**The Impact of the Amoeba Business Model on Financial Performance:  
Evidence from Chinese Companies**

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**Abstract**

In recent years, Chinese enterprises have faced increasing pressure to pilot novel management paradigms and adopt innovation‑driven solutions. This study investigates how the Amoeba management model - a hallmark of East Asian management theory - affects corporate financial performance. We assemble panel data from 16 firms across eight industries in China over the period 2010-2023, and employ a fixed‑effects regression combined with a Difference‑in‑Differences (DID) approach to assess impacts on return on assets (ROA) and return on equity (ROE). Our findings reveal that firms implementing the Amoeba model realize significantly higher ROA and ROE, confirming its potential to materially enhance performance. Moreover, the positive alignment of control variables, decentralized management structures, and financial transparency underscores the robust effectiveness of the Amoeba approach.

Түлхүүр үгс: Amoeba management; financial performance; return on assets (ROA); return on equity (ROE); difference‑in‑differences (DID).

**Introduction**

In recent years, as China’s economic restructuring and “quality-first” growth strategies have deepened, there has emerged a strong imperative for firms to fundamentally shift their management paradigms. Policy documents such as the *Guidelines for Establishing World‑Class Enterprises* and the *State‑Owned Enterprise Quality Improvement Plan* (Yu, 2013) explicitly call for management innovation and greater market agility.

National initiatives - most notably the innovation‑driven development strategy and the “Digital China” campaign - have further underscored the need for organizations to adopt management models that can respond swiftly and effectively to rapidly changing market conditions. This environment creates both the opportunity and the necessity to deploy more innovative, flexible, and comprehensive accounting and control mechanisms.

Against this backdrop, the Amoeba management model, rooted in East Asian management philosophy (Nonaka & Takeuchi, 1995), has emerged as a holistic approach that aligns decentralized organizational structures, empowered employees, and financial transparency. First formulated in the late 1950s by Kazuo Inamori, founder of Kyocera Corporation, the Amoeba model has since been adopted successfully across multiple industries (Adler & Hiromoto, 2010; Inamori, 2012).

*Core Principles of Amoeba Management*

Amoeba management is a distinctive model that combines management philosophy, organizational structure, and performance‑incentive systems, and is built upon three core principles:

1. **Autonomous, Profit‑Center Structure.** The firm is divided into multiple small “amoeba” units, each endowed with independent decision‑making authority and profit accountability. Every employee adopts an “entrepreneurial mindset”, actively participating in strategy, fostering a sense of ownership, initiative, and responsibility.
2. **Time‑Unit Profit Accounting.** Performance is measured continuously using the formula:

This real‑time metric enables employees to monitor and improve their own productivity.

1. **Full Employee Participation.** Organizational goals and values are shared openly with all staff, creating transparency and enabling every team member to contribute to strategic execution. This “people‑centered” culture strengthens internal cohesion and collective commitment.

*Operational Mechanisms*

To implement the Amoeba model effectively, an organization must establish the following interlocking systems:

* **Unit Structuring:** Break the company into autonomous “amoebas” of 3-15 people, each responsible for its own profitability.
* **Amoeba Leaders:** Appoint and train a manager for each unit, equipping them with management, communication, and basic accounting skills.
* **Internal Marketplace:** Enable amoebas to trade goods and services among themselves at market‑based prices, clarifying profit allocation and accountability.
* **Monthly Performance Reviews:** Calculate each amoeba’s value added per time unit on a monthly basis and conduct structured performance analyses.
* **Information Transparency:** Share daily reports and hold morning meetings to keep all levels informed.
* **Flexible Structure Adjustment:** Continuously realign unit boundaries and responsibilities based on performance outcomes.

Unlike traditional command‑and‑control systems, Amoeba management is a philosophy that transforms employees into co‑creators. It shifts organizational governance from “monitoring and control” to “trust and empowerment”, laying the foundation for a self‑sustaining, innovation‑driven enterprise.

