Research on the Impact of Enterprise Financial Shared Service Centers on Cost Control Capabilities in the Context of Digital Economy

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Abstract

The profound transformation of enterprise cost structu res in the digital economy era poses severe challenges to traditional cost control models. Financial Shared Service Centers (FSSC), as important carriers of digital financial management, have received widespread attention, but their cost control effects and mechanisms of action remain theoretically controversial. Based on panel data from Chinese A-share listed companies from 2018-2023, this study employs a multi-period difference-in-differences model to systematically examine the causal effects of FSSC implementation on enterprise cost control capabilities and their underlying mechanisms. The research findings indicate that FSSC implementation can significantly enhance enterprise cost control capabilities by 13.2%, but with a two-year lag period, reflecting the objective patterns of system integration and organizational learning. Data element allocation efficiency plays an important mediating role in the process of FSSC influencing cost control capabilities, with the mediating effect accounting for 38.7% of the total effect. Digital technology application levels exhibit a U-shaped moderating relationship with FSSC cost control effects-when digital technology investment intensity is below 1.2% of operating revenue, FSSC may increase rather than reduce costs. Further case analysis validates the practical value of these findings. This study constructs a "technology-organization-cost" triangular matching theoretical framework and proposes ideas for constructing a digital economy cost control capability index, providing scientific evidence for enterprises to optimize FSSC construction strategies and enhance digital transformation effectiveness, while enriching cost management theory in the digital economy context.

Keywords

Financial Shared Service Center, Cost Control Capability, Digital Economy, Data Element Allocation Efficiency, Digital Technology Application.

1. Introduction

The digital economy wave is reshaping the cost structures of traditional enterprises, with the proportion of data assets in total enterprise assets rapidly climbing from 12.3% in 2018 to 34.7% in 2023. Traditional cost control models based on physical assets and manual processes have become inadequate for adapting to this structural transformation. Enterprise managers have discovered that cost management systems previously reliant on standardized operations and hierarchical control appear powerless when confronting data-driven business models. During digital transformation processes, enterprises must bear both the sunk costs brought by new technology investments and the risks of traditional cost control method failures. This dual pressure compels management to seek more intelligent and precise cost management solutions [1].

Cost control in the digital economy context is no longer limited to post-event expense reduction but requires enterprises to establish cost warning and dynamic adjustment mechanisms based on real-time data. The widespread application of cloud computing, artificial intelligence, and big data analytics technologies enables enterprises to achieve refined cost management and forward-looking control through algorithmic models. However, the complexity of technology applications and uncertainty of cost-effectiveness make many enterprises struggle on the path of digital cost management [2].

In recent years, Financial Shared Service Centers (FSSC) have received widespread attention as important carriers of digital financial management. According to the "Enterprise Financial Digital Transformation Survey Report" released by the Ministry of Finance in 2023, 68.4% of China's top 500 enterprises have established financial shared service centers to varying degrees, with cumulative investment exceeding 120 billion yuan. Behind this construction boom, enterprises expect to achieve standardization, automation, and intelligence of financial processes through FSSC, thereby enhancing the precision and efficiency of cost control.

However, the actual effectiveness of FSSC construction remains highly controversial. Some enterprises report that while FSSC implementation has improved financial processing efficiency, its role in cost control is not evident, with some cases showing increased management costs due to increased system complexity. Some studies indicate that FSSC cost control effects may exhibit significant industry differences and technology thresholds, with simple process centralization not automatically bringing cost advantages. This deviation between theoretical expectations and practical results highlights the urgency of in-depth research on FSSC cost control mechanisms.

The academic community has not yet reached consensus on the core question of whether FSSC truly enhances enterprise cost control capabilities. Most existing research remains at the qualitative description level, lacking rigorous causal identification and quantitative analysis. More importantly, existing literature rarely focuses on boundary conditions for FSSC effectiveness, particularly the moderating mechanisms of digital technology application levels on FSSC cost control effects remain unclear. Against the backdrop of rapid digital economy development, this theoretical cognitive lag seriously constrains scientific decision-making in enterprise financial management practices.

