



Research on Financial Shared Services and Firm Sustainability

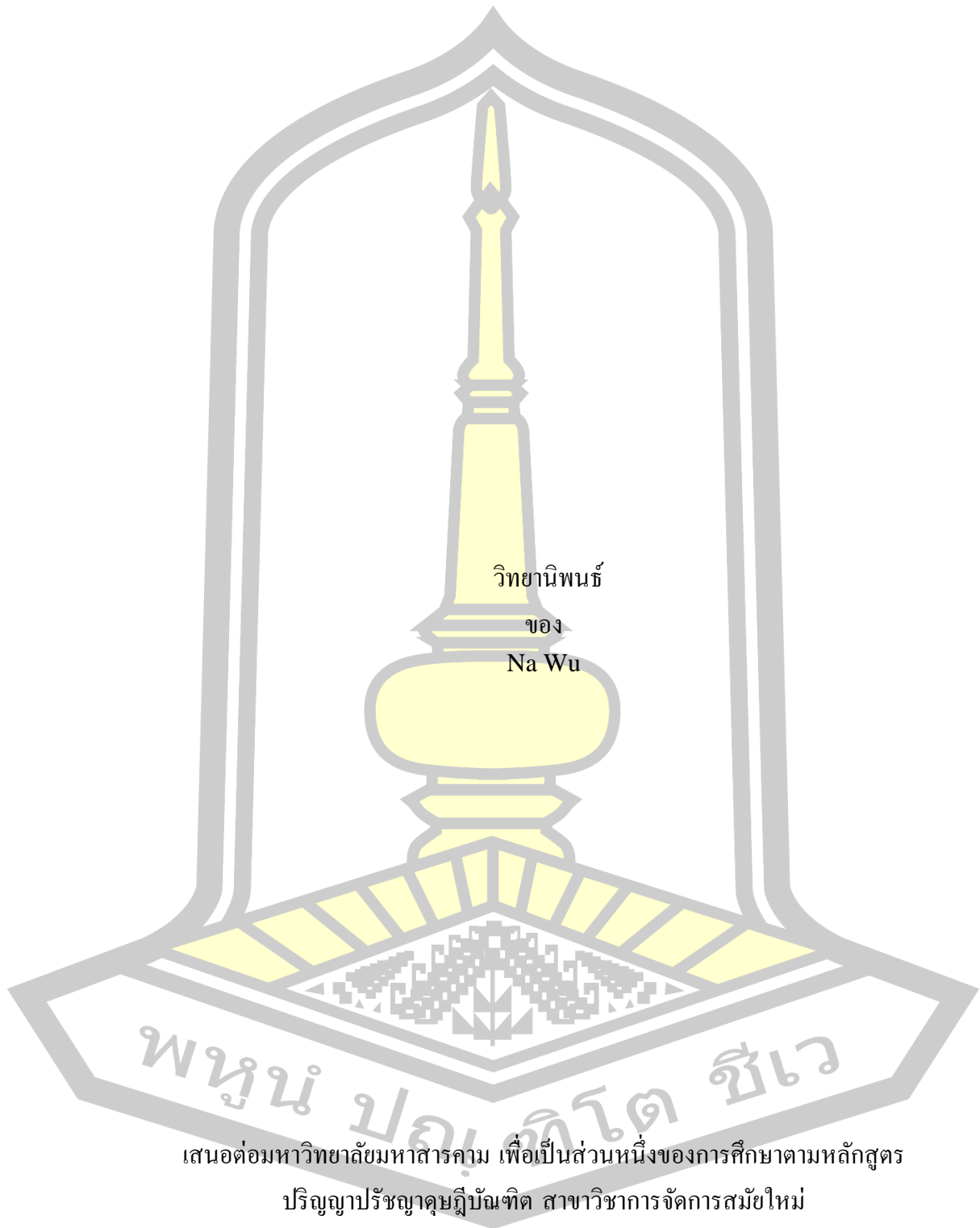
Na Wu

A Thesis Submitted in Partial Fulfillment of Requirements for
degree of Doctor of Philosophy in Modern Management

April 2025

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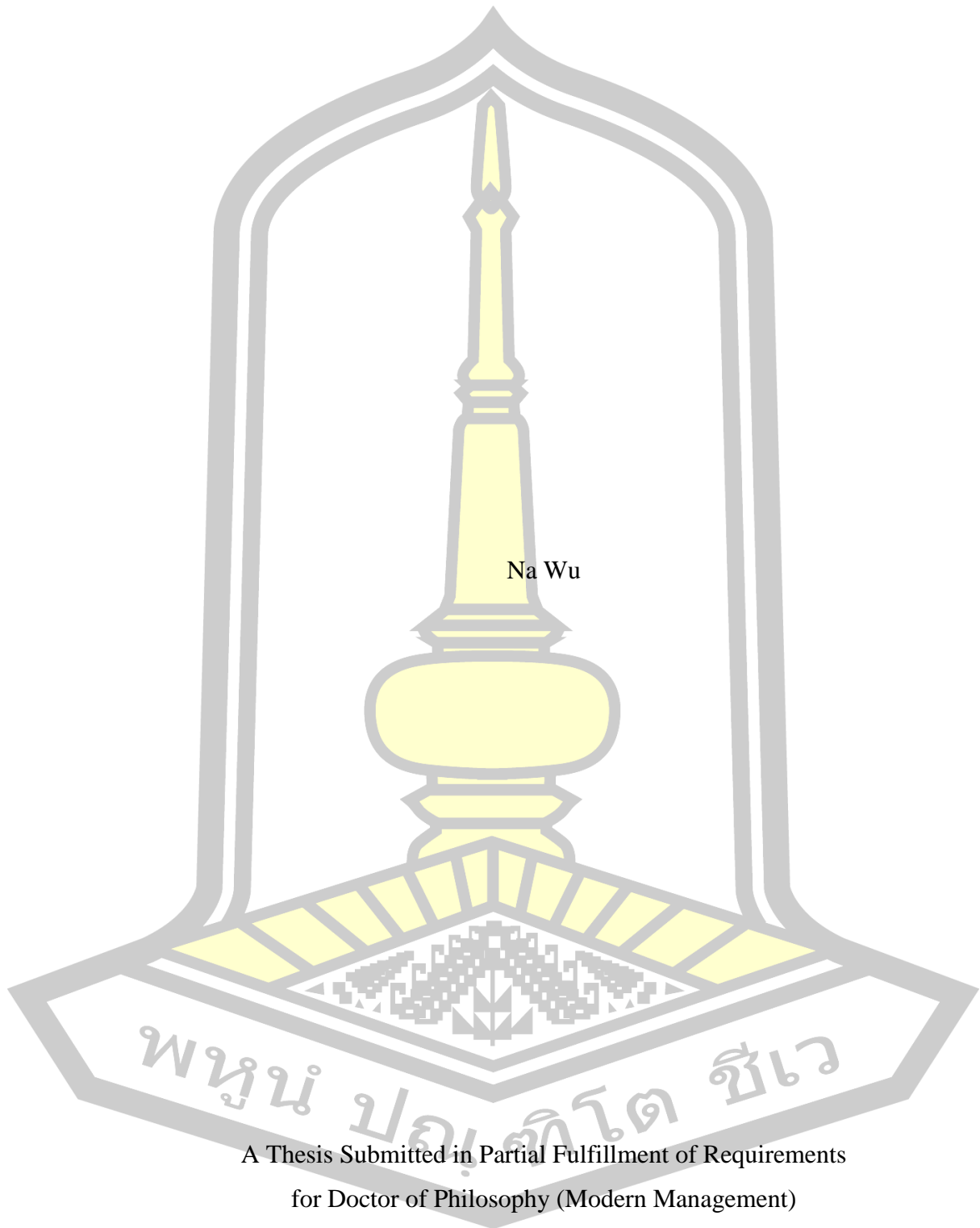


เสนอต่อมหาวิทยาลัยมหาสารคาม เพื่อเป็นส่วนหนึ่งของการศึกษาตามหลักสูตร
ปริญญาปรัชญาดุษฎีบัณฑิต สาขาวิชาการจัดการสมัยใหม่

เมษายน 2568

ลิขสิทธิ์เป็นของมหาวิทยาลัยมหาสารคาม

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April 2025

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DEGREE Doctor of Philosophy **MAJOR** Modern Management
UNIVERSITY Mahasarakham **YEAR** 2025
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ABSTRACT

The objective of this paper is to explore the relationship between Financial Shared Services (FSS), including Strategic FSS Management, Treasury Management, Business Operations, and Transparent Governance, and corporate sustainability. The research delves into the relationships among the four dimensions of financial shared services and their measurement standards. Additionally, the study investigates the mediating role of digital transformation between FSS and corporate sustainability. This research constructs a fixed-effects model, selecting 600 listed companies in China that have established financial shared service centers, covering an effective sample of 4,568 observations from 2013 to 2023, and evaluates validity, reliability, and tests the hypotheses.

The results show that first, Financial Shared Services significantly enhance corporate sustainability, with Strategic FSS Management, Treasury Management, Transparent Governance, and company size being key factors influencing corporate sustainability. Second, digital transformation partially mediates the relationship between Strategic FSS Management, Treasury Management, Business Operations, Transparent Governance, and corporate sustainability, further validating the crucial role of digital transformation in improving corporate sustainability. Third, there are significant differences in the impact of Strategic FSS Management, Treasury Management, Business Operations, and Transparent Governance on sustainability between companies of different sizes and market values.

Organizations should focus on leveraging Financial Shared Services (FSS) by taking a comprehensive and systematic approach, starting with Strategic FSS Management, Treasury Management, Operations Management, and Transparent Governance, to integrate and optimize financial functions. Companies should view FSS as a key tool for improving financial management efficiency, strategic alignment, and risk control. By integrating dispersed financial functions, they can push for data centralization, process standardization, and resource sharing, helping to reduce costs, increase operational efficiency, and achieve sustainable development.

Keyword : Financial Shared Services, corporate sustainability, Strategic FSS Management, Treasury Management, Transparent Governance, digital transformation

ACKNOWLEDGEMENTS

I am deeply grateful to my family for their unwavering support throughout my doctoral journey.

I would like to extend my heartfelt thanks to my classmates and colleagues for their selfless assistance whenever I faced difficulties in my studies.

I sincerely appreciate my advisor, Dr. Sutana Boonlua, for her meticulous guidance throughout the entire dissertation process. A heartfelt thank you to all the members of my dissertation committee for their encouragement and valuable recommendations.

I am truly grateful to Mahasarakham University for the opportunity to pursue my studies and for giving me such an enriching doctoral experience.

Thank you to all those I love and who love me!

Na Wu

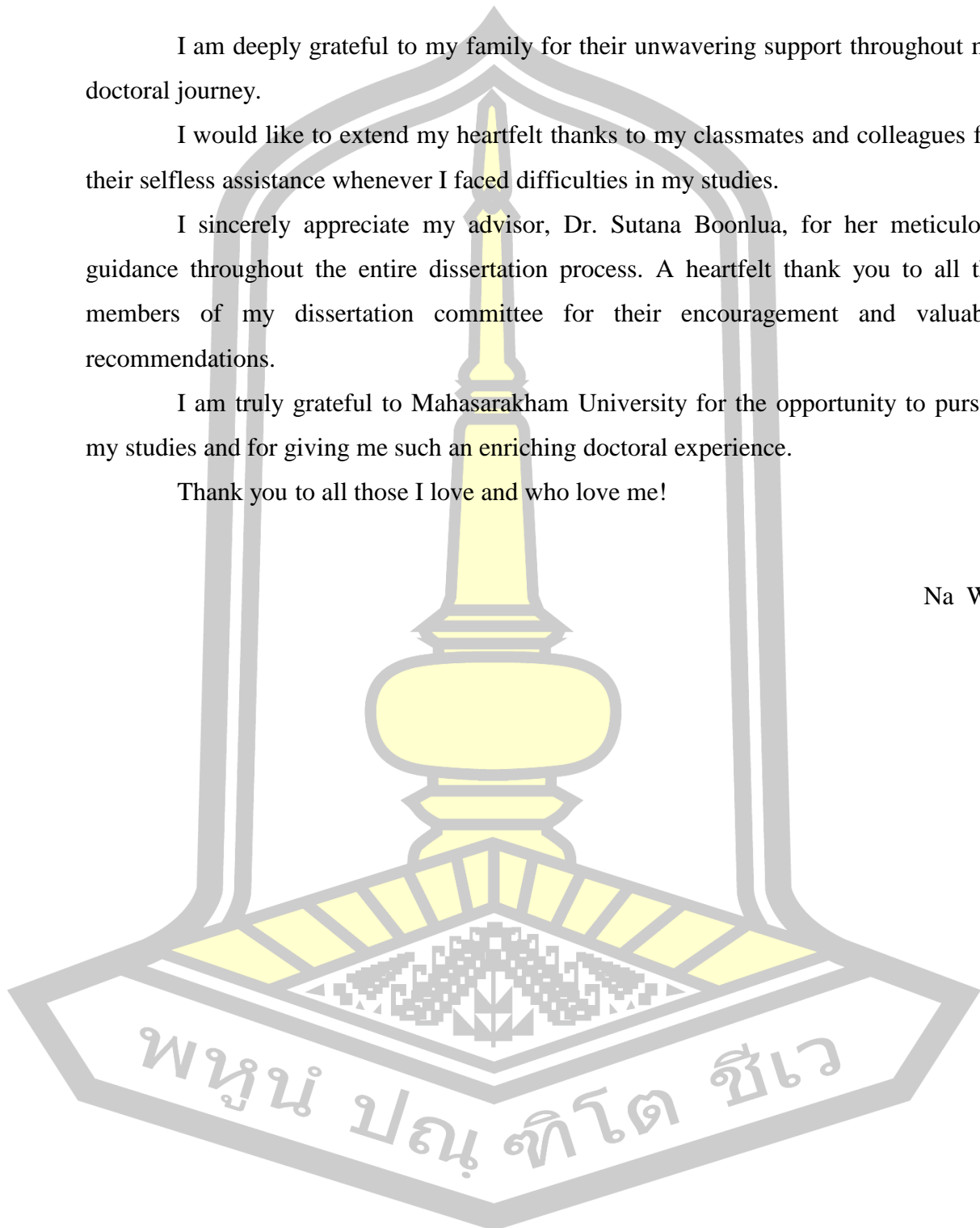
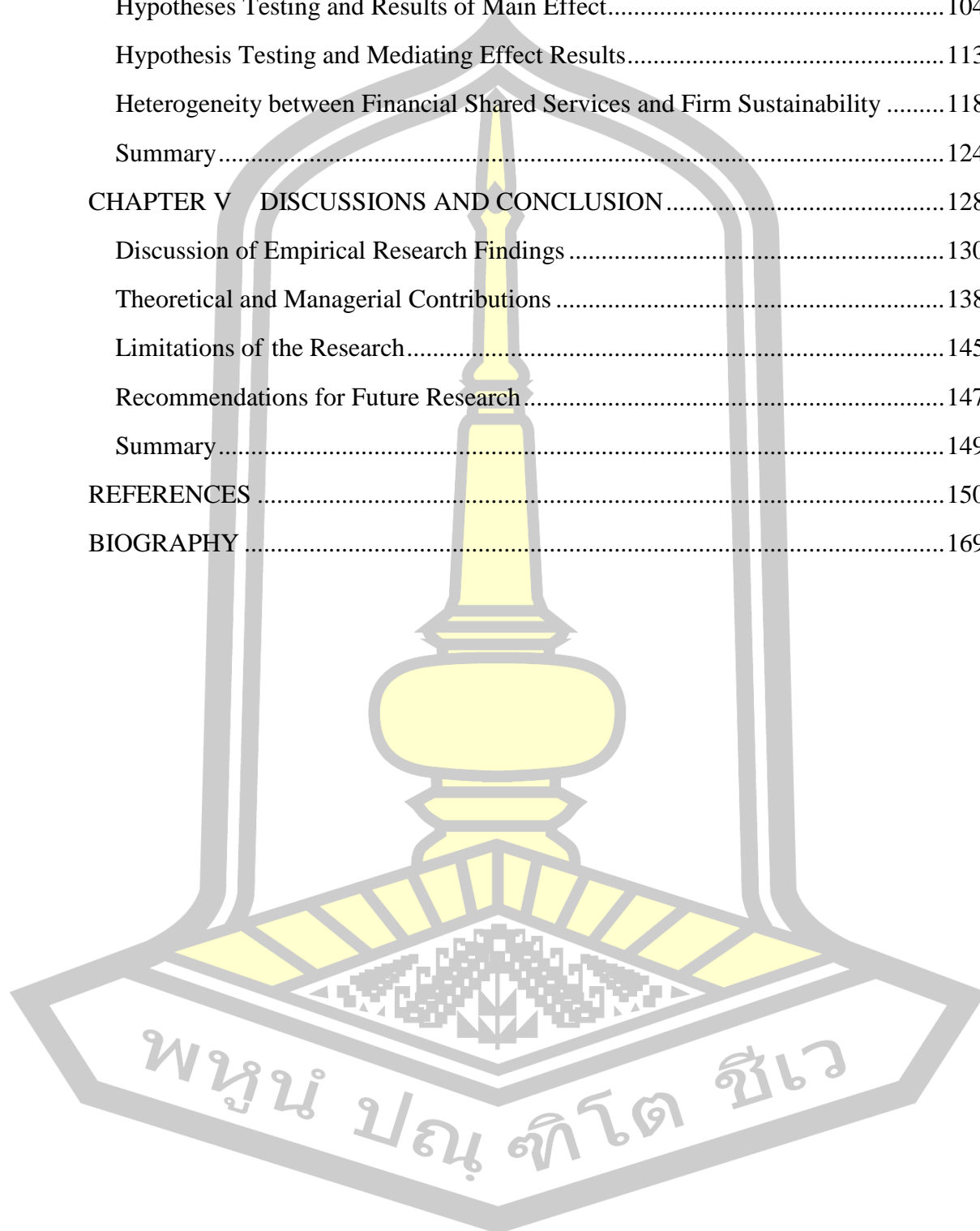


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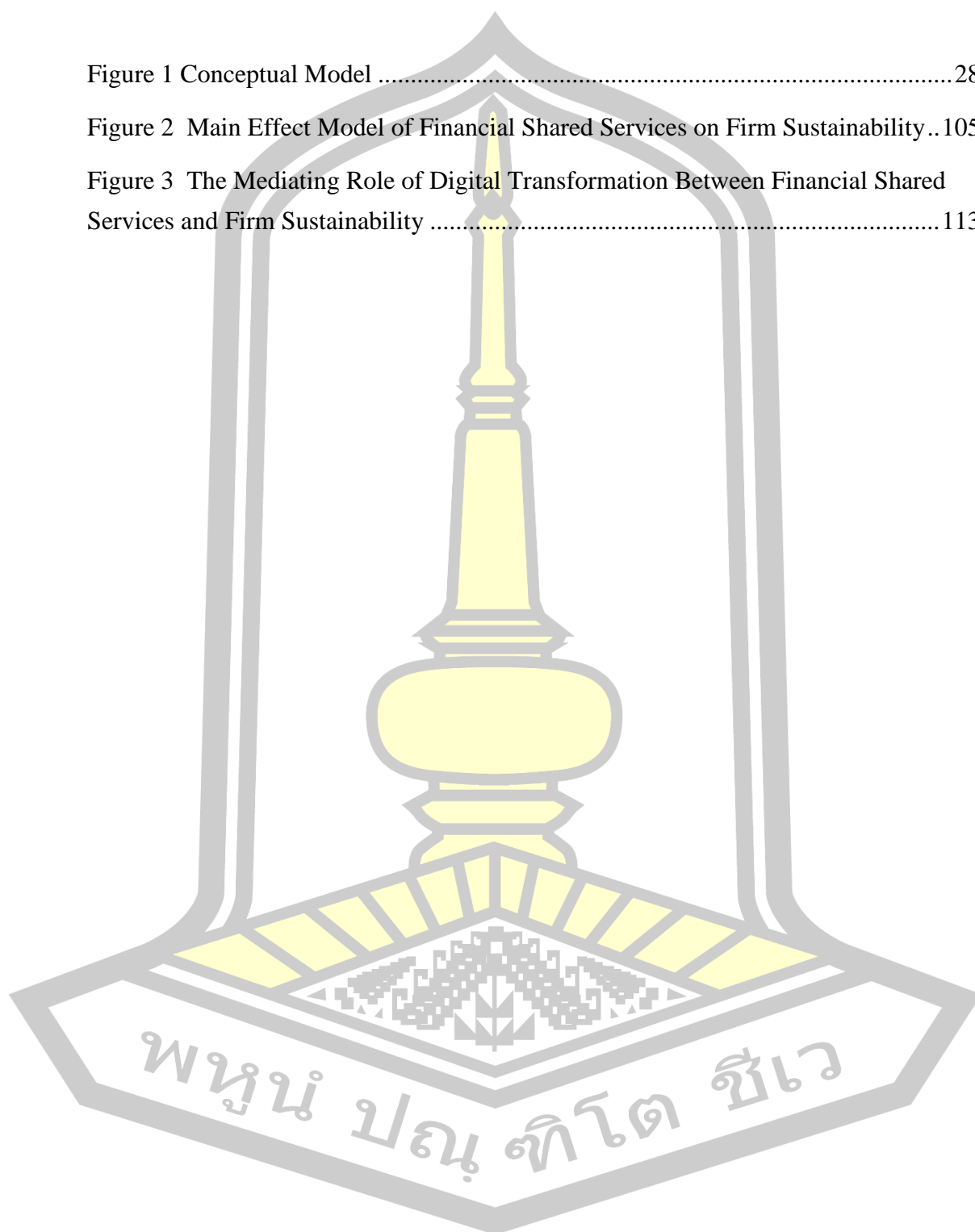
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CHAPTER I

INTRODUCTION

Overview

1. Research Background and Basis

(1) Background of Industry Development

First, the rise of the financial shared services model.

With the rapid development of economic globalization and new generation information technologies, many companies today face a constantly changing and increasingly competitive market environment. Therefore, how organizations can provide the best supportive services and choose the optimal service delivery model has become a widely discussed issue (Moller, 2011).

Since the 1950s, international enterprises in North America and Europe have undergone several stages of evolution in organizational control models. These stages include centralization, decentralization, a mix of centralization and decentralization, and finally, the stage of shared services and automation. Over the past 30 years, further development in information technology has continuously reduced the cost of internal information access, while the value of information decision-making and control has been increasing. As a result, companies have begun to evolve towards the shared services center (Shared Services Centers) model. Based on Malcolm's (1999) basic viewpoints on the development stages of organizational strategy (see Table 1).

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Table 1 Evolution of International Business Organizational Strategies

<i>Organizational Structure</i>	<i>Time Period</i>	<i>Key Characteristics</i>
Centralized: Headquarter controls most decisions.	Late 19th century to early 20th century	Companies primarily expanded into international markets through exports, focusing on market development.
Decentralized: Subsidiaries have more autonomy.	1950s to 1970s	Establishment of foreign subsidiaries or branches, local production, and market adaptation.
Centralized: Headquarter strengthens control over global operations.	1980s to 1990s	Integration and coordination of global resources, focusing on economies of scale worldwide.
Hybrid Structure: Combination of centralization and decentralization, emergence of global shared services centers.	Early 21st century to present	Unified brand image and market positioning, technology-driven, with a focus on social responsibility.
Highly Flexible: Dynamic adjustment of organizational structure, driving shared services and automation.	2020s to present	Digitalization, artificial intelligence, flexible responses, and regional strategies.

At the beginning of the 21st century, many internationally renowned companies had already begun adopting financial shared services. Companies like Ford and Microsoft, for instance, had established financial shared services centers. Shared services have transformed the way internal information is accessed and managed within organizations. These changes, in turn, have driven the ongoing evolution of the shared services concept—from initial cost savings to process reengineering and process standardization, then to integrating non-core services to enhance internal resource allocation capabilities, and finally to supporting the formulation and execution of corporate strategies. The importance and strategic significance of financial shared services have continuously increased.

Second, the international experience of financial shared services.

In 2011, approximately 80% of the Fortune 500 companies were using shared services to varying degrees within the U.S. operations . A more recent survey found that over 70% of large enterprises globally have established shared services centers (Richter & Brühl, 2017).

The structure of shared services centers typically includes four forms: First, the decentralized model, where global centers are established to handle basic transactional processes while other activities remain in local branches. Second, the multi-center model, where independent shared centers and systems are established in each country to provide services. Third, the center-radiation model, where global and regional shared services centers are established; the global center primarily handles transactional processing, while the regional centers focus on high-value services. Fourth, the regional center model, where regional shared services centers are set up in each strategic area to provide support tailored to the region's organizational dynamics, culture, legal regulations, and language differences.

As the practice of financial shared services centers deepens, finance professionals are increasingly focusing on process re-engineering and process standardization (Seal & Herbert, 2013).

The services provided have evolved from initially focusing on low-strategic-value, repetitive business processes to expanding into high-value activities such as forecasting, risk control, and activities with strategic value, including resource and capability creation (Herbert & Seal, 2014). Early on, scholars suggested that finance needs to be integrated into the corporate strategic planning process . The emergence and development of financial shared services not only reflect the need for cost reduction and efficiency improvement but also represent a fundamental transformation of organizational functions, ultimately serving corporate strategy and value creation. To continually create value for the enterprise, it must handle more value-added complex services (Mukherjee & Josh, 2017) and not only provide these services but also actively assist clients in identifying problems and proposing

solutions . These changes will gradually impact coordination and control systems within the organization, the ways in which organizational learning and knowledge acquisition occur, and may even affect how organizations think about their business and positioning (Seal & Herbert, 2013).

Third, the development of financial shared services in China.

In the context of rapid economic and technological development, the number and scale of enterprises in China have continuously increased, and competition among enterprises has become increasingly intense. The growing scale of enterprises, the complexity of business structures, and the severe domestic economic conditions have increased the difficulty of business management, raising higher requirements for accounting, financial management, and financial decision-making capabilities. This phenomenon has driven Chinese enterprises to transform according to changes in the external environment, focusing on improving management efficiency and quality. By enhancing efficiency, enterprises can reduce labor costs and optimize resource allocation; adopt rational organizational models and streamline processes; and utilize digital management to reduce operational risks and improve competitiveness in the global market.

The Chinese government has made significant efforts to promote the construction of information systems and the development of world-class financial systems in enterprises. On December 6, 2013, the Ministry of Finance issued the "Enterprise Accounting Informationization Work Norms," which required large enterprises and enterprise groups with numerous and widely distributed subsidiaries to explore the use of information technology to centralize accounting business and gradually establish financial shared service centers. This provided important policy support for the construction and implementation of financial shared services in large Chinese enterprise groups.

Subsequently, in 2014, the Ministry of Finance issued the "Guiding Opinions on Fully Advancing the Construction of Management Accounting Systems,"

encouraging large enterprises and enterprise groups to leverage the advantages of specialization and information technology to establish financial shared service centers. This helps enterprises accelerate the transition from accounting functions to management decision-making, promoting the development of information systems oriented towards management accounting.

In August 2020, the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council issued the "Notice on Benchmarking World-Class Management Improvement Actions," with one of the key tasks being to enhance financial management and increase value creation capabilities.

In 2021, the Ministry of Finance formulated and issued the "Accounting Informationization Development Plan (2021-2025)," which emphasized supporting the expansion of accounting functions through information technology, based on standardization and focusing on digitalization, guiding and regulating the continuous and healthy development of accounting information data standards, management systems, information systems, and talent development, actively promoting the digital transformation of accounting, and advancing the development of a national accounting information system that meets the requirements of the new era.