**Literature Review**

Since its original implementation at Japan’s Kyocera Corporation (Inamori, 2012; Adler & Hiromoto, 2010), the Amoeba management model has attracted growing interest worldwide and, in recent years, has been piloted across multiple sectors in China, becoming a focal point of academic inquiry.

Wang Di (2024) finds that after China’s MN Group introduced the Amoeba model in 2018, its net profit rose by 47 % in 2018 and by 45 % in 2019, before declining in 2020. Although the model delivered a rapid boost to financial performance, Wang argues that the legacy performance‐measurement system was poorly aligned with the new structure, which contributed to the subsequent downturn. He proposes three solutions for redesigning the evaluation framework and uses financial‐ratio analysis and modular performance measures to quantify the effects of these improvements.

Yahefujiang (2023) studies the rollout of Amoeba management at Baosteel in 2016. He reports that Baosteel’s sales jumped by 92 % and total profit by 69 %, and by 2019 its output reached 38.9 million tonnes - making it the world’s third‑largest producer. While internal controls and market‐response capabilities improved markedly, Yahefujiang notes persistent shortcomings in performance evaluation, information systems, and internal audit processes.

Jianfu, Yaven, & Zvarych (2022) examine the application of the Amoeba model in China’s real‑estate sector. Their case study of Zhongliang Company shows revenues swelling from RMB 3.5 billion to RMB 100 billion shortly after adoption, underscoring the model’s rapid‑growth potential. They highlight the model’s flexibility during the post‑pandemic downturn and its special relevance to urban planning in third‑ and fourth‑tier cities.

Hiromoto (2010) analyzes Kyocera’s own experience, identifying key success factors: a decentralized structure of autonomous profit centers, a clear and simple accounting system, and strong employee empowerment. These elements, he argues, drove initiative and dramatically increased internal productivity.

Urban & Czerska (2016) compare Amoeba Management System (AMS) implementations in Sweden and Poland. They show that AMS’s core aim - creating self‑managing teams - consistently improved internal management. Their work also details the implementation challenges, the role of employee engagement, and the cultural adjustments necessary for success in a European context.

Shen et al. (2020) apply a Difference‐in‐Differences (DID) approach to measure the impact of COVID‑19 on the performance of Chinese stock‑listed firms. They find that the pandemic depressed firm performance, especially for companies with lower sales and investment levels. Although this study does not examine the Amoeba model directly, it validates DID as an empirical method - providing the foundation for our own analysis of how Amoeba adoption alters pre‑ and post‑intervention performance.

Taken together, these studies confirm that the Amoeba model can rapidly enhance financial performance, boost productivity, and foster organizational agility in uncertain markets. However, they also warn that without corresponding upgrades to performance metrics, information systems, and organizational culture, the model’s benefits may erode over time. Accordingly, our study seeks to build on this literature by systematically quantifying the Amoeba model’s impact on Chinese firms’ financial metrics, thereby deepening both theoretical understanding and practical implementation guidance.

**Data and Model**

This study uses firm‑level financial data from Chinese companies across multiple industries to quantify the impact of implementing the Amoeba management model on financial performance. Specifically, we compare firms that have adopted the Amoeba model with matched peers that have not, over the period 2010-2023.

Our sample comprises 16 firms (one adopter and one non‑adopter per industry) in eight sectors. Financial statements for these firms were drawn from Wind Financial Terminal and the CSMAR database (Table 1). Firm names have been withheld to protect confidentiality.

