

Financial Fraud Risk Identification Based on the Chartered Financial Analyst Framework: A Pre-Event Analysis Perspective Using the Luckin Coffee Case

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Abstract

Capital markets are contingent on information quality, while the frequent appearance of financial statements fraud seriously undermines information quality, detrimentally harms investors and market safety. Drawing on Luckin Coffee accounting fraud as a natural experimental opportunity, under the Fraud Triangle theory, this study designs a complete identification procedure comprising intrinsic motivations, extrinsic signals, and a meticulous analysis process. Based on only the public available information before its fraud was revealed, this research adopts techniques based on the Chartered Financial Analyst curriculum, such as evaluating profit quality, cash flow monitoring, comparing with competitors, to highlight financial anomalies or key abnormal financial indices from Luckin Coffee's audit report for investors. Evidence shows that systematic Chartered Financial Analyst (CFA) based detection processes have been able to generate the signal of strong warning toward financial frauds. The present study this holds significant theoretical and practical implications for enhancing overall market risk detection capabilities and regulatory oversight efficiency.

Keywords: Luckin coffee, fraud triangle theory, Beneish M-squared method, chartered financial analyst

1. Introduction

Sound capital markets require high-quality disclosure of information. However, frequent reports of financial fraud in recent years, both domestically and internationally, not only resulted in tremendous loss of investors but also heavily impacted the efficiency and fairness of resource allocation through the market (Banerjee S, 2024). The serious accounting problems admitted in 2020 by Luckin Coffee, a former "star" Chinese concept stock, and its subsequent sharp plunge triggered an extreme crisis of confidence in such shares globally and caused people to seriously think about transnational cooperation. This is a typical and striking example in this area of research.

Research on financial fraud has usually focused on ex-post analyses for defining the event period qualitatively, classification of schemes, and effects. In this way, although these insights have helped provide new understanding and guidance, these approaches have tended to lack methodology rigor and have often not managed to evade subjective conclusions. Essentially, financial fraud is an observed result produced from various under-the-surface motivations. Existing literature is mostly ex-post qualitative explanation for synthesizing the timeline, method, effect and macroeconomic consequences, but since they are ex-post, it is less methodologically rigorous and can be biased based on hindsight judgments and neglects to effectively capture the specific information set, with uncertainties, difficulties in decision making confronting participants in taking such risks, accumulating down into fraud. Thus, some key aspects in the financial fraud process might be overlooked with consequences for decision makers. To address these limitations, this research seeks to transcend conventional approaches by adopting an ex-ante analytical perspective. Coupled with Fraud Triangle Theory (Schafer, 1973), it introduces the globally recognized and rigorous Chartered Financial Analyst (CFA) knowledge framework as its core analytical apparatus (Pinto, 2010).

Confirmatory Factor Analysis presents a potent methodological tool for this purpose. As a foundational component of Structural Equation Modeling, CFA enables the testing of hypothesized relationships between pre-specified theoretical constructs and their observed indicators (Kline, 2011). This paper integrates the CFA model into the Luckin case analysis. Primarily, it consolidates disparate fraud motivations and signals into a unified, testable theoretical framework, quantifying the interrelationships among various factors. Secondly, it demonstrates how

a process of business logic validation, systematic financial scrutiny, and corporate governance evaluation can progressively reveal the anomalies and risks concealed beneath a facade of robust growth. The value of this research extends beyond a single-case post-mortem, aiming to derive a replicable, quantitative risk identification framework. This framework is intended to serve as an enhanced operational early-warning tool for regulatory bodies and market participants.

2. Luckin Coffee's Business Model

2.1 Intensive Capital Injection and Initial Public Offering (IPO) Journey

Luckin Coffee's rapid growth has been highly reliant on substantial capital infusion. Public information indicates that since 2018, the company has completed several rounds of large-scale financing, including a Series A round of USD 200 million and a Series B round of USD 200 million (Luckin Coffee Inc, 2019). The company went public on the National Association of Securities Dealers Automated Quotations (NASDAQ) in May 2019. According to its F-1/A filing, the Initial Public Offering (IPO) involved the issuance of 33 million American Depositary Shares at USD 17 per share, raising a total of USD 561 million. Merely a few months after its listing, in January 2020, the company announced a follow-on offering, planning to raise approximately USD 890 million through a secondary stock offering and the issuance of convertible bonds (Luckin Coffee Inc, 2020). This series of financing activities reflects the company's substantial capital requirements and its strategic objective of sustaining rapid expansion.

