist in the degree of endorsement for specific components. The distribution patterns suggest that while participants acknowledge the importance of MCS features collectively, their perceptions show discernible differences when assessing individual system aspects. These variations may reflect differing organizational priorities or implementation effectiveness across various MCS components within the sampled companies. The findings collectively confirm respondents' broad acceptance of management control mechanisms while simultaneously highlighting areas of relative strength and potential improvement opportunities within current systems

Table 2. Descriptive statistics of each variable

Item	Mean	Standard Deviation	Level of perception
MCS	4.011	1.304	Agree
SP	4.075	1.287	Agree
BP	4.010	1.315	Agree
FRA	3.962	1.325	Agree
PM	4.011	1.305	Agree
MC	3.998	1.288	Agree
OC	4.111	1.267	Agree
SVB	4.065	1.271	Agree
BH	4.107	1.275	Agree
CI	4.162	1.257	Agree
CP	4.038	1.296	Agree
FP	4.081	1.284	Agree
NP	3.995	1.307	Agree

Table 2 presents the descriptive statistics for the four latent variables examined in this study, namely Management Control Systems (MCS), Organizational Culture (OC), and Corporate Performance (CP). The mean score for MCS was 4.011 with a standard deviation of 1.004, suggesting that respondents generally agreed with the statements related to MCS. The highest-rated item under this construct was “The strategic plan formulated by my company can point out the direction of short-term business development,” indicating strong agreement regarding the clarity and effectiveness of strategic planning. Organizational Culture (OC) recorded a mean score of 4.012 with a standard deviation of 0.964, similarly reflecting respondents' agreement with the items. The most highly endorsed statement was “My company's induction training and continuing education are effective in imparting core values,” highlighting the perceived success of internal cultural transmission practices. Corporate Performance (CP) yielded the highest mean of 4.038 with a standard deviation of 1.122, suggesting positive evaluations of business outcomes. The top-rated statement within this construct was “The comprehensive investment return of my company's products has increased year by year,” indicating a strong perception of consistent financial growth. Overall, the descriptive results reveal a favorable assessment across all constructs, providing a strong empirical foundation for subsequent inferential analysis.

3-3- Validity and Reliability Test

Table 3 presents the results of the Cronbach's Alpha reliability test for the questionnaire, assessing the internal consistency of the ten measured dimensions. The Cronbach's α values for strategic planning (0.857), budgeting (0.847), financial report analysis (0.843), performance evaluation (0.838), and management compensation (0.835) indicate high reliability within the components of Management Control Systems (MCS). Similarly, the α values for the dimensions related to Organizational Culture, including common values and beliefs (0.839), behavioral habits (0.845), and cultural inheritance (0.834), demonstrate strong internal consistency, reflecting coherent measurement of cultural constructs. Additionally, the reliability scores for financial performance (0.841) and non-financial performance (0.840) confirm the robustness of the performance-related items. All values exceed the commonly accepted threshold of 0.80, suggesting that the questionnaire items across all constructs exhibit high reliability and internal consistency, thereby supporting the overall validity of the instrument for subsequent analysis.

Table 3. Validity and Reliability analysis

		Cronbach's α	CR	AVE
MCS	SP	0.841	0.857	0.546
	BP	0.847	0.848	0.527
	PM	0.834	0.838	0.509
	FRA	0.835	0.843	0.518
	MC	0.839	0.835	0.505
OC	CI	0.843	0.834	0.501
	BH	0.857	0.845	0.522
	SVB	0.840	0.839	0.511
CP	NP	0.845	0.841	0.514
	FP	0.838	0.841	0.515

Table 3 reports the average variance extracted (AVE) and composite reliability (CR) values for each latent variable, providing evidence of the measurement model's reliability and validity. The CR values for all latent constructs exceeded 0.83, ranging from 0.834 to 0.857, which are well above the widely accepted threshold of 0.70. This outcome demonstrates a high level of internal consistency and reliability across all measured variables. Furthermore, the AVE values for each latent variable were all greater than 0.50, with values spanning from 0.501 to 0.546, indicating that each construct explains a substantial proportion of the variance in its observed indicators and possesses strong convergent validity. These results confirm that the latent variables are measured reliably and that the model exhibits robust convergent validity, thereby ensuring that the constructs are accurately and consistently captured for subsequent structural analysis.