Table 1. Data Coverage by Industry

|  |  |  |
| --- | --- | --- |
| Industry | Years | Source |
| Dairy production | 2013-2023 | Wind Financial Terminal |
| Steel manufacturing |
| Telecommunication equipment |
| Air transportation |
| E-commerce | 2012-2023 |
| Infant formula | 2013-2023 |
| Beverage production |
| Heavy machinery manufacturing | 2010-2023 | CSMAR |

To isolate the effect of Amoeba adoption, we employ a DID framework within a firm fixed‑effects regression. This method has been widely used to evaluate structural interventions; for instance, Shen et al. (2020) applied DID to assess the impact of COVID-19 on corporate performance in China, thereby validating its suitability for estimating treatment effects. Angrist & Pischke (2009) further emphasize that DID combined with fixed-effects panel regression provides a robust identification strategy in observational settings.

where, – financial performance metric (ROA or ROE); – 1 if firm has adopted Amoeba management, 0 otherwise; – 1 for all post-adoption years for treated firms (and corresponding years for controls), 0 otherwise;  **– the interaction term capturing the treatment effect ();** – vector of firm-level covariates (size, sales growth, leverage ratio, etc.); – idiosyncratic error term; – firm index, – year index.

All regressions include firm fixed effects to control for unobserved, time‑invariant heterogeneity across firms.

Table 2 presents variable definitions and summary statistics for the full sample and by adopter status. ROA (Return on Assets) and ROE (Return on Equity) average higher for treated firms (ROA: 0.0478 vs. 0.0408; ROE: 0.1036 vs. 0.0758), suggesting a preliminary performance advantage.

Table 2. Variable Definitions and Descriptive Statistics

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Adopted | Obs. | Mean | St.dev. | Min | Max |
| *Dependent variables* |  |  |  |  |  |  |
| – **Return on Assets**, net income divided by total assets | All | 180 | 0.0442 | 0.0656 | -0.1531 | 0.2781 |
| No | 92 | 0.0408 | 0.0656 | -0.1531 | 0.2090 |
| Yes | 88 | 0.0478 | 0.0658 | -0.1047 | 0.2781 |
| – **Return on Equity**, net income divided by total equity | All | 180 | 0.0894 | 0.1625 | -0.5907 | 0.5712 |
| No | 92 | 0.0758 | 0.1712 | -0.5907 | 0.5712 |
| Yes | 88 | 0.1036 | 0.1525 | -0.5907 | 0.5008 |
| *Amoeba Adoption-Related Variables* | | | | | | |
| – dummy variable capturing the difference between firms that have adopted the Amoeba model and those that have not | All | 180 | 0.3222 | 0.4686 | 0.0000 | 1.0000 |
| No | 92 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Yes | 88 | 0.6591 | 0.4767 | 0.0000 | 1.0000 |
| – dummy variable equal to 1 for firms that adopted the Amoeba model, 0 otherwise. | All | 180 | 0.4889 | 0.5013 | 0.0000 | 1.0000 |
| No | 92 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Yes | 88 | 1.0000 | 0.0000 | 1.0000 | 1.0000 |
| – dummy variable equal to 1 for all years from the adoption year, 0 otherwise. | All | 180 | 0.6444 | 0.4800 | 0.0000 | 1.0000 |
| No | 92 | 0.6304 | 0.4853 | 0.0000 | 1.0000 |
| Yes | 88 | 0.6591 | 0.4767 | 0.0000 | 1.0000 |
| *Control variables* |  |  |  |  |  |  |
| – ratio of total liabilities to total assets | All | 180 | 0.5755 | 0.1359 | 0.2315 | 0.9269 |
| No | 92 | 0.5500 | 0.1380 | 0.2315 | 0.9269 |
| Yes | 88 | 0.6023 | 0.1290 | 0.3119 | 0.8408 |
| – ratio of operating cash flow to total assets | All | 180 | 0.0904 | 0.0823 | -0.1288 | 0.4198 |
| No | 92 | 0.0809 | 0.0657 | -0.0705 | 0.2365 |
| Yes | 88 | 0.1002 | 0.0961 | -0.1288 | 0.4198 |
| – natural logarithm of total assets | All | 180 | 24.4560 | 1.5763 | 21.0643 | 28.1924 |
| No | 92 | 24.2262 | 1.7567 | 21.0643 | 28.1924 |
| Yes | 88 | 24.6962 | 1.3304 | 21.6425 | 26.7103 |
| – ratio of property, plant, and equipment to total assets | All | 180 | 0.2771 | 0.1990 | 0.0000 | 0.8763 |
| No | 92 | 0.2854 | 0.1741 | 0.0000 | 0.6985 |
| Yes | 88 | 0.2683 | 0.2227 | 0.0184 | 0.8763 |
| – year-over-year percentage growth in sales | All | 164 | 0.1192 | 0.2829 | -0.4896 | 1.6674 |
| No | 84 | 0.1127 | 0.2888 | -0.4896 | 1.6674 |
| Yes | 80 | 0.1259 | 0.2782 | -0.4813 | 1.3779 |
| – natural logarithm of receivables turnover | All | 164 | 2.8266 | 1.4548 | 0.0880 | 7.8089 |
| No | 84 | 2.7695 | 1.5725 | 0.0880 | 7.8089 |
| Yes | 80 | 2.8864 | 1.3273 | 0.5023 | 5.8510 |
| – dummy variable equal to 1 for pandemic years (2020 and 2021), 0 otherwise | All | 180 | 0.1778 | 0.3834 | 0.0000 | 1.0000 |
| No | 92 | 0.1739 | 0.3811 | 0.0000 | 1.0000 |
| Yes | 88 | 0.1818 | 0.3879 | 0.0000 | 1.0000 |