In 2022, SASAC issued the "Notice on Strengthening Financial Informationization Work in Central Enterprises," requiring qualified enterprises to explore centralized accounting and shared accounting services at the group level and issued the "Guiding Opinions on Accelerating the Construction of a World-Class Financial Management System in Central Enterprises," emphasizing the integration of digital technology with financial management to improve financial management capabilities and build a world-class financial management system as an important foundation for achieving sustainable development.

In December 2024, the Ministry of Finance issued the "Guiding Opinions on Comprehensively Deepening the Application of Management Accounting", which emphasized the need to comprehensively enhance the digitization and intelligence

levels of management accounting. It called for improving the construction level of financial shared service centers and studying and formulating standards for such centers to provide high-quality data sources that meet various business needs and control requirements. This initiative aims to upgrade financial shared service centers into unit data hubs. Based on the construction of data middle platforms, it promotes interconnection among various types of data, including business, finance, taxation, and funds, to achieve deep integration of financial and business information. Additionally, it actively seeks to enhance the automation, intelligence, and unmanned capabilities of financial shared service centers, driving the transformation toward intelligent finance.

This series of policies provides essential support for enterprises to establish new accounting information systems and accelerate the construction of world-class financial management systems. With the strong support and promotion of the Chinese government, the development of financial shared services has accelerated significantly. In 2022, the Fortune Global 500 list revealed that among the 145 Chinese companies in the list, over 58% had completed or were in the process of establishing financial shared services. Additionally, according to the latest directory of central enterprises from SASAC, more than 55% of the 98 central enterprises have completed or are in the process of establishing financial shared services .

In summary, companies should balance economic benefits, environmental protection, and social responsibility to achieve long-term sustainable development. By exploring how Financial Shared Services can promote effective resource utilization, reduce resource waste, and fulfill social and environmental responsibilities while driving economic growth, this research can reveal its key role in achieving long-term firm sustainability . Such research not only contributes to theoretical advancement but also provides guidance for optimizing Financial Shared Services models in practice.

(2) Background of Fundamental Theories

Barney (1991) introduced the core concept of the Resource-Based View (RBV), categorizing firm resources into four types: physical resources (such as production facilities and geographical location), human resources (such as employees' skills and knowledge), organizational resources (such as corporate culture and internal processes), and financial resources (such as capital and financial stability). Barney (1991) proposed the VRIO framework (Value, Rarity, Imitability, and Organization) to assess whether a firm's resources can create a competitive advantage.

Hart (1995), building on the Resource-Based View, introduced a new perspective on incorporating environmental management into corporate strategy. At this time, global environmental issues were becoming increasingly severe, and companies faced growing pressures related to environmental responsibilities. The Natural Resource-Based View (NRBV) advocates that firms should consider environmental resources and sustainable development as key factors in building and maintaining competitive advantage. The NRBV extends the traditional Resource-Based View (RBV) by incorporating natural resources and environmental management into the strategic framework of firms.

Elkington (1997) introduced the concept of the Triple Bottom Line (TBL), emphasizing that businesses should focus not only on economic profit but also on environmental and social performance. The three dimensions of TBL are environmental, social, and economic. These three aspects together form the framework for firm sustainability.

Firm Sustainability encompasses three dimensions: first is economic sustainability. Companies need to remain competitive in the market and achieve long-term financial stability and growth through innovation and efficiency improvements. Second is environmental sustainability. Firms must reduce their consumption of natural resources and minimize negative environmental impacts by adopting environmentally friendly technologies and green supply chain management. Third is social sustainability. Companies should focus on social responsibility, improve

employee welfare, community development, and consumer rights, and enhance social well-being through Corporate Social Responsibility (CSR) activities (Dyllick & Hockerts, 2002).

The significance of firm sustainability for businesses is profound, covering aspects such as enhancing competitiveness, achieving economic benefits, attracting investment, increasing employee satisfaction, ensuring legal compliance, and supporting long-term development. Sustainability is not only a manifestation of corporate social responsibility but also a key factor for long-term success and stability. By implementing sustainability strategies, firms can ensure ongoing growth and social recognition amidst globalization and resource constraints.

Freeman (1984) introduced the concept of "stakeholders," marking an important turning point in management theory. Freeman emphasized that businesses should not only focus on the interests of shareholders but also consider the needs and expectations of all stakeholders, including employees, customers, suppliers, communities, and other relevant groups. Freeman (1984) argued that the diversity and complexity of stakeholders present challenges for corporate strategy and management, while also being crucial for achieving long-term success.

Based on this, exploring how to achieve firm sustainability is a meaningful research topic. This research posits that implementing financial shared services can enhance financial performance, thereby improving firm sustainability. The reasons for this research are as follows:

First, based on the Resource-Based Theory. In a diversification strategy, effective resource integration can significantly enhance company performance. Effective utilization and management of resources help companies gain competitive advantages during the diversification process (Sharma & Kesner, 1996). Sharma and Kesner's research provides theoretical support for understanding resource integration in financial shared services. Financial shared services centers (FSSC) can effectively integrate and utilize the company's financial resources through centralization and

standardization of financial functions, thereby improving overall performance. In financial shared services, the Resource-Based Theory can be used to analyze how effective resource integration improves the efficiency and effectiveness of financial management. For example, by integrating financial resources from different business units, companies can achieve cost savings, process optimization, and performance improvement.

Second, based on Sustainability Theory. Companies should consider sustainability goals when implementing financial shared services to maximize the overall benefits of shared services. When implementing financial shared services, integrating Environmental, Social, and Governance (ESG) standards can enhance financial management efficiency (Hwang & Kwon, 2018). Financial shared services can advance firm sustainability as follows: First, environmental sustainability. Financial shared services (FSS) optimize resource allocation and process improvements, reducing waste and resource consumption, and promoting environmental goals. Centralized and digital financial operations reduce the use of paper documents and travel, thereby lowering carbon emissions. Second, social responsibility. The implementation of FSS may involve changes in employee roles and skill enhancements, contributing to career development and job satisfaction, thus improving the company's social responsibility performance. FSS can enhance financial transparency and accountability, foster positive interactions and cooperation with the community, and improve the company's social image. Third, corporate governance. FSS, through standardization and centralization, strengthens financial transparency and internal controls, thereby improving corporate governance. By optimizing financial management, FSS can support companies in formulating and implementing sustainable development strategies, balancing short-term financial goals with long-term sustainability goals.

Third, from the perspective of stakeholder theory, financial shared services can enhance financial performance and improve financial management

processes. This not only directly impacts the interests of shareholders and investors but also supports the long-term sustainability of the enterprise by optimizing relationships with employees, suppliers, customers, and society.

2. Significance of this research

(1) Theoretical Significance

First, enriching the theory of financial shared services. Although financial shared services have achieved certain research results, most studies are qualitative, with relatively few quantitative studies. Case studies dominate, while empirical research is limited, and most findings focus on the impact of financial shared services on control capabilities, operational efficiency, and business performance, with a lack of research on firm sustainability. This research contributes to the theory of financial shared services (FSSC) by exploring its multidimensional impact on digital transformation and firm sustainability. Through four dimensions—strategic FSS management, treasury management, business operations, and transparent governance—this research provides a comprehensive perspective to explain how these dimensions interrelate and influence digital transformation and firm sustainability. By integrating these dimensions into a unified framework, this research enriches existing theoretical models and explains their impact on corporate outcomes.

Second, extending the theory of firm sustainability. This research explores how financial shared services influence environmental protection, social responsibility, and corporate governance (ESG), thereby extending the theory of firm sustainability. It provides theoretical insights into how various aspects of financial shared services promote or hinder firm sustainability, enriching the practical content of firm sustainability.

Third, deepening the understanding of mediating variables. This research investigates the mediating role of digital transformation between financial shared services and firm sustainability, offering new theoretical insights to explain how

financial shared services facilitate digital transformation and ultimately impact firm sustainability.

(2) Practical Significance

First, providing practical guidance for financial shared services. By clarifying how different dimensions, such as strategic FSS management, treasury management, business operations, and transparent governance, influence digital transformation and firm sustainability, this research provides practical guidance for organizations to establish financial shared service centers and implement financial shared services.

Second, offering practical guidance for firm sustainability. By examining how financial shared services promote digital transformation and firm sustainability, This research provides actionable insights for improving environmental, social, and governance practices. The findings help companies optimize sustainability strategies and operations, better align with ESG standards, and enhance corporate reputation.

Research Objectives

The primary research objective is to systematically explore the comprehensive impact of financial shared services (FSS) on firm sustainability and the mediating role of digital transformation in this relationship. By systematically examining these issues, This research aims to uncover the complex relationships among financial shared services, digital transformation, and firm sustainability, providing both theoretical support and practical guidance for enterprises implementing financial shared services.

The specific research objectives include:

(1) To explore the impact of financial shared services on firm sustainability. This involves analyzing how the four dimensions—strategic FSS management, treasury management, business operations, and transparent governance—affect firm sustainability.

(2) To investigate the impact of various dimensions of financial shared services on digital transformation. This entails analyzing how the four dimensions—strategic FSS management, treasury management, business operations, and transparent governance—affect digital transformation during the implementation of financial shared services.

(3) To examine the mediating role of digital transformation in the relationship between financial shared services and firm sustainability.

Research Questions

The main research question is: What is the impact of financial shared services (FSS) on digital transformation and firm sustainability, as revealed through empirical analysis?

The specific research questions include:

(1) How does financial shared services (FSS) directly affect firm sustainability?

(2) How do the different dimensions of financial shared services (FSS) influence digital transformation?

(3) What is the mediating role of digital transformation between the dimensions of financial shared services and firm sustainability?

Research Scope

First, the research examines foundational theories. These theories include the resource-based view (RBV), sustainability theory, and stakeholder theory. The RBV explains how resources that are valuable, rare, inimitable, and supported by organizational capabilities help firms gain and sustain competitive advantages. Financial shared services enhance competitiveness by integrating core resources, improving resource efficiency, enhancing organizational capabilities, and optimizing business processes. The RBV provides theoretical support for the relationship between financial shared services and digital transformation. Next, sustainability theory encompasses economic, environmental, and social sustainability. Financial shared services optimize resource allocation and improve processes, reducing waste and resource consumption, driving firms to achieve environmental goals and enhance corporate social responsibility. Sustainability theory underpins the relationship between financial shared services and firm sustainability. Lastly, stakeholder theory emphasizes that firms should not only focus on shareholders but also consider the needs and expectations of other stakeholders, including employees, customers, suppliers, communities, and other relevant groups. The implementation of financial shared services impacts multiple stakeholders, such as shareholders, employees, and management. Stakeholder theory provides a theoretical foundation for the mediating role of digital transformation in the relationship between financial shared services and firm sustainability.

Second, the research develops a conceptual framework and model. In terms of the conceptual framework, financial shared services are defined as a new financial management model that achieves scale and standardization by centralizing and re-engineering processes for repetitive and easily standardized tasks in shared service centers. Financial shared services consist of four dimensions: strategic FSS management, treasury management, business operations, and transparent governance. The first dimension, strategic FSS management, refers to strategic decision-making to

establish financial shared service centers to achieve overall financial and strategic goals. The second dimension, treasury management, involves the planning, execution, and oversight of activities related to cash flow, investments, and financing within a company's financial department. The third dimension, business operations, relates to the centralized and standardized management of financial functions within the shared service center to achieve efficient, low-cost, and high-quality financial management and support services. The fourth dimension, transparent governance, refers to the implementation of open, clear, and efficient management and reporting mechanisms in financial shared service centers. The core objective of transparent governance is to enhance the transparency of financial operations, ensure the accuracy and completeness of information, and build trust with stakeholders. Thus, the conceptual framework and model hypothesize a positive impact of financial shared services on firm sustainability, with digital transformation acting as a mediator between financial shared services and firm sustainability.

Third, the research conducts empirical research. The research sample consists of Chinese enterprises, covering companies of various industries and sizes. Given the maturity of financial shared services in China and the supportive policy environment, the research focused on 600 publicly listed companies that have established financial shared service centers. It analyzed data spanning 11 years, from 2013 to 2023, to ensure the timeliness and relevance of the information and data used in the research.

Thesis Organization

Chapter 1: Introduction includes an overview, research objectives, research questions, scope of the research, and organization of the dissertation.

Chapter 2: Literature Review and Conceptual Framework, first, the theoretical foundations introduces the theories related to financial shared services, digital transformation, and firm sustainability. Second, the literature review covers prior research on financial shared services, digital transformation, and firm

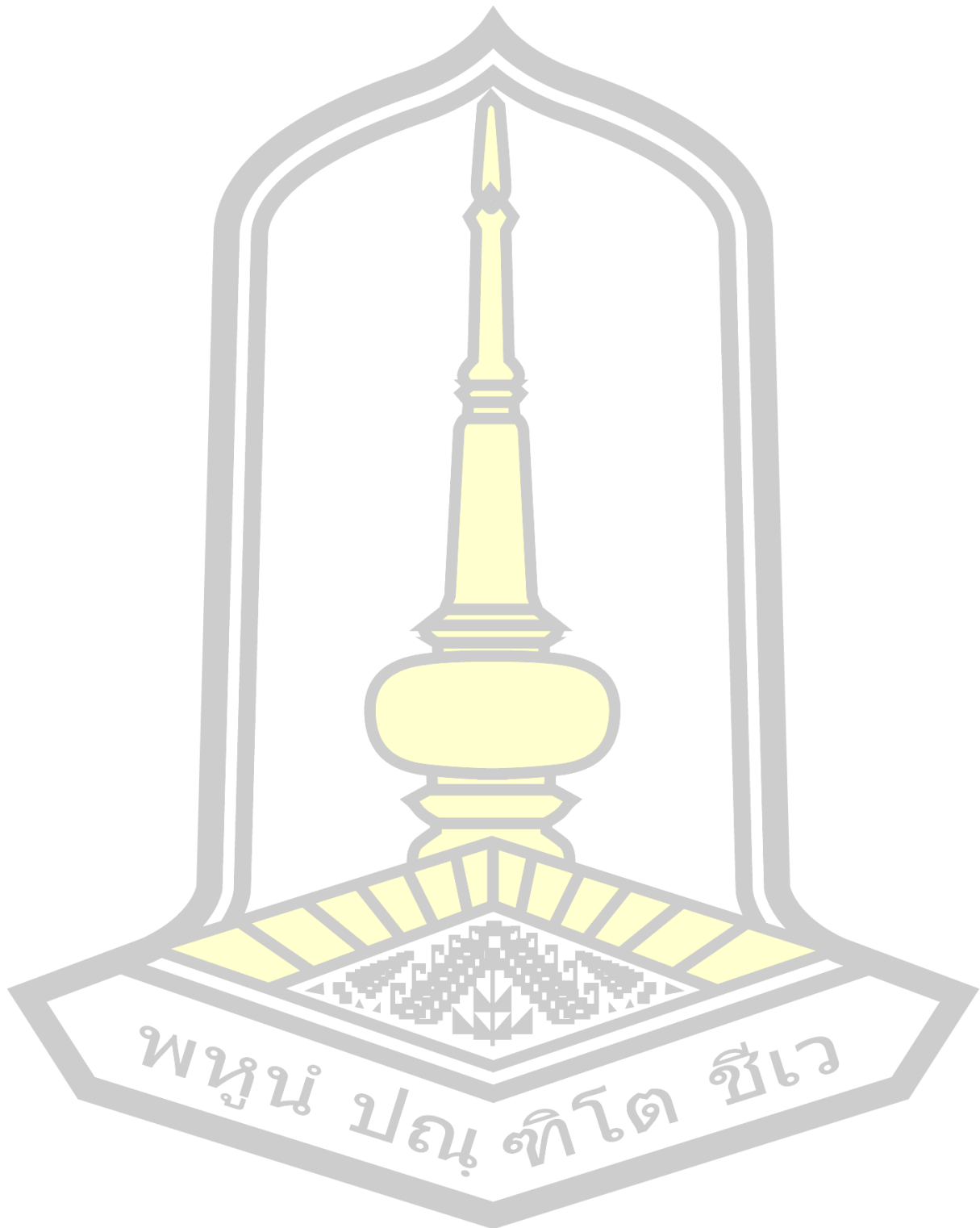
sustainability. Third, research hypotheses, based on the literature review, proposes specific research hypotheses, including the effects of various dimensions of financial shared services on digital transformation and firm sustainability, as well as the mediating role of digital transformation.

Chapter 3: Research Methodology, first, sample selection and data collection procedures describes the criteria for sample selection, sample size, data collection process, and data sources. Second, measurement indicators introduces the measurement tools and indicators used in the research, including methods for measuring the dimensions of financial shared services, digital transformation, and firm sustainability. Third, methodology provides details the research methods, including the application of quantitative and qualitative methods, as well as data analysis techniques. Fourth, statistical techniques presents the statistical techniques and data analysis methods employed, such as regression analysis and path analysis, to test the research hypotheses.

Chapter 4: Results and Discussion, first, hypothesis testing and results presents the results of hypothesis testing, including the effects of financial shared services on firm sustainability and the mediating role of digital transformation. Second, summary and discussion summarizes the key findings and discusses their theoretical and practical implications.

Chapter 5: Conclusion includes a summary of the findings, theoretical and managerial contributions, research limitations, and directions for future research.

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CHAPTER II

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

The previous chapter focused on an overview of financial shared services (FSS), including the research objectives, research questions, and scope of the research. This chapter provides a more in-depth understanding of FSS, including the theoretical foundations, literature review, conceptual framework, and research hypotheses. The research hypotheses are designed to address the research objectives and questions.

This chapter is divided into three sections. The first section introduces the theoretical foundations of the conceptual model. The second section provides relevant literature, definitions of all concepts in the conceptual framework, and prior studies related to FSS. The final section summarizes the hypothesized relationships between FSS and firm sustainability.

Theoretical Foundation

1. Resource-Based View (RBV)

(1) The proposal of the Resource-Based View (RBV)

The early contributor to the Resource-Based View (RBV), Wernerfelt (1984) proposed that a firm's resources could influence its strategic choices and enhance its competitive position through the uniqueness and scarcity of these resources. This perspective expanded the traditional market-driven strategic theory, asserting that the uniqueness and irreplaceability of company resources are key factors in determining competitive advantage. Barney (1991) developed a theoretical framework suggesting that firm resources can provide sustained competitive advantage, discussing how valuable, rare, inimitable, and organizationally supported resources help firms gain and maintain this advantage. Building on Wernerfelt's view, he clarified the concept

and essential characteristics of resources, arguing that only those things that help firms achieve sustained competitive advantage can be considered resources, characterized by value, rarity, inimitability, and non-substitutability. Barney (1991) classified firm resources into three types: physical capital, human capital, and organizational capital.

Grant (1991) considered the inputs in the production process as resources, noting that these resources themselves are not productive, such as capital, equipment, technology, and brands. Amit & Schoemaker (1993) distinguished between resources and capabilities, viewing resources as stock elements owned or controlled by firms that can be converted into products or services when used with other assets.

(2)The development of the Resource-Based View (RBV)

Helfat & Raubitschek (2000) addressed the previous confusion between the concepts of resources and capabilities, arguing that there is an interaction between assets and capabilities, and the knowledge accumulated during this interaction is the firm's key strategic resource, expanding the definition of resources from a knowledge perspective. Das & Teng (2000) categorized resources into proprietary resources and knowledge resources based on their visibility when exploring the formation mechanism of strategic alliances. Proprietary resources, represented by capital and materials, are relatively visible, while technological and managerial resources belong to tacit knowledge and are less visible. Arikian (2001) described resources as tangible and intangible assets that firms use to conceive and implement strategies, categorizing them into physical, financial, human, and organizational resources. Ardichvili (2003) considered any elements and supporting conditions beneficial to the creation and growth of enterprises as entrepreneurial resources from an entrepreneurial perspective. Chinese scholar Zhang (2006) categorized resources into asset resources, capability resources, and cultural resources based on the ease of transfer during the corporate merger and acquisition management process.

In summary, from the late 20th century to the early 21st century, the rise of the resource school initiated a wave of research on the relationship between resources, capabilities, and firm competitive advantage. Although there is no consensus on the specific definition and classification of resources in existing research, it is clear that firms are collections of various resources that can create value. Effectively and efficiently acquiring or allocating resources is crucial for firms' survival and development (Zhang, 2021).

(3)The current study of the Resource-Based View (RBV)

In the digital age, data has become a new type of production factor. In 2020, the term "data resource" was officially released to the public by the China National Committee for Terms in Sciences and Technologies. Narrowly defined, data resources refer to various data generated or accumulated during the firm's operations, such as customer information, financial transactions, and procurement records. Broadly, data resources encompass not only data itself but also any factors involved in and capable of creating value, such as new-generation communication technologies and digital technology personnel . Compared to traditional production factors like labor, capital, land, knowledge, technology, and management, data resources are characterized by their massive volume, mobility, and replicability, challenging the basic VRIN characteristics from the traditional RBV perspective .

Barney and Felin (2022) proposed that digital resources (such as data, algorithms, and digital platforms) have become an important source of competitive advantage for firms. They emphasized that the uniqueness, complementarity, and inimitability of digital resources are key to their value. For example, firms optimize decision-making through big data analytics capabilities or integrate supply chain resources through digital platforms, thereby creating hard-to-replicate competitive advantages. The research also pointed out that the dynamic management capability of digital resources (such as rapid iteration and resource reconfiguration) is crucial for firms to stand out in digital competition.

Teece (2023) explored the combination of dynamic capabilities and RBV in the context of the digital economy. Firms can effectively respond to market changes through digital resources (such as data, algorithms, and digital platforms) and dynamic capabilities (such as resource reconfiguration and rapid iteration). The study also introduced the concept of "digital dynamic capabilities," emphasizing the ability of firms to quickly adjust resource allocation in a digital environment.

Smith & Johnson (2024) conducted a systematic meta-analysis of the research on digital transformation and RBV, summarizing the role of digital resources (such as data, algorithms, and digital platforms) in a firm's competitive advantage. The study found that the uniqueness, complementarity, and inimitability of digital resources are key to their value, while dynamic capabilities (such as resource reconfiguration and rapid iteration) are central to maintaining competitive advantage in a digital environment.

Garcia & Fernandez (2024) explored the role of dynamic capabilities and resource management in small and medium-sized enterprises (SMEs). The study indicated that, despite limited resources, SMEs can effectively respond to market changes through dynamic capabilities (such as resource integration, resource release, and resource reconstruction). The research also proposed a "dynamic capabilities model under resource constraints," emphasizing the flexibility and innovation of SMEs when resources are limited.

In summary, the Resource-Based View (RBV) provides a strong theoretical foundation for understanding the relationship between financial shared services and digital transformation. From the RBV perspective, financial shared services are seen as strategic resources that drive digital transformation through resource integration, improving operational efficiency, enhancing dynamic capabilities, supporting innovation, and facilitating organizational coordination. Financial shared services not only optimize the allocation of internal resources within the organization but also leverage unique resource advantages to help firms gain and sustain competitive

advantages in the market. This resource-based competitive advantage is key to the success of a company's digital transformation and sustainable development.

2. Sustainability Theory

(1) The proposal of Sustainability Theory

In 1983, the United Nations General Assembly passed a resolution to establish the World Commission on Environment and Development (WCED) to address the conflict between environmental degradation and socioeconomic development. Led by former Norwegian Prime Minister Gro Harlem Brundtland, this report, also known as the "Brundtland Report," systematically proposed the concept of "sustainable development," defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." It emphasizes the balance among economic growth, environmental protection, and social equity. Hart (1995), based on RBV, proposed a new perspective of incorporating environmental management into corporate strategy. At this time, global environmental problems were becoming increasingly severe, and companies faced growing environmental responsibility pressures. The Natural Resource-Based View (NRBV) advocates that firms should consider environmental resources and sustainable development as key factors when building and maintaining competitive advantage. This theory extends the traditional RBV by incorporating natural resources and environmental management into the corporate strategic framework.

Elkington's (1997) introduced the concept of the "Triple Bottom Line" (TBL), which includes three dimensions: environmental, social, and economic. These three aspects form the framework for firm sustainability. The TBL model has a pioneering impact on the formation and development of ESG (Environmental, Social, and Governance). Dyllick & Hockerts (2002) attempted to expand the scope of firm sustainability research beyond the traditional business case to explore how firms can more broadly engage in sustainable development. Firm sustainability includes three dimensions: economic sustainability, where firms need to maintain competitiveness in

the market through innovation and efficiency improvements to achieve long-term financial stability and growth; environmental sustainability, where firms need to reduce their consumption of natural resources and negative environmental impacts through environmental technologies and green supply chain management to achieve sustainable resource utilization; and social sustainability, where firms need to focus on social responsibility, improve employee welfare, community development, and consumer rights through CSR activities to enhance social well-being. Berkes, Colding & Folke (2003) systematically explored the interactions and complexities between human societies and the natural environment, proposing ways to enhance the resilience of social-ecological systems to address the challenges of complexity and change.

(2) The development of Sustainability Theory

In the 2010s, Sustainability Theory became more systematized, with its research scope expanding to the global level, focusing on issues such as climate change, resource scarcity, and global governance.

Rockström (2009) proposed the "Planetary Boundaries" theory, defining nine critical boundaries of the Earth system (e.g., climate change, biodiversity loss, nitrogen and phosphorus cycles). He emphasized that human activities must remain within these boundaries to ensure the stability of the Earth system. This provided a scientific basis for global sustainable development and promoted the application of Sustainability Theory in a globalized context.

United Nations (2015) introduced the 17 Sustainable Development Goals (SDGs), covering economic, social, and environmental dimensions, aiming to achieve global sustainability by 2030. This framework provided a unified action plan for global sustainable development, promoting the practical application of Sustainability Theory in policy-making.

Geels (2011) proposed the "Multi-Level Perspective" (MLP) theory, analyzing the interactions between technology, institutions, and socio-cultural factors

in sustainability transitions. This provided a theoretical framework for research on sustainability transitions and deepened the application of Sustainability Theory at the systemic level.

(3) The current study of Sustainability Theory

In the 2020s, Sustainability Theory has further evolved, with research priorities expanding beyond the traditional environmental, economic, and social triple bottom line to broader areas such as digital transformation, circular economy, climate change adaptation, and global governance. The following outlines key developments in Sustainability Theory and representative literature from this period.

Bai (2020) explored the role of digital technologies (e.g., big data, artificial intelligence, blockchain) in promoting sustainability, analyzing how these technologies optimize resource utilization, reduce carbon emissions, and enhance social equity. This research provided a theoretical framework for integrating digital transformation with sustainability and proposed practical pathways for leveraging digital technology for sustainable development.

George (2021) examined the role of digital entrepreneurship in addressing sustainability challenges, proposing that digital innovations (e.g., sharing economy platforms, digital supply chain management) can effectively promote resource conservation and environmental improvement. This research integrated Sustainability Theory with digital entrepreneurship, offering new perspectives for sustainable development in the digital era.

Biermann (2022) analyzed the role of global governance in achieving the Sustainable Development Goals (SDGs), proposing strategies to strengthen international cooperation and policy coordination. This research provided theoretical support for the intersection of global governance and Sustainability Theory.

United Nations (2023) assessed global progress toward the Sustainable Development Goals (SDGs), offering recommendations for strengthening global

governance and multi-stakeholder participation. This provided practical guidance for integrating global governance with Sustainability Theory.

Smith & Johnson (2024) conducted a systematic review of the role of digital technologies (e.g., artificial intelligence, blockchain, the Internet of Things) in promoting sustainability. They analyzed how these technologies optimize resource utilization, reduce carbon emissions, and enhance social equity, offering a comprehensive review of the integration of digital transformation and sustainability, along with practical pathways for implementation. Brown & Davis (2024) explored how small and medium-sized enterprises (SMEs) achieve sustainability in digital transformation, proposing strategies for applying digital technologies across social, environmental, and economic dimensions. This research provided theoretical support and practical guidance for integrating SME digital transformation with sustainability.