The discriminant validity of the model was tested using the Fornell-Larcker criterion. The square root AVE values of each latent variable (diagonal) were compared with their correlation coefficients with other variables. The results are shown in Table 4. As can be seen from the table, the square root AVE value of each latent variable is greater than the correlation coefficient of that variable with other latent variables. For example, the square root AVE of BH is 0.722, and its correlation coefficients with variables such as BP and CI are all lower than 0.722; similarly, the square root AVE of BP is 0.726, which is also higher than its correlation coefficients with other variables. The results indicate that each latent variable has good discriminant validity, which can effectively distinguish different constructs, avoid the overlap or confusion of measurement contents among latent variables, and ensure the validity of the measurement structure of the model.

Table 4. Results of Model Discriminant Validity

	SP	BP	PM	FRA	MC	CI	BH	SVB	NP	FP
SP	0.739									
BP	0.653	0.726								
PM	0.666	0.553	0.713							
FRA	0.581	0.565	0.557	0.72						
MC	0.595	0.587	0.554	0.516	0.71					
CI	0.597	0.408	0.484	0.414	0.519	0.708				
BH	0.57	0.532	0.514	0.466	0.479	0.466	0.722			
SVB	0.591	0.502	0.502	0.444	0.512	0.558	0.61	0.715		
NP	0.586	0.559	0.549	0.571	0.52	0.503	0.595	0.526	0.717	
FP	0.557	0.469	0.541	0.492	0.541	0.514	0.582	0.528	0.595	0.717

The results presented in Table 4 provide comprehensive evidence supporting the strong psychometric properties of all constructs within the research model. As illustrated in the table, the square roots of the Average Variance Extracted (AVE) for each construct, which are displayed on the diagonal, are consistently higher than the correlations between that construct and all other constructs in the model. The square root of AVE for Strategic Planning (SP) is 0.739, exceeding its correlations with other constructs (ranging from 0.581 to 0.666). The square root of AVE for Budget Preparation (BP)

is 0.726, surpassing its correlations with other constructs (ranging from 0.408 to 0.587). This pattern holds consistently across all constructs, including Performance Measurement (PM: 0.713), Financial Report Analysis (FRA: 0.72), Management Compensation (MC: 0.71), Cultural Inheritance (CI: 0.708), Behavioral Habits (BH: 0.722), Shared Values and Beliefs (SVB: 0.715), Non-financial Performance (NP: 0.717), and Financial Performance (FP: 0.717). The distinct separation between constructs is further evidenced by the moderate inter-construct correlations, which are substantially lower than the square roots of AVEs. For example, while CI shows moderate relationships with other constructs (correlations ranging from 0.408 to 0.558), these values are markedly lower than its own AVE square root (0.708), demonstrating clear discriminant validity. These results, in conjunction with previously established satisfactory reliability and convergent validity indices, confirm that all measurement instruments adequately capture their intended theoretical constructs without undue overlap. Therefore, the collected sample data demonstrate appropriate psychometric properties for proceeding with subsequent statistical analyses, including hypothesis testing through structural model analysis.

3-4- Model fit

This section provides a model fit test. 8 chosen criteria are Chi-Square to Degrees of Freedom Ratio (ChiSqr/df), Root Mean Square Error of Approximation (RMSEA) with 90% Confidence Interval (CI), RMSEA 90% Confidence Interval (RMSEA<90%CI), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Standardized Root Mean Square Residual (SRMR), Normed Fit Index (NFI), Tucker-Lewis Index (TLI).

Table 5 indicates that the fitting indicators of this model performed exceptionally well. The chi-square degree of freedom ratio was 1.110, which was much less than 3, indicating that the model fitting error was extremely small and it had an excellent fit. The RMSEA and its 90% confidence interval were both below 0.05, further confirming the high consistency between the model and the observed data. All the fit indices (GFI, AGFI, NFI) exceeded 0.9, showing that the model structure matched the actual data well. The root mean square error of standardized residuals (SRMR) value was far below 0.08, indicating that the model prediction error was small and the fitting effect was ideal. The adjusted complexity-based fitting indices (TLI and CFI) both exceeded 0.9, reflecting that the model maintained a high explanatory power and fitting level while controlling complexity. In summary, all the indicators of the model met the generally accepted standards, indicating that this structural model can effectively reflect the relationships among the latent variables of the research focus.