Among treated firms, 65.9% of observations fall in post‑adoption years, compared with 63.0% for controls. Treated firms tend to be larger (higher ), more highly leveraged (higher ), generate more operating cash flow (higher ), exhibit stronger sales growth (higher ), and enjoy faster receivables turnover (higher ), but invest proportionally less in PP&E (lower ).

**Results**

This study estimates the effect of Amoeba management adoption on firms’ financial performance, measured by return on assets (ROA) and return on equity (ROE). We employ both correlation analysis and a fixed‑effects regression framework with a Difference‑in‑Differences (DID) specification.

Table 3 presents pairwise correlations among all key variables. Both ROA and ROE show statistically significant relationships with several control variables:

* , , and all correlate positively with and , indicating that stronger cash‑flow generation, higher sales growth, and faster receivables turnover tend to accompany superior profitability.
* Conversely, and correlate negatively with and , suggesting that increased leverage and asset intensity are associated with reduced profitability.

Table 3. Correlation Matrix

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable |  |  |  |  |  |  |  |  |  |  |  |
|  | 0.0307 | 0.0688 |  |  |  |  |  |  |  |  |  |
|  | 0.0539 | 0.0858 | 0.7050  \*\*\* |  |  |  |  |  |  |  |  |
|  | -0.1212 | -0.1115 | 0.5121  \*\*\* | 0.0299 |  |  |  |  |  |  |  |
|  | -0.4956  \*\*\* | -0.2982  \*\*\* | 0.1184 | 0.1930  \*\*\* | 0.0174 |  |  |  |  |  |  |
|  | 0.6857  \*\*\* | 0.5935  \*\*\* | 0.1170 | 0.1174 | -0.0341 | -0.2741  \*\*\* |  |  |  |  |  |
|  | -0.0329 | -0.0582 | 0.1244  \* | 0.1495  \*\* | 0.1351  \* | 0.0829 | 0.0294 |  |  |  |  |
|  | -0.1008 | -0.1527  \*\* | -0.2006  \*\*\* | -0.0431 | -0.2792  \*\*\* | 0.0075 | 0.1058 | 0.1429  \* |  |  |  |
|  | 0.3498  \*\*\* | 0.4236  \*\*\* | 0.0893 | 0.0234 | 0.1535  \*\* | 0.1121 | 0.4282  \*\*\* | 0.1227 | -0.1955  \*\* |  |  |
|  | 0.3904  \*\*\* | 0.3208  \*\*\* | -0.0347 | 0.0403 | -0.1043 | -0.2072  \*\*\* | 0.5238  \*\*\* | 0.0318 | 0.2512  \*\*\* | 0.2939  \*\*\* |  |
|  | -0.0001 | -0.0467 | 0.1458  \* | 0.0103 | 0.2847  \*\*\* | -0.0769 | -0.0126 | 0.0845 | -0.0659 | -0.0818 | 0.0667 |

*Note: \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.*

The relatively low to moderate inter‑correlations among the controls imply that multicollinearity is unlikely to bias the regression estimates.