In summary, sustainability theory provides three aspects of theoretical support for FSS and firm sustainability. First, environmental sustainability. FSS optimizes resource allocation and process improvement to reduce waste and resource consumption, promoting the achievement of environmental goals. Centralized and digital financial operations reduce the use of paper documents and business travel, thereby reducing carbon emissions. Second, social responsibility. The implementation of FSS may involve changes in employee roles and skills enhancement, contributing to employee career development and job satisfaction, thereby improving corporate social responsibility performance. FSS can enhance financial transparency and accountability, fostering positive interactions and cooperation between companies and communities, and improving corporate social image. Third, corporate governance. FSS strengthens financial transparency and internal controls through standardized and centralized management, improving corporate governance levels. By optimizing financial management, FSS can support firms in formulating and implementing sustainable development strategies, balancing short-term financial goals with long-term sustainability goals.

3. Stakeholder Theory

(1) The Proposal of Stakeholder Theory

Freeman (1984) stated the foundational work of stakeholder theory, marking a significant turning point in corporate management theory. Freeman systematically defined the concept of "stakeholders," emphasizing that firms should not only focus on shareholders' interests but also consider the needs and expectations of all stakeholders, including employees, customers, suppliers, communities, and other related groups. Freeman (1984) argued that the diversity and complexity of stakeholders present challenges to corporate strategy and management, but also are key to achieving long-term success. Donaldson & Preston (1995) posited that corporate responsibility extends beyond shareholders to all individuals or groups affected by or affecting corporate activities, such as employees, customers, suppliers, communities, and governments. Donaldson & Preston (1995) suggested that firms should comprehensively consider the interests of various stakeholders rather than solely focusing on financial returns for shareholders.

Mitchell & Wood (1997) proposed three core dimensions to assess stakeholder importance: power, legitimacy, and urgency, categorizing stakeholders into four types: definitive stakeholders (possessing power, legitimacy, and urgency), expectant stakeholders (possessing power and legitimacy but low urgency), non-core stakeholders (possessing legitimacy and urgency but low power), and potential stakeholders (who may become important stakeholders in the future but currently have little impact).

(2) The Development of Stakeholder Theory

Since the late 20th century, Stakeholder Theory has undergone significant development and evolution, gradually becoming an important theoretical framework in corporate governance, strategic management, and corporate social responsibility (CSR) research.

Stakeholder Theory has increasingly integrated with CSR and sustainable development goals (SDGs). Jones and Wicks (1999) pointed out that Stakeholder Theory and CSR theory share an inherent consistency, both emphasizing that while pursuing economic benefits, enterprises should also fulfill social responsibilities. This perspective has provided important theoretical support for subsequent research.

In the 2010s, Stakeholder Theory further expanded in the context of globalization and digitalization. Freeman summarized the development of Stakeholder Theory and introduced the concept of "Stakeholder Capitalism." They emphasized that enterprises should pay more attention to the diversity of stakeholders in a globalized environment and create shared value through collaboration.

Additionally, Stakeholder Theory has developed further with the advancement of the SDGs. Bansal & Song (2017) pointed out that Stakeholder Theory provides crucial theoretical support for enterprises to achieve sustainability goals. They emphasized that businesses should promote environmental, social, and governance (ESG) objectives through stakeholder engagement and collaboration.

From the late 20th century to the 2010s, Stakeholder Theory has evolved from its theoretical foundation to practical applications and global expansion. This theory not only provides new perspectives for corporate management but also offers vital theoretical support for CSR and sustainable development goals.

(3) The Current Study of Stakeholder Theory

In recent years, Stakeholder Theory has continued to deepen and develop in the context of globalization, digitalization, and sustainability, becoming a critical theoretical framework in corporate governance, social responsibility, and sustainability research.

With the advancement of the United Nations' SDGs, the role of Stakeholder Theory in achieving ESG goals has been further emphasized. Bansal & Song (2021) pointed out that Stakeholder Theory provides crucial theoretical support for businesses to achieve sustainability objectives. They emphasized that companies

should drive ESG goals through stakeholder participation and collaboration to create long-term value.

Furthermore, Freeman explored the application of Stakeholder Theory in achieving sustainability goals. They proposed that enterprises should integrate sustainability objectives into strategic decision-making through stakeholder collaboration, thereby balancing the triple bottom line of economic, environmental, and social factors.

Mayer (2023) further discussed the application of Stakeholder Capitalism in the digital age. He pointed out that digital technologies (such as artificial intelligence and blockchain) provide new tools and platforms for stakeholder engagement and collaboration, thus advancing the practice of Stakeholder Capitalism.

Freeman examined new directions for Stakeholder Theory in the era of sustainability, emphasizing how businesses can create shared value through stakeholder collaboration while achieving environmental and social objectives. He also proposed future research frameworks, including new models of stakeholder engagement and the application of digital tools.

In summary, the Stakeholder Theory provides important theoretical support for the relationship between financial shared services (FSS), digital transformation, and enterprise sustainability. By emphasizing the importance of resource allocation, transparency, trust-building, stakeholder participation, and long-term value creation, Stakeholder Theory helps organizations better align financial shared services with their business strategies and sustainability goals. This theoretical framework ensures that companies not only focus on financial performance but also address the diverse needs of various stakeholders, enabling them to achieve sustained success in the marketplace.

Related Literature Review and Research Hypotheses

1. Conceptual Model

The conceptual model of this research is shown in Figure 1.

First, financial shared services (FSS) impact firm sustainability (FS) from four perspectives: strategic FSS management, treasury management, business operations, and transparent governance. Second, financial shared services (FSS) influence digital transformation (DT) from these same four perspectives. Third, digital transformation (DT) plays a mediating role between financial shared services (FSS) and firm sustainability (FS).

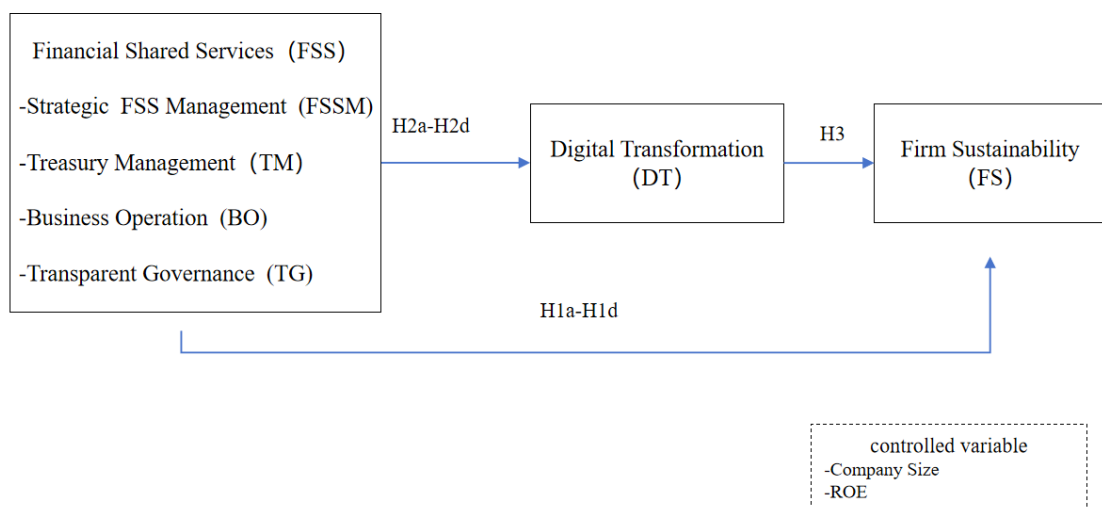


Figure 1 Conceptual Model

2. Background of Firm Sustainability (FS)

Hart (1995) proposed the natural resource-based view, emphasizing that a company's competitive advantage in sustainability comes from its ability to effectively manage and utilize natural resources. To achieve sustainable competitive advantage, companies need to innovate and manage in three key areas: Pollution Prevention, Product Stewardship, and Sustainable Development.

Elkington (1997) introduced the concept of the "Triple Bottom Line," stressing that companies should simultaneously focus on economic, social, and environmental performance. This concept is one of the cornerstones of firm sustainability research. The first is the Economic Bottom Line (Profit). Traditionally, the main goal of a company is to make a profit. Financial performance measures the economic success of a company, including revenue, profit margins, and shareholder

returns. The second is the Social Bottom Line (People). The social bottom line focuses on a company's impact on society, including employee welfare, community development, and consumer rights protection. Companies should assume social responsibility and promote social justice and welfare. The third is the Environmental Bottom Line (Planet). The environmental bottom line focuses on a company's impact on the natural environment, including resource consumption, pollution emissions, and ecological protection. Companies should adopt environmental measures to reduce negative environmental impacts and achieve sustainable development.

Subsequently, Carroll (1999) reviewed the definitions and evolution of corporate social responsibility, proposing a four-level model (economic, legal, ethical, and philanthropic responsibilities), providing a framework for understanding the role of businesses in social responsibility. The first is Economic Responsibilities. As the most fundamental responsibility, companies need to make a profit and create value for shareholders. This is the primary reason for the company's existence and the basis of its social responsibility. The second is Legal Responsibilities. Companies must comply with laws and regulations, which is a basic requirement from society. Legal responsibilities ensure that companies meet social norms and standards while pursuing economic interests. The third is Ethical Responsibilities. Beyond legal requirements, companies should adhere to socially accepted ethical norms. These responsibilities include honesty, fair competition, and consumer protection, which, although not legally binding, are crucial for the company's social image and long-term development. The fourth is Philanthropic Responsibilities. As the highest level of corporate social responsibility, philanthropic responsibilities include voluntary contributions to social welfare, such as donations, community service, and support for education and environmental projects, without the primary aim of profit.

Then, Porter & Kramer (2006) introduced the concept of "Creating Shared Value" (CSV), advocating that companies should create economic value while

addressing social issues, achieving a win-win situation. It views social issues as central to corporate strategy rather than merely ancillary activities.

Eccles & Serafeim (2014) found through empirical analysis that companies implementing sustainability strategies perform better in organizational processes and performance, providing evidence of a positive correlation between firm sustainability and financial performance. High-sustainability companies show significant differences in governance structure, performance evaluation, and incentive mechanisms. High-sustainability companies often place greater emphasis on building and maintaining a positive corporate culture, including employee training, value transmission, and stakeholder engagement. High-sustainability companies tend to perform better in long-term financial performance, including higher shareholder returns and lower stock price volatility. This indicates that sustainability strategies not only offer social and environmental benefits but also bring significant economic returns.

In summary, this research considers firm sustainability as the ability of a company to balance economic, environmental, and social objectives during its operations, pursuing long-term stability and success. This balance is reflected in the company's efforts to minimize negative environmental impacts, maintain social fairness and welfare, and achieve the Triple Bottom Line of economic, environmental, and social performance.

3. Background of Financial Shared Services (FSS)

(1) Definition of Shared Services

Firstly, the definition of shared services has prompted scholarly discussions. The traditional Multi-Divisional Form (M-form) suggests that each division of a company is responsible for providing its own business support services (Chandler, 1962). However, with the emergence of various management models such as matrix management, multiple reporting relationships, electronic organizations, and network organizations, some scholars argue that the M-form is outdated (Hoskisson, 1993).

The shared service center, as a new method of separating non-core elements from divisions, has gained academic attention. Different scholars have provided their own definitions of shared service centers.

Schulman, Harmer, Dunleavy & Lusk (1999) define shared services as a management model that integrates internal support functions within a company. By centralizing and standardizing services, it aims to improve operational efficiency, reduce costs, and provide high-quality support services to business units. Shared services encompass various functional areas, including finance, human resources, IT, and procurement. The core concepts of shared services include centralization, standardization, and value-added services. Value-added services refer to the idea that shared services are not only cost centers but also strategic partners that provide value-added support to business units.

Quinn, Cooke & Kris (2000) describe shared services as a management model that improves efficiency and reduces costs through centralized management of internal support functions. The core concepts are standardization, centralization, and customer orientation. Standardization involves providing consistent and high-quality services through unified processes and systems. Centralization involves managing resources to reduce duplication of effort and resource waste, achieving economies of scale. Customer orientation focuses on the needs of internal customers (business units) to provide efficient and flexible support services.

Arrtz (2014) argues that the Shared Services Center is a reconfiguration of the traditional M-form model. In this new model, support functions are centralized into a new, semi-autonomous organizational unit and provided as services to local organizations. Herbert & Seal (2014) define the Shared Services Center as a method of consolidating non-core activities of business units into an organization with an independent, fair-trade management mechanism, located in low-cost areas.

Therefore, the goal of the Shared Services Center is to improve service quality, reduce operational costs, and create new value for the enterprise. The core

concepts are cost savings, value creation, and business support. Cost savings are achieved through centralization and standardization, which reduce duplication of work and resource wastage, realizing economies of scale. Value creation indicates that it is not merely a cost center but also creates new value for the enterprise through innovation and optimization of business processes. Business support involves providing high-quality support services to enhance the competitiveness of the enterprise's core business (Strikwerda, 2006).

Overall, the Shared Services Center is a relatively independent entity within an organization that centralizes some activities originally belonging to business units to provide service support to these units (Amiruddin, 2013).

(2) Definition of Financial Shared Services

Bergeron (2002) defines financial shared services as a centralized financial management model aimed at optimizing financial operational efficiency, reducing costs, and improving service quality through standardized and specialized services. financial shared service centers (FSSC) typically handle repetitive financial tasks for multiple business units within the organization, such as accounting, report preparation, and tax filing. The core concepts of financial shared services are standardization, centralization, and specialization. Standardization refers to achieving efficient financial processing through unified processes and systems. Centralization involves managing financial resources centrally to reduce duplication of effort and resource waste. Specialization refers to providing specialized financial services to enhance service quality and accuracy.

Chinese scholars Chen(2018) describe financial shared services as a new management model that, based on a unified information system platform, reengineers and scales existing financial business processes to reduce financial processing costs and improve financial management efficiency. ACCA (2017; 2018) view financial shared services as a business model that consolidates similar and repetitive financial processes from different internal business units into an independent shared center for

processing. Jia(2020) argue that financial shared services rely on information technology, with a focus on optimizing organizational structure, standardizing procedures, improving process efficiency, reducing operational costs, enhancing decision support, and creating enterprise value, representing a new management model that provides specialized and standardized services from a market perspective. Yang (2021) note that the financial shared services model focuses on reengineering strategies, processes, organization, personnel, and systems to integrate highly repetitive, easily standardized, and dispersed financial processes across brands and subsidiaries. Zhou & Wang (2021) suggest that financial shared services involve reengineering and standardizing repetitive basic financial work to achieve information sharing within the enterprise, resulting in the integration and cooperation of shared financial services, business financial services, and strategic financial services.

In summary, this research defines financial shared services as a new financial management model that consolidates and standardizes repetitive and easily standardized business processes into a shared center through process reengineering.

(3) Key Factors in Implementing Financial Shared Services

The implementation of a financial shared services center (FSSC) changes the traditional distribution and operation of management accounting functions. First, through centralized management of financial processes, the shared services center standardizes and unifies financial data, improving data quality and decision-making efficiency. Second, the shared services center is not just a transaction processing center but also a decision support center. Through centralized management and technical support, the shared services center provides real-time financial data and analysis to support strategic decision-making. Third, cost control and efficiency improvement. The shared services center significantly reduces operating costs and improves efficiency through standardized and automated financial processes. Fourth, transformation of management accounting functions. The implementation of shared services promotes the transformation of management accounting functions from

traditional transactional work to strategic and analytical work, allowing management accountants to focus more on business analysis, performance management, and strategic support (Herbert & Seal, 2012).

Wang (2023) argues that financial shared services provide the necessary integration between business and finance (business-finance integration). Digital transformation offers data mining and analysis technologies, and shared service centers promote enterprise performance and sustainability through key factors in digitization, business support, decision support, and organizational transformation.

This research, drawing on the perspectives of Wang (2023) and others, identifies strategic FSS management, treasury management, business operations, and transparent governance as four critical factors in the establishment of financial shared service centers (FSSC) and the implementation of financial shared services (FSS). The financial shared service center lays the foundation for its objectives through strategic FSS management, strengthens financial operations through Treasury Management, ensures the execution of daily activities through business operations, and ultimately secures the stability and credibility of the financial system through Transparent Governance. These four dimensions are interdependent and collectively form a logically coherent and functionally complete financial shared services framework.

Firstly, Strategic FSS Management.

Strategic financial shared services management (FSSM) refers to strategically managing and operating a financial shared services center (FSSC) to achieve the enterprise's overall financial and strategic goals. Strategic FSS management focuses not only on daily financial operational efficiency and cost savings but also on improving financial management quality, transparency, and decision support capabilities, creating greater strategic value for the enterprise.

The key factors for financial shared services can be divided into internal conditions and external factors. Internal conditions include strategy, systems,

processes, structure, personnel, organization, performance, and services; external factors include market, policy, technology, and competition Execution of strategy, standardized business processes, information systems, reconstruction of business activities, and shareholder management are critical factors affecting the implementation of shared services.

Martin (2011) identified six key factors for successful implementation of financial shared services through a survey: strategic planning, process management, change management, location decision, organizational structure, and service level agreements. Ying(2013) found that personnel management, performance management, organizational structure design, process management, information systems, and strategic planning positively affect financial shared services, with their impact increasing sequentially. He & Zhou (2013) suggested that the key elements of financial shared services are organizational structure design, strategic planning, process management, information systems, performance management, and personnel management. Ramirez (2007) noted that strategic factors such as service quality, planning, implementation, positioning, goal setting, and location selection set development goals for the implementation of financial shared services, creating unique advantages among industry competitors and further creating value.

Janssen (2006) argued that the success factors of shared services centers are senior management support, comprehensive process analysis, change management, and information technology. Senior management support and clear strategic direction are critical for the successful implementation of SSC. Active involvement and support from senior leaders effectively drive the change process.

In summary, strategic FSS management involves making strategic decisions to establish a financial shared service center and implement Financial Shared Services, to achieve the overall financial and strategic objectives of the enterprise.

Secondly, Treasury Management.

Treasury management is a centralized method for managing a company's funds, which involves effectively managing financial risks through centralized monitoring and control of the flow of funds. Treasury not only handles daily settlement and payments but also covers comprehensive financial activities such as financing, investment, fund planning, and fund allocation (Li , 2023).

Functions of Fund Settlement and Payment: In financial sharing, treasury management takes on the core role of fund settlement and payment. The Financial Shared Service Center prepares, adjusts, and approves fund plans based on the budget plans of the member units, according to the treasury information system. It also performs tasks like fund plan control, compliance reviews of settlement documents, and other audit control activities (2022 State-owned Assets Supervision and Administration Commission document).

Bank Account Management Function: Treasury management is also responsible for the standardized management of bank accounts, including account application, registration, transactions, and cancellation. The Financial Shared Service Center performs targeted reviews based on the treasury's classification of account contents, ensuring the accuracy and compliance of account management (Li , 2023).

Risk Management and Internal Control Function: Treasury management plays an important role in risk management and internal control in financial sharing. By embedding risk management systems and control rules into the information system, the Financial Shared Service Center can strengthen risk management and internal controls, improving the standardization and accuracy of business processes (2022 State-owned Assets Supervision and Administration Commission document).

Resource Integration and Efficiency Improvement Function: The integration of treasury management and the Financial Shared Service Center allows for the consolidation of financial data resources and the sharing of advanced technological resources, ensuring the accuracy and timeliness of treasury management data, and improving the efficiency of treasury operations. By centrally processing relatively

standardized, high-volume, and frequent transactional tasks, economies of scale can be leveraged to reduce financial operation costs (2022 State-owned Assets Supervision and Administration Commission document).

Decision Support and Strategic Planning Function: Treasury management also provides decision support and strategic planning functions within financial sharing. By utilizing the data analysis capabilities of the Financial Shared Service Center, treasury can offer intelligent technological support for corporate executives in areas such as fund flow and investment and financing decisions, helping the company achieve its strategic goals and plans (2024–2025 China Treasury Report).

In summary, Treasury Management is a centralized approach to managing a company's funds, which not only handles daily settlements and payments but also involves comprehensive financial activities such as financing, investment, fund planning, and fund allocation. By centrally monitoring and controlling the flow of funds, it effectively manages the company's financial risks. Treasury management and the Financial Shared Service Center play irreplaceable roles within a corporate group. The close dependence and collaboration between the two ensure the safety, efficiency, and stability of the group's fund management. Treasury management, relying on the foundational services and data analysis capabilities provided by the Financial Shared Service Center, enables the rational allocation of financial resources and risk control, providing strong support for the achievement of the corporate group's strategic goals.

Thirdly, Business Operations.

Business operations management is a crucial means for modern enterprises to achieve competitive advantage and sustainable development. Efficient business operations management allows enterprises to optimize resource allocation, reduce operating costs, and improve service quality (Zhang, 2015).

Business operations in financial shared services (FSS) refer to managing a company's financial functions through centralization and standardization in the shared services center to achieve efficient, low-cost, high-quality financial management and

support services. FSS business operations mainly encompass financial activities such as accounting, report preparation, tax filing, budget management, cash management, accounts receivable, and accounts payable management.

By implementing unified processes and operational standards, the shared services center can ensure efficient service delivery and data consistency. Standardization helps reduce errors and improve operational efficiency (Schulman, Harmer, Dunleavy & Lusk, 1999). Comprehensive process analysis and redesign can ensure the shared services center provides efficient, standardized services. Eliminating redundancies and inefficiencies is key to improving efficiency (Quinn, Cooke & Kris, 2000). Drawing from Business Process Reengineering (BPR) experiences, comprehensive process analysis and redesign ensure that the shared services center can provide efficient, standardized services (Ulbrich, 2006). By establishing and implementing unified processes and standards, the shared services center ensures the standardization and consistency of financial data, which helps improve the accuracy and timeliness of financial reporting and supports the company's decision-making process (Herbert & Seal, 2012).

FSS business operations are essential for enhancing corporate operational efficiency and performance. Luo & Li(2016) found that multiple large enterprise groups achieved the integration of group financial resources through FSSC, leveraging the scale and synergy of the entire group and achieving the transformation from traditional accounting to management accounting. Petrișor & Cozmiu (2016) pointed out that financial sharing in Romania effectively supported IT, finance, procurement, and marketing activities in companies. Zhang(2016) found that financial sharing is beneficial for integrating non-core business units, quickly unifying service standards, behaviors, and business rules, reducing the number of business personnel, lowering human resource costs, and improving operational efficiency and standardization. ACCA (2017; 2018; 2019) and Zhou & Wang(2021) research shows

that after establishing financial shared services centers, Chinese listed companies continuously improve their operational efficiency.

The main types of business operations model innovation include product innovation, process innovation, service innovation, and organizational innovation. Among these, process innovation involves optimizing business processes to improve operational efficiency and reduce costs (Li, 2018). Financial sharing requires constructing an organizational structure suitable for operational management, clarifying the responsibilities of various departments and positions, ensuring a clear division of management and operational duties, and introducing advanced information systems to achieve real-time information sharing and automated business process management (Wang, 2019).

Zhang(2010) found through numerous case studies that the key factors for the successful implementation of financial shared services include core business process optimization, organizational change, integration of network financial systems, and improvement of evaluation systems. He(2013) argued that a fundamental reflection and thorough redesign of the group's business processes could achieve modern key performance indicators such as improved quality, service, speed, and cost reduction. ACCA(2020) suggested that the standardization of business processes is the foundation of the specialization and efficient operation of financial shared services centers. Standardizing, optimizing, and executing various financial business processes and operational management processes meet the requirements for standardized management and reduce financial risks. ACCA (2018) survey results show that process standardization and centralization (95.3%) are the main measures to ensure process quality in shared services centers.

In summary, business operations in a shared service center involve the centralized and standardized management of a company's financial functions to achieve efficient, low-cost, and high-quality financial management and support

services. Key concepts in business operations within financial shared services include standardization, centralization, process innovation, and organizational transformation.

Fourthly, Transparent Governance.

The idea of transparent governance can be traced back to the Enlightenment period in the 18th century, when philosophers like John Locke and Montesquieu proposed the notion that government power should be limited and supervised. In the 20th century, the concept of transparent governance gradually applied to modern public administration and corporate governance. In the information age, the concept of transparent governance has further expanded, emphasizing the use of information technology and digital tools to achieve transparency and accountability. Transparent governance refers to ensuring transparency, openness, and accountability in government and corporate management and operations to enhance public trust and organizational performance. It emphasizes information disclosure, transparent decision-making, and effective supervision to prevent corruption and improve operational efficiency.

Bergeron (2014) discussed the importance of transparent governance in enhancing the effectiveness of financial shared services centers, particularly how transparent governance mechanisms ensure alignment between shareholder interests and management behavior. Chen & Guo (2020) suggested that in the context of financial shared services centers, there is an interactive relationship between transparent governance and equity concentration, which can improve the quality of corporate governance and financial performance by optimizing equity structure. Waheed & Malik (2019) studied how equity concentration influences corporate performance through governance mechanisms in Pakistani listed companies, highlighting the importance of transparent governance in solving agency problems.

Schulman, Harmer, Dunleavy & Lusk (1999) proposed that shared services centers could provide transparent financial reports and real-time financial data. On one hand, shared services centers provide standardized financial reports, allowing

enterprises to more clearly present their financial status. Transparent financial reporting helps enhance internal and external trust, supporting transparent governance. On the other hand, through automated systems, shared services centers can achieve real-time processing and reporting of financial data. Real-time financial data enable management to understand the company's financial status promptly, making transparent and data-driven decisions. ACCA (2018) suggested supporting transparent governance by enhancing financial transparency, increasing accountability, and preventing corruption and fraud. The first is enhancing financial transparency, which manifests in data accuracy and consistency, transparent financial reporting, and real-time financial data. The second is increasing accountability, characterized by a unified financial management system and clear division of responsibilities. The third is preventing corruption and fraud, characterized by standardized and automated processes, internal control, and auditing.

Transparent governance plays a critical role in optimizing the management and operations of financial shared services centers. It helps strengthen the management and control of group companies, standardize financial processes, improve efficiency, reduce costs, and prevent financial risks; Chen & Guo, 2020). Zhao (2020) suggested that applying a transparent governance framework in financial shared services centers can increase accountability by establishing clear responsibilities and financial transaction and reporting processes. This governance approach can reduce errors and fraud, enhancing overall financial integrity. Xia (2019) believed that transparent governance also supports the construction of information systems in financial shared services centers, ensuring data transparency and traceability, thereby improving data processing accuracy and efficiency.

In summary, governance mechanisms, shareholder rights, ownership concentration, financial transparency, enhanced accountability, and prevention of corruption and fraud have become popular terms in transparent governance. Transparent governance in financial shared services centers (FSS) refers to the

implementation of open, clear, and efficient management and reporting mechanisms within the FSS (Schulman & Lusk, 1999). The core objective of this transparent governance is to increase the transparency of financial operations, ensure the accuracy and completeness of information, and enhance trust among stakeholders.

(4) Summary of Research on Financial Shared Services

The initial intention behind the application of shared services is to reduce costs. Consequently, a direct impact of implementing financial shared service centers is cost savings for the enterprise, which has been confirmed by numerous studies. Another effect associated with cost reduction is an improvement in work efficiency. Herbert & Seal (2012) found in their case analysis of Utilityco's financial shared service center that after the establishment of the shared services organization, the financial staff at various branches experienced a significant reduction in the burden of handling complex transactions. They shifted their focus to managing relationships between the shared center and business units and providing management decision support. This shift transformed their role from merely providing financial information to utilizing it and integrating deeply with business teams, thus acting as "business partners." Additionally, during the establishment of the financial shared service center, the reengineering and standardization of service processes also improved the transparency of business units. Hence, shared service centers not only reduce costs and improve efficiency but also create value for enterprises through changes in management functions.