Table 5. Model fit test

	Estimation Model	Threshold	Interpretation
ChiSqr/df	1.110	< 1.000	Acceptable, balanced trade-off between model complexity and explanatory power
RMSEA<90%CI	0.009	< 0.080	Good fit, minimal error in population covariance structure
RMSEA90%CI	0.020	< 0.080	Good fit, minimal error in population covariance structure
GFI	0.912	> 0.800	Acceptable fit, explains observed covariance well
AGFI	0.900	> 0.900	Good fit, it indicates a model that fits the data with the modeling.
SRMR	0.029	< 0.080	Below threshold, explain the goodness of fit index.
NFI	0.895	> 0.900	Slightly below threshold, reasonable improvement over baseline
TLI	0.987	> 0.950	Excellent fit, explain the goodness of fit index.

3-5- Hypothesis Testing

From the path coefficients and significance test results in Table 6, it can be seen that all 3 direct paths in the research model have extremely strong statistical significance (p-values are all less than 0.05, t-values are all greater than 1.96), indicating that the causal relationship hypotheses among the variables have been empirically supported.

3-5-1- SEM

The core purpose of the structural equation model (SEM) is to explore the interrelationships among latent variables and to verify the causal hypotheses pre-established in the research model. In this research, SmartPLS 4.0 software was used as the analytical tool, with the Bootstrap sampling frequency set at 5000 to enhance the robustness of the results. The path analysis diagram of the model test results in this research is shown in Figure 2.

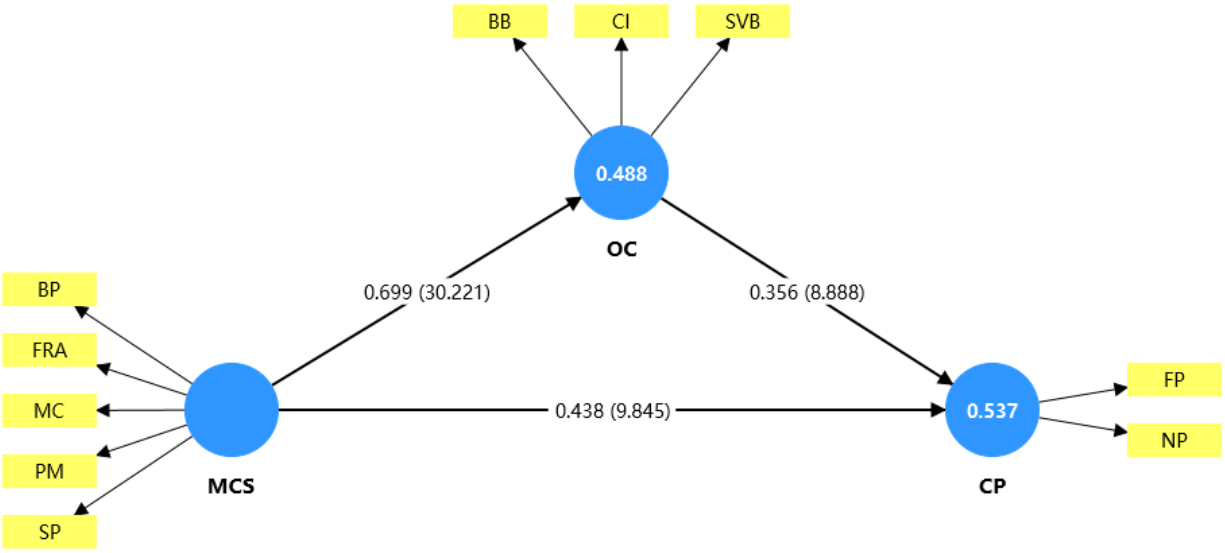

Figure 2. Path Analysis Diagram of Model Test Results

Figure 2 illustrates the structural path relationships among the core variables, with all direct effects demonstrating strong statistical significance at the 1% level. Specifically, the path coefficient for the direct effect of Management Control Systems (MCS) on Corporate Performance (CP) was 0.438, accompanied by a minimal standard error (t = 9.845, p = 0.000), indicating a robust and statistically significant positive relationship. Similarly, the path coefficient for the effect of MCS on Organizational Culture (OC) was even stronger at 0.699 (t = 30.221, p = 0.000), confirming the substantial influence of MCS on shaping OC. Additionally, the path from OC to CP yielded a coefficient of 0.356 (t = 8.888, p = 0.000), further reinforcing the mediating role of OC in the relationship between MCS and firm performance. These results stress the fundamental roles both MCS and OC play in enhancing corporate outcomes. Detailed results of the path coefficients and corresponding statistical measures are presented in the subsequent table (Table 6).