Table 4 presents the estimates from five specifications explaining ROA:

* coefficient is positive across all models and attains significance at the 10% level in Models 3-5. This finding implies that, relative to non‑adopters, Amoeba adopters experience a measurable increase in ROA following adoption.
* dummy is positive and significant at the 1% level in every model, underscoring that firms which implement Amoeba management enjoy substantially higher ROA than their counterparts.
* dummy (post‑adoption years) consistently enters with a negative and highly significant coefficient, hinting at a possible regression to the mean or adjustment costs over time; however, disentangling this from the core DID effect requires further inquiry.
* Among the controls, , , and each carry positive, significant coefficients, whereas consistently exerts a negative, significant impact.

Table 4. Regression Results with ROA as the Dependent Variable

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|  | 0.0385  \*\*\* | 0.0214 | 0.0225  \* | 0.0243  \* | 0.0248  \* |
|  | 0.1776  \*\*\* | 0.0794  \*\*\* | 0.0789  \*\*\* | 0.0875  \*\*\* | 0.0900  \*\*\* |
|  | -0.0503  \*\*\* | -0.0320  \*\*\* | -0.0316  \*\*\* | -0.0295  \*\*\* | -0.0321  \*\*\* |
|  |  | -0.1417  \*\*\* | -0.1379  \*\*\* | -0.1450  \*\*\* | -0.1398  \*\*\* |
|  |  | 0.3260  \*\*\* | 0.3221  \*\*\* | 0.2091  \*\*\* | 0.2061  \*\*\* |
|  |  |  | -0.0002 | -0.0069 | -0.0081 |
|  |  |  | 0.0200 | 0.0352 | 0.0414 |
|  |  |  |  | 0.0371  \*\*\* | 0.0386  \*\*\* |
|  |  |  |  | 0.0079  \* | 0.0071 |
|  |  |  |  |  | 0.0083 |
| Constant | 0.0488  \*\*\* | 0.0951  \*\*\* | 0.0901 | 0.2353 | 0.2588 |
| Observation | 180 | 180 | 180 | 164 | 164 |
| Number of companies | 16 | 16 | 16 | 16 | 16 |
| Adj.R2 | 0.6026 | 0.6908 | 0.6875 | 0.7489 | 0.7496 |
| F statistics  (p-value) | 16.9686  (0.0000) | 22.0476  (0.0000) | 19.7564  (0.0000) | 22.1377  (0.0000) | 21.3317  (0.0000) |

*Note: \*\*\* and \* indicate statistical significance at the 1% and 10% levels, respectively.*

Adjusted R² values range from 0.60 to 0.75, and F‑tests are significant at 1% in all specifications, indicating strong overall explanatory power and model fit. These associations affirm the economic plausibility of the control variables used in the model.

Table 5 summarizes analogous regressions for ROE:

* The DID term is positive and significant at the 5%-10% levels in Models 1, 3, 4, and 5, reinforcing the ROA results and demonstrating that post‑adoption adopters outperform non‑adopters in ROE.
* The dummy reaches 1% significance only in Model 1, suggesting that the immediate treatment effect on ROE may be strongest in the simplest specification and may attenuate when additional controls are introduced.
* The dummy again enters negatively and with high significance across all models, mirroring the pattern observed for ROA.
* Control variables , , , and show significant positive associations with ROE, in line with their effects on ROA.