2.2 Post-IPO Performance Pressure

Luckin Coffee as the new public company was subject to explicit capital market expectations about growth and returns in the capital market. The business model shown to investors was to open a large number of store sites with heavy rewards to acquire users, then realize profitability via scale economy. However, the "growth-first" logic would mean that each period must display impressive revenue growth, increasing numbers of users and improved unit economics to justify the premium valuation and meet investors' expectations, thereby generating considerable short-term performance pressure (Muddy, 2020).

2.3 Highly Concentrated Governance Structure

A defining characteristic of Luckin Coffee's corporate architecture was its highly concentrated governance structure.

According to the prospectus F-1 document submitted to the United States Stock Exchange and Securities Exchange Commission, the company used the Class A share structure and Class B shares dual class, while Class B common shares held 10 times the number of Class A shares. The founding partners Zhiya Qian and Zhengyao Lu could actually control nearly 88.6% of the total voting rights, giving them absolute control of the company after listing. Such concentration of power would make it impossible for checks and balances within the company (Dechow, 2011). In addition, at the same time, management used the so-called "disrupting" slogan, focusing on challenging traditional industries. In corporate strategy, the promotion of the aggressive "survival" logic created a "fast business growth" corporate culture, which would promote fast development of the company. While instrumental in driving swift business development, this culture, emphasizing velocity and scale, likely exerted a profound influence on the corporation's overall risk tolerance and decision-making modalities.

3. In-depth Case Analysis Based on CFA Model Results

3.1 Scrutiny of Business Logic Rationality

Table 1 presents selected financial data from Luckin Coffee's unaudited third-quarter 2019 report. To estimate transaction volume, an average ticket size must be assumed. Given the product's high cost-performance ratio and pervasive aggressive promotional strategies (e.g., "buy-one-get-one-free"), a conservative estimate of RMB 10 per ticket is applied. Daily cups per store \approx Store net revenue per day / Average ticket size \approx 4,889 RMB / 10 RMB/cup \approx 489 cups/day. Store-level operating profit: RMB 186.3 million. Store-level operating profit margin: 12.5%. Daily profit per store = Total store-level operating profit / Number of stores / Number of days in quarter \approx 186,300,000 RMB / 3,321.5 stores / 92 days \approx 610 RMB/day. Company-wide net loss: RMB 531.9 million. Principal period expenses: Sales and marketing expenses RMB 557.7 million; General and administrative expenses RMB 246.1 million.

Table 1. Luckin coffee Q3 2019 financial data

Luckin Coffee	Q3 2019
Sales revenue	RMB 1.4932 billion
Number of stores at the beginning of the period	2,963
Number of stores at the end of the period	3,680
Average number of stores	3322
Quarterly days	92 days
Average daily revenue per store	4,889 RMB

Data from pre-restatement official financial report (Luckin Coffee Inc, 2019)

The analysis reveals significant vulnerabilities. Firstly, store-level profitability exhibited high fragility. Although the reported store-level operating profit margin was 12.5%, the calculated daily profit per store amounted to a marginal RMB 610. This narrow profit margin suggests instability highly susceptible to operational cost fluctuations or adjustments in subsidy policies, indicating an elementary weak unit economic model. Secondly, the corporation displayed pronounced "diseconomies of scale." Despite achieving profitability at the individual store level, the consolidated entity reported a substantial net loss of RMB 531.9 million. This implies that, on average, each store bore a daily loss of approximately RMB 1,742 attributable to central corporate expenses, primarily driven by high sales and marketing expenditures and administrative overheads.

3.2 Comparison of Key Industry Metrics

When creating the illusion through fraud, companies tend to leave systematic loopholes across several areas on various levels of profitability. And these may be identified and quantified by combinations of financial ratios. There will be deep analysis of financial fraud with Beneish M-squared method (Tarjo, 2015). The standard form of the Beneish M-Score model is shown in Equation (1):

$$M = -4.84 + 0.92 \times DSRI + 0.528 \times GMI + 0.404 \times AQI + 0.892 \times SGI + 0.115 \times DEPI - 0.172 \times SGAI + 4.679 \times TATA - 0.327 \times LVGI \quad (1)$$

According to Beneish's empirical research, the model's discrimination rule is as follows (Beneish, 1999):

$M > -2.22$, there is a high probability that the company has committed financial fraud;

$M \leq -2.22$, the financial reporting is considered essentially normal.