Research on financial shared services has achieved certain results, but it is predominantly qualitative with fewer quantitative studies. In the areas of business scope and key implementation factors of financial shared services, most research consists of practical summaries. Regarding the economic consequences of financial shared services, research remains largely case-based with limited empirical studies. Existing research has mainly focused on the impacts of financial shared services on

control capabilities, operational efficiency, and business performance, with a notable lack of studies on the impact of financial shared services on firm sustainability .

4. Background of Digital Transformation (DT)

(1) The Connotation of Digital Transformation

In recent years, both academia and industry have defined digital transformation from different perspectives. These definitions can be roughly divided into three categories: technological, organizational, and social perspectives.

From a technological perspective, digital transformation is the process of deploying and applying digital technologies. Specifically, Liu (2011) defined digital transformation as the organizational transformation in the digital economy by integrating digital technologies and business processes in the construction and management of e-banking. Westerman & Bonnet (2015) believe that digital transformation means enterprises can leverage digital technologies to gain transformation benefits. Li (2018), in their study of the cross-border e-commerce digital transformation mechanism of small and medium-sized enterprises, regarded digital transformation as a process triggered by information technology changes.

From an organizational perspective, digital transformation emphasizes organizational change. Chen(2019) distinguished the two often-confused English concepts "digitization" and "digitalization". The former refers to the process of converting information into binary digits, also known as "information digitization," while the latter refers to the application of digital technologies in workflows to improve efficiency, abbreviated as "process digitalization." They argued that digital transformation (digital transformation) is a higher-level transformation aimed at creating new business models, citing the successful practices of Amazon and Apple. Verhoef(2019) emphasized the development and innovation of digital business models in their discussions of digital transformation. Scholars like Vial (2019) generalized organizational change as significant changes in physical attributes, while others further specified organizational changes, such as enhancing customer

experience, simplifying operations, and strategic thinking. Similarly, industry definitions of digital transformation are largely aligned. The China Center for Information Industry Development's "White Paper on Industrial Digital Transformation" describes industrial digital transformation as the use of the Internet of Things (IoT) to improve business processes and operating models in enterprises, leading to commercial value.

From a social perspective, as digital technology applications become more widespread, digital transformation is no longer limited to micro-level organizational changes. Some researchers and industry leaders focus more on the revolutionary and positive impacts that digital technologies bring to society, describing digital transformation as a social phenomenon. Lindgren (2017) addressed questions such as what constitutes a digital society, the relationship between technology and social change, and the relationship between the social environment and digital media. He argued that as new tools and technologies are introduced frequently, today's media environment has become increasingly complex, and society is inevitably influenced by digital communication tools and platforms such as the Internet and social media. In China's industrial sector, JD Digital Technology Research Institute referred to digital transformation broadly as industrial digitalization in its "China Industrial Digital Development Report 2020," describing the process of upgrading, transforming, and reengineering the entire industrial chain.

In conclusion, the connotation of digital transformation emphasizes both "digital" and "transformation." Digital technologies play a crucial supporting role in the digital transformation of enterprises, while business improvement is the essential feature of digital transformation. This research, from an organizational change perspective, considers digital transformation as the process through which enterprises utilize digital technologies such as the Internet of Things, cloud computing, big data, and blockchain to achieve major business improvements, such as new product or

service development, manufacturing process optimization, and operational management upgrades.

(2) The Relationship Between Financial Shared Services and Digital Transformation

With global competition intensifying and information technology advancing rapidly, enterprises face multiple opportunities and challenges. Many large enterprises, such as Siemens and Alibaba, have strengthened their management through the introduction of financial shared service centers and business process reengineering to seek better survival and development. Sun(2021) stated that in an era of continuous technological advancement, digital transformation of enterprises is imperative, but it is not an overnight process. Wang(2016) noted that financial shared centers are gradually becoming an inevitable trend in the digital transformation and upgrading of modern enterprises. Chen(2016) stated that financial shared service centers are the starting point for digital transformation, and in the early stages of digital transformation, it is necessary to establish a financial shared service center as a foundational platform. Zhang(2020) explained that the advantage of financial shared service centers lies in solving data management challenges for enterprise groups, providing essential data, organizational, technological, and service foundations for digital transformation. Wang(2018) added that ERP systems are crucial for constructing financial shared centers, as they focus on business processes and emphasize the creation of a complete data structure from data collection to data application, preventing information silos and laying the foundation for digital transformation. Zhang(2018) pointed out that the purpose of digital transformation is not to build financial shared service centers, but to centralize low-value-added tasks through the establishment of such centers to achieve semi-automation, improve financial staff efficiency, and shift the focus of financial work to value-added activities such as budgeting, forecasting, decision-making, control, and analysis. He (2018) stated that financial shared service centers are an integral part of enterprise

management models, and it cannot be said that digital transformation is solely aimed at establishing financial shared centers. Rather, it can be said that in the process of digital transformation, the establishment of financial shared service centers provides great convenience for future transformation.

(3) The Impact Path of Financial Shared Services on Digital Transformation

Li (2017) stated that financial shared service centers, as the starting point of digital transformation, play an important role in driving digital transformation. Zhao (2019) added that this view originates from the recognition that digital transformation begins with financial shared service centers and that financial digitalization is the first step in digital transformation. Chen & Guo (2020) further explained that financial shared service centers are essentially digital middle platforms that integrate both internal and external data, expanding the breadth and depth of data, turning data into assets, and providing various business solutions, accelerating the process of digital transformation.

Specifically, Lu(2021) believed that the construction of financial shared service centers should be guided by the enterprise's strategic planning. Management must define the strategic layout, functional scope, and organizational structure of financial shared centers to meet the needs of the enterprise's strategic plan. Wu (2020) added that financial shared centers mainly use smart collection and smart recognition methods to automate and digitize financial data, enabling executives to spend more time analyzing enterprise data to maximize enterprise value. Han & Qu(2020) stated that the data, business, and technical middle platforms built by financial shared centers allow management accounting to shift from analyzing historical data to predicting future development, which adds value to business management and is beneficial for financial digital transformation. Chen (2021) also indicated that the introduction of new technologies will impact the production and business processes of enterprises, as well as have significant effects on job work modes and job interfacing

methods, so enterprises must adjust their organizational structures to meet the needs of new technologies for digital transformation. He(2021) pointed out that financial shared service centers achieve process efficiency improvements, reduce operational costs, and enhance business value through organizational restructuring and business process reengineering, realizing digital transformation.

Therefore, financial shared service centers promote digital transformation by strategically positioning, using intelligent technologies, building data platforms, driving organizational changes, and reengineering processes. These actions further enhance the operational efficiency of enterprises, optimize decision-making, and guide enterprises to further transform toward intelligence.

(4) The Impact of Financial Shared Services on the Effectiveness of Digital Transformation

Tiefenbeck (2017) stated that financial shared service centers, when driving digital transformation, reduce the time costs of geographical mobility of enterprise personnel and data collection and transmission costs, thus achieving efficient collaboration on online platforms. Li(2016) believed that in the process of digital transformation, financial shared service centers also achieve the consolidation and control of financial information, lowering costs and improving operational efficiency within the group through shared platforms. Wang(2021) stated that digital transformation under financial shared service centers can promote the development of digital logistics, form inventory models such as overstocking, digital twins, and robust optimization methods, which are conducive to improving the efficiency of digital logistics. Hu & Chen (2021) stated that by centralizing financial data in financial shared service centers and introducing modern technologies such as cloud computing and IoT, enterprises can reduce human interference and ensure the reliability of financial data, promoting collaborative development between financial organizations and management teams.

Definitions of Variables in the Conceptual Model Based on the Literature Review.

Table 2 Overview of Variable Definitions

<i>Type</i>	<i>Name</i>	<i>Abbreviation</i>	<i>Variable Definition</i>
Dependent Variable	Firm Sustainability	FS	Firm sustainability refers to a company's ability to balance economic, environmental, and social goals during its operations, pursuing long-term stability and success.
Independent Variable	Strategic FSS Management	FSSM	Strategic FSS management refers to the process of establishing a financial shared service center and implementing financial shared services through strategic decisions to achieve the company's overall financial and strategic objectives.
Independent Variable	Treasury Management	TM	Treasury management is a method of centralized management of corporate

			<p>funds. It is responsible not only for daily settlement and payment of funds but also for comprehensive financial management activities such as financing, investment, fund planning, and fund allocation. By centralizing the monitoring and control of fund flow, it effectively manages the financial risks of the company.</p>
<i>Type</i>	<i>Name</i>	<i>Abbreviation</i>	<i>Variable Definition</i>
Independent Variable	Business Operations	BO	<p>Business operations refer to the management of a company's financial functions through centralization and standardization within a shared service center, aiming to achieve efficient, low-cost, and high-quality financial management and support services.</p>
Independent Variable	Transparent Governance	TG	<p>Transparent governance refers to the implementation of open, clear, and efficient management and reporting mechanisms within a financial shared services center, aiming to increase the transparency of financial operations and ensure the accuracy and completeness of information.</p>

Mediating Variable	Digital Transformation	DT	Digital transformation is the process through which a company utilizes digital technologies such as the Internet of Things, cloud computing, big data, and blockchain to achieve significant business improvements, including the development of new products or services, optimization of manufacturing processes, and upgrades in operational management.
<i>Type</i>	<i>Name</i>	<i>Abbreviation</i>	<i>Variable Definition</i>
Control Variable	Company Size	Size	The total asset size of the enterprise.
Control Variable	Profitability	ROE	Return on equity (ROE)

The Impact of Financial Shared Services (FSS) on Firm Sustainability (FS)

1. The Overall Impact of Financial Shared Services (FSS) on Firm Sustainability (FS)

In the 1990s, companies began widely adopting the shared services model to cope with increasing market competition and rising operating costs. Through shared services, companies can achieve optimal resource allocation and business process optimization. Shared services are a management model that improves efficiency and reduces costs by centralizing and standardizing internal support functions (such as finance, human resources, and IT). Shared Service Centers (SSCs) provide specialized services to support the operations and development of business units. Shared services

emphasize standardization, centralization, and specialization as core concepts, highlighting their importance to firm sustainability (Schulman, Harmer, Dunleavy & Lusk, 1999).

Firm Sustainability contributes to three aspects: environmental protection, social responsibility, and economic benefits. The first is environmental protection. Firm Sustainability emphasizes that companies should take measures to reduce their negative impact on the environment during their operations. The second is social responsibility. Companies enhance their sense of social responsibility and public image through community engagement, improving working conditions, and focusing on employee welfare. The third is economic benefits. By implementing sustainable development strategies, companies can reduce costs, improve efficiency, explore new market opportunities, and enhance long-term competitiveness, thereby achieving economic benefits and sustainable development. Companies can achieve efficient resource utilization and maximize value by innovating business models, such as the circular economy and sharing economy, to promote sustainable development (Mazur & Walczyna, 2010).

Herbert (2012) explored the impact of shared services as a new organizational form on management accounting, analyzing its advantages in centralized management, process standardization, and cost control, which are crucial for achieving firm sustainability goals. Jiang (2022) analyzed how financial shared services (FSS) enhance firm sustainability by improving accounting information quality and reducing financial risk in the digital context. Liu & Zhao(2023) provided empirical evidence on how financial shared services improve financial performance. Liu & Zhao demonstrated through detailed data analysis and case studies the significant potential of financial shared services in improving operational efficiency, reducing costs, and enhancing financial transparency, thereby supporting firm sustainability. Ou & Zhang(2023) argued that financial shared services reduce repetitive work and resource waste in financial operations through centralized management and process standardization, thus lowering operational costs. Financial shared services improve the efficiency of capital utilization and enhance the financial condition of enterprises by optimizing working capital management processes. By reducing repetitive work and improving work efficiency, financial shared services can increase employee satisfaction and motivation, supporting firm sustainability goals.

ACCA (2020) proposed the Global Business Services (GBS) model: GBS is the centralized management of multiple functions (such as finance, human resources, IT, procurement, etc.) within a company, integrating services from different business areas to achieve higher synergy and resource utilization efficiency. GBS is not limited to finance but encompasses all support functions of an enterprise. Studies have shown the great potential of the GBS model in improving operational efficiency, reducing costs, and enhancing service quality, thereby promoting firm sustainability .

Based on this, the following research hypothesis is proposed:

H1: Financial Shared Services (FSS) have a proactive relationship with Firm Sustainability (FS).

2. The Impact of Strategic Financial Shared Services Management on Firm Sustainability (FS)

Strategic management of financial shared services includes planning, implementing, and monitoring financial shared services to ensure alignment with the company's sustainability goals. Strategic financial shared services management supports the company's long-term development goals by improving financial processes, enhancing efficiency, and reducing costs, thereby impacting firm sustainability (Chen & Wang, 2010). Factors influencing corporate performance through strategic financial shared services include process optimization, data analysis and decision support, and cost management.

First, process optimization. Strategic financial shared services enhance the efficiency and accuracy of financial operations through process standardization and automation. Second, data analysis and decision support. Providing valuable financial data analysis supports strategic decision-making, improving the quality of operational decisions. Third, cost management. Centralized management of financial functions reduces redundancy and improves cost efficiency (Patel & Johnson, 2023).

Strategic financial shared services focus not only on efficiency and cost savings but also aim to support firm sustainability goals, including environmental, social, and governance (ESG) aspects. Mechanisms through which strategic financial

shared services promote firm sustainability include process optimization and standardization, transparency and reporting, and decision support.

First, process optimization and standardization. By standardizing and optimizing financial processes, resource utilization efficiency is improved, and environmental impact is reduced. Second, transparency and reporting. Improved financial transparency and reporting allow companies to better monitor and manage their sustainability performance. Third, decision support. Providing accurate financial data analysis helps companies make decisions that align with sustainability goals (Nguyen & Zhang, 2021).

The strategic implementation of financial shared services impacts corporate environmental, social responsibility, and governance (ESG) performance by improving efficiency, supporting ESG goals, and providing long-term benefits.

First, improving efficiency. Strategic financial shared services can enhance operational efficiency through process and resource management optimization, supporting sustainability goals. Second, supporting ESG goals. Financial shared services can help companies better comply with environmental regulations, enhance social responsibility, and improve corporate governance. Third, long-term benefits. In the long run, implementing strategic financial shared services can help companies achieve sustainable financial performance and social benefits (Chen & Wang, 2010).

In summary, financial shared services (FSS) as a strategic tool are believed to help companies achieve more efficient financial management and ESG goals. First, enhancing environmental performance: Through standardizing and optimizing financial processes, companies can more effectively track and report environmental impacts. Second, improving social responsibility: Through more effective resource allocation and financial management, companies can better support social welfare projects and employee benefits. Third, optimizing governance structure: By improving financial transparency and standardized management, the overall governance level of the company is enhanced (Nguyen & Zhang, 2021).

Based on this, the following research hypothesis is proposed:

H1a: Strategic FSS Management has a proactive relationship with Firm Sustainability (FS).

(2)The Impact of Treasury Management on Firm Sustainability (FS)

Treasury management, as an integral part of corporate finance, optimizes cash flow, risk control, and resource allocation, significantly impacting a company's sustainability (ESG - Environmental, Social, and Governance).

Environmental Impact: Treasury management supports green financing strategies (e.g., issuing green bonds, applying for green loans) to finance environmentally sustainable projects like energy-efficient equipment or clean energy development. It improves resource efficiency by optimizing cash flows and investment decisions, reducing waste, and promoting sustainable production and operations. The treasury team forecasts and assesses environmental risks (e.g., carbon taxes, changes in environmental regulations), helping companies build resilience in the face of environmental challenges.

Social Impact: Efficient treasury management ensures timely salary payments, while also facilitating funding for social responsibility projects. By improving cash flow, treasury management guarantees timely payments to suppliers, thus supporting partnerships focused on social and environmental responsibility. It helps arrange budgets and manage cash flows to support charitable donations, community activities, and social programs.

Governance Impact: Treasury management focuses on internal controls and compliance, enhancing cash flow transparency, and reducing financial fraud and operational risks. It effectively manages forex, interest rate, and liquidity risks, ensuring financial stability and boosting resilience in governance. Efficient cash management supports ESG strategies, including funding investments in innovative technologies or meeting ESG-related scoring requirements.

In summary, treasury management, through green finance, resource optimization, and risk control, provides substantial support for companies, helping them achieve sustainability goals while enhancing their social influence and governance effectiveness.

Based on this, the following research hypothesis is proposed:

H1b: Treasury Management has a proactive relationship with Firm Sustainability (FS).

(3)The Impact of Business Operations on Firm Sustainability (FS)

Business operations management is a key means for modern enterprises to achieve competitive advantage and sustainable development. Efficient business operations can optimize resource allocation, reduce operating costs, and improve service quality (Zhang, 2015). In this process, financial shared services (FSS), as a centralized and standardized management model, further promote the efficiency of financial management and support service quality by optimizing financial functions. Integrating ESG goals with business strategy ensures that companies focus on environmental and social impacts while achieving financial goals and improve overall performance by improving supply chain management and production processes (Kiron, 2018).

Elkington (1997) proposed the concept of the "Triple Bottom Line" (TBL), emphasizing a comprehensive perspective on corporate performance that includes economic, environmental, and social aspects. The TBL theory provides a new framework for comprehensively evaluating business operations performance, allowing companies to balance economic gains with environmental and social performance, thereby achieving overall sustainability.

The Sustainable Value Model provides a solution for business operations management. The Sustainable Value Model includes operational efficiency, market access, and strategic transformation. Operational efficiency improves business operations efficiency by optimizing resource use and reducing environmental impact, such as reducing energy consumption and waste generation. Market access involves providing products and services that meet social and environmental standards to enhance market competitiveness and brand image. Strategic transformation requires companies to adjust their strategies to address environmental and social challenges and actively participate in solving these challenges to achieve long-term sustainable development (Hart & Milstein, 2003).

Financial shared services are an innovative business model, and innovative business models support the circular economy. Bocken (2016) explored business models in the circular economy: Product Service Systems (PSS), providing services instead of directly selling products to reduce resource consumption and create new revenue streams. Closed-loop supply chains reduce the demand for raw resources by recycling and reusing product materials. Business model adjustments incorporate environmental and social benefits into core competitiveness rather than focusing

solely on short-term economic interests. For example, developing green technologies and innovative business models can enhance market competitiveness.

Schaltegger & Wagner (2017) provided a framework to integrate social, environmental, and economic performance into business operations:

First, integrated performance management. Establish an integrated performance management system to balance short-term economic benefits and long-term sustainability goals. Second, strategic integration. Integrate sustainable development strategies with the company's core business strategies to optimize resource allocation and improve operational efficiency. Third, performance measurement and reporting. Establish effective performance measurement and reporting mechanisms to monitor and evaluate social, environmental, and economic performance, enhancing transparency and stakeholder trust.

In summary, business operations significantly promote firm sustainability and ESG goals by optimizing resource allocation, reducing costs, and improving quality. Integrating sustainable development with the company's core business strategies and adopting innovative business models and technologies can effectively promote comprehensive performance in environmental, social, and economic aspects.

Based on this, the following research hypothesis is proposed:

H1c: Business Operations have a proactive relationship with Firm Sustainability (FS).

(4) The Impact of Transparent Governance on Firm Sustainability (FS)

Elkington (1997) introduced the concept of the "Triple Bottom Line" (TBL), emphasizing the role of transparent governance in achieving economic, environmental, and social performance. Elkington (1997) highlighted that transparent governance plays a crucial role in realizing the TBL objectives. Transparent governance can improve a company's performance in environmental and social aspects by enhancing accountability and public trust through clear information disclosure and open reporting. Strategies for implementing transparent governance include establishing open reporting mechanisms, enhancing internal control and audit procedures, and promoting stakeholder engagement. These measures help ensure transparency when fulfilling social and environmental responsibilities, thereby avoiding potential ethical and legal risks.

Transparent governance, as a corporate management practice, involves openly and clearly reporting corporate activities, decision-making processes, and their impacts on the environment and society. Transparent governance helps increase corporate responsibility and promotes progress toward sustainability goals (Bebbington & Larrinaga, 2014).

Highly transparent companies tend to perform better in CSR and ESG areas. Transparent governance has been found to be a key factor in enhancing corporate social responsibility and ESG performance. High transparency and comprehensive information disclosure are significantly related to a company's environmental and social performance. Companies should enhance their transparency and information disclosure to improve sustainability performance (Hsu & Wang, 2017). Corporate transparency includes not only the disclosure of financial information but also the openness of their environmental impacts, social policies, and governance practices. This information disclosure helps enhance corporate reputation, increase stakeholder trust, and improve social responsibility fulfillment (Dhaliwal & Wang, 2011).

Transparent governance is seen as a key factor in meeting investors' demand for ESG information. A transparent governance structure and clear reporting can help investors make more informed decisions and increase their trust in the company. By providing detailed and accurate ESG data, companies can improve their attractiveness to investors. To respond to investors' focus on ESG, companies need to improve their governance and reporting mechanisms, including establishing transparent disclosure procedures, enhancing the accountability of governance structures, and strengthening the management of environmental and social impacts. These improvements not only meet investor expectations but also help enhance overall corporate performance (Eccles & Klimenko, 2019).

In summary, transparent governance positively impacts firm sustainability . By increasing transparency in information disclosure and enhancing the accountability of governance structures, companies can improve their environmental and social impacts, enhance social responsibility fulfillment, and increase trust among investors and stakeholders.

Based on this, the following research hypothesis is proposed:

H1d: Transparent Governance has a proactive relationship with Firm Sustainability (FS).

The impact of Financial Shared Services (FSS) on digital transformation (DT).

(1)The impact of Financial Shared Services (FSS) on Digital Transformation (DT)

Global competition is intensifying, and with rapid advancements in information technology, a variety of information products have emerged. Enterprises face multiple opportunities and challenges. Many large enterprises are adopting new management approaches, such as setting up shared financial service centers and process reengineering, to strengthen their business management and seek better survival and development. Sun (2021) states that in an era of continuous technological development, enterprise digital transformation is inevitable, but this process is not accomplished overnight. Wang (2016) notes that financial shared centers are gradually becoming an inevitable trend in modern enterprise digital transformation. Chen (2016) emphasize that the financial shared center is the starting point for digital transformation; in the early stages of digital transformation, enterprises need to build a financial shared center as a foundational platform. Zhang (2020) explains that the advantage of financial shared centers lies in solving the problem of data management in enterprise groups, providing the necessary data foundation, organizational foundation, technological foundation, and service foundation for enterprise digital transformation. Wang (2018) adds that ERP systems play a crucial role in building financial shared centers. They focus on data collection to data application, establishing a comprehensive data structure, preventing information silos, and laying the groundwork for enterprise digital transformation. Zhang (2018) points out that the purpose of digital transformation is not to establish a financial shared service center. Instead, it involves creating a financial shared service center to centralize low-value-added business processes, achieving semi-automation, improving the efficiency of financial personnel, and shifting the focus of financial work to value-added activities like budgeting, forecasting, decision-making, and analysis. He (2018) emphasizes that the financial shared center is an integral part of the enterprise management model. It cannot be said that digital transformation is solely for establishing a financial shared

center; rather, during the process of digital transformation, establishing a financial shared center provides significant convenience for future transformation.

Based on this, the following research hypothesis is proposed:

H2: Financial Shared Services (FSS) has a proactive relationship with Digital Transformation (DT).

(2) The impact of Strategic Financial Shared Service Management on Digital Transformation (DT)

Strategic financial shared service management (FSSC) plays a crucial role in enhancing enterprise financial operations efficiency through centralization, standardization, and intelligence, significantly impacting digital transformation (DT).

Resource Integration and Process Optimization: Strategic Financial Shared Services achieve effective resource integration through centralized management and standardized operations. The optimization and automation of financial processes lay a solid foundation for digital transformation. Shared service centers enable centralized financial data management, reducing redundancy and errors, and supporting the deployment of digital tools, such as ERP systems or RPA technologies.

Data-Driven Decision-Making: Strategic Financial Shared Services emphasize data centralization and standardization, providing high-quality data that enables advanced analytics, AI modeling, and real-time decision-making during digital transformation (Schulman et al., 1999). The integrated platform of shared services allows the deployment of BI (Business Intelligence) tools for cross-departmental data sharing and insights.

Promoting Technology Adoption and Innovation: Financial shared services depend on technology support, such as cloud computing, big data analysis, and blockchain. Strategic management of FSSC accelerates the adoption of digital technologies, enhancing enterprise technological maturity (2019). By implementing strategic FSSC, enterprises can adopt technologies like automated expense systems or intelligent invoice management, thus strengthening digital capabilities.

Supporting the Transformation of Digital Business Models: The implementation of strategic financial shared services releases enterprise resources, facilitating the shift toward digital business models, particularly in service-driven or platform-based businesses. Efficient financial shared services allow enterprises to

focus more on improving customer experience or developing new products, thus adapting quickly to digital demands (Kane et al., 2015).

Risk Control and Compliance Enhancement: Digital transformation often brings along risks, but strategic financial shared services effectively mitigate these risks through centralized monitoring and standardized processes. Shared service centers use real-time data monitoring and analysis technologies to identify potential financial and operational risks, aiding enterprises in adapting to changes during digital transformation.

Cultural Change and Organizational Collaboration: Strategic Financial Shared Services emphasize cross-departmental collaboration and cultural alignment, which facilitate the cultural changes required for digital transformation . By establishing a unified management platform and transparent information exchange mechanisms, financial shared services create a more cooperative environment within organizations for digital transformation (Schulman, 1999).

Based on this, the following research hypothesis is proposed:

H2a: Strategic FSS Management has a proactive relationship with Digital Transformation (DT).

(3) The impact of Treasury Management on Digital Transformation (DT)

Treasury Management (TM) is a critical component of corporate financial management, driving the comprehensive implementation of digital transformation through efficient cash operations, risk management, and decision-making support. It plays a key role in data centralization, intelligent management, and technical integration.

Cash Concentration and Efficiency Improvement: Treasury management optimizes cash flow through centralized cash management systems, improving the efficiency of fund usage and providing strong financial support for the deployment of digital technologies . Many multinational companies adopt global cash pooling models, leveraging centralized treasury platforms to monitor cash flow in real-time, facilitating the upgrade of digital systems.

Data-Driven Risk Management: Treasury management uses data analysis techniques to quantify and monitor market risk, credit risk, and liquidity risk, ensuring

financial stability during digital transformation (Vial, 2019). Enterprises use AI and big data analytics to perform dynamic risk prediction and management, enhancing transparency and security in cash operations.

Technological Enabling and Innovation: Treasury management heavily relies on technology support, driving financial process automation and innovation through the integration of blockchain, cloud computing, and RPA technologies, thus creating value for digital transformation (Kane, 2015). The application of blockchain in cross-border payments significantly improves transaction efficiency and reduces manual intervention and operational risks.

Supporting Strategic Decision-Making: Treasury management provides precise financial forecasting and liquidity analysis, assisting executives in making strategic decisions for digital transformation (Schulman, 1999). Through advanced data analysis platforms, treasury departments offer cash flow predictions and financing needs assessments, supporting long-term planning and investment in digital technologies.

Enhancing Globalization and Cross-Border Collaboration: Treasury management integrates global funds, promoting cross-border collaboration and resource allocation through centralized treasury platforms. For global enterprises, this enhances efficiency in cash allocation and cost control, particularly in multi-currency and multi-timezone operations. With global treasury management systems (TMS), enterprises can achieve effective cash dispatch and cost management across borders.