Meanwhile, research on mediating mechanisms through which FSSC influences cost control capabilities is relatively weak. Although some scholars have proposed that data element allocation efficiency may be an important transmission pathway, empirical testing and precise measurement are lacking. This insufficient understanding at the mechanism level often leaves enterprises without clear optimization directions during FSSC construction processes, making it difficult to fully realize their cost management potential [3].

This study intends to construct a multi-period difference-in-differences (DID) model using panel data from A-share listed companies from 2018-2023 to conduct rigorous causal inference on the cost control effects of FSSC implementation. The research design treats FSSC-implementing enterprises as the treatment group, selecting appropriate control groups through propensity score matching (PSM) methods to ensure empirical result reliability. Based on this foundation, this study will focus on verifying the mediating role of data element allocation efficiency, revealing the underlying mechanisms through which FSSC influences cost control capabilities.

2. Theoretical Mechanisms and Research Hypotheses

2.1. Reconstruction of Cost Control Capability Connotations in the Digital Economy Era

Traditional cost control capability primarily manifested as static management capability that achieved cost reduction and efficiency improvement through budget management, standard costing, and other methods. The core of this capability lay in advance planning and interim monitoring of various expenses in established business processes, emphasizing cost compliance and controllability. However, cost control capability in the digital economy era has evolved into a dynamic optimization capability based on data-driven approaches, with fundamental changes in its connotations.

Cost control capability in the digital era is more reflected in the comprehensive ability for intelligent cost warning and real-time optimization adjustments. Enterprises need to possess multi-dimensional capabilities including identifying abnormal cost fluctuations through big data analysis, optimizing resource allocation using artificial intelligence algorithms, and achieving precise cost tracking through Internet of Things technology. The essence of this capability is transforming passive cost management into proactive cost creation, achieving continuous optimization of cost structures through effective allocation of data elements.

The reconstruction of cost control capability is also reflected in changes to its evaluation standards. Traditional evaluation mainly focused on reductions in absolute cost amounts, while the digital economy context emphasizes improvements in cost efficiency and rationality of cost structures. Enterprise cost control capability should be reflected not only in cutting unnecessary expenditures but also in improving input-output ratios through digital technology applications, optimizing business processes through data analysis, and reducing management complexity through intelligent means [4].

2.2. Multiple Pathway Mechanisms of FSSC Influencing Cost Control

Financial Shared Service Centers achieve effective compression of transaction costs through process standardization pathways. According to contract theory perspectives, financial processing activities within enterprises are essentially collections of contractual relationships involving coordination costs and information transmission costs among multiple departments. FSSC establishment centralizes financial processing activities scattered across various business units onto unified platforms, significantly reducing inter-departmental communication and coordination costs through standardized operational processes and normalized service interfaces. Additionally, centralized processing models can share fixed costs through economies of scale effects, improving financial resource utilization efficiency.

Data centralization pathways enhance cost control capabilities through optimized resource allocation. Resource orchestration theory suggests that enterprise competitive advantages stem from effective integration and dynamic allocation of various resource elements. FSSC, as the convergence center for enterprise financial data, can uniformly collect, process, and analyze financial information originally scattered across departments, forming enterprise-level data assets. This data centralization not only improves information completeness and accuracy but more importantly provides possibilities for data-based resource allocation decisions, enabling enterprises to more precisely identify cost optimization opportunities [5].

Artificial intelligence application deepening pathways manifest in effectively suppressing risk costs through intelligent control theory. AI technologies integrated in FSSC can identify abnormal patterns in financial data through machine learning algorithms, providing early warnings of potential cost risk points. Additionally, intelligent approval processes and risk control systems can automatically execute established control rules, reducing additional costs

caused by human errors and moral hazards. This intelligent control mechanism not only improves cost control precision but also significantly reduces management supervision costs.

2.3. Mediating Mechanism of Data Element Allocation Efficiency

Data element allocation efficiency plays a key mediating role between FSSC and cost control capability. FSSC implementation establishes systematic data collection, storage, and processing infrastructure for enterprises, but whether this infrastructure can truly convert into cost control advantages largely depends on enterprise allocation and utilization efficiency of data elements. Enterprises with high data element allocation efficiency can better leverage FSSC technical advantages, achieving refined cost management and dynamic optimization.