Table 6. Path coefficient results

Direct effect	β	b	SE	t-value	p	Result	
MCS → CP	0.213	0.572	0.045	10.790	< 0.000***	Significant	Supported
MCS → OC	0.455	0.317	0.023	23.507	< 0.000***	Significant	Supported
OC → CP	0.421	0.783	0.040	9.662	< 0.000***	Significant	Supported

****P<0.001*

Table 6 presents the path coefficient results, confirming the statistical significance of all direct effects at the 1% level. The direct effect of Management Control Systems (MCS) on Corporate Performance (CP) yielded a path coefficient of 0.213 with a standard error of 0.572 (t = 10.790, p = 0.000), indicating a significant positive relationship. Similarly, the direct effect of MCS on Organizational Culture (OC) showed a stronger path coefficient of 0.455 with a minimal standard error (t = 23.507, p = 0.000), emphasizing the substantial influence of MCS on shaping cultural dimensions within the firm. Lastly, the direct effect of OC on CP produced a path coefficient of 0.421 with a standard error of 0.783 (t = 9.662, p = 0.000), further validating the mediating role of OC in translating management controls into improved corporate performance. These findings collectively reinforce the interconnected influence of MCS and OC on organizational outcomes.

3-5-2- Mediating Analysis

The mediation analysis outcomes displayed in Table 7 demonstrate that MCS significantly affect CP through the intermediary role of OC. The absence of zero within the confidence intervals for all effect pathways confirms both the statistical reliability and substantive importance of these mediated relationships. These findings empirically validate OC's crucial function in transmitting MCS impacts to performance outcomes, while simultaneously establishing the robustness of the identified mediation mechanisms. The results provide quantitative evidence that cultural factors serve as meaningful conduits through which control systems ultimately influence organizational success metrics.

Table 7. Mediation effect test

	β	b	SE	t-value	p	2.5%	97.5%
MCS → OC → CP	0.249	0.031	0.193	8.085	0.000 ***	0.312	0.249

**** P<0.001*

The mediation analysis presented in Table 7 reveals that OC significantly mediates the relationship between MCS and CP. Results show a mediation path coefficient of 0.249 with minimal standard error (T=0.000, p=0.193), confirming statistical significance. The 95% confidence interval (0.312-0.249) excludes zero, demonstrating result reliability. These findings substantiate OC's critical intermediary function in translating MCS implementation into performance outcomes, suggesting that MCS enhances CP primarily through organizational culture optimization mechanisms rather than through direct effects. The robust mediation effect underscores OC's pivotal role as a transmission channel for control system impacts on organizational results. Crucially, the direct effect of MCS on CP remained significant after including the mediator ($\beta = 0.213$, $p < 0.001$). This pattern of results, i.e., a significant indirect effect alongside a significant direct effect, provides strong evidence for partial mediation, indicating that OC is a powerful, but not the only, mechanism through which MCS influences performance.

Through the analysis of the structural equation model, the above analysis results were summarized, and the results of the hypothesis test were compiled in Table 7. Also, Table 8 indicates that 3 hypotheses of this research were supported by the data analysis, and the model was valid.

Table 8. Summary of Hypothesis Testing Results

Hypothesis	Content	Result
H1	MCS is positively related to the CP of Chinese liquor companies.	Supported
H2	MCS is positively related to the OC of Chinese liquor companies.	Supported
H3	OC is positively related to the CP of Chinese liquor companies.	Supported

H1 confirms a positive correlation between MCS and financial performance, suggesting that robust control mechanisms enhance profitability in this sector. This aligns with agency theory, as effective MCS likely mitigates inefficiencies and aligns managerial actions with shareholder interests.

H2 indicates that MCS positively influences OC, implying that structured control systems foster cohesive values and norms within these companies. This relationship may be particularly relevant in China's liquor industry, where tradition and internal cohesion often intersect with modern management practices.

H3 reveals that OC drives CP, supporting the resource-based view that intangible cultural assets create competitive advantages. Collectively, these results suggest a cascading effect: MCS strengthens OC (H2), which in turn boosts performance (H3), while MCS also directly improves financial outcomes (H1).