Based on this, the following research hypothesis is proposed:

H2b: Treasury Management has a proactive relationship with Digital Transformation (DT).

(4) The impact of Operations Management on Digital Transformation (DT)

Enhancing Financial Process Automation: Financial shared service centers (FSSCs) integrate and standardize financial processes, leveraging financial software and systems to automate operations. For example, expense reimbursements, bill payments, and fund management are automated, significantly reducing manual intervention and improving financial data accuracy and processing efficiency. This digital transformation helps advance automation in corporate financial management.

Bhalla (2012) notes that the automation capabilities of FSSCs enable more efficient financial management, driving digital progress.

Enhanced Data Centralization and Analysis: Financial Shared Service Centers centralize financial data, overcoming the limitations of traditional, dispersed financial information. By utilizing big data and AI analytics, enterprises can deeply mine financial data for cost control, financial forecasting, and risk management, significantly strengthening digital decision-making capabilities. Chen & Lin (2015) highlight that FSSCs use big data analysis and AI to help businesses centralize financial data, improving the depth and accuracy of financial analysis.

Increasing Operational Efficiency and Collaboration: Financial Shared Service Centers use digital tools and platforms to enhance collaboration among various departments. Whether it's cross-departmental financial accounting, budgeting, or financial audits, these tasks can be conducted via digital platforms for real-time communication and data sharing. This internal collaboration, optimized through digital processes, significantly boosts operational efficiency. Rogers (2016) points out that the application of digital platforms in FSSCs greatly improves intra-organizational collaboration, driving process optimization.

Based on this, the following research hypothesis is proposed:

H2c: Operations Management has a proactive relationship with Digital Transformation (DT).

(5)The Impact of Transparent Governance on Digital Transformation (DT)

Enhancing Financial Transparency and Compliance: Financial shared service centers (FSSCs) build unified financial management frameworks and implement transparent governance processes to ensure openness, fairness, and compliance in all financial activities. Through transparent governance structures, enterprises can strengthen financial data traceability and authenticity in digital environments, effectively reducing financial risks and ensuring regulatory compliance during digital transformation. Zhou & Lu (2021) state that transparent governance in FSSCs enhances data security and compliance, helping enterprises operate in a compliant manner in digital environments.

Improving Internal Controls and Risk Management: FSSCs utilize transparent governance frameworks to strengthen internal control mechanisms, ensuring the integrity and accuracy of financial information. Through digital tools and systems, enterprises can monitor financial data in real-time, identifying and addressing potential risks promptly, thus significantly boosting risk management capabilities. Mitchell (2019) highlights that transparent governance in FSSCs improves internal controls' efficiency and enhances risk management through digital control tools.

Enhancing Information Sharing and Collaboration Efficiency: Transparent governance promotes the sharing and collaboration of internal information. In FSSCs, transparent governance ensures financial data openness and fairness, driving cross-departmental collaboration and communication. Enterprises use digital platforms to achieve real-time data sharing, breaking down information silos and significantly improving inter-departmental collaboration efficiency. Rogers (2016) emphasizes that transparent governance, facilitated by digital platforms, optimizes financial data sharing and improves collaboration within the organization.

Strengthening Digital Decision-Making Capabilities: Transparent governance improves the accuracy and availability of financial data, helping enterprises conduct data analysis and decision-making more effectively during digital transformation. Enterprises can leverage big data analysis tools to uncover insights from financial data, enabling more precise and data-driven decisions. Chen & Lin (2015) state that transparent governance helps enterprises make more accurate financial decisions by managing financial data transparently.

Enhancing Customer Trust and Service Quality: Transparent governance allows enterprises to build customer trust in digital services. By disclosing financial information transparently, enterprises can earn customer trust, improving customer experience and satisfaction. Mitchell (2019) notes that transparent governance, through digital platforms, enhances customer service quality and strengthens customer trust.

Reducing Compliance and Operational Risks: Transparent governance in FSSCs helps enterprises lower compliance and operational risks during digital transformation. Through transparent governance structures and digital tools, enterprises can efficiently ensure financial data compliance, avoiding risks caused by

lack of transparency. Wu (2020) highlights that transparent governance, facilitated by digital processes, significantly reduces compliance risks.

In summary, transparent governance in financial shared service centers drives enterprises toward more efficient, transparent, and sustainable financial management systems, thus supporting overall digital transformation.

Based on this, the following research hypothesis is proposed:

H2d: Transparent Governance has a proactive relationship with Digital Transformation (DT).

The Mediating Effect of Digital Transformation (DT) Between Financial Shared Services (FSS) and Firm Sustainability (FS)

Digital transformation (DT) plays a crucial role in the relationship between financial shared services (FSS) and firm sustainability (ESG), by optimizing the processes and data management of financial shared services, thereby indirectly promoting sustainable development across environmental, social, and governance dimensions.

Digital Transformation Drives Process Optimization in FSS: Digital transformation provides advanced technological support to financial shared services, driving automation, data integration, and analysis capabilities. Through digital transformation, financial shared services achieve real-time financial data management and transparent sharing, enabling enterprises to optimize resource allocation and improve financial information accuracy, which enhances the quality of financial decision-making. Wu (2020) indicates that digital transformation significantly boosts financial operational efficiency in financial shared services through process automation and data management, creating the foundation for improved ESG performance.

FSS Facilitates Sustainability in Enterprises: Financial shared services, through process automation and data integration, not only optimize financial management but also enhance financial transparency and data availability. This, in turn, indirectly drives firm sustainability by improving operational efficiency in ESG areas. Mitchell (2019) highlights that financial shared services, through digital

transformation, improve financial performance by optimizing processes and integrating resources, which contributes to more sustainable operations in enterprises, particularly in the environmental and social domains.

Digital Transformation Enhances the Sustainability Capabilities of FSS: During digital transformation, financial shared services leverage data transparency and process optimization to support more efficient resource utilization, environmental protection, and social responsibility. Zhou & Lu (2021) state that digital transformation significantly increases transparency and sustainability in financial shared services, driving long-term sustainable development in enterprises.

In conclusion, financial shared services, through digital transformation, optimize financial management processes and enhance data analysis capabilities, leading to significant improvements in sustainability across economic, environmental, and social dimensions. Digital transformation acts as a mediating factor, facilitating the transition of financial shared services toward greater firm sustainability (ESG).

Based on this, the following research hypothesis is proposed:

H3: Digital Transformation (DT) plays a mediating role between Financial Shared Services (FSS) and Firm Sustainability (FS).

Summary

Based on the Resource-Based View (RBV) proposed by Wernerfelt (1984), Barney (1991), and Grant (1991), resources can create value for enterprises. Effectively and efficiently acquiring or allocating resources is key to determining an enterprise's survival and development (Zhang, 2021). RBV provides theoretical support for financial shared services and financial performance. Financial shared services optimize resource allocation by centralizing financial functions, enabling organizations to better utilize their core resources, thereby enhancing overall financial performance. Implementing financial shared services helps organizations establish unique financial management capabilities, thereby gaining a competitive advantage in the industry.

Based on John Elkington's (1997) "Triple Bottom Line" (TBL) concept, which encompasses environmental, social, and economic dimensions, the foundation

of firm sustainability theory is established. The sustainability theory provides theoretical support for financial shared services and firm sustainability . Financial shared services promote environmental goals by optimizing resource allocation and process improvement, reducing waste and resource consumption. Financial shared services can enhance corporate social image by improving financial transparency and accountability, promoting good interaction and cooperation with the community. Financial shared services strengthen financial transparency and internal control through standardized and centralized management, thereby improving corporate governance.

Based on the Stakeholder Theory proposed by Freeman (1984), Donaldson & Preston (1995), and Mitchell, Agle & Wood (1997), theoretical support is provided for financial shared services, subsidiary business strategy, and financial performance. The implementation of financial shared services affects multiple stakeholders, including shareholders, employees, and management. For shareholders, FSS can directly improve financial performance by enhancing financial management efficiency and reducing operating costs, thereby increasing shareholder returns. For employees, FSS may reduce workload and increase job satisfaction through standardized and automated financial processes, though it may also raise concerns about job security. For management, FSS provides more accurate financial data to support decision-making, thereby enhancing strategic planning and operational efficiency. From a strategic flexibility perspective, subsidiaries can adjust their business strategies to adapt to changes brought by financial shared services, maintaining financial performance stability in uncertain environments.

Based on the above theoretical foundation, this research proposes the following research hypotheses:

Financial shared services (FSS) from the dimensions of strategic FSS management, treasury management, operational management, and transparent governance can promote firm sustainability.

Financial shared services (FSS) from the dimensions of strategic FSS management, treasury management, operational management, and transparent governance can drive digital transformation (DT).

Digital transformation (DT) mediates the relationship between financial shared services (FSS) and firm sustainability (FS).

Research Hypotheses Summary. Table 3 summarizes hypotheses proposed in the research:

Table 3 Summary of Research Hypotheses

<i>Hypothesis</i>	<i>Description</i>
H1	Financial Shared Services (FSS) have a proactive relationship with Firm Sustainability (FS).
H1a	Strategic FSS Management (FSSM) has a proactive relationship with Firm Sustainability (FS).
H1b	Treasury Management(TM) has a proactive relationship with Firm Sustainability (FS).
H1c	Business Operations (BO) have a proactive relationship with Firm Sustainability (FS).

H1d	Transparent Governance (TG) has a proactive relationship with Firm Sustainability (FS).
H2	Financial Shared Services (FSS) have a proactive relationship with Digital Transformation (DT).
H2a	Strategic FSS Management (FSSM) has a proactive relationship with Digital Transformation (DT).
H2b	Treasury Management (TM) has a proactive relationship with Digital Transformation (DT).
H2c	Business Operations (BO) have a proactive relationship with Digital Transformation (DT).
H2d	Transparent Governance (TG) has a proactive relationship with Digital Transformation (DT).
H3	Digital Transformation (DT) mediates the relationship between Financial Shared Services (FSS) and Firm Sustainability (FS).



CHAPTER III

RESEARCH METHODS

The previous chapter described the definitions of various concepts, covering the relationships between financial shared services and the overall conceptual framework, and provided an understanding of the theoretical foundations involved, including literature review, conceptual framework, and research hypotheses. Consequently, this chapter details the research methodology to address research objectives, research questions, and hypothesis testing.

This research methodology is divided into four sections: first, sample selection and data collection procedures, which involve explaining the population and sample, as well as the methods for data collection; second, variable measurement; third, verification of research instruments, including tests of validity, reliability, statistical analysis, and relevant regression analysis equations; and finally, a summary table of concept definitions and operational variables.

Sample Selection and Data Collection Procedure

1. Population and Sample

(1) Population

As of 2023, there is no exact official statistic on the number of enterprises in China that have established financial shared service centers. However, based on industry research and market trends, the following estimates can be made:

First, large enterprises. China's large enterprises (such as state-owned enterprises, central enterprises, and large private enterprises) are the main builders of financial shared service centers. According to public data, by 2022, over 80% of central enterprises had already established or were in the process of establishing financial shared service centers (State-owned Assets Supervision and Administration

Commission of the State Council, 2022). There are about 97 central enterprises in total (as of 2023, the number of central enterprises supervised by the State-owned Assets Supervision and Administration Commission), so approximately 70-80 central enterprises alone have established financial shared service centers.

Second, listed companies and private enterprises. In addition to central enterprises, many large private enterprises and listed companies (such as Huawei, Alibaba, Tencent, Lenovo, etc.) have also established financial shared service centers. According to market research, about 10%-15% of A-share listed companies in China (approximately 400-600 companies) have already established or are advancing the construction of financial shared service centers (iResearch Consulting, 2023).

Third, small and medium-sized enterprises. Due to scale and cost limitations, the proportion of small and medium-sized enterprises (SMEs) establishing financial shared service centers is relatively low. However, with the popularization of cloud computing and SaaS services, some SMEs have begun to adopt a lightweight financial shared model. The number of such enterprises is difficult to accurately estimate, but it is expected to be in the thousands (International Data Corporation, 2022).

Fourth, industry distribution. Financial shared service centers are relatively common in industries such as finance, manufacturing, retail, internet, and real estate. For example, in the banking industry, almost all large banks (such as Industrial and Commercial Bank of China, China Construction Bank, etc.) have established financial shared service centers (China Banking Association, 2023). In the manufacturing industry, companies were early adopters of the financial shared model (Deloitte, 2021).

Therefore, the overall estimate: Combining data from central enterprises, listed companies, private enterprises, and SMEs, the number of enterprises in China that have established financial shared service centers may be around 2,000. If including enterprises that are in the process of building or planning to build financial shared service centers, this number may be even higher.

(2) Sample

The Yamane formula is used to calculate the sample size because it provides a simple and effective method for dealing with finite populations, especially suitable for secondary data in research. The Yamane formula helps researchers determine the required sample size to ensure the representativeness of the results, while avoiding oversampling or undersampling (Adam, 2020). Then, the sample size is calculated based on the Yamane formula with a 95% confidence level and $e = 0.05$ (Yamane, 1973). When the size of the population is known, the sample size can be determined using the following formula:

$$n = N / (1 + N(e^2))$$

n = sample size

N = population size

e = level of precision

The values were set for the formula:

$$N=2000$$

$$e=0.05$$

$$n=2000/(1+(2000(0.05^2))\approx 333$$

Therefore, the sample size is at least 333 companies. To ensure the adequacy of the sample data, this research selects 600 companies from China's A-share listed firms that have established financial shared service centers (FSSC) as the research subjects. According to the requirements of Hsiao (2022) for panel data analysis, the number of cross-sectional units should be no less than 20, and the length of the time series should be no less than 5 periods. The sample in this research contains 600 companies, covering 11 years of data. Therefore, the sample size of this research is 600 companies \times 11 years = 6600 observations, which fully meets the minimum sample size requirement for panel data analysis.

2. Data Collection Procedure

In this research, the data primarily comes from the CSMAR database covering financial and sustainability data from 2013 to 2023. To ensure the quality of the data and the effectiveness of the analysis, this research performed rigorous data cleaning.

First, according to market research, about 10%-15% of A-share listed companies in China (approximately 400-600 companies) have already established or are advancing the construction of financial shared service centers (iResearch Consulting, 2023). This research uses AI large models, big data, and other technologies to organize the specific information of **600** A-share listed companies in China that have established financial shared service centers.

Second, this research removed all ST (Special Treatment) and PT (Particularly Transferred) companies, as their financial conditions or other issues might not accurately reflect the characteristics of normally operating enterprises (Chen & Liu, 2021; Ding and Wu, 2020). Second, for data with large magnitudes, such as total assets, this research performed a logarithmic transformation to reduce skewness and heteroscedasticity, making the data more normally distributed and improving the accuracy and stability of model estimation (Wooldridge, 2010; Hair et al., 2019).

Third, this research excluded samples with missing and outlier values, ensuring the integrity and reliability of the data (Chen & Liu, 1993; Wang & Chen, 2017). After these steps, this research obtained an effective sample of **4,568 firms** that had established financial shared centers, providing a solid data foundation for subsequent empirical analysis.

Measurement of Variables

1. Dependent Variable

Firm sustainability refers to a company's ability to balance the economic, environmental, and social goals during its operations, striving for long-term stability and success. ESG (Environmental, Social, and Governance) has become an important framework for measuring firm sustainability.

First, in this research of the relationship between ESG and corporate financial performance, a large number of empirical studies show that good ESG performance can significantly enhance corporate financial performance, particularly reflected in higher shareholder returns in the capital markets. The environmental dimension focuses on the role of green technology investment and carbon emission reduction in improving operational efficiency; the social dimension emphasizes the positive impact of employee welfare and customer relationship management on brand reputation; the governance dimension highlights that a sound governance structure and transparent financial disclosures can enhance investor confidence and corporate competitiveness (Gompers et al., 2003).

Second, the measurement of ESG is a research hotspot in this field. Current mainstream rating agencies (such as MSCI and Sustainalytics) show significant differences in their ESG ratings of companies, and the unification of rating standards urgently needs to be addressed. Additionally, mandatory ESG disclosure policies in some countries have promoted increased corporate transparency, but there are still regional differences in implementation scope and regulatory effectiveness.

Finally, research on the application of ESG in corporate strategy shows that by integrating ESG into the core strategy, companies can not only effectively address environmental and social risks but also achieve sustainable long-term value creation. For example, the application of green finance and sustainable supply chains not only reduces operating costs but also enhances corporate social reputation.

Based on these points, this research uses ESG as the measurement indicator for firm sustainability.

2. Independent Variables

(1) Strategic Financial Shared Services Management

Strategic FSS management refers to the establishment of a financial shared service center through strategic decisions. The financial shared service center supports the company's strategic goals by means of centralization, standardization, cost control, and efficiency improvement, enhancing management levels, reducing risks, and driving innovation and transformation within the company.

Based on this, this research follows the method of Wang (2023) and uses a dummy variable to measure whether a company has established a financial shared service center (FSSC). The value rule is as follows: if the company has established an FSSC in the current year, the dummy variable takes the value of 1. If the company has not established an FSSC in the current year, the dummy variable takes the value of 0.

(2) Treasury Management

Treasury management is a method of centralized management of corporate funds, which is responsible not only for daily settlement and payment of funds but also for financing, investment, fund planning, and fund allocation activities. Text mining and keyword analysis, as core methods of data mining, can be applied to treasury management research to reveal the dynamic trends, core themes, and development hotspots of corporate fund management practices. Text mining uses natural language processing (NLP) technology to perform both quantitative and qualitative analysis on a large volume of literature and reports, enabling an in-depth exploration of the research structure and content patterns in the field of treasury management.

Text mining has been used in the analysis of treasury management in corporate practice. For example, by analyzing the texts related to treasury management in corporate annual reports and Environmental, Social, and Governance (ESG) reports, scholars have revealed the key role of treasury management in supporting firm sustainability. Bazerman & Tenbrunsel (2011) used text analysis to study how companies address compliance challenges in treasury management, finding that the keywords “internal control,” “transparency,” and “risk warning” are associated with risk management, reflecting that risk management is an important theme in treasury management.

Kwok & Sharp (2020) used text mining methods to analyze the keywords related to treasury management in corporate financial reports and found that “liquidity management,” “foreign exchange risk,” and “capital cost” are high-frequency topics in the field of treasury management. Deloitte (2022) pointed out that treasury management is closely related to firm sustainability strategies, particularly playing an important role in risk control and fund allocation.

Based on this, this research refers to Kwok & Sharp (2020) and measures treasury management as the natural logarithm of the frequency of treasury management keywords appearing in the annual reports of listed companies.

Table 4 Construction of Treasury Management Index and Selection of Keywords

<i>Dimensions</i>	<i>Classified Terms</i>	<i>Text Composition</i>
Treasury Management (Fund Operations)	Financial Management and Fund Operations	Treasury, Funds Operation Management Platform, Fund Concentration, Funds Management, Fund Center, Optimization of Financial Resources, Funds Budgeting and Planning, Cash Flow Management, Cash and Liquidity Management, Working Capital Management, Investment and Financing Management, Pool Management, Fund Cost Control, Fund Strategy

<i>Dimensions</i>	<i>Classified Terms</i>	<i>Text Composition</i>
		<p>Management, Fund Raising Management, Resource Matching Management, Fund Concentration Management, Bank-Enterprise Direct Connection, Online Banking, Clearing Center, Internal Bank Funds Department, Treasury Department, Financial Office, Funds Office, Account Management, Planning Management, Settlement Management, Bill Management, Cash Pool, Bill Pool, Asset Pool, Tax Management System, Electronic Accounting Archives System, Liquidity Management, Foreign Exchange Risk, Capital Cost</p>
<p>Treasury Management (Management Innovation)</p>	<p>Enterprise Management and Innovation</p>	<p><input type="checkbox"/> Business Innovation Platform, Risk Management, Financial Company, Organizational Structure Adjustment, System Design and Optimization, Process Reengineering and Standardization, Application of Information Technology, Data Governance, Internal and External Resource Integration, Risk Early Warning, Early Warning Mechanism, Integration of Empowering Factors, Financial Product System, Financial Institution Relationship Management, Customer Credit System, Continuous Innovation and Optimization, Supply Chain Finance Management, Decision Support and Information Management, Internal Control and Compliance, Internal Control System, Compliance Management, Capital Structure Management, Bank Relationship Management, Technology and Digital Innovation</p>
<p>Treasury Management</p>	<p>Specific Technologies</p>	<p><input type="checkbox"/> Group Financial BIP, Application of Information Technology, Integration of Information Systems, Data</p>

<i>Dimensions</i>	<i>Classified Terms</i>	<i>Text Composition</i>
(Technology Support)	and Systems	Analysis and Prediction, Bank-Enterprise Direct Connection, Online Banking, Payment Factory
<p>Note: (1) Both the abbreviation and the full name of the corresponding keyword are included in the text search to avoid missing any counts.</p> <p>(2) During the search process, keywords preceded by negation terms like "no," "none," or "not" are excluded from the statistics.</p> <p>(3) Frequency processing uses logarithmic transformation.</p> <p>Sources: the Treasury Management Regulations by the People's Bank of China, and policy documents from the Association for Financial Professionals (AFP) in the U.S.</p>		

(3) Business Operations

Business operations in the financial shared service center involve the centralized and standardized management of a company's financial functions to achieve efficient, low-cost, and high-quality financial management and support services. Business operations mainly cover financial activities such as accounting, report preparation, tax filing, budget management, fund management, accounts receivable, and accounts payable management. Business operations are an important means for enterprises to achieve competitive advantage and sustainable development. Through efficient business operations management, companies can optimize resource allocation, reduce operating costs, and improve service quality (Zhang, 2015).

In the context of financial shared services, business operations refer to the management of financial functions within a shared services center through centralization and standardization to achieve efficient, low-cost, high-quality financial management and support services. The business operations of FSS primarily cover financial activities such as accounting, financial reporting, tax declaration, budget management, cash management, accounts receivable, and accounts payable management.

This research adopts the measurement method of Zhou & Wang (2021) to measure operational efficiency using the cash and cash equivalents turnover ratio. The rationale is as follows: First, this indicator reflects the efficiency of capital utilization. The cash and cash equivalents turnover ratio assesses the ability of the financial shared services center to generate revenue from cash and cash equivalents over a period. A higher turnover ratio indicates that the center effectively uses its cash resources to generate more revenue. Second, this indicator reflects operational efficiency. The operational efficiency of the financial shared services center includes not only the speed and accuracy of financial operations but also how effectively funds are allocated and utilized. The cash and cash equivalents turnover ratio provides a straightforward indicator of how the center manages cash flow in operations. Third, this indicator reflects liquidity management. Financial shared services centers often handle financial affairs for multiple subsidiaries or business units, including cash flow management. Monitoring the cash and cash equivalents turnover ratio helps evaluate the center's performance in liquidity management and its efficiency in using cash. Fourth, this indicator reflects financial stability. A healthy cash and cash equivalents turnover ratio can indicate the financial stability of the shared services center. Effective cash turnover management helps avoid cash shortages and improves overall financial stability.

Therefore, the business operations indicator is the cash and cash equivalents turnover ratio, calculated as follows:

Cash and Cash Equivalents Turnover Ratio

= Operating Revenue / Average Cash and Cash Equivalents

(4) Transparent Governance

Transparent governance refers to the implementation of open, clear, and efficient management and reporting mechanisms within a financial shared services center. The core objective of transparent governance is to enhance the transparency of financial

operations, ensure the accuracy and completeness of information, and build trust with stakeholders.

Firstly, transparent governance is closely related to the quality of accounting information. Bushman & Smith (2001) indicate that the core of accounting information quality lies in the accuracy, reliability, and timeliness of financial reporting, which directly affects the effectiveness of transparent governance. High-quality accounting information not only reduces information asymmetry but also strengthens trust between the company and its stakeholders, thereby facilitating the achievement of transparent governance. Francis et al. (2004) further suggest that accounting conservatism, as an important dimension of accounting information quality, effectively reduces the risk of overestimation in financial reports and enhances financial transparency.

Secondly, earnings management is widely used to measure accounting information quality and serves as an inverse indicator of transparent governance. Healy & Wahlen (1999) propose that companies manipulating accounting profits through earnings management decrease the authenticity of financial information, undermining the level of transparent governance. Research shows that companies with lower levels of earnings management generally have higher accounting information quality and levels of transparent governance. This view is supported by Leuz, Nanda & Wysocki (2003), who found that in markets with stronger transparent governance, earnings management behavior significantly decreases, and the quality of financial reporting improves significantly.

Additionally, disclosure completeness and timeliness of financial reporting are important indicators of transparent governance. Verrecchia (2001) notes that comprehensive and timely disclosure of information reduces market information asymmetry, improves market efficiency, and thereby enhances the level of transparent governance. Ball & Shivakumar (2008) find that companies with higher disclosure completeness better meet the information needs of investors and regulators, reduce the

information risk in financial reports, and consequently improve the quality of transparent governance.

Finally, the quality of internal controls is also a significant aspect of measuring transparent governance. Doyle, Ge, & McVay (2007) demonstrate that the quality of internal controls is closely related to accounting information quality, with internal control deficiencies often leading to a decline in financial report quality and impacting the level of transparent governance. An efficient internal control system not only ensures the accuracy and reliability of accounting information but also enhances the overall level of transparent governance within the company.

Based on this, the transparent governance in the context of financial shared services (FSS) in this research is measured using the modified Jones' model (1991), with total accruals as the indicator of earnings management. Accruals refer to components of profit that are not reflected through cash flows and are commonly used to analyze and detect earnings management behavior.

3.2.3 Mediating Variables

The mediating variable is digital transformation. Digital transformation of financial shared services refers to the upgrade and optimization of financial shared services through the application of advanced information technologies (such as big data analytics, artificial intelligence, and robotic process automation) to improve financial management efficiency, reduce costs, enhance decision support capabilities, and increase the flexibility and responsiveness of overall financial operations.

This research employs a text analysis method. Following the digital transformation framework, big data mining techniques are used to extract and count relevant keywords, focusing on three aspects: application of digital technologies, digital production methods, and business model transformation, to establish a dynamic evaluation system for the digital transformation of financial shared services.

Based on Wang (2023), the value of digital transformation is represented by the natural logarithm of the frequency of digital transformation keywords appearing in the annual reports of listed companies.