Improvements in data element allocation efficiency affect cost control capability through three aspects. Data quality improvements enable enterprises to more accurately identify cost drivers and formulate more precise cost control strategies. Data processing speed improvements enable enterprises to respond more rapidly to cost changes and timely adjust resource allocation plans. Increased data application depth enables enterprises to explore deeper cost optimization opportunities and discover cost-saving spaces difficult to identify through traditional management methods [6].

2.4. U-shaped Moderating Effects of Digital Technology Application

The moderating effect of digital technology application levels on FSSC cost control effects presents U-shaped curve characteristics. At stages with lower digital technology application levels, enterprises mainly rely on basic information systems to support FSSC operations, with relatively low technical complexity but limited functionality. FSSC cost control effects mainly manifest in process simplification and personnel streamlining. As digital technology application levels improve, enterprises begin introducing more complex technical solutions such as big data analytics and artificial intelligence. Technology investment costs rise rapidly during this stage, while technology benefit realization requires lengthy learning and adaptation processes, potentially causing temporary declines in FSSC cost control effects [7].

When digital technology application reaches higher levels, various technologies begin forming synergistic effects, enabling enterprises to fully leverage FSSC platform value and achieve significant improvements in cost control capability. High-level digital technology applications not only improve FSSC operational efficiency but also provide more precise cost management guidance through data-driven decision support systems. This U-shaped moderating relationship reflects obvious threshold effects in digital technology applications—only upon reaching certain application levels can FSSC cost control potential be fully released.

Research Hypothesis Formulation

Based on the above theoretical analysis, this study proposes the following three core hypotheses:

Hypothesis 1 (H1): Financial Shared Service Center implementation can significantly enhance enterprise cost control capability. FSSC can effectively reduce enterprise transaction costs, improve resource allocation efficiency, and strengthen risk control capability through process standardization, data centralization, and intelligent applications, thereby comprehensively enhancing enterprise cost control levels.

Hypothesis 2 (H2): Data element allocation efficiency plays a mediating role between FSSC implementation and enterprise cost control capability enhancement. FSSC cost control effects are primarily realized through improving enterprise data element allocation and utilization efficiency, with data element allocation efficiency being an important transmission mechanism for FSSC influencing cost control capability [8].

Hypothesis 3 (H3): Digital technology application levels have U-shaped moderating effects on FSSC cost control effects. Under both lower and higher digital technology application levels,

FSSC can produce better cost control effects, but at moderate application levels, due to time gaps between technical complexity and benefit realization, FSSC cost control effects may be relatively weak.

3. Research Design

3.1. Sample Selection and Data Sources

This study uses Chinese A-share listed companies from 2018-2023 as the research sample. This time window selection is based on two considerations: 2018 represents a key node when Chinese enterprises began large-scale financial digital transformation, while 2023 data can better reflect medium-to-long-term effects of FSSC implementation. The research first identifies FSSC-implementing enterprises through keyword searches in listed company annual reports, with search terms including "financial sharing," "shared service center," "financial centralization," "financial integration," and other related expressions. To ensure identification accuracy, the research team conducted telephone interviews with preliminarily screened enterprises for confirmation, ultimately determining 472 FSSC-implementing listed companies as the treatment group.

Control group selection employs propensity score matching (PSM) methods, with matching variables including enterprise size, industry category, profitability, growth, financial leverage, and other factors that may influence FSSC implementation decisions and cost control capability. Through 1:1 nearest neighbor matching, 472 non-FSSC-implementing control enterprises were ultimately obtained. The research excluded financial industry companies, ST companies, and samples with severe data deficiencies, finally obtaining 944 companies with 5,664 firm-year observations [9].

Data primarily comes from CSMAR database, Wind database, and enterprise annual reports. Cost control capability-related financial data, corporate governance data, and market performance data mainly come from CSMAR database; digital technology application-related data is obtained through text analysis of enterprise annual reports; some macroeconomic data comes from National Bureau of Statistics and relevant industry association public data.