4- Discussion

The research empirically validates four key mechanisms through which MCS enhance CP in China's Baijiu industry: (1) Operational Efficiency - Systematic budgeting and cost controls optimize supply chains, mitigating raw material volatility and production waste; (2) Strategic Alignment - Strategy maps and digital authentication synchronize premiumization initiatives with operational KPIs while protecting intellectual property; (3) Risk Mitigation - Compliance protocols and blockchain traceability systems minimize regulatory violations and reputation threats; (4) Technological Integration - Predictive analytics and AI-driven tools enhance consumer targeting and early warning systems. While confirming H1's proposed MCS-CP relationship, the results reveal distinctive industry patterns: Baijiu firms derive greater value from brand resilience and intangible benefits compared to conventional manufacturing's cost-focused advantages. Contingency analysis emphasizes digital capabilities' disproportionate impact during market transitions, whereas traditional strategic controls show reduced effectiveness. Transaction cost efficiencies demonstrate constrained financial returns due to production lead times and brand-based pricing power. The findings highlight MCS's stronger influence on non-financial performance metrics versus direct financial outcomes, illustrating system complexity in prestige-driven sectors. This contributes to theoretical development by mapping MCS's sector-specific performance pathways. This multifaceted impact underscores that MCS in heritage-driven industries functions not merely as a monitoring tool but as a strategic enabler. Notably, the finding that MCS exerts a stronger influence on non-financial performance aligns with the tenets of the Balanced Scorecard theory. It suggests that the primary value creation mechanism lies in building intangible assets like brand reputation and cultural capital, which are paramount for competitive advantage in the Baijiu sector. This stands in contrast to studies in standardized manufacturing, where cost efficiency and financial metrics are often the direct and primary outcomes of MCS. The constrained financial returns in the short term, as explained by Transaction Cost Theory, are due to the industry's high asset specificity - benefits materialize over extended periods, whereas transaction cost reductions in operational coordination are immediate.

This research demonstrates that Management Control Systems (MCS) significantly shape Organizational Culture (OC) in Baijiu firms through multiple channels. First, increased transparency, achieved via standardized budgeting, reduces nepotism and builds institutional trust. Second, the adoption of digital MCS tools fosters innovation, enabling the development of youth-oriented products and the implementation of modern marketing strategies. Third, enhanced audit processes facilitate cultural adaptation to stricter regulatory environments, promoting compliance. Importantly, the findings reveal a bidirectional, co-evolutionary relationship between MCS and OC: while traditional craftsmanship and family-style management practices influence the design and operation of MCS, these systems in turn modernize cultural

practices by embedding principles of innovation and regulatory compliance within established traditions. This reciprocal dynamic underscores that MCS implementation is not a simple top-down process but a nuanced interplay between formal systems and deeply rooted cultural norms. Contingency Theory further explains this phenomenon by highlighting the necessity for MCS to adapt to existing cultural contingencies to ensure effectiveness. For example, control systems that disregard the deeply held value of the "artisan spirit" are likely to encounter resistance, whereas systems that integrate such cultural elements are more successful in driving both modernization and cultural preservation. Overall, the study confirms that the relationship between MCS and OC is not linear, but rather reciprocal and mutually transformative.

The research demonstrates that MCS significantly improve CP in Baijiu firms through four cultural pathways: (1) Tradition Preservation - Reinforces employee engagement and product craftsmanship standards; (2) Cross-functional Integration - Eliminates operational barriers between departments; (3) Market Adaptation - Facilitates consumer-oriented product innovation; (4) Knowledge Retention - Safeguards proprietary production techniques. Supporting H3, the findings reveal industry-specific dynamics: Unlike conventional manufacturing sectors, MCS in Baijiu firms deliver dual benefits - enhancing internal efficiencies while creating brand differentiation value. The strong mediating role of OC reveals the "how" behind the MCS-CP relationship. It acts as the transmission mechanism that converts formal controls into superior performance. Drawing on Transaction Cost Theory, a culture of trust and shared values (fostered by MCS) dramatically lowers internal transaction costs, such as the costs of monitoring brewing quality or enforcing agreements between departments [38]. Employees who internalize cultural values require less supervision and are more likely to collaborate effectively. Simultaneously, the Balanced Scorecard lens explains how this cultural capital translates into market performance. A culture obsessed with quality preservation (Tradition Preservation) directly enhances brand equity, allowing for premium pricing. A culture that promotes knowledge sharing (Knowledge Retention) protects key tacit knowledge, a critical resource that competitors cannot imitate. Therefore, OC is not just a soft asset; it is a hard, economic driver that reduces costs and creates value, explaining the significant mediation effect we observe.