Table 5. Regression Results with ROE as the Dependent Variable

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|  | 0.0963  \*\* | 0.0615 | 0.0759  \* | 0.0732  \* | 0.0750  \* |
|  | 0.2579  \*\*\* | 0.0333 | 0.0257 | 0.0435 | 0.0522 |
|  | -0.1334  \*\*\* | -0.0992  \*\*\* | -0.0942  \*\*\* | -0.0908  \*\*\* | -0.0999  \*\*\* |
|  |  | -0.1045 | -0.0493 | -0.1494 | -0.1313 |
|  |  | 0.9399  \*\*\* | 0.8897  \*\*\* | 0.5338  \*\*\* | 0.5235  \*\*\* |
|  |  |  | -0.0020 | -0.0315 | -0.0355 |
|  |  |  | 0.2734  \*\* | 0.2931  \*\*\* | 0.3149  \*\*\* |
|  |  |  |  | 0.1296  \*\*\* | 0.1349  \*\*\* |
|  |  |  |  | 0.0280  \*\* | 0.0249  \* |
|  |  |  |  |  | 0.0290 |
| Constant | 0.1226  \*\*\* | 0.0845 | -0.0085 | 0.6960 | 0.7774 |
| Observation | 180 | 180 | 180 | 164 | 164 |
| Number of companies | 16 | 16 | 16 | 16 | 16 |
| Adj.R2 | 0.4210 | 0.5049 | 0.5188 | 0.6193 | 0.6212 |
| F statistics  (p-value) | 8.6549  (0.0000) | 10.6061  (0.0000) | 10.1904  (0.0000) | 12.5279  (0.0000) | 12.1400  (0.0000) |

*Note: \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.*

Adjusted R² values lie between 0.42 and 0.62, and all F‑statistics are significant at 1 %, indicating satisfactory explanatory performance. This result indicates that while the effect of Amoeba adoption on equity returns is more sensitive to model specification, the direction of influence remains positive across all models.

Overall, the results consistently demonstrate that firms adopting the Amoeba management model achieve higher ROA and ROE compared to non‑adopters. The effect on ROA is particularly robust, both in magnitude and statistical significance, while the effect on ROE, though slightly more variable, remains positive. Control variables confirm that healthier cash flows, stronger sales growth, and efficient receivables management enhance profitability, whereas higher leverage and capital intensity tend to suppress it.

These findings substantiate the hypothesis that the decentralized profit‑center structure, enhanced transparency, and employee empowerment intrinsic to the Amoeba model materially improve corporate financial performance.

**Conclusion**

This study investigated how the Amoeba management model, a foundational concept in East Asian management philosophy, influences corporate financial performance in China. Using panel data from 16 firms across eight industries over the 2010–2023 period, we employed the Difference-in-Differences (DID) method to estimate the causal impact of model adoption, with return on assets (ROA) and return on equity (ROE) as the primary performance indicators.

The key findings are summarized as follows:

* Positive performance impact: Firms that adopted the Amoeba model exhibited significant improvements in both ROA and ROE, confirming the model's potential to enhance financial efficiency. The effect on ROA was especially robust and consistently significant across all specifications, while the impact on ROE, though more variable, remained positive.
* Short-term gains vs. long-term sustainability: While the DID coefficient was positive and significant, the negative sign on the period dummy suggests that performance gains may diminish over time unless accompanied by complementary structural and systemic adjustments.
* Role of internal financial drivers: Improvements in performance were not driven solely by the management reform. Control variables such as operating cash flow, sales growth, and receivables turnover had strong positive effects, whereas high leverage was negatively associated with profitability.
* Generalisability: Although firm names are anonymized for confidentiality, the data reliability and balanced industry sample enhance the generalisability of the findings to other organizational contexts.

In summary, this study provides both theoretical and practical evidence that decentralized structures, financial transparency, and employee engagement - hallmarks of the Amoeba model - can meaningfully improve organizational performance.

Future research may consider:

* Examining long-term performance outcomes beyond initial post-adoption periods;
* Incorporating organizational culture and human capital into the analytical framework;
* Conducting cross-industry and cross-country comparisons to assess the model’s broader applicability and adaptability.

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