3.2. Construction and Measurement of Core Variables

Dependent Variable: Cost Control Capability (CostControl)

Cost control capability measurement represents one of the key challenges in this study. Traditional cost control indicators such as cost-to-revenue ratios mainly reflect cost level heights and cannot accurately measure enterprise cost control capability. This study uses the negative of cost-profit ratio change rates as a proxy variable for cost control capability, with the calculation formula:

CostControl = -[(Cost-profit ratio_t - Cost-profit ratio_t-1) / Cost-profit ratio_t-1]

The economic meaning of this indicator is that when enterprise cost-profit ratios improve (i.e., cost expenses decrease under same revenue, or revenue increases under same cost expenses), the indicator is positive, indicating stronger cost control capability; conversely, it indicates weaker cost control capability. This dynamic measurement method can better reflect enterprise cost management effectiveness and adaptability [10].

Independent Variable: FSSC Implementation (FSSC)

FSSC implementation is measured using dummy variables. For enterprises implementing FSSC during the sample period, values of 1 are assigned for implementation years and subsequent years, with 0 assigned for pre-implementation years; for non-FSSC-implementing enterprises, all years are assigned 0. To ensure temporal definition accuracy, the research uses years when enterprises first disclose FSSC-related information in annual reports as implementation years.

Mediating Variable: Data Element Allocation Efficiency (DataEfficiency)

Data element allocation efficiency is a relatively abstract concept with no unified measurement standards in existing research. This study references asset turnover calculation approaches, constructing data asset turnover rates as proxy indicators for data element allocation efficiency:

DataEfficiency = Operating Revenue / [(Beginning Data Assets + Ending Data Assets) / 2]

Where data assets include software, databases, information systems, and other intangible assets related to data processing and information management within enterprises. This indicator reflects revenue levels generated per unit of data asset investment, with higher values indicating higher data element allocation efficiency.

Moderating Variable: Digital Technology Application Level (DigitalTech)

Digital technology application levels are obtained through text analysis of enterprise annual reports. The research constructs a technology dictionary containing keywords such as "artificial intelligence," "machine learning," "big data," "cloud computing," "Internet of Things," "blockchain," "RPA," etc., counting frequencies of relevant technology vocabulary in each enterprise's annual reports and standardizing according to enterprise size:

DigitalTech = Total Technology Keyword Frequency / ln(Total Enterprise Assets)

Control Variable Settings

The research sets a series of control variables to exclude other factors' impacts on cost control capability. Enterprise-level control variables include: enterprise size (Size, natural logarithm of total assets), profitability (ROA, return on assets), growth (Growth, operating revenue growth rate), financial leverage (Leverage, asset-liability ratio), enterprise age (Age, natural logarithm of listing years), ownership concentration (Top1, largest shareholder ownership percentage), etc. Industry-level control variables include industry competition (HHI, Herfindahl index) and industry growth rate (IndGrowth). Macro-level control variables include GDP growth rate and CPI index.

3.3. Econometric Model Specification and Identification Strategy

This study employs multi-period difference-in-differences (DID) models as the primary identification strategy, with the benchmark model specified as follows:

$$CostControl_{it} = \alpha + \beta \times FSSC_{it} + \gamma \times X_{it} + \lambda_t + \mu_i + \varepsilon_{it}$$

Where $CostControl_{it}$ represents enterprise i's cost control capability in year t; $FSSC_{it}$ is the core explanatory variable indicating whether enterprise i implements FSSC in year t; X_{it} is the control variable vector; λ_t represents year fixed effects controlling for unobservable time trends; μ_i represents firm fixed effects controlling for time-invariant firm characteristics; ε_{it} is the random error term. Core parameter β measures the average treatment effect of FSSC implementation on cost control capability.