Table 5 Construction of Digital Transformation Index for Financial Shared Services and Keyword Selection

<i>Dimension</i>	<i>Classification Terms</i>	<i>Text Combinations</i>
Digital Technology Application (Basic Conditions)	Artificial Intelligence	Financial robots, Process automation, RPA, Artificial Intelligence, Business Intelligence, Image recognition, Investment decision and support systems, Intelligent data analysis, Intelligent robots, Machine learning, Deep learning, Semantic search, Biometrics, Facial recognition, Voice recognition, Identity verification, Autonomous driving, Natural language processing
	Blockchain	Blockchain auditing, Smart contracts, Smart contract management, Digital currency, Distributed computing, Differential privacy technology, Smart financial contracts
	Cloud Computing	Financial cloud, Software as a Service (SaaS), Financial shared services platform, Integrated financial platform, Virtual audit platform, Cloud computing, Stream computing,

<i>Dimension</i>	<i>Classification Terms</i>	<i>Text Combinations</i>
		Graph computing, In-memory computing, Multi-party secure computing, Fusion architecture, Billion-level development, Exabyte-level storage, Internet of Things, Cyber-Physical Systems
	Big Data	Big Data, Data Mining, Text Mining, Data Visualization, Heterogeneous Data, Credit Reporting, Augmented Reality, Mixed Reality, Virtual Reality
Digital Production Methods (Key Strategies)	Intelligent Manufacturing	Intelligent control, Intelligent terminals, Intelligent mobility, Intelligent management, Smart factory, Smart logistics, Intelligent manufacturing, Smart warehousing, Intelligent equipment, Intelligent production, Intelligent connected systems, Automated control, Automated detection, Numerical control, Integration, Integrated control
Business Model Transformation (Catalysts)	Internet and E-commerce	Mobile internet, Industrial internet, Industrial internet, Internet business models, Internet technology, Internet solutions, Internet thinking, Internet actions, Internet business, Internet mobile, Internet marketing, Internet strategy, Internet platforms, Internet modes, Internet ecosystem, E-commerce, Electronic commerce, Internet+, Online-offline, Online-to-offline, Online and offline, O2O, B2B, C2C, B2C, C2B

<i>Dimension</i>	<i>Classification Terms</i>	<i>Text Combinations</i>
<p>Note: (1) Both abbreviations and full terms of the relevant keywords are included in the text search to avoid missing any statistics. (2) Keywords prefixed with negation terms such as "no," "none," or "not" are excluded from the search. (3) Frequency data are processed using logarithmic transformation. Sources: Adapted from Qi, Yudong (2020), Zhao(2021), "Made in China 2025," and the "14th Five-Year Plan for Digital Economy Development." (4) O2O means "Online to Offline" ; B2B means "Business to Business" ; C2C means "Consumer to Consumer" ; B2C means "Business to Consumer" ; C2B means "Consumer to Business".</p>		

3.2.4 Control Variables

(1) Company Size

Company size refers to the size of a company's assets, measured as the natural logarithm of total assets.

(2) Return on Equity (ROE)

Return on Equity (ROE) is a key financial metric used to measure a company's ability to generate returns on its net assets, reflecting its capability to utilize shareholders' equity to create profits.

Statistical Techniques

This research would use the STATA program as a research tool to analyze data. It would be utilized for Descriptive Analysis, Conclusion Analysis, Robustness Test, and Heterogeneity Analysis.

1. Descriptive Analysis

Descriptive analysis is a statistical description of the survey of all variables of the overall data. In simple terms, it is a series of complex data sets with a few representative data points to describe, which allows for intuitive explanations of data changes. This includes data dispersion analysis, concentration trend analysis, frequency analysis, distribution, and some basic statistical graphics.

Descriptive analysis is the first step in data analysis. It helps to understand and recognize the basic characteristics and structure of the data. Only after completing the descriptive statistical analysis and fully understanding and recognizing the characteristics of the data can one proceed with more complex data analysis. Therefore, descriptive analysis is the most basic and essential part of the process of conducting data analysis (Sanchez & Puchades, 2021).

2. Correlation Test and Variance Inflation Factor (VIF)

(1) Correlation Test

Correlation analysis will be used to test the correlations among all variables, and a correlation matrix will be provided to show the interrelationships among all variables for preliminary analysis. If the correlation between variables is high, with a correlation coefficient greater than 0.8 and statistically significant, multicollinearity may occur (Hair et al., 2010; Homberg, Artz & Wieseke, 2012). Therefore, factor analysis will be used to group highly correlated variables together, and factor scores for all variables will be calculated to avoid multicollinearity issues. Pearson correlation analysis was employed in this research because the data used is at the interval level.

This research adopts Pearson correlation analysis because the data used is at the interval level. The results show that the correlation coefficients range between 0.051 and 0.288. If the correlation coefficients among all independent variables are below 0.7, it is generally considered that there is no serious multicollinearity . Therefore, there is no issue with the relationships among the independent variables in This research, and the results are presented in Table 6 (Chapter 4).

(2) Variance Inflation Factor (VIF)

To address the multicollinearity issue, this research will use the Variance Inflation Factor (VIF) and tolerance values as indicators to determine if there is a high degree of multicollinearity among the independent variables. According to

Hair (2006), multicollinearity is not a concern when the tolerance value is greater than 0.10 and the VIF is less than 10.

In This research, the analysis of collinearity statistics shows that the VIF values range from 1.010 to 1.280. According to Hair (2006), multicollinearity is no longer a concern when the VIF value is less than 10. Therefore, there is no multicollinearity issue among the variables in This research, and the results are presented in Table 6 (Chapter 4).

3. Stationarity Test

To verify the stationarity and reliability of the data, stationarity testing is necessary. Panel unit root tests are more powerful in a panel data structure (Marimuthu, Khan & Bangash, 2021). When all variables are at a significance level of 5% ($p < 0.05$), the null hypothesis that panel data has a unit root is rejected, meaning that all variables are stationary (Baltagi, 2021). All of the variables' p-values in this research are less than 0.05, demonstrating the stationary nature of the data set and its suitability for trustworthy data analysis.

4. Model selection

(1) Fixed Effects Model (FEM)

The Fixed Effects Model (FEM) is a commonly used method in panel data analysis. Its primary function is to control for individual-specific characteristics (e.g., firms, regions, or individuals) that do not vary over time but may influence the dependent variable, thereby avoiding the interference of these unobserved variables in the estimation results (Baltagi, 2005). This method enables researchers to more accurately analyze the dynamic relationship between the dependent and independent variables.

The characteristics and applications of the Fixed Effects Model (FEM) include:

The first is controlling for individual heterogeneity. The Fixed Effects Model assumes that the specific effects (i.e., fixed effects) of each individual are constant

over time. These effects may include geographic characteristics of a region, industry attributes of a firm, etc. These unobserved time-invariant characteristics may influence research outcomes. If uncontrolled, they may lead to omitted variable bias (Wooldridge, 2010).

The second is focusing on within-individual variation. The Fixed Effects Model emphasizes how the dependent variable changes with variations in the independent variable over time, rather than focusing on differences between individuals. For instance, when examining the impact of a policy on firm performance, the Fixed Effects Model can remove inherent differences between firms and focus on changes in firm performance before and after the policy implementation.

The third is addressing endogeneity issues. By eliminating time-invariant individual-specific characteristics, the Fixed Effects Model (FEM) partially resolves endogeneity issues caused by omitted variables (Hausman & Taylor, 1981).

(2) Random Effects Model (REM)

The Random Effects Model (REM) is another method commonly used in panel data analysis. Unlike the Fixed Effects Model (FEM), it assumes that individual-specific effects are random and uncorrelated with the independent variables (Wooldridge, 2010). This model leverages both within-individual variation over time and between-individual differences, making it more efficient than the Fixed Effects Model in certain circumstances.

The characteristics and applications of the Random Effects Model include:

The first is assuming random individual-specific effects. The Random Effects Model (REM) assumes that individual heterogeneity (i.e., individual-specific effects) is random and uncorrelated with the independent variables in the model. This assumption allows individual-specific effects to be modeled as part of the error term (Baltagi, 2005; Wooldridge, 2010).

The second is utilizing between-individual differences. The Random Effects Model (REM) captures not only within-individual variation over time but also between-individual differences, thereby improving estimation efficiency. When the assumption of no correlation between individual-specific effects and independent variables holds, the Random Effects Model provides more efficient estimates than the Fixed Effects Model (Greene, 2012).

The third is applicable to studies with time-invariant variables. The Random Effects Model (REM) can estimate coefficients of time-invariant variables, which the Fixed Effects Model (FEM) cannot achieve. For example, in studying the impact of education on income, the Random Effects Model (REM) can analyze the effects of time-invariant factors such as race or region (Baltagi, 2005).

In conclusion, from the results in Table 6, this research is based on panel and time series data, making it suitable for using the **FEM** model. **Stata** is a statistical analysis software capable of performing various statistical models, including the FEM and REM.

5. Model Setting

(1) Model Selection

In the model selection process, this research used a series of statistical tests to determine the most suitable model for the data in this research. First, the F-test result is 30.84, highly significant at the 1% level, indicating that the Fixed Effects Model (FEM) is superior to the Ordinary Least Squares (OLS) model. Second, the LM test result is 3704.34, also highly significant at the 1% level, further confirming that the Random Effects Model (REM) is better than the OLS model. Lastly, the Hausman test result is 171.25, highly significant at the 1% level, indicating that the FEM is superior to the REM.

Based on these test results, this research choose the Fixed Effects model as the primary analysis model for this research to ensure the consistency and reliability of the estimation results. This selection provides a solid statistical foundation for

subsequent empirical analysis, ensuring the effectiveness and credibility of this research findings.

Table 6 Model Selection

	Chi ²	Result
F test	30.84***	FEM
LM test	3704.34***	REM
Hausman test	171.25***	FEM

Note: *p<0.1, **p<0.05, ***p<0.01

(2) Model Construction

$$FS_{it} = \alpha_0 + \alpha_1 FSSM_{it} + \alpha_2 TM_{it} + \alpha_3 BO_{it} + \alpha_4 TG_{it} + \alpha_5 Controls_{it} + \theta_i + \epsilon_t + \epsilon_{it} \quad (1)$$

$$DT_{it} = \beta_0 + \beta_1 FSSM_{it} + \beta_2 TM_{it} + \beta_3 BO_{it} + \beta_4 TG_{it} + \beta_5 Controls_{it} + \theta_i + \epsilon_t + \epsilon_{it} \quad (2)$$

$$FS_{it} = \gamma_0 + \gamma_1 DT_{it} + \gamma_2 Controls_{it} + \theta_i + \epsilon_t + \epsilon_{it} \quad (3)$$

Where:

Model (1) represents the main regression model,

Models (2) and (3) represent the mediating effect models.

FS_{it} denotes the firm sustainability of firm i in year t ,

$FSSM_{it}$ denotes the strategic Financial Shared Services Management of firm i in year t ,

TM_{it} denotes the Treasury Management of firm i in year t ,

BO_{it} denotes the Business Operations of firm i in year t ,

TG_{it} denotes the Transparent Governance of firm i in year t ,

$Controls_{it}$ denote a set of control variables,

θ_i represents the individual fixed effects for firm i ,

ϵ_t represents the time fixed effects for year t ,

ε_{it} denotes the random disturbance term for firm i in year t ,

α_0 , β_0 , γ_0 are intercept terms.

6. Endogeneity Test

The purpose of the endogeneity test is to detect whether the independent variables in the model are correlated with the error term. This correlation may arise from omitted variables, measurement errors, or bidirectional causality, which can lead to biased regression results (Wooldridge, 2010). If endogeneity is not properly addressed, the estimated coefficients will be inconsistent. This research will perform a robustness test using the instrumental variable method, as it is one of the key tools for testing endogeneity (Kashyap, 2022).

The instrumental variable method (2SLS, Two-Stage Least Squares) is a commonly used estimation technique to address endogeneity. In regression models, endogeneity typically arises from the correlation between the independent variables and the error term, which causes biased estimates and prevents accurate identification of causal relationships. Endogeneity issues can be caused by factors such as omitted variables, measurement errors, or reverse causality. When this correlation exists, traditional ordinary least squares (OLS) estimates are no longer consistent, and hypothesis testing becomes ineffective.

The instrumental variable method (2SLS) addresses endogeneity by using exogenous instruments to replace endogenous independent variables, thereby eliminating the impact of endogeneity. Specifically, the 2SLS method consists of two stages: The first stage involves regressing the endogenous variables using the instruments to obtain the predicted values of the instruments. The second stage uses the predicted values obtained from the first stage to replace the original independent variables in the regression analysis, yielding unbiased and consistent estimates.

Instruments (IV) must satisfy two conditions: The first is the relevance condition: the instrument must be significantly correlated with the endogenous

independent variable, meaning the instrument should effectively explain the variation in the endogenous variable. The second is the exogeneity condition: the instrument must not be correlated with the error term, meaning the instrument should be exogenous and not affected by factors in the error term that influence the dependent variable.

Using the instrumental variable method (2SLS) can effectively eliminate biases caused by endogeneity, thereby improving the reliability and validity of the regression analysis results (Wooldridge, 2010). This is the reason why this research uses the instrumental variable method to address potential endogeneity issues.

This research uses four instruments: Iv1, Iv2, Iv3, and Iv4, which are constructed based on the industry, year, and regional averages, aiming to capture the exogenous part of the explanatory variables and provide consistent estimators. Iv1 refers to FSSM based on the industry, year, and regional averages; Iv2 refers to TM based on the industry, year, and regional averages; Iv3 refers to BO based on the industry, year, and regional averages; Iv4 refers to TG based on the industry, year, and regional averages. These are presented in Table 12 (Chapter 4).

7. Heterogeneity Analysis

Heterogeneity analysis is the research of how individual differences impact the dependent variable. It can reveal complex structures and relationships hidden in the data, improving the model's predictive accuracy and explanatory power. By identifying specific patterns in different groups or contexts, policymakers and decision-makers can more accurately grasp influencing factors and develop more refined and effective strategies. As a result, model heterogeneity analysis is an essential component of the field of data analysis. This research will use heterogeneity analysis to further explore the impact of different populations on the research results (Haddaway, Woodcock, Macura, & Collins, 2020).

This research will further explore the impact of different groups on the research results through heterogeneity analysis (Haddaway et al., 2020). this research found that, when grouped by "firm size differences," there were significant differences in the impact of strategic FSS management, treasury management, business operations, and transparent governance on sustainability among firms of different sizes. When grouped by "firm market value differences," there were significant differences in the impact of strategic FSS management (FSSM), treasury management (TM), business operations (BO), and transparent governance (TG) on firm sustainability (FS) among firms with different market values.

Summary

This chapter introduces the sample selection and data collection procedures, providing definitions and measurement methods for all variables. Regression analysis and the fixed effects model were used. The specific measurements of each variable are shown in Table 7.

Table 7 Definitions and Operational Variables of Constructs

Construct	Definition	Operational Variables	Source
<i>Dependent Variable</i>			
Firm Sustainability (FS)	Firm sustainability refers to a company's ability to balance the economic, environmental, and social goals during its operations, striving for long-term stability	The measurement indicator of firm sustainability is ESG.	KPMG (2018)

Construct	Definition	Operational Variables	Source
	and success.		
<i>Independent Variable</i>			
Strategic FSS Management (FSSM)	Strategic FSS management refers to the establishment of a financial shared service center through strategic decision-making and the implementation of financial shared services to achieve the overall financial and strategic goals of the company.	A dummy variable is used with the following value rules: If the company has established an FSSC in the current year, the dummy variable takes the value of 1. If the company has not established an FSSC in the current year, the dummy variable takes the value of 0. After the year in which the financial shared service center is established, the value is 1; otherwise, it is 0.	Wang (2023)
Treasury management	Treasury management is a method of centralized management of company funds, responsible not only for daily settlement and payment but also for financing, investment, fund planning, and fund	Using text mining, the value of treasury management is represented by the natural logarithm of the frequency of treasury management-related keywords appearing in the annual reports of listed companies.	Deloitte. (2021)

Construct	Definition	Operational Variables	Source
	<p>allocation activities.</p> <p>By centrally monitoring and controlling the flow of funds, it effectively manages the company's financial risks.</p>		
Business Operations (BO)	<p>Business operations in the shared service center involve the centralized and standardized management of the company's financial functions to achieve efficient, low-cost, and high-quality financial management and support services.</p>	<p>Cash and Cash Equivalents Turnover Ratio = Revenue / Average Cash and Cash Equivalents</p>	Zhou & Wang(2021)
Transparent Governance (TG)	<p>Transparent governance refers to the implementation of open, clear, and efficient management and reporting mechanisms in the financial shared service center to improve the</p>	<p>The modified Jones (1991) model is used, with total accruals as the measure of earnings management. Earnings management is widely used to assess the quality of accounting information and is considered a reverse</p>	Healy & Wahlen (1999)

Construct	Definition	Operational Variables	Source
	transparency of financial operations and ensure the accuracy and completeness of information.	indicator of transparent governance.	
Mediator Variable			
Digital Transformation (DT)	Digital transformation is the process by which companies use digital technologies such as the Internet of Things, cloud computing, big data, and blockchain to achieve significant business improvements, including the development of new products or services, optimization of manufacturing processes, and upgrading of operational management.	Using text mining, the value of digital transformation is represented by the natural logarithm of the frequency of digital transformation-related keywords appearing in the annual reports of listed companies.	Wang (2023)
Control Variable			
Company Size(CS)	Company asset size	The natural logarithm of the company's assets.	Wang (2023)

Construct	Definition	Operational Variables	Source
Profitability	Return on Equity (ROE)	Return on Equity	Wang (2023)



CHAPTER IV

RESULTS

The previous chapter described the sample selection and data collection procedures, measurement of variables, and research tools. This chapter begins with an introduction to statistical analysis, including correlation analysis, multicollinearity analysis, and descriptive statistics. The second part discusses the relationship between financial shared services and firm sustainability, covering baseline regression and endogeneity testing. The third part explores the mediating effect of digital transformation on the relationship between financial shared services and firm sustainability. The fourth part addresses the heterogeneity between financial shared services and firm sustainability, analyzing differences in company size and market value. Finally, this chapter concludes with findings that support the null hypothesis.

Descriptive Statistics

This research conducts statistical analyses on the sample data, including the mean, standard deviation, minimum, and maximum values, as shown in the table below.

Table 8 Descriptive Statistics

Variable	Obs.	Mean	SD	Min	Max
FS	4568	73.9987	4.6232	44.2000	89.2400
FSSM	4568	0.4689	0.4991	0.0000	1.0000
TM	4568	2.8217	0.9427	0.0000	5.6021
BO	4568	8.4920	12.0702	0.1956	162.2540
TG	4568	0.0522	0.0618	0.0000	0.4281
SIZE	4568	23.2592	1.5496	19.2259	28.6969
ROE	4568	-0.0354	0.7980	-41.5023	1.4882

(1) Firm Sustainability

When conducting descriptive statistical analysis on the sample data, we found that the mean (Mean) of corporate sustainability (FS) is 73.9987, indicating

that the overall level of corporate sustainability in the sample is around 74. Overall, these companies perform relatively well in terms of sustainability. If the ESG score is a standardized indicator ranging from 0 to 100, then a score of 74 falls into the upper-middle level, suggesting that, on the whole, these companies demonstrate a certain degree of compliance and sustainable development capability in environmental, social responsibility, and corporate governance aspects.

The standard deviation (SD) is 4.6232, reflecting the degree of data dispersion. This indicates that there is relatively little variation in corporate ESG scores, with most companies' ESG scores distributed within the range of $[73.9987 \pm 4.6232] \approx [69.38, 78.62]$. This suggests that there is no extreme polarization in ESG scores, and the sustainability levels of most companies are relatively close.

The minimum value is 44.2, indicating that some companies have relatively low ESG scores, potentially facing significant issues in environmental, social responsibility, or governance aspects, such as environmental pollution or corporate governance deficiencies. The maximum value is 89.24, showing that certain companies excel in ESG performance and may be industry leaders in ESG, demonstrating outstanding practices in green development, social responsibility, and corporate governance.

(2) Strategic FSS Management

The Strategic FSS Management (FSSM) variable is a time-varying binary variable in the panel data, indicating whether a company has established a financial shared services center in a given year.

The mean of Strategic FSS Management (FSSM) is 0.4689, suggesting that in the panel data from 2013 to 2023, approximately 46.89% of firm-year observations correspond to companies that have already established a financial shared services center.

The standard deviation is 0.4991. Since the standard deviation is close to 0.5, it indicates that the distribution of 0s and 1s in the sample is relatively

balanced. This suggests that the years in which companies established financial shared services centers are relatively dispersed between 2013 and 2023, rather than being concentrated in a specific year.

(3) Treasury Management

The mean of Treasury Management (TM) is 2.8217. Since TM is measured as the natural logarithm of keyword occurrences, this mean suggests that, on average, TM-related keywords appear approximately 16.8 times (assuming the original data represents word frequency). This indicates that corporate attention to treasury management is generally at an upper-middle level, with TM-related keywords typically appearing around 16–17 times in financial reports, announcements, and other texts.

The standard deviation is 0.9427. Given that TM has undergone a logarithmic transformation, a standard deviation of 0.94 suggests that the variation in TM keyword mentions among different companies remains significant, though the absolute differences are much smaller compared to the original word frequencies.

This level of variation implies that some companies mention TM keywords relatively infrequently (possibly around 5–10 times), while others mention them more frequently (potentially 30–40 times).

The minimum value is 0, indicating that in certain years, some companies had a TM keyword frequency of 1. This suggests that at least some companies paid minimal attention to treasury management in specific years. The maximum value is 5.6021, meaning the original keyword occurrence count for TM in certain firms reached approximately 270 times. This likely reflects that some companies placed significant emphasis on treasury management in specific years or even dedicated specific sections to it in financial reports and announcements.

(4) Business Operations

The mean of Business Operations (BO) is 8.4920, indicating that the BO

indicator of sample firms is at a moderate level overall.

The standard deviation is 12.0702 (relatively large), suggesting significant differences in business operations among firms, meaning that BO levels vary considerably across different companies. Some firms may exhibit high operational efficiency, while others may have lower efficiency.

The minimum value is 0.1956, indicating that some firms have low BO levels, possibly due to industry characteristics, market conditions, or internal management factors. The maximum value is 162.2540, showing that some firms have extremely high BO indicators, suggesting that these firms operate far more efficiently than others. The wide range of values indicates a right-skewed distribution, meaning that while most firms have lower BO levels, a few firms with exceptionally high BO levels increase the overall standard deviation.

(5) Transparent Governance

The mean of Transparent Governance (TG) is 0.0522, indicating that, on average, sample firms exhibit a low level of earnings management, suggesting relatively good transparency in governance.

The standard deviation is 0.0618 (relatively large compared to the mean), implying significant variation in earnings management across firms. While some firms demonstrate high financial transparency, others still engage in substantial earnings management practices.

The minimum value is 0, meaning that some firms have almost no earnings management, implying highly transparent financial reporting, possibly due to strict regulations or strong corporate governance structures. The maximum value is 0.4281, indicating that some firms engage in a high degree of earnings management (low transparency), which may be due to earnings manipulation or external pressures such as financial performance targets or market expectations.

(6) Firm Size

The mean of Firm Size (SIZE) is 23.2592, with a standard deviation of

1.5496, a minimum value of 19.2259, and a maximum value of 28.6969. These figures indicate that while sample firms vary in total asset size, the overall distribution is relatively stable.

Since firm size is typically measured as the natural logarithm of total assets, a mean value of 23.2592 corresponds to a relatively large asset or revenue level, reflecting the strong market influence of these firms, which aligns with the fact that all sample firms are publicly listed.

A standard deviation of 1.5496, which is small relative to the mean, suggests that firm size varies within a reasonable range without extreme outliers. This indicates a high concentration of firm size within the sample, with relatively controllable differences.

The minimum value of 19.2259 represents the smallest firms in the sample, which, despite being publicly listed, may include emerging companies, asset-light businesses, or mid-sized enterprises. The maximum value of 28.6969 represents the largest firms in the sample, likely comprising major state-owned enterprises, industry leaders, or multinational corporations. The range of 19.2259 to 28.6969 indicates significant differences in firm size across the sample.

(7) Profitability

The mean return on equity (ROE) is only 0.0354 (3.54%), indicating that sample firms have relatively low profitability, generating only 0.0354 yuan in profit for every 1 yuan of shareholder equity. This may reflect weak profitability among some firms or the presence of many low-ROE firms dragging down the overall average. Given that all sample firms have established Financial Shared Services (FSS) centers, the high initial investment in FSS implementation may temporarily impact profitability. Further analysis is needed to assess the effect of FSS on ROE.

The standard deviation of 0.7980 is significantly larger than the mean (0.0354), highlighting strong volatility in ROE and substantial differences in

profitability among firms. The sample includes both highly profitable firms and those with low or even negative profitability, suggesting a long-tailed or highly skewed distribution of profitability.

The minimum value of -41.5023 indicates that some firms have experienced severe losses, potentially due to major impairments, operational crises, or financial restructuring. The maximum value of 1.4882 (148.82%) suggests that certain firms exhibit exceptionally high ROE, possibly due to high financial leverage, which reduces the net asset base and amplifies ROE.

In conclusion, these descriptive statistics provide crucial background information for subsequent empirical analysis, helping to better understand the distribution characteristics of variables and their potential implications.

Correlation Analysis and Multicollinearity Analysis

1. Correlation Analysis

Correlation analysis explores the strength and direction of relationships between variables. By calculating correlation coefficients, we can determine whether significant linear associations exist between different variables and understand the nature of these relationships.

A common rule of thumb suggests that if the correlation coefficients between all independent variables are below 0.7, there is generally no serious multicollinearity. The correlation analysis of the sample is shown in the table below, with correlation coefficients ranging from 0.051 to 0.288, indicating that there are no multicollinearity issues among the independent variables.

Table 9 Correlation Analysis

	FS	FSSM	TM	BO	TG	SIZE	ROE
FS	1						
FSSM	0.125***	1					
TM	0.154***	0.350***	1				
BO	0.110***	0.065***	0.090***	1			
TG	0.130***	0.075***	0.0180	0.327***	1		
SIZE	0.288***	0.103***	0.343***	0.136***	-0.030**	1	
ROE	0.051***	0.0190	-0.0120	0.0240	-0.064***	0.038**	1

Note: * $p < 0.1$, ** $p < 0.5$, *** $p < 0.01$

In the correlation analysis, this research found the following significant relationships:

Strategic FSS management (FSSM) and firm sustainability (FS): A significant positive correlation (correlation coefficient = 0.125, $p < 0.01$) suggests that strategically managing and operating financial shared service centers can effectively enhance firm sustainability performance.

Treasury Management (TM) and Firm Sustainability (FS): A significant positive correlation (correlation coefficient = 0.154, $p < 0.01$) indicates that treasury management, particularly in fund management and cash flow planning, plays a crucial role in promoting firm sustainability.

Business Operations (BO) and Firm Sustainability (FS): A significant positive correlation (correlation coefficient = 0.110, $p < 0.01$) highlights the importance of centralization and standardization of financial functions within shared service centers in improving firm sustainability.

Transparent Governance (TG) and Firm Sustainability (FS): A significant positive correlation (correlation coefficient = 0.130, $p < 0.01$) suggests that an open,

clear, and efficient management and reporting mechanism within financial shared service centers contributes to enhancing firm sustainability.

Firm Size (SIZE) and Firm Sustainability (FS): A strong positive correlation (correlation coefficient = 0.288, $p < 0.01$) implies that an increase in total asset size is closely associated with higher firm sustainability levels.

Profitability (ROE) and Firm Sustainability (FS): A significant positive correlation (correlation coefficient = 0.051, $p < 0.01$) suggests that improved return on equity contributes to enhanced firm sustainability.

Overall, these correlation results provide a solid foundation for further exploring the causal relationships and underlying mechanisms between the variables.

2. Multicollinearity Analysis: Variance Inflation Factor (VIF) and Tolerance

Multicollinearity analysis helps identify and address issues of high correlation among predictor variables to ensure the stability and reliability of the regression model. When significant linear relationships exist between multiple predictor variables, it may lead to inaccurate estimates of regression coefficients and inflated standard errors, thereby affecting the explanatory and predictive power of the model.

Multicollinearity is not considered a problem when the variance inflation factor (VIF) is less than 10. The multicollinearity analysis of the sample is presented in the table below.

To mitigate biases in regression coefficient estimation caused by multicollinearity, we calculate the Variance Inflation Factor (VIF) and tolerance values. The sample multicollinearity analysis is presented in the table below.

Table 10 Multicollinearity Analysis

Variable	VIF
FSSM	1.150
TM	1.280

BO	1.150
TG	1.140
SIZE	1.160
ROE	1.010

In the multicollinearity test of the model, this research calculated the Variance Inflation Factor (VIF) for each explanatory variable. The results show that the VIF value for Strategic FSS Management (FSSM) is 1.150; for Treasury Management (TM), it is 1.280; for Business Operations (BO), it is 1.150; for Transparent Governance (TG), it is 1.140; for Firm Size (SIZE), it is 1.160; and for Profitability (ROE), it is 1.010.