Table 2. Beneish M-Score calculation for Q3 2019

Ratio	Ratio Value	Weight in M-score	Value in M-score
DSRI	0.02185	0.92	0.0201
GMI	0.6956	0.528	0.3673
AQI	1.2483	0.404	0.5043
SGI	6.401	0.892	5.7097
DEPI	0.3834	0.115	0.0441
SGAI	0.3654	-0.172	-0.0628
TATA	-0.0509	4.679	-0.2381
LVGI	0.6104	-0.327	-0.1996

Data from pre-restatement official financial report (Luckin Coffee Inc, 2019)

Table 2 displays the calculated Beneish M-Score for Q3 2019. The resultant M-score is 1.3050, which exceeds the established threshold of -2.22. According to the Beneish M-Score model, this value indicates a high probability of financial manipulation based on the assessment of the constituent financial ratios.

3.3 Comparison of Key Industry Metrics

Table 3. Key industry metrics comparison

Indicator	Company	Luckin Coffee	Starbucks	Fold Difference
Single store quarterly revenue		40600 RMB	1162000 RMB	28.6 times
Single store quarterly profit		5100 RMB	209000 RMB	41 times
Gross Profit Margin		51.7%	≈60%	1.16 times
Revenue growth		540.2%	≈7%	77 times

Data source: Luckin (Luckin Coffee Inc, 2019) and Starbucks 2019 official financial data (Starbucks, 2019)

As indicated in Table 3, despite a surge in revenue driven by aggressive store expansion, Luckin Coffee's quarterly revenue and profit per store were 28.6 times and 41 times that of Starbucks, respectively. However, Luckin reported a gross profit margin comparable to Starbucks. Starbucks' high gross margin is primarily built on brand premium, its high-class positioning, and the value derived from its "third-place" experiential offering. In contrast, Luckin employed an aggressive discount strategy characterized by "first cup free" and "buy-one-get-one-free" promotions, resulting in a significantly lower effective average selling price. To achieve a similar level of gross margin, a significant amount compared to its average customer spending per transaction in 2019 is extremely unlikely within retail.

3.4 Corporate Governance and Motivational Analysis

This section conducts an in-depth analysis of the internal drivers and enabling conditions for financial manipulation at Luckin Coffee from a corporate governance perspective, utilizing the Fraud Triangle framework.

3.4.1 Multidimensional Sources of Performance Pressure

The performance pressure Luckin Coffee confronted with was multifaceted, involving three escalating dimensions. Firstly, the company faced severe cash flow constraints. Financial statements indicated that despite an ending cash balance of RMB 5.544 billion, its main source was financing activities, including IPO and private placements, but not operational cash flow. With operating cash flow remaining negative at RMB -122.8 million in Q3 2019, the company was at risk of a breakdown in its capital chain. Secondly, rigid pressure arisen from Valuation Adjustment Mechanisms. Based on its pre-IPO financing history, Luckin had entered into Valuation Adjustment Mechanisms (VAMs) with early investors containing specific performance clauses. Failure to meet growth targets would expose founders and management to significant personal financial losses and dilution of control, creating a powerful incentive to achieve targets by any means necessary. Thirdly, pressure to manage market expectations intensified post-IPO. Management consistently communicated highly optimistic growth trajectories and profitability timelines during earnings calls, publicly projecting imminent store-level profitability. To maintain personal credibility and sustain the company's valuation, management became constrained by the elevated expectations they themselves had cultivated, feeling compelled to deliver on these promises through unconventional means.