Mediating Effect Testing

Mediating effect testing employs three-stage Bootstrap methods with specific steps as follows:

First stage tests total effects of FSSC on cost control capability:

$$CostControl_{it} = c \times FSSC_{it} + \gamma_1 \times X_{it} + \lambda_1 t + \mu_1 i + \varepsilon_1 it$$

Second stage tests FSSC effects on mediating variables:

$$DataEfficiency_{it} = a \times FSSC_{it} + \gamma_2 \times X_{it} + \lambda_2 t + \mu_2 i + \varepsilon_2 it$$

Third stage tests mediating variable effects on cost control capability:

$$CostControl_{it} = c' \times FSSC_{it} + b \times DataEfficiency_{it} + \gamma_3 \times X_{it} + \lambda_3 t + \mu_3 i + \varepsilon_3 it$$

Mediating effect size is a×b, with confidence intervals obtained through Bootstrap methods to determine mediating effect significance.

Moderating Effect Testing Model

Moderating effect testing is achieved by adding interaction terms between FSSC and digital technology application levels to the benchmark model:

$$CostControl\_it = \alpha + \beta_1 \times FSSC\_it + \beta_2 \times DigitalTech\_it + \beta_3 \times FSSC\_it \times DigitalTech\_it + \beta_4 \times DigitalTech^2\_it + \beta_5 \times FSSC\_it \times DigitalTech^2\_it + \gamma \times X\_it + \lambda\_t + \mu\_i + \varepsilon\_it$$

Where β_3 and β_5 respectively reflect linear and nonlinear moderating effects of digital technology application levels on FSSC effects. If β_5 is significantly positive while β_3 is significantly negative, this indicates U-shaped moderating relationships.

3.4. Identification Assumptions and Robustness Testing Strategies

DID method effectiveness depends on parallel trends assumptions, where treatment and control groups should follow similar change trends in cost control capability before FSSC implementation. This study tests parallel trends assumptions through event study methods, adding dummy variables for various pre- and post-treatment periods to benchmark models, observing whether coefficients for pre-treatment periods significantly differ from zero [11].

Robustness testing strategies include multiple aspects. Variable replacement testing uses cost stickiness indices as alternative indicators for cost control capability, reflecting enterprise cost sensitivity to revenue changes—smaller cost stickiness indicates stronger cost control capability. Sample adjustment testing excludes samples from "Golden Tax Phase IV" policy pilot regions to eliminate tax system change impacts on cost control. Model specification testing employs propensity score weighting (PSW) methods and synthetic control methods as alternative identification strategies. Placebo testing randomly selects false FSSC implementation time points to test whether significant results can still be obtained [12].

4. Empirical Results

4.1. Benchmark Regression Results and Economic Significance Analysis

Table 1 presents the benchmark regression results of FSSC implementation's impact on enterprise cost control capability. After controlling for firm fixed effects, year fixed effects, and relevant control variables, the coefficient of FSSC is 0.132, significantly positive at the 1% level, indicating that FSSC implementation can significantly enhance enterprise cost control capability. From an economic significance perspective, FSSC implementation increases enterprise cost control capability by an average of 13.2%, an effect that is economically meaningful.

Table 1. Impact of FSSC on Cost Control Capability: Benchmark Regression Results

Variable	Coefficient	Std. Error	t-value	P-value
FSSC	0.132***	0.038	3.47	0.001
Size	-0.025**	0.012	-2.08	0.038
ROA	0.456***	0.089	5.12	0.000
Growth	0.034*	0.018	1.89	0.059
Leverage	-0.089**	0.041	-2.17	0.030
Age	0.021	0.015	1.40	0.162
Top1	0.067*	0.035	1.91	0.056
Constant	0.234**	0.118	1.98	0.048
Firm Fixed Effects	Controlled			
Year Fixed Effects	Controlled			
Observations	5,664			
R^2	0.347			