In conclusion, all the VIF values are well below the threshold of 10, which is generally considered to indicate no severe multicollinearity issues. This suggests that there is no significant multicollinearity among the explanatory variables in the model, and each variable can be treated as an independent explanatory factor. This ensures the reliability and stability of the regression analysis results and provides a solid foundation for subsequent regression analysis.

Hypotheses Testing and Results of Main Effect

1. Test Results of the Main Effects Baseline Regression

One of the objectives of this research is to explore the impact of financial shared services on corporate sustainability. It analyzes how the four dimensions of strategic FSS management, treasury management, business operations, and transparent governance affect corporate sustainability.

Baseline regression analysis is conducted to examine the direct effects of financial shared services on firm sustainability. This analysis establishes the foundational relationships between key variables, providing empirical evidence for hypothesis testing. The results of the baseline regression are presented in the table below.

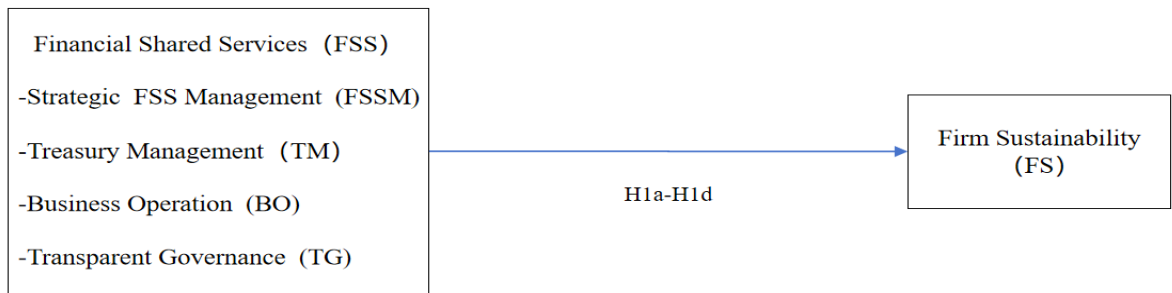


Figure 2 Main Effect Model of Financial Shared Services on Firm Sustainability

Table 11 The Results for Regression Analysis of Financial Shared Services on Firm Sustainability

	Model 1 OLS	Model 2 REM	Model 3 FEM
FSSM	0.6507*** (0.1404)	0.6840*** (0.1351)	0.5131*** (0.1706)
TM	0.5989*** (0.0869)	0.1574* (0.0886)	0.2584** (0.1112)
BO	0.0232*** (0.0073)	0.0087 (0.0070)	0.0363*** (0.0065)
TG	7.7092*** (1.4645)	9.5626*** (1.3833)	4.6806*** (1.1293)
SIZE		0.8018*** (0.0441)	0.3952*** (0.1115)
ROE		0.2719* (0.1478)	0.0446 (0.0717)
Constant term	71.4044*** (0.2540)	54.0020*** (0.9584)	63.2815*** (2.5903)
F-test value	30.84***		30.84***
Hausman-test value		171.25***	
Lagrangian Multiplier-test	3704.34***		
No. of observation	4568	4568	4568
Adj. R ²	0.0468	0.1120	0.5180

Note: i. *p<0.1, **p<0.5, ***p<0.01;ii. FEM is the fixed effects model

The table presents the results of the hypothesis testing for the main effect model. The detailed explanations of the hypothesis tests are as follows:

(1) Results of Model 1

Hypothesis 1: Financial Shared Services (FSS) have a positive relationship with Firm Sustainability (FS).

The conclusions for each sub-hypothesis are as follows:

Hypothesis 1a: Strategic FSS Management (FSSM) has a positive relationship with Firm Sustainability (FS).

In the baseline regression analysis, Model (1) first examined the effects of various factors on firm sustainability (FS) without controlling for other variables and fixed effects. The results show that the coefficient of strategic FSS management (FSSM) is 0.6507 and highly significant at the 1% level, indicating a significant positive impact on firm sustainability. Similarly, previous research (Nguyen & Zhang, 2021) suggests that financial shared services (FSS), as a strategic tool, are considered capable of helping firms achieve more efficient financial management as well as environmental, social, and governance (ESG) goals. The immense potential of financial shared services in improving operational efficiency, reducing costs, and enhancing financial transparency thereby supports firm sustainability. *Therefore, Hypothesis 1a is supported.*

Hypothesis 1b: Treasury Management (TM) has a positive relationship with Firm Sustainability (FS).

The coefficient of treasury management (TM) is 0.5989 and is also significant at the 1% level, indicating a strong positive effect of treasury management on firm sustainability in terms of fund management, cash flow, and the planning and execution of investment and financing activities. Similarly, previous research suggests that treasury management, by optimizing cash flow and investment decisions, reduces resource waste and promotes sustainable production and operational models. By improving cash flow, treasury management ensures the timely payment of suppliers,

supporting partnerships focused on social and environmental responsibilities (McKinsey, 2023). Through budgeting and cash flow management, treasury departments facilitate corporate charitable donations, social welfare activities, and community projects. *Therefore, Hypothesis 1b is supported.*

Hypothesis 1c: Business Operations (BO) have a positive relationship with Firm Sustainability (FS).

The coefficient of business operations (BO) is 0.0232 and is also significant at the 1% level, though its impact is relatively smaller. Similarly, previous research (Hart & Milstein, 2003) indicates that the sustainable value framework provides a pathway for business operations management, suggesting that firms should adjust their strategies to address environmental and social challenges while actively participating in resolving these issues to achieve long-term sustainability. Business operations significantly contribute to firm sustainability and the achievement of ESG goals by optimizing resource allocation, reducing costs, and improving quality. *Therefore, Hypothesis 1c is supported.*

Hypothesis 1d: Transparent Governance (TG) has a positive relationship with Firm Sustainability (FS).

The coefficient of transparency governance (TG) is 7.7092, which is highly significant at the 1% level, indicating that transparency governance has a critical impact on firm sustainability by enhancing financial operation transparency and ensuring the accuracy and integrity of information. Similarly, previous research (Bebbington & Larrinaga, 2014) suggests that transparency governance, as a corporate management practice, focuses on openly and clearly reporting corporate activities, decision-making processes, and their environmental and social impacts. Transparency governance helps strengthen corporate accountability and promotes progress toward sustainability goals. *Therefore, Hypothesis 1d is supported.*

Since all four factors positively and significantly contribute to firm sustainability, *Hypothesis 1 is fully supported.*

At this stage, the adjusted R^2 of the model is 0.0468, and the sample size is 4,568.

(2) Results of Model 2

In Model 2, this research further introduce control variables, specifically Firm Size (SIZE) and Profitability (ROE). The results show the following:

- The coefficient of Strategic FSS Management (FSSM) is adjusted to 0.6840, which remains significant at the 1% level ($p < 0.01$).
- The coefficient of Treasury Management (TM) is 0.1574, significant at the 10% level ($p < 0.10$).
- The coefficient of Business Operations (BO) is 0.0087, which is not significant.
- The coefficient of Transparent Governance (TG) is 9.5626, highly significant at the 1% level ($p < 0.01$).
- The coefficient of Firm Size (SIZE) is 0.8018, significant at the 1% level ($p < 0.01$), indicating a significant positive effect of firm size on firm sustainability.
- The coefficient of Profitability (ROE) is 0.2719, significant at the 10% level ($p < 0.10$), although the impact is relatively small.

At this stage, the adjusted R^2 of the model increases to 0.1120. **Therefore, Hypothesis 1 is supported.**

(3) Results of Model 3

Finally, in Model 3, fixed effects are introduced, and the results show:

- The coefficient of Strategic FSS Management (FSSM) is 0.5131, still significant at the 1% level ($p < 0.01$).
- The coefficient of Treasury Management (TM) is 0.2584, significant at the 5% level ($p < 0.05$).
- The coefficient of Business Operations (BO) is 0.0363, highly significant at the 1% level ($p < 0.01$).

- The coefficient of Transparent Governance (TG) is adjusted to 4.6806, highly significant at the 1% level ($p < 0.01$).

- The coefficient of Firm Size (SIZE) is 0.3952, significant at the 1% level ($p < 0.01$).

- The coefficient of Profitability (ROE) is 0.0446, with no significant impact.

At this point, the adjusted R^2 significantly increases to 0.5180, demonstrating a substantial improvement in the model's explanatory power. The constant term coefficients are 71.4044, 54.0020, and 63.2815, all significant at the 1% level ($p < 0.01$).

In summary, the results of the hypothesis testing indicate that financial shared services have a significant positive impact on firm sustainability (H1a-H1b). This conclusion aligns with the research by Teece (2007), which proposed that dynamic capabilities can enhance a firm's adaptability and sustainability by optimizing resource allocation and integration. Additionally, Porter & Kramer (2011) emphasized that creating shared value (such as financial shared services) can simultaneously meet stakeholder needs and promote long-term corporate development. Ulrich (1997) highlighted that shared services, through centralized management, improve operational efficiency and serve as an essential tool for achieving corporate strategic goals. Furthermore, Becker (2016) demonstrated that financial shared services support firm sustainability by enhancing transparency and reducing redundant operations. Schäffer (2019) explored the role of shared services in strengthening firms' resource integration capabilities and dynamic adaptability, which are crucial for maintaining competitive advantages in dynamic environments. These studies collectively support the critical influence of financial shared services on firm sustainability. *Therefore, Hypothesis 1 is supported.*

2. Endogeneity Test

Endogeneity testing is used to evaluate whether there is a correlation between the independent variables and the error term in the model. When the

independent variables are correlated with the error term, the regression analysis results may not accurately reflect causal relationships, thereby affecting the validity of hypothesis testing and theoretical derivations. In the endogeneity test, we employed the instrumental variable method (2SLS) to address potential endogeneity issues and ensure the reliability of the estimation results.

Specifically, we selected four instrumental variables (Iv1, Iv2, Iv3, Iv4), which were constructed based on the industry, year, and region averages. These instrumental variables aim to capture the exogenous components of the explanatory variables, thereby providing consistent estimators. Iv1 refers to the industry-year-region average of FSSM; Iv2 refers to the industry-year-region average of TM; Iv3 refers to the industry-year-region average of BO; Iv4 refers to the industry-year-region average of TG.

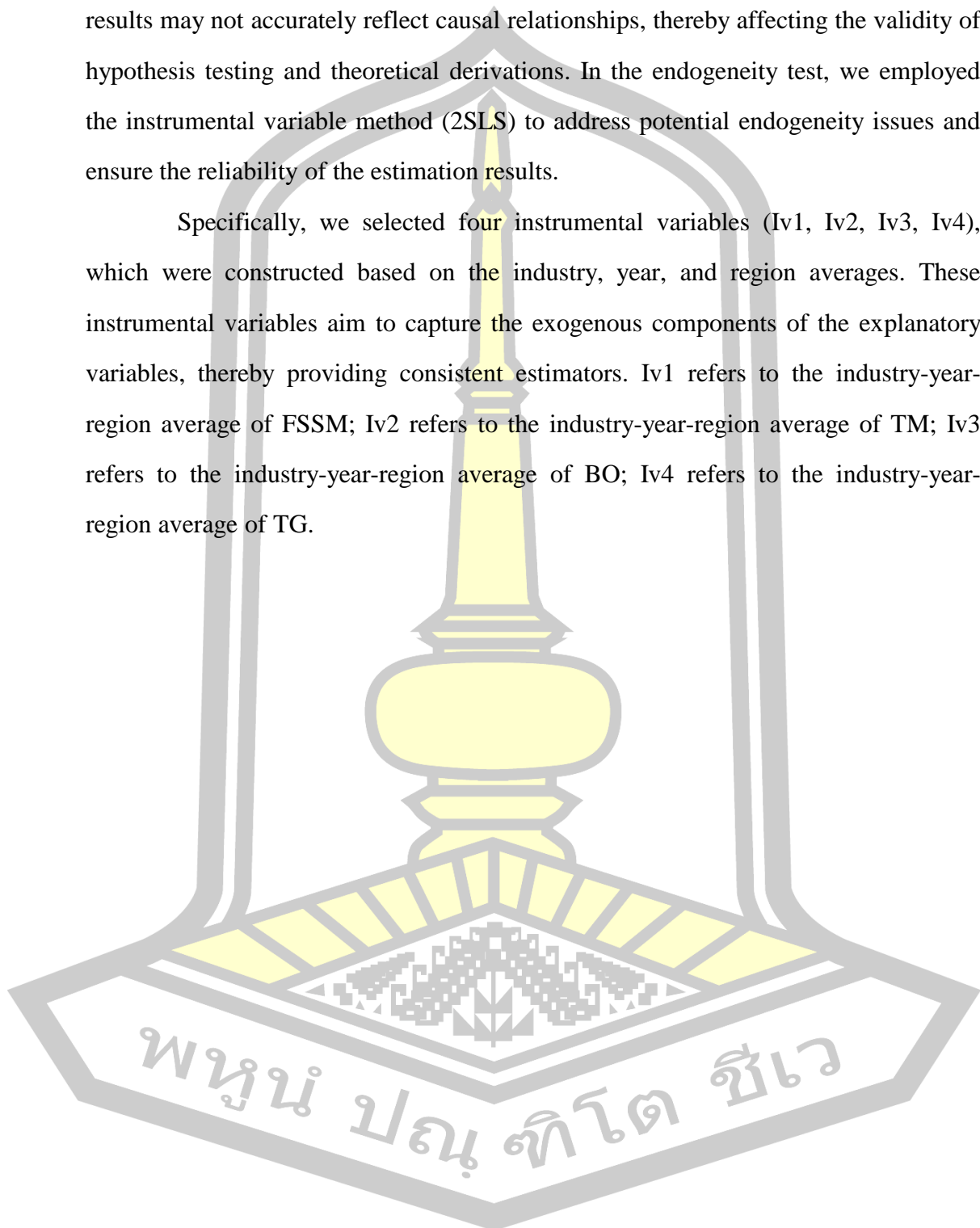


Table 12 Instrumental Variables Method

	Model 4	Model 5	Model 6	Model 7
	FS	FS	FS	FS
FSSM	0.8902*** (0.2364)			
TM		0.4632*** (0.1415)		
BO			0.0550*** (0.0090)	
TG				7.8061*** (1.4275)
SIZE	0.3869*** (0.1133)	0.3684*** (0.1138)	0.3989*** (0.1134)	0.4364*** (0.1102)
ROE	0.0245 (0.0749)	0.0454 (0.0770)	0.0211 (0.0711)	0.0608 (0.0739)
No. of observation	4568	4568	4568	4568
Adj. R ²	0.0075	0.0073	0.0249	0.0213
Model	FEM	FEM	FEM	FEM
First stage				
	FSSM	TM	BO	TG
Iv1	0.9624*** (0.0091)			
Iv2		0.9655*** (0.0146)		
Iv3			0.9879*** (0.0441)	
Iv4				0.9993*** (0.0218)
F test	5478.339***	4328.694***	501.177***	2086.751***
LM test	1377.766***	370.991***	65.723***	226.465***

Note: *p<0.1, **p<0.5, ***p<0.01

In the endogeneity test, this research used Instrumental Variables (IV) method (2SLS) to address potential endogeneity issues and ensure reliable estimation results. Specifically, this research chose four instrumental variables (Iv1, Iv2, Iv3, Iv4), constructed based on industry, year, and region averages, aiming to capture the exogenous part of the explanatory variables, thereby providing consistent estimators.

In the first-stage regression, the instrumental variables fit the explanatory variables significantly, with F-test values of 5478.339, 4328.694, 501.177, and 2086.751, all highly significant at the 1% level, indicating strong correlations between instrumental variables and explanatory variables, and no weak instrumental variable issues. Additionally, the LM statistics of the Sargan test are 1377.766, 370.991, 65.723, and 226.465, respectively, all of which are significant at the 1% level. This further validates the effectiveness of the instrumental variables, indicating that the instrumental variables are uncorrelated with the error term.

In the second-stage regression, the coefficient for Strategic FSS Management is 0.8902 and highly significant at the 1% level, indicating a significant positive impact on Firm Sustainability. The coefficient for Treasury Management (TM) is 0.4632 and significant at the 1% level, the coefficient for Business Operations (BO) is 0.0550 and significant at the 1% level, and the coefficient for Transparent Governance (TG) is 7.8061 and significant at the 1% level. The control variable, firm size (SIZE), has a significantly positive impact on firm sustainability in all models, while the impact of profitability (ROE) is not significant.

The four dimensions of Financial Shared Services (FSS)—Strategic FSS Management, Treasury Management, Business Operations, and Transparent Governance—each have a significant positive impact on firm sustainability (FS). Among them, the impact of Transparent Governance is the most significant, followed

by Treasury Management and Strategic FSS Management, while the impact of Business Operations is relatively smaller but still significant. Therefore, Hypothesis 1, "Financial Shared Services (FSS) has a proactive relationship with Firm Sustainability (FS)," is fully supported. Firms should implement systematic financial shared services practices, combining transparent governance, treasury management, and strategic FSS management, to comprehensively enhance their sustainability performance and gain a lasting competitive advantage in a highly competitive market.

In conclusion, these results show that after addressing endogeneity issues using the instrumental variable method, the impact of Strategic FSS Management, Treasury Management, Business Operations, and Transparent Governance on firm sustainability remains significant, further confirming the important role these factors play in enhancing firm sustainability. Therefore, *Hypothesis 1 is further supported.*

Hypothesis Testing and Mediating Effect Results

Mediating Relationship between Financial Shared Services and Firm Sustainability through Digital Transformation.

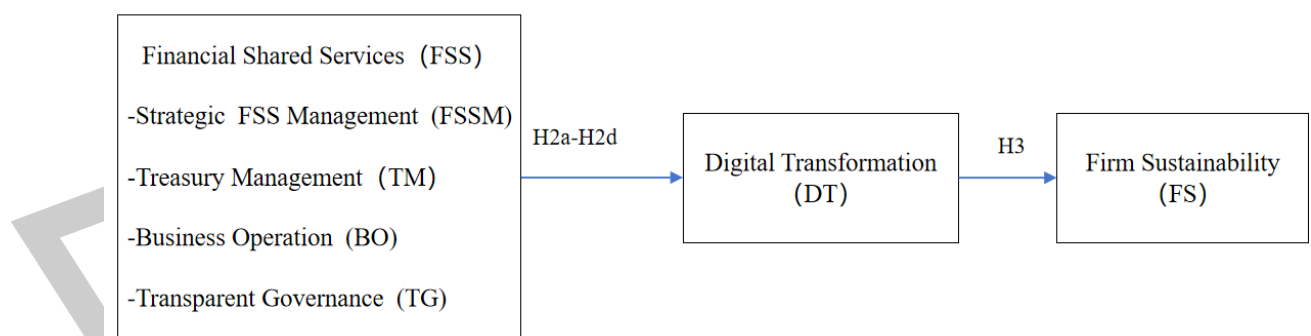


Figure 3 The Mediating Role of Digital Transformation Between Financial Shared Services and Firm Sustainability

Table 13 Mediating Effect Analysis

	Model 8	Model 9
	DT	FS
FSSM	0.0844** (0.0352)	
TM	0.1093*** (0.0274)	
BO	0.0056** (0.0024)	
TG	0.6381* (0.3434)	
DT		0.3339*** (0.0827)
SIZE	0.1685*** (0.0314)	0.3422*** (0.1146)
ROE	-0.0137 (0.0187)	0.0290 (0.0719)
Constant term	-1.3258* (0.7332)	65.0296*** (2.6460)
No of observation	4568	4568
Adj. R ²	0.7389	0.5050
Model	FEM	FEM

Note:*p<0.1, **p<0.5, ***p<0.01

The table above shows the results of the mediating effect test for the two hypotheses in the models. In the mediation effect analysis, this research evaluated the mediating role of Digital Transformation (DT) in the relationship between Strategic

FSS Management (FSSM), Treasury Management (TM), Business Operations (BO), Transparent Governance (TG), and Firm Sustainability (FS). The detailed explanation of the hypothesis tests is as follows:

(1) Model 8 Results

H2: Financial Shared Services (FSS) have a positive relationship with Digital Transformation (DT).

The conclusion of the hypothesis test is explained below:

Hypothesis 2a: Strategic FSS Management has a positive relationship with Digital Transformation (DT).

The results show that in Model (1), the coefficient of strategic FSS management (FSSM) is 0.0844 and significant, indicating a positive impact on digital transformation. Similarly, previous research suggests that strategic financial shared services enable effective resource integration through centralized management and standardized operations. The optimization and automation of financial processes lay a solid foundation for digital transformation. Through shared service centers, enterprises can centrally manage financial data, reduce redundancies and errors, and support the deployment of digital tools such as ERP systems or RPA technologies. *Therefore, Hypothesis 2a is supported.*

Hypothesis 2b: Treasury Management (TM) has a positive relationship with Digital Transformation (DT).

The coefficient of treasury management (TM) is 0.1093 and highly significant, indicating a positive impact on digital transformation. Similarly, previous research suggests that treasury management optimizes cash flow through a centralized funds management system, improving capital efficiency and providing strong financial support for the investment in digital technologies. Treasury management uses data analysis techniques to quantify and monitor market risk, credit risk, and liquidity risk in real time, ensuring financial stability during digital transformation (Vial, 2019). The accurate financial forecasts and liquidity analyses provided by

treasury management assist senior management in making strategic decisions for digital transformation (Schulman et al., 1999). *Therefore, Hypothesis 2b is supported.*

Hypothesis 2c: Business Operations (BO) have a positive relationship with Digital Transformation (DT).

The coefficient of business operations (BO) is 0.0056 and positively significant at the 5% level. Similarly, previous research suggests that operational management improves financial process automation. The automation function of financial shared service centers helps companies achieve more efficient financial management, promoting the digitalization process.

Financial shared service centers, through big data analysis and AI technologies, enable companies to centralize financial data management, enhancing the depth and accuracy of financial analysis (Chen & Lin, 2015). The application of digital platforms within financial shared service centers has greatly improved internal collaboration efficiency, driving process optimization within the company . *Therefore, Hypothesis 2c is supported.*

Hypothesis 2d: Transparent Governance (TG) has a positive relationship with Digital Transformation (DT).

The coefficient of transparent governance (TG) is 0.6381 and significant at the 10% level. Similarly, previous research (Zhou,2021) mentions that transparent governance in financial shared service centers can effectively enhance the security and compliance of company data, ensuring compliant operations in a digital environment. Transparent governance, through the use of digital platforms, optimizes the sharing of financial data and effectively improves internal collaboration within the company . *Therefore, Hypothesis 2d is supported.*

In conclusion, the hypothesis testing results show that financial shared services have a significant positive impact on digital transformation (H2a-H2b). This conclusion is consistent with the research by Teece (2018), which indicates that dynamic capabilities are the core driving force behind corporate digital

transformation, enabling adaptation and transformation in a rapidly changing environment through resource and technology integration. Additionally, Davenport and Short (1990) emphasize that business process reengineering driven by information technology is key to digital transformation, and financial shared services, through process optimization and standardization, can lay a solid foundation for digital transformation. Bergeron (2003) points out that financial shared services not only improve operational efficiency but also effectively support the introduction of new technologies and the digitalization of processes. Schäffer (2019) further verifies that shared services accelerate the application of technology and the process of digitalization by optimizing resource allocation and enhancing data transparency. Moreover, Dutta (2015) shows that shared services can leverage information technology to facilitate strategic transformation, providing the infrastructure and management support needed for digital transformation. These studies collectively support the important role of financial shared services in driving corporate digital transformation. *Therefore, Hypothesis 2 is supported.*

(2) Model 9 Results

H3: Digital Transformation (DT) mediates the relationship between Financial Shared Services (FSS) and Firm Sustainability (FS).

The conclusion of the hypothesis test is explained below:

In model (2), the coefficient of digital transformation is 0.3339 and highly significant, indicating that digital transformation has a significant positive impact on firm sustainability. The hypothesis testing results show that digital transformation mediates the relationship between financial shared services and firm sustainability (H3). This conclusion is consistent with Teece (2014), who points out that digital transformation, as a dynamic capability, can enhance the integration of resources and operational efficiency, thus promoting the realization of sustainability through financial shared services. Furthermore, research shows that financial shared services can improve data processing capabilities and decision-making support through the

application of digital technologies, facilitating long-term business development. Davenport & Westerman (2018) emphasize the mediating role of digital transformation in achieving corporate strategic objectives, suggesting that digital transformation effectively integrates financial shared services with sustainability goals, driving sustainable competitive advantages in both technology and management. Additionally, Brynjolfsson & McAfee (2014) highlight the relationship between technological innovation and economic performance, which supports the crucial role of digital transformation in driving firm sustainability. Schäffer (2019) further validates how digital transformation serves as a bridge within the shared services framework, promoting sustainability in dynamic environments through the application of technology and process optimization. At the same time, Liu (2011) also suggests that innovations in information technology can serve as a key bridge between financial shared services and firm sustainability, driving long-term competitive advantages in a digital context. ***Therefore, Hypothesis 3 is supported.***

The control variable Firm Size (SIZE) has a significant positive effect on firm sustainability in both models, while the impact of Profitability (ROE) is not significant. The adjusted R² values for Model (8) and Model (9) are 0.7389 and 0.5050, respectively, with a sample size of 4568 in both models, indicating strong explanatory power for the models.

In summary, these results show that digital transformation plays a partial mediating role between Strategic FSS Management, Treasury Management, Business Operations, Transparent Governance, and firm sustainability, further confirming the importance of digital transformation in enhancing firm sustainability. ***Therefore, Hypotheses 2 and 3 are supported.***

Heterogeneity between Financial Shared Services and Firm Sustainability

1. Differences by Firm Size

In the heterogeneity analysis, this research divided the sample into two groups—small-scale firms and large-scale firms—based on the median of firm size, to explore differences in how Strategic Financial Shared Services Management (FSSM), Treasury Management (TM), Business Operations (BO), and Transparent Governance (TG) affect Firm Sustainability (FS) across different scales of enterprises.

Table 14 Heterogeneity: Enterprise Size Differences

	Model 10	Model 11
	(1) Small-scale enterprises	(2) Large-scale enterprises
	FS	FS
FSSM	0.5461** (0.2444)	0.3764 (0.2427)
TM	0.3206** (0.1429)	0.3418** (0.1611)
BO	0.0453*** (0.0131)	0.0345*** (0.0076)
TG	1.0591 (1.5105)	5.7749*** (1.6508)
ROE	-0.0141 (0.0590)	0.7470* (0.4002)
Constant term	71.5556*** (0.4054)	73.0431*** (0.5064)
No. of observation	2243	2268
Adj. R ²	0.5199	0.5301
Model	FEM	FEM

Note: *p<0.1, **p<0.5, ***p<0.01

FSSM: (1) Small-scale group, the coefficient of FSSM is 0.5461 and significant at the 5% level, indicating a positive impact on the sustainability of

small-scale enterprises. This may be because small-scale enterprises focus more on optimizing resource allocation and improving operational efficiency through strategic FSSM management, thereby achieving better sustainability performance with limited resources; (2) Large-scale group, the coefficient of FSSM is 0.3764 and not significant.

TM: (1) Small-scale group, the coefficient of TM is 0.3206 and significant at the 5% level, indicating that small-scale enterprises can better address financial risks and enhance sustainability through effective treasury management and cash flow control. (2) Large-scale group, the coefficient of TM is 0.3418 and significant at the 5% level, suggesting that large-scale enterprises can effectively optimize fund allocation and improve the efficiency of fund utilization through treasury management, thereby enhancing sustainability.