3.4.2 Institutional Roots of Fraud Opportunity

The opportunity for fraud mainly came from serious lack and deficiencies appeared in the corporate governance structure, most notably the extreme concentration of power under the dual-class share mechanism. Due to founders holding more than 88% of voting-sharing powers stemming from their Class B Shares, the Boards of Directors and Supervisory Boards could almost ignore investing principals' interest in essence, where external shareholders, including institution shareholders and common investors outside who have actually no decision-making authority at all, are only left relying upon trust shown by company managers to exercise ownership over its. The disclosed composition revealed that the audit committee lacked sufficient independence and expertise to effectively challenge aggressive accounting practices. Compounding this, the internal audit function reported directly to management instead of the audit committee, further undermining the independence and efficacy of internal controls. Additionally, the novel "data-driven new retail" business model introduced inherent ambiguities. The complexity of this model provided significant latitude in accounting treatments for revenue recognition and cost allocation, creating opportunities for regulatory arbitrage and making it challenging for external auditors and regulators to detect irregularities.

3.4.3 Cultural Construction of Rationalization

Even though not measurable directly, tendencies toward rationalization might have been perceived by reviewing the managers' talk. Founders kept insisting on their mission to "disrupt traditional industries" and a great cause of making "a national brand," both may imply the firm was regarded as an industry challenger and an innovator in the founders' corporate culture frame. This cultural self-narration could then be understood to help justify reckless financial operations as being needed for carrying out such supposedly higher goals. Applying the systematic framework of the Fraud Triangle, tremendous performance pressure combined with opportunities created by flaws in governance will lead to the theoretical inevitability. This analysis underscores that corporate governance flaws are not merely peripheral contextual factors but constitute a core mechanism driving financial fraud. This finding provides a critical theoretical lens and practical insight for assessing financial risks in analogous new economy enterprises.

4. Conclusion

4.1 Systematic Conclusions

In view of the systematic analysis described above which simulates thorough due diligence embedded in the CFA framework, this study therefore arrives at the final conclusion that Luckin Coffee is strongly uninvestable. The developed comprehensive three-dimensional analytical framework includes evaluating the business model's viability, financial anomaly and corporate governance. It arrives at a "Strong Avoid" rating. The main risk is the integrity of its reported financial numbers. Many of the identified anomaly detecting scores such as Beneish M-Score went beyond thresholds for high chances of potential manipulation. In addition, proportions of accruals/total assets were exceptionally large. These indicate a possibility of significant material misstatement risk. Secondary risk exists in the basic sustainability of its operational model. The results from various financial calculations have indicated that even if it assume the business actually had been operated properly with correct financial reporting, its operational mode showed fundamental weakness that operating cash flows were negative throughout, and that dependence on outside financing to survive existed, and that unit economics appeared impractical with a simple mathematics operation, showing it was extremely hard to operate on break-even point based. Last but not the least critical, the very nature of extremely inefficient supervisory mechanisms created due to absolute founding control significantly weakened inside supervision and external oversight, creating an environment where accounting fraudulent behaviors could occur undetected.

4.2 Policy Recommendations

Derived from the analytical process and findings, this study proposes an array of recommendations. For regulatory institutes, it is imperative to advance the adoption of regulatory technology, facilitating a shift from reactive enforcement towards proactive, real-time monitoring. It recommend exploring the development of automated early-warning systems based on multi-dimensional financial anomaly indicators to target supervisory resources more efficiently. For investors and financial analysts, enhancing critical thinking and prioritizing robust cash flow analysis are paramount. The ability to plausibly reconcile reported earnings with operating cash flows should be a mandatory checkpoint in the investment decision-making process. Companies exhibiting complex narratives, hyper-growth, and persistently weak cash flow warrant a higher risk premium and sustained scrutiny. For companies, particularly those with concentrated ownership structures, strengthening corporate governance is essential. This includes enhancing board independence and expertise, and improving the transparency and verifiability of disclosures.

4.3 Research Limitations and Future Directions

This study is subject to certain limitations. It believe that generalizing our findings would be subject to further test once being applied to more cases. Limited by the scope of publicly available information, it was impossible for us to investigate the more specific details of internal control procedures and related-party transactions across multiple angles. Future research could follow along several lines as well. Firstly, follow-up applying the analytical process proposed in the above replication study to other suspected fraud companies for test. Secondly, use longitudinal panel data samples to build quantitative financial models of financial risks prediction and back-test to check the effectiveness of these models. Thirdly, further in-depth study into different special financial characteristics and possibly financial management methods used by new economy firms' operators, providing timely tools for risk assessment and regulation.

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