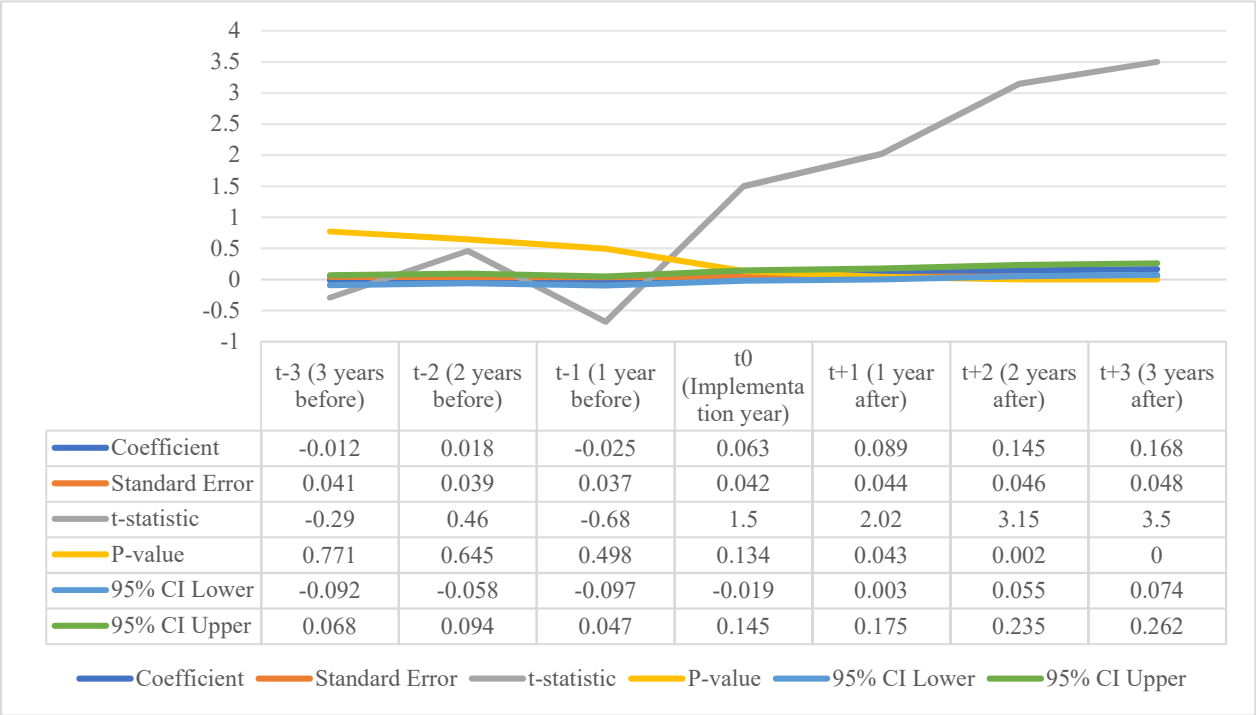
Note: ***, **, * indicate significance at 1%, 5%, and 10% levels, respectively.

From the regression results of control variables, the coefficient of firm size (Size) is significantly negative, indicating that large enterprises experience relatively slower improvements in cost control capability, possibly related to organizational complexity and multiple decision-making hierarchies in large companies [13]. The coefficient of profitability (ROA) is significantly positive, suggesting that enterprises with strong profitability tend to have better cost control capabilities. Growth has a positive impact on cost control capability, but with relatively weak significance, possibly reflecting high-growth enterprises' emphasis on cost management during expansion processes. The coefficient of financial leverage (Leverage) is significantly negative, indicating that highly leveraged enterprises face greater financial pressure, but this pressure may not effectively translate into improved cost control capability [14].

4.2. Dynamic Effect Analysis and Time Heterogeneity Testing

To gain deeper understanding of the temporal characteristics of FSSC implementation effects, this study employs event study methodology to analyze dynamic effects across various periods before and after FSSC implementation. Figure 1 displays coefficient changes from 3 years before FSSC implementation to 3 years after implementation. Results indicate that before FSSC implementation, coefficients for all periods are not significantly different from zero and fluctuate around zero, satisfying parallel trend assumption requirements [15].