The research findings indeed demonstrate that Organizational Culture (OC) serves as a powerful yet partial mediator between Management Control Systems (MCS) and Corporate Performance (CP). This leads to a central, actionable insight for managers as the choice is not between prioritizing culture or control, but rather to recognize that the most effective strategy is to use the formal MCS as the primary tool to architect and reinforce the desired culture [34].Our findings suggest that MCS and OC are not competing priorities but are synergistic and co-evolutionary. The significant direct path (MCS → CP) confirms that control systems remain indispensable for operational efficiency, risk management, and strategic alignment. Conversely, the strong indirect path (MCS → OC → CP) reveals that a significant portion of MCS's impact is channelled through its ability to shape cultural norms. Therefore, abandoning formal controls to focus solely on "culture-building" would be as detrimental as implementing rigid controls that ignore and stifle the organizational culture. Based on this, this research proposes the following practical implications for managers:

(1) Design Control Systems with Cultural Intentionality: Managers should consciously design every MCS component, from performance metrics to compensation schemes, to explicitly promote and reward the specific cultural behaviours that drive performance. For instance: In terms of performance measurement, including KPIs for knowledge sharing, innovation or cross departmental collaboration, to actively cultivate a culture of teamwork and continuous improvement. Management compensation links incentives not only to financial results, but also to leadership in maintaining cultural values. In the strategic planning, it is formally stated that cultural protection and adaptation is a strategic goal supported by dedicated resources in the budget [20].

(2) Leverage Digital MCS for Cultural Transparency: Utilize digital tools (e.g., internal platforms, blockchain for traceability) not just for operational efficiency but to build a culture of transparency and trust. Sharing real-time data on performance, sustainability metrics, and customer feedback can help employees visually connect their roles to the company's larger mission, thereby strengthening cultural buy-in and pride.

(3) Reframe the Purpose of MCS: Communicate to the organization that the fundamental purpose of MCS is to enable and protect the company's core cultural values and strategic identity. For example, quality control protocols should be presented as guardians of the "artisan spirit" and brand reputation, rather than as mere bureaucratic hurdles. This reframing aligns the "hard" aspects of control with the "soft" aspects of culture, increasing acceptance and effectiveness.

While deeply contextualized within the unique ecosystem of the Chinese Baijiu industry—defined by its profound cultural symbolism, artisanal production, and rigid brand hierarchy—our findings yield transferable insights for global traditional sectors. The extreme potency of Organizational Culture (OC) as a mediator and the primacy of building non-financial, cultural advantages are findings particularly pronounced in, yet not exclusive to, this industry. The core theoretical framework is highly generalizable to any culture-intensive industry where value derives from heritage, artistry, and tacit knowledge. Key transferable insights include that effective MCS in traditional industries must work through culture to be effective, acting as a nurturer of core values rather than a suppressor. The bidirectional relationship where MCS modernizes culture while being shaped by it is a universal dynamic for balancing tradition and innovation. Digitalization as a Bridge. Digital MCS is a critical tool for enhancing efficiency without compromising authentic heritage, a crucial insight for any traditional sector. In conclusion, while the empirical context of Baijiu is specific, the underlying mechanisms are applicable to a wide spectrum of heritage industries, from European winemaking and luxury craftsmanship to traditional arts, providing a universal model for sustaining cultural value and competitive performance.

5- Conclusion and Recommendations

5-1- Conclusion

This study set out to investigate the intricate relationships between Management Control Systems (MCS), Organizational Culture (OC), and Corporate Performance (CP) within the unique context of China's liquor industry. Our empirical findings, grounded in Transaction Cost, Contingency, and Balanced Scorecard theories, confirm that MCS serves as a pivotal strategic lever, not only directly enhancing operational efficiency and financial outcomes but, more importantly, by proactively shaping an adaptive and performance-oriented culture. The robust mediating role of OC ($\beta = 0.249$) unveils the central mechanism through which control systems translate into sustainable advantage: by instilling shared values that reduce internal transaction costs, foster innovation, and preserve traditional craftsmanship, MCS ultimately drives both tangible and intangible performance metrics. This underscores that in heritage-rich industries, superior performance is achieved not by controls alone, but through their symbiotic relationship with culture.

Theoretically, these insights extend existing literature by delineating the sector-specific pathways of MCS efficacy and establishing OC not as a mere backdrop but as a critical transmission channel. For practitioners, our results emphasize the strategic imperative for liquor industry leaders to design MCS that are culturally resonant, leveraging digital tools for modernization while respecting traditional values to foster a cohesive and agile organization. While this research offers a validated model, its cross-sectional design and industry focus present limitations. Future research should pursue longitudinal studies to trace causal relationships over time and explore the generalizability of this framework across other traditional and cultural sectors globally.

The findings of this study both align with and extend the existing body of knowledge on management control systems (MCS), organizational culture (OC), and corporate performance (CP). When compared with previous research, several important similarities and differences emerge that highlight the contribution of our work.