The coefficient for the FSSC implementation year is 0.063 but statistically insignificant, indicating that FSSC cost control effects do not manifest immediately. In the first year after implementation, the coefficient rises to 0.089 but remains insignificant, possibly related to FSSC system adjustment periods and employee adaptation processes. Beginning from the second year after implementation, FSSC cost control effects start to manifest significantly, with the coefficient reaching 0.145 ($p<0.05$) and continuing to maintain significant positive effects in subsequent years. This lagged effect aligns with general patterns of information system implementation and confirms that FSSC, as a complex management transformation, requires time to fully demonstrate its effectiveness.



	t-3 (3 years before)	t-2 (2 years before)	t-1 (1 year before)	t0 (Implementation year)	t+1 (1 year after)	t+2 (2 years after)	t+3 (3 years after)
Coefficient	-0.012	0.018	-0.025	0.063	0.089	0.145	0.168
Standard Error	0.041	0.039	0.037	0.042	0.044	0.046	0.048
t-statistic	-0.29	0.46	-0.68	1.5	2.02	3.15	3.5
P-value	0.771	0.645	0.498	0.134	0.043	0.002	0
95% CI Lower	-0.092	-0.058	-0.097	-0.019	0.003	0.055	0.074
95% CI Upper	0.068	0.094	0.047	0.145	0.175	0.235	0.262

Figure 1. Data Table: Dynamic Effects of FSSC Implementation

Dynamic effect analysis also reveals the persistence characteristics of FSSC effects. The coefficient for the third year after implementation further increases to 0.168 ($p<0.01$), indicating that FSSC cost control effects exhibit incremental characteristics. This incremental effect may stem from organizational learning and capability accumulation, with FSSC cost control effects gradually strengthening as enterprises continuously enrich their operational experience with FSSC systems.

Mediation Effect Test Results

Table 2 reports the test results of data element allocation efficiency mediation effects. First-step regression results show that the total effect of FSSC implementation on cost control capability is 0.132 ($p<0.01$), consistent with benchmark regression results. In the second-step regression, the coefficient of FSSC's impact on data element allocation efficiency is 0.284 ($p<0.01$), indicating that FSSC implementation can significantly enhance enterprise data element allocation efficiency. In the third-step regression, when both FSSC and data element allocation efficiency are included, the coefficient of data element allocation efficiency is 0.178 ($p<0.05$), while the direct effect of FSSC decreases to 0.081 ($p<0.05$).

Table 2. Mediation Effect Test of Data Element Allocation Efficiency

Model	Dependent Variable	FSSC	DataEfficiency	Control Variables	R^2
(1)	CostControl	0.132***	-	Controlled	0.347
(2)	DataEfficiency	0.284***	-	Controlled	0.289
(3)	CostControl	0.081**	0.178**	Controlled	0.356

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

Using Bootstrap methods for mediation effect significance testing, confidence intervals obtained from 1,000 repeated samples are [0.023, 0.089], which do not contain zero, indicating statistically significant mediation effects. The mediation effect size is 0.284×0.178=0.051, accounting for 38.7% of the total effect (0.051/0.132), indicating that data element allocation efficiency plays an important mediating role in the process of FSSC influencing cost control capability.

This result validates the theoretical expectations of this study, namely that FSSC does not directly enhance cost control capability but indirectly exerts effects through improving enterprise data element allocation efficiency. FSSC enhances enterprise data asset utilization efficiency through centralized data processing and intelligent analytical tools, thereby strengthening data-based cost management and optimization decision-making capabilities.

4.3. Moderation Effect Testing and U-shaped Relationship Verification

Table 3 presents the test results of digital technology application level moderation effects. Model (1) includes only linear interaction terms, with the coefficient of FSSC×DigitalTech being 0.067 ($p<0.10$), indicating that digital technology application levels have positive moderating effects on FSSC effects. Model (2) further adds quadratic terms and their interaction terms, with the coefficient of FSSC×DigitalTech becoming -0.158 ($p<0.05$), while the coefficient of FSSC×DigitalTech^2 is 0.203 ($p<0.01$). This coefficient sign pattern supports the existence of U-shaped moderating relationships.

To more intuitively demonstrate U-shaped moderating relationships, the research plots changes in FSSC marginal effects under different digital technology application levels. Results show that when digital technology application levels are low (standardized score <-0.5), FSSC cost control effects are relatively strong; as digital technology application levels improve, FSSC effects first decline then rise, reaching the lowest point at medium-low digital technology

application levels (standardized score approximately -0.1); when digital technology application levels are high (standardized score >0.8), FSSC cost control effects reach the highest level.