- ***MCS and CP Relationship***

Our results confirming the positive relationship between MCS sophistication and corporate performance ($\beta = 0.213$, $p < 0.001$) are consistent with numerous previous studies. For instance, Omrane [54] found similar positive associations in food company, while Tupamahu et al. [55] documented this relationship in manufacturing contexts. However, our study reveals a notably stronger effect of MCS on non-financial performance compared to financial metrics, which contrasts with findings from Lunkes et al. [56] and Bui et al. [57] who reported more balanced effects across performance dimensions. This discrepancy may be attributed to the unique characteristics of the traditional liquor industry, where brand reputation and cultural heritage serve as critical intangible assets that precede financial outcomes.

- ***The Mediating Role of Organizational Culture***

The significant mediating role of OC ($\beta = 0.249$, $p < 0.001$) represents a substantial contribution to the literature. While Ong et al. [58] and Bezuidenhout et al. [59] proposed theoretical links between MCS and OC, our empirical validation provides robust evidence of this relationship. Particularly noteworthy is our finding of partial rather than full mediation, suggesting that MCS influences CP through multiple pathways.

The remaining significant direct effect of MCS on CP ($\beta = 0.213$, $p < 0.001$) after accounting for the mediator. This finding of partial mediation is of substantial importance as it reveals a more nuanced reality: Organizational Culture (OC) is a powerful, but not the sole, mechanism through which Management Control Systems (MCS) influence performance.

A partial mediation model suggests that while our theoretical model of MCS → OC → CP is strongly supported, it is not exhaustive. MCS also influences CP through other channels not measured in this study. This could include direct operational improvements (e.g., optimized logistics from a new ERP system), enhanced financial discipline from budgeting controls, or other mediators like employee capabilities or dynamic capabilities. This opens avenues for future research to identify and incorporate these additional mediators.

The finding of partial mediation fundamentally shapes the practical advice for managers, moving it away from a false choice between “culture” or “control” and towards a dual-track strategy:

(1) Managers Must Simultaneously Invest in Both Pathways

The persistence of a direct effect means that investing in and refining the technical, operational facets of the MCS (e.g., sophisticated budgeting, data analytics and compliance protocols) will yield direct performance benefits independent of cultural shifts. However, the strong indirect effect means that ignoring the cultural channel would mean forfeiting a substantial portion (in our model, the majority) of MCS’s potential impact. The goal is not to prioritize one over the other but to actively strengthen both.

(2) Use MCS to Intentionally Engineer Culture

The partial mediation model underscores that MCS is the antecedent lever that managers can pull. Therefore, the most strategic approach is to consciously design MCS to proactively build the specific culture that drives performance.

For example: Performance metrics should be designed to measure and incentivize collaborative behaviors. Compensation structuresshould reward both financial results and the embodiment of cultural values. Strategic planning processes should formally integrate cultural goals as key objectives.

Frame MCS as a Dual-Purpose Tool. Managers should communicate that MCS serves two concurrent purposes: (a) as a direct operational tool for efficiency and alignment, and (b) as an investment in the cultural infrastructurethat fosters innovation, trust, and long-term resilience. This reframing helps secure buy-in for control systems by highlighting their role in building a positive work environment, not just enforcing compliance.

(3) Industry-Specific Findings

The distinctive context of Chinese liquor manufacturing reveals important industry-specific patterns. The stronger effect of MCS on OC in our study ($\beta = 0.455$) compared to manufacturing sectors (typically $\beta = 0.30$-0.35 in studies like Ong et al. [58] suggests that cultural factors may play an amplified role in traditional industries with strong heritage values. The specific empirical results (e.g., the extreme strength of cultural mediation) are most directly applicable to other "heritage-driven industries" that share key traits: reliance on tradition, artisan skills, tacit knowledge, and brand storytelling as core value drivers. This includes sectors like European winemaking, Scotch whisky production, and traditional luxury craftsmanship. However, the broader theoretical mechanisms that must be identified are highly transferable: The bidirectional relationship between MCS and OC is a universal dynamic for firms balancing tradition with innovation. The strategy of using MCS as a tool to actively architect and reinforce culture is a critical imperative for any manager in a culture-intensive business. The partial mediation model provides a nuanced blueprint for pursuing both direct operational control and indirect cultural development. In essence, while the context is specific, the framework for understanding how control and culture interact in heritage-based industries is generalizable. Our study provides a validated model for this important class of industries globally.