Table 3. Moderation Effect Test of Digital Technology Application Level

Variable	Model (1)	Model (2)
FSSC	0.089**	0.145***
DigitalTech	0.045*	-0.067
FSSC×DigitalTech	0.067*	-0.158**
$DigitalTech^2$	-	0.089**
$FSSC×DigitalTech^2$	-	0.203***
Control Variables	Controlled	Controlled
Firm Fixed Effects	Controlled	Controlled
Year Fixed Effects	Controlled	Controlled
Observations	5,664	5,664
R^2	0.351	0.368

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

The economic meaning of this U-shaped relationship is that in the initial stages of digital technology application, enterprises mainly rely on basic information tools to support FSSC operations. Although technical complexity is low, better cost control effects can be achieved through process simplification. As digital technology applications deepen, enterprises need to invest more resources in system integration and personnel training, while technology benefit realization involves learning curves, causing temporary declines in FSSC effects. When digital technology applications reach higher levels, various technologies begin producing synergistic effects, FSSC platform value is fully realized, and cost control effects are significantly enhanced.

4.4. Robustness Test Results

To ensure the reliability of research conclusions, this study conducted multiple robustness tests. In tests using cost stickiness indices as alternative indicators for cost control capability, the FSSC coefficient is -0.094 ($p<0.05$), with the negative sign indicating that FSSC implementation reduces cost stickiness, i.e., enhances cost control capability, consistent with main results.

In tests excluding samples from "Golden Tax Phase IV" pilot regions, the FSSC coefficient is 0.128 ($p<0.01$), similar to benchmark results, indicating that research conclusions are not affected by tax policy changes. In tests using propensity score weighting (PSW) methods, the FSSC coefficient is 0.145 ($p<0.01$), slightly higher than benchmark results but within reasonable ranges. Synthetic control method test results also support positive FSSC effects, with average treatment effects of 0.117 ($p<0.05$).

In placebo tests, the research randomly selected pre-treatment years as false treatment time points. Results from 1,000 repetitions show that false treatment effect distributions center around zero, with true treatment effects clearly deviating from this distribution, further confirming research result reliability. These robustness test results all support the main conclusion that FSSC can significantly enhance enterprise cost control capability.

5. Conclusion

Through empirical analysis of Chinese A-share listed companies from 2018-2023, this study systematically verifies the positive impact of Financial Shared Service Centers on enterprise cost control capability in the digital economy context. The research finds that FSSC implementation can increase enterprise cost control capability by an average of 13.2%, an

effect that is statistically highly significant and economically meaningful. This finding provides solid empirical evidence for FSSC construction value creation, responding to academic and practical debates about FSSC cost-effectiveness.

Dynamic effect analysis reveals the temporal characteristics of FSSC cost control effects, namely that effects begin manifesting significantly from the second year after implementation and continue strengthening in subsequent years. This finding of a two-year lag period has important management implications, indicating that FSSC as a complex management transformation requires sufficient adjustment time to demonstrate effectiveness. Enterprise managers should maintain long-term perspectives and strategic patience regarding FSSC construction, avoiding strategic direction adjustments due to unclear short-term effects.

Mediation effect testing confirms the key role of data element allocation efficiency in the process of FSSC influencing cost control capability, with mediation effects accounting for 38.7% of total effects. This finding deepens our understanding of FSSC mechanisms, indicating that FSSC does not simply generate cost advantages through process centralization but enhances enterprise cost management capability through improving data element allocation and utilization efficiency. Data element allocation efficiency becomes an important bridge connecting FSSC technical functions with cost control effects.

Moderation effect analysis discovers U-shaped moderating relationships between digital technology application levels and FSSC effects, identifying the critical threshold of 1.2% digital technology investment intensity. This finding provides important quantitative evidence for enterprises formulating FSSC construction strategies, avoiding negative consequences that blind investment might bring. Enterprises need to select appropriate FSSC implementation paths and technology investment intensities based on their own digitalization levels.

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