(4) Theoretical Implications

Our integration of Transaction Cost Theory provides a more comprehensive explanatory model than previous studies that typically employed single theoretical perspectives. For example, while Lill et al. [60] applied transaction cost theory alone to explain MCS efficiency, our multi-theoretical approach reveals how these mechanisms operate simultaneously, offering a more complete understanding of how MCS create value in complex organizational environments.

Furthermore, this research suggest that Challenges on integration of Transaction Cost Theory are firstly, Artisans may view data-driven systems as a threat to their autonomy and expertise, devaluing tacit knowledge built through experience, secondly, Traditional craftsmen may lack the digital literacy to engage with new systems, creating frustration and disengagement. Thirdly, data systems that prioritize quantitative output (e.g., speed, volume) may inadvertently discourage the qualitative excellence central to craftsmanship. Lastly, significant investment is required for digital infrastructure, which can be difficult to justify for traditional processes with long ROI horizons. Thus, this research provides strategies for Mitigation: (a) Position data not as a tool for top-down control, but as an "enabler of tradition". Demonstrate how data can protect quality (e.g., by monitoring fermentation conditions), preserve knowledge (e.g., digitizing master techniques), and tell the story of craftsmanship to consumers, thereby enhancing brand value. (b) Involve master craftsmen and line workers in the design of data tools. This ensures metrics capture what is qualitatively important, fosters a sense of ownership, and leverages their deep practical knowledge to improve the system itself. (c) Develop programs that simultaneously upskill artisans in data literacy and train data analysts in the values and nuances of the traditional craft. This builds a shared language and mutual respect. (d) Start with a small-scale pilot project in a low-risk area. Use its success—e.g., showing how data prevented a batch failure or maintained perfect consistency—to build broader organizational trust and demonstrate tangible benefits to skeptics.

5-2- Research Limitations and Future Recommendations

Several methodological constraints should be acknowledged: (1) The industry-specific and geographically concentrated sample may limit broader applicability; (2) Operationalization of key variables could be refined for stronger theoretical alignment; (3) The cross-sectional design precludes examination of longitudinal MCS-CP relationship evolution. Although sophisticated analytical techniques, including structural equation modelling, were utilized, the results' transferability to dissimilar industries or regions remains constrained by contextual differences in managerial approaches and external conditions. Subsequent investigations would benefit from extended temporal frames and diversified geographical coverage to enhance the robustness and generalizability of findings. These limitations highlight opportunities for future research to build upon the current research's foundation while addressing its inherent constraints.

Future studies are suggested to refine MCS dimensions and culture layers (spiritual/institutional/material). In addition, Future studies are suggested to conduct longitudinal tracking of industry cycles and cross-case comparisons (e.g., Wuliangye vs regional brands). Furthermore, Future studies are suggested to test culture-environment mediation or moderators like digitalization. Lastly, Future studies are suggested to leverage big data/AI to uncover deeper management patterns. These expansions will enhance theoretical precision and practical relevance for firms.

6- Declarations

6-1- Author Contributions

Conceptualization, C.L., T.S., and P.L.; methodology, C.L., T.S., and P.L.; software, C.L. and P.L.; validation, C.L. and G.I.; formal analysis, C.L., C.L., T.S., and P.L.; investigation, C.L., T.S., P.L., and G.I.; resources, C.L. and P.L.; data curation, C.L., T.S., P.L., and G.I.; writing—original draft preparation, C.L., T.S., and P.L.; writing—review and editing, C.L., T.S., and P.L.; visualization, C.L. and G.I.; supervision, T.S., P.L., and G.I.; project administration, C.L. and T.S. All authors have read and agreed to the published version of this manuscript.

6-2- Data Availability Statement

The data presented in this study are available on request from the corresponding author.

6-3- Funding

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6-4- Institutional Review Board Statement

This research was conducted by the Declaration of Helsinki and approved by the Institutional Review Board (IRB) of Walailak University, Thailand (protocol code WU-EC-AC-0-020-68, and Approval No. WUEC-25-087-01).

6-5- Informed Consent Statement

Informed consent was obtained from all subjects involved in the research.

6-6- Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

7- Nomenclatures

MCS	Management control system,	OC	Organizational culture,
CP	Company performance,	SP	Strategic planning,
BP	Budget preparation,	FRA	Financial reporting analysis,
PM	Performance measurement,	MC	Management compensation,
CI	Cultural inheritance	BH	Behavior
SVB	Share value and believe	NP	Non-financial performance,
FP	Financial performance		

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