BO: (1) Small-scale group, the coefficient of business operations is 0.0453 and significant at the 1% level, indicating that small-scale enterprises can enhance the efficiency and quality of financial management through centralized and standardized business operations, thereby improving sustainability. (2) Large-scale group, the coefficient of business operations is 0.0345 and significant at the 1% level, suggesting that large-scale enterprises can also achieve economies of scale, reduce operational costs, and enhance sustainability through centralized and standardized business operations.

TG: (1) Small-scale group, the coefficient of transparent governance is 1.0591 but not significant, which may be due to the relatively simple governance structure of small-scale enterprises, leaving limited room for improvement in transparent governance. (2) Large-scale group, the coefficient of transparent governance is 5.7749 and highly significant at the 1% level, indicating that transparent governance has a significant positive impact on the sustainability of large-scale enterprises. This may be because large-scale enterprises face more complex internal and external environments, and transparent governance can

enhance corporate transparency and credibility, strengthen stakeholder trust, and thereby promote sustainable development.

In conclusion, these results indicate significant differences in the impact of strategic FSS management, treasury management, business operations, and transparent governance on sustainability across enterprises of different sizes. Specifically, transparent governance has a more significant impact on the sustainability of large enterprises, while strategic FSS management plays a more prominent role in the sustainability of small enterprises. This finding provides empirical evidence for formulating targeted sustainability enhancement strategies for enterprises of different sizes. Small enterprises should focus on optimizing strategic FSS management and treasury management, while large enterprises should strengthen transparent governance and standardize business operations management.

Therefore :

(1) Small-scale enterprises :Hypotheses 1a-1c are supported, but Hypotheses 1d is not.

(2) Large-scale enterprises:Hypotheses 1b-1d are supported., but Hypotheses 1a is not.

2. Differences by Firm Market Value

In examining how differences in firm market value affect the relationship between Financial Shared Services and firm sustainability, this research divided the sample into two groups based on the median of market value—firms with lower market value and firms with higher market value—and conducted heterogeneity analysis accordingly. The results revealed significant differences in how Strategic Financial Shared Services Management (FSSM), Treasury Management (TM), Business Operations (BO), and Transparent Governance (TG) impact Firm Sustainability (FS) across firms with different market values.

Table 15 Heterogeneity: Differences in Enterprise Market Value

	Model 12	Model 13
	(1) Low market value	(2) High market value
	FS	FS
FSSM	0.6631*** (0.2525)	0.6115** (0.2606)
TM	0.3329* (0.1735)	0.1464 (0.1589)
BO	0.0301*** (0.0081)	0.0523*** (0.0107)
TG	6.1729*** (1.5896)	3.0346* (1.6419)
SIZE	0.1988 (0.1649)	0.8621*** (0.1859)
ROE	-0.1099 (0.0947)	-0.0789 (0.1196)
Constant term	67.5076*** (3.9784)	53.1980*** (4.1709)
No of observation	2218	2269
Adj. R ²	0.5133	0.5564
Model	FEM	FEM

Note:*p<0.1, **p<0.5, ***p<0.01

FSSM: (1) Low market value group, the coefficient of FSSM is 0.6631 and highly significant at the 1% level, indicating that it has a significant positive effect on the sustainability of such enterprises. This may be related to the tendency

of enterprises with lower market value to use FSSM to enhance their market competitiveness and sustainability. (2) High market value group, the coefficient of strategic FSS management is 0.6115 and significant at the 5% level.

TM: (1) Low market value group, the coefficient of TM is 0.3329 and significant at the 10% level, indicating that treasury management has a relatively significant positive effect on the sustainability of small-scale enterprises. This may be because small-scale enterprises have limited financial resources and are more sensitive to cash flow and liquidity risks. Through effective treasury management, small-scale enterprises can allocate funds more efficiently, maintain stable operations, and reduce financial risks, thereby enhancing their sustainability. (2) High market value group, the coefficient of TM is 0.1464 and not significant, indicating that the impact of treasury management on the sustainability of large-scale enterprises is relatively weak or negligible. This may be because large-scale enterprises typically have more diversified financial resources and well-established financial systems, making them less reliant on treasury management for risk control or operational efficiency. As a result, the marginal effect of treasury management on sustainability is not significant.

BO: (1) Low market value group, the coefficient of BO is 0.0301 and significant at the 1% level, further highlighting the importance of refined financial management for sustainability under limited resources. (2) High market value group, the coefficient of BO is 0.0523 and significant at the 1% level, indicating that in enterprises with higher market value, the optimization of business operations makes a more prominent contribution to sustainability.

TG: (1) Low market value group, the coefficient of TG is 6.1729 and highly significant at the 1% level, reflecting that in enterprises with lower market value, enhancing governance transparency plays a key role in boosting external investor confidence and promoting sustainable development. (2) High market value group, the coefficient of TG is 3.0346 and significant at the 10% level, relatively

lower, which may indicate that enterprises with higher market value already have a certain level of governance transparency, and further improvements have a smaller marginal effect.

In conclusion, the analysis results reveal significant differences in the impact of strategic FSS management (FSSM), treasury management (TM), business operations (BO), and transparent governance (TG) on firm sustainability (FS) across enterprises with different market values. These findings not only enrich the theoretical understanding of the relationship between financial shared services and firm sustainability but also provide practical guidance for enterprises of varying market values to develop differentiated financial management strategies.

Therefore :

(1) Low market value enterprises :Hypotheses 1a-1d are supported.

(2) High market value enterprises:Hypotheses 1b-1d are supported., but

Hypotheses 1a is not.

Summary

Chapter 4 presents this research data analysis results based on 600 listed companies in China that have established financial shared services centers (FSSCs) from 2013 to 2023, covering a total of 11 years. This chapter is divided into five sections:

(1) Descriptive Statistics: Includes the mean, standard deviation, minimum, and maximum values for all constructs.

(2) Correlation Analysis and Multicollinearity Analysis: Positive correlations were found between each explanatory variable and the dependent variable. The average VIF value for all variables is 1.150, suggesting that the variables can be considered as independent explanatory factors, indicating no multicollinearity issues.

(3) Hypothesis Testing and Main Effect Results: The coefficient for FSSM is 0.5131, which is significant at the 1% level. The coefficient for TM is 0.2584, significant at the 5% level. The coefficient for BO is 0.0363, highly significant at the 1% level. The coefficient for TG is adjusted to 4.6806, highly significant at the 1% level, and the coefficient for SIZE is 0.3952, significant at the 1% level. The adjusted R^2 for the model significantly increased to 0.5180, greatly enhancing the model's explanatory power. The constant terms have coefficients of 71.4044, 54.0020, and 63.2815, all significant at the 1% level. The main effect hypothesis testing results show that Hypotheses 1a–1d are supported.

(4) Hypothesis Testing and Mediating Effect Results: The results from the mediating effect hypothesis testing show that Hypotheses 2a–2d and Hypothesis 3 are supported.

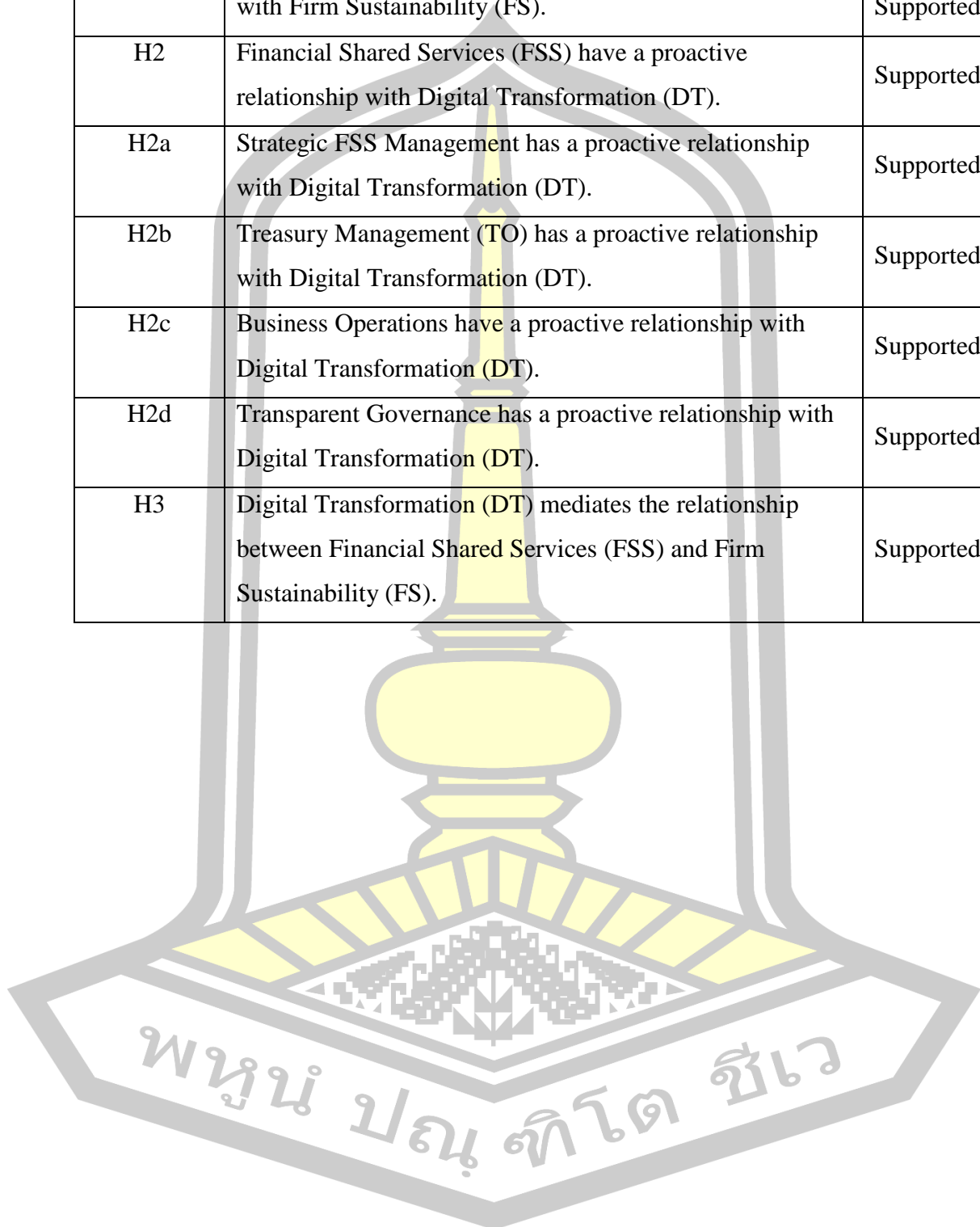
(5) Heterogeneity Analysis Results: Significant differences are found in the impact of Strategic FSS Management, Treasury Management, Business Operations, and Transparent Governance on sustainability across companies of different sizes and market values.

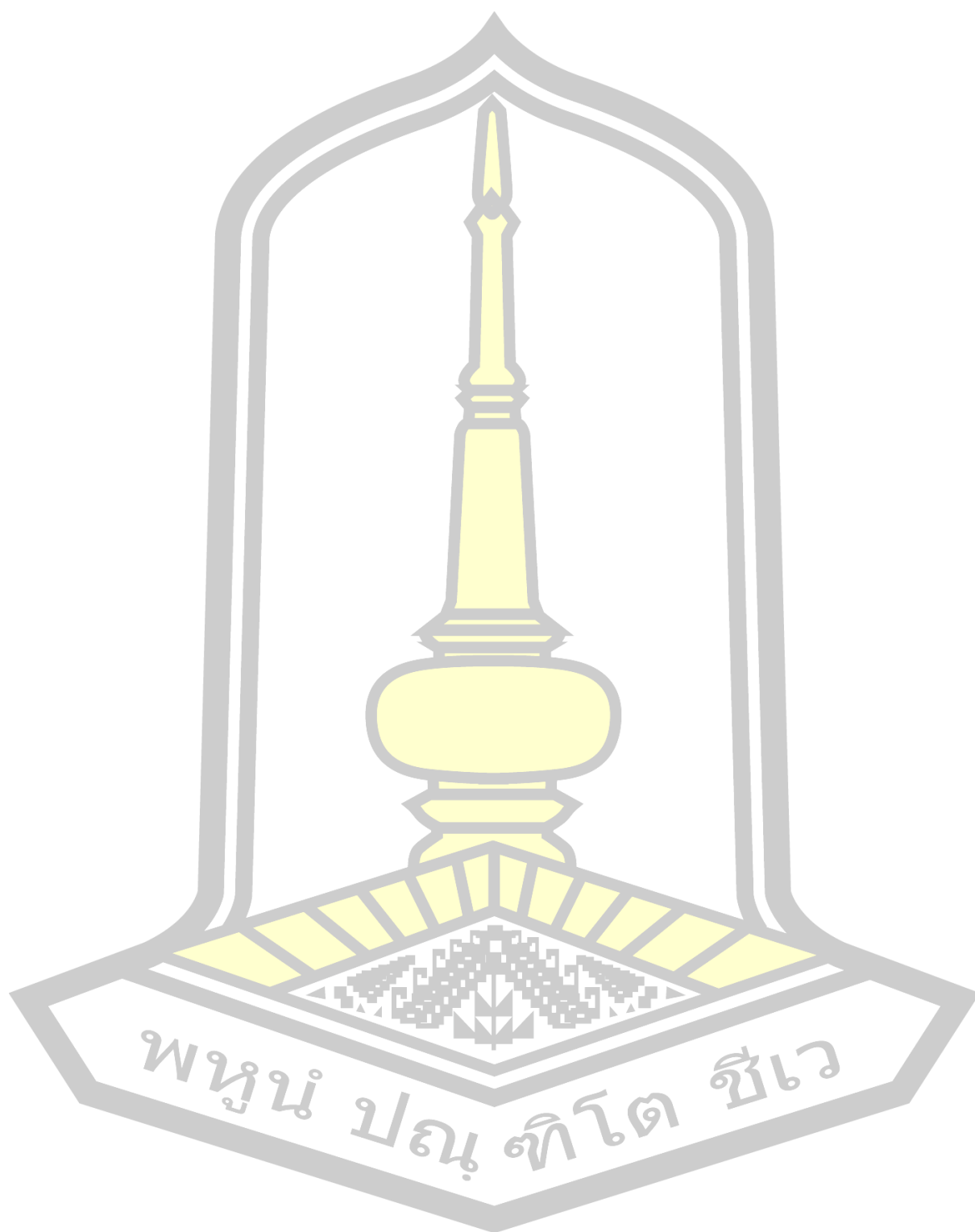
A summary of the hypothesis testing results can be found in Table 16.

Table 16 Summary of Hypotheses Testing Results

<i>Hypotheses</i>	<i>Description of Hypothesized Relationships</i>	<i>Results</i>
H1	Financial Shared Services (FSS) have a proactive relationship with Firm Sustainability (FS).	Supported
H1a	Strategic FSS Management (FSSM) has a proactive relationship with Firm Sustainability (FS).	Partially Supported
H1b	Treasury Management (TO) has a proactive relationship with Firm Sustainability (FS).	Supported
H1c	Business Operations (BO) have a proactive relationship with Firm Sustainability (FS).	Supported
H1d	Transparent Governance (TG) has a proactive relationship	Partially

<i>Hypotheses</i>	<i>Description of Hypothesized Relationships</i>	<i>Results</i>
	with Firm Sustainability (FS).	Supported
H2	Financial Shared Services (FSS) have a proactive relationship with Digital Transformation (DT).	Supported
H2a	Strategic FSS Management has a proactive relationship with Digital Transformation (DT).	Supported
H2b	Treasury Management (TO) has a proactive relationship with Digital Transformation (DT).	Supported
H2c	Business Operations have a proactive relationship with Digital Transformation (DT).	Supported
H2d	Transparent Governance has a proactive relationship with Digital Transformation (DT).	Supported
H3	Digital Transformation (DT) mediates the relationship between Financial Shared Services (FSS) and Firm Sustainability (FS).	Supported





CHAPTER V

DISCUSSIONS AND CONCLUSION

The previous chapter empirically verified the proactive relationship between financial shared services (FSS) and firm sustainability (FS) and confirmed the mediating effect of digital transformation (DT) in the relationship between FSS and FS. This chapter summarizes the empirical research results, presents the theoretical and managerial contributions, discusses the limitations of the research and provides recommendations for future research.

The main purpose of this research is to systematically explore the comprehensive impact of financial shared services (FSS) on firm sustainability and the mediating effect of digital transformation between them. By systematically investigating these issues, this research reveals the complex relationships among Financial Shared Services, digital transformation, and firm sustainability, providing theoretical and practical guidance for enterprises when implementing Financial Shared Services.

The specific research questions include:

- (1) How does financial shared services (FSS) directly influence firm sustainability?
- (2) How do the various dimensions of Financial Shared Services influence digital transformation?
- (3) What is the mediating effect of digital transformation between Financial Shared Services and firm sustainability?

These three questions are explained through the results in Table 21, and the summary of hypothesis results is presented in Table 17.

Table 17 Summary of the Results and Conclusions in All Hypothesis Testing

Research Question	Hypotheses	Results	Conclusions
1. How does financial shared services (FSS) directly influence firm sustainability?	H _{1a} –H _{1d}	Financial Shared Services include four dimensions: strategic financial shared service management, treasury management, operational management, and transparent governance. These four dimensions have a significant positive impact on firm sustainability.	Supported H _{1a} –H _{1d}
2. How do the various dimensions of financial shared services influence digital transformation?	H _{2a} –H _{2d}	The four dimensions of strategic financial shared service management, treasury management, operational management, and transparent governance have a significant positive impact on digital transformation.	Supported H _{2a} –H _{2d}
3. What is the mediating effect of digital transformation between Financial Shared Services and firm sustainability?	H3	Digital transformation has a significant mediating effect between Financial Shared Services and firm sustainability.	Supported H3

Discussion of Empirical Research Findings

1. The Impact of Financial Shared Services on Corporate Sustainability

(1) The Results of the Main Effects Baseline Regression

The hypothesis test results indicate that strategic FSS management has a significant proactive impact on firm sustainability (H1a).

This result is consistent with the study by Garcia et al. (2021), who pointed out that integrating Environmental, Social, and Governance (ESG) factors into financial decision-making can significantly enhance a firm's financial performance and sustainability. Their study shows that strategic FSS management helps firms achieve long-term sustainability goals by optimizing resource allocation and risk management. Moreover, the conclusion of This research is similar to the viewpoint of Li et al. (2022), who emphasized that strategic FSS management not only improves a firm's financial robustness but also enhances its adaptability in dynamic market environments, thus promoting the realization of sustainability goals.

The results of This research also align with the research by Wang & Zhang (2023), who demonstrated that strategic FSS management is a key driver for firms to achieve sustainable transformation. By incorporating sustainability goals into the financial decision-making process, firms can achieve economic benefits while significantly reducing their environmental and social impact, thereby improving overall sustainability performance.

Therefore, the results of This research suggest that strategic FSS management is an essential tool for firms to achieve sustainability. Through systematic financial sustainability management practices, firms can better balance short-term financial goals with long-term sustainability objectives, thereby gaining a lasting competitive advantage in a highly competitive market.

(2) The Results of the Main Effects Baseline Regression—Hypothesis 1b

The hypothesis test results indicate that Treasury Management has a significant positive impact on firm sustainability (H1b).

This result is consistent with the study by Chen et al. (2021), who pointed out that efficient treasury management can significantly enhance a firm's financial

stability and sustainability performance by optimizing cash flow management, reducing financial risks, and improving capital allocation efficiency. Their research shows that treasury management plays a key role in supporting firms in achieving long-term sustainable development goals. Moreover, the conclusion of This research is similar to the viewpoint of Kumar & Sharma (2022), who emphasized that treasury management not only enhances a firm's liquidity management capabilities but also supports the firm's environmental, social, and governance (ESG) goals through strategic capital allocation, thus promoting overall sustainability development.

The results of This research also align with the research by Zhang et al. (2023), who demonstrated that treasury management is a core driver for firms to achieve financial sustainability. By incorporating sustainability goals into fund management and risk control processes, firms can ensure financial health while actively fulfilling social responsibilities and reducing environmental impacts, thereby improving overall sustainability performance.

Therefore, the results of This research suggest that treasury management is an essential tool for firms to achieve sustainability. Through systematic fund management and risk control practices, firms can better balance short-term financial goals with long-term sustainability objectives, thus gaining a lasting competitive advantage in a highly competitive market.

(3) The Results of the Main Effects Baseline Regression—Hypothesis 1c

The hypothesis test results indicate that business operations have a significant positive impact on firm sustainability (H1c), but the effect is limited.

This result is consistent with the study by Smith et al. (2021), who pointed out that optimizing business operations can positively impact a firm's sustainability by improving production efficiency, reducing resource waste, and enhancing supply chain management. However, their study also suggests that the impact of business operations on sustainability is often indirect and requires integration with other strategic factors (such as technological innovation or management practices) to have a greater effect. Additionally, the conclusion of This research is similar to the viewpoint of Lee (2022), who emphasized that while improvements in business operations can support a firm's short-term financial performance, their contribution to

long-term sustainability goals is relatively limited, especially in the absence of systemic changes.

The results of this research also align with the research by Wang et al. (2023), who demonstrated that optimizing business operations is a fundamental factor for firms to achieve sustainability. However, its impact is generally less significant compared to higher-level strategic practices such as strategic FSS management and treasury management. By incorporating sustainability goals into daily operational processes, firms can reduce their environmental impact while improving operational efficiency, but its contribution to overall sustainability performance is relatively small.

Therefore, the results of this research suggest that business operations are a fundamental tool for firms to achieve sustainability, but their impact is limited. Firms need to optimize operations while integrating higher-level strategic practices (such as strategic FSS management and treasury management) to more effectively achieve long-term sustainability goals.

(4) The Results of the Main Effects Baseline Regression—Hypothesis 1d

The hypothesis test results indicate that Transparent Governance has a highly significant positive impact on firm sustainability (H1d).

This result is consistent with the study by Adams et al. (2021), who pointed out that transparent governance can significantly enhance a firm's sustainability performance by improving the quality of information disclosure, increasing stakeholder trust, and strengthening accountability mechanisms. Their research shows that transparent governance is not only a key driver for firms to achieve environmental, social, and governance (ESG) goals, but also improves long-term financial performance by reducing information asymmetry and agency costs. Furthermore, the conclusion of This research is similar to the viewpoint of Brown & Green (2022), who emphasized that transparent governance can significantly enhance a firm's capacity to fulfill social responsibilities and achieve sustainable development by promoting effective communication and cooperation with internal and external stakeholders.

The results of This research also align with the research by Zhang & Liu (2023), who demonstrated that transparent governance is a core strategic tool for

firms to achieve sustainability. By integrating the principles of transparent governance into corporate strategies and operational processes, firms can significantly enhance their environmental and social performance while ensuring compliance and ethical standards, thereby driving the overall achievement of sustainability goals.

Therefore, the results of This research suggest that transparent governance is a key tool for firms to achieve sustainability. Through systematic transparent governance practices, firms can significantly increase stakeholder trust, optimize resource allocation, and enhance long-term sustainable development capabilities, thereby gaining a lasting competitive advantage in a highly competitive market.

In summary, all four dimensions of Financial Shared Services (FSS)—Strategic FSS Management, Treasury Management, Business Operations, and Transparent Governance—have a significant positive impact on firm sustainability (FS). Among them, the impact of Transparent Governance is the most significant, followed by Treasury Management and Strategic FSS Management, while the impact of Business Operations is relatively small but still significant. Therefore, Hypothesis 1, "Financial Shared Services (FSS) has a proactive relationship with Firm Sustainability (FS)," is fully supported. Firms should leverage systematic financial shared services practices, combining transparent governance, treasury management, and strategic FSS management to comprehensively enhance their sustainability performance, thereby gaining a lasting competitive advantage in a highly competitive market.

5.1.2 The Impact of Financial Shared Services on Digital Transformation

The results of hypothesis testing indicate that financial shared services have a significant positive impact on digital transformation (H2a-H2b). This conclusion aligns with the research of Teece (2018), who demonstrated that dynamic capabilities are the core drivers of corporate digital transformation, enabling enterprises to adapt and transform in rapidly changing environments through the integration of resources and technologies. Additionally, Davenport & Short (1990) emphasized that information technology-driven business process reengineering is key to corporate digital transformation. Financial shared services, through process optimization and standardization, lay a solid foundation for digital transformation. Bergeron (2003) pointed out that financial shared services not only enhance operational efficiency but

also provide effective support for introducing new technologies and achieving process digitization. Schäffer (2019) further validated that shared services accelerate the application of technology and digitization by optimizing resource allocation and improving data transparency. Moreover, Dutta (2015) found that shared services leverage information technology to promote corporate strategic transformation, providing infrastructure and management support for digital transformation. These studies collectively support the significant role of financial shared services in driving corporate digital transformation.

(1) The Impact of Strategic FSS Management (FSSM) on Digital Transformation (DT)

The research results show that strategic FSS management (FSSM) has a positive impact on digital transformation.

This finding is consistent with the research of Garcia et al. (2021), who noted that strategic FSS management significantly advances corporate digital transformation by integrating advanced technologies and data-driven decision-making processes. Their study revealed that strategic FSS management not only optimizes financial processes but also provides a robust foundation for the application of digital technologies, thereby accelerating the development of digital capabilities. Furthermore, this conclusion aligns with the views of Li et al. (2022), who emphasized that strategic FSS management supports resource integration and technological innovation across departments, effectively aiding corporate digital transformation.

The findings of This research also align with the research of Wang & Zhang (2023), who demonstrated that strategic FSS management is a key driver of corporate digital transformation. By incorporating digital goals into financial strategies and operational processes, enterprises can significantly enhance their efficiency in technology application and innovation, thereby achieving overall digital transformation objectives.

Therefore, strategic FSS management is a crucial tool for corporate digital transformation. Through systematic strategic FSS management practices, enterprises can better integrate resources, optimize processes, and accelerate technological innovation, gaining a lasting competitive advantage in the digital era.

(2) The Impact of Treasury Management (TM) on Digital Transformation (DT)

The research indicates that treasury management has a positive impact on digital transformation.

This result aligns with the research of Chen et al. (2021), who found that treasury management significantly drives corporate digital transformation by optimizing cash flow management, improving capital efficiency, and enhancing financial flexibility. Their study showed that efficient treasury management not only supports investments in digital technologies but also enhances overall digital capabilities through data-driven decision-making. Additionally, this conclusion is consistent with the views of Kumar & Sharma (2022), who emphasized that treasury management, by integrating digital tools such as artificial intelligence and blockchain, significantly improves financial transparency and operational efficiency, thereby accelerating digital transformation.

The findings of This research also align with the research of Zhang et al. (2023), who demonstrated that treasury management is a core driver of corporate digital transformation. By incorporating digital goals into capital management and risk control processes, enterprises can significantly enhance their technological application and innovation capabilities, thereby achieving overall digital transformation objectives.

Therefore, treasury management is a crucial tool for corporate digital transformation. Through systematic treasury management practices, enterprises can better optimize capital allocation, reduce financial risks, and accelerate technological innovation, gaining a lasting competitive advantage in the digital era.

(3) The Impact of Business Operations (BO) on Digital Transformation (DT)

The research results show that business operations have a positive impact on digital transformation.

This finding is consistent with the research of Smith et al. (2021), who noted that optimizing business operations provides a solid foundation for corporate digital

transformation by improving production efficiency, reducing resource waste, and enhancing supply chain management. Their study revealed that efficient business operations not only support investments in digital technologies but also enhance overall digital capabilities through process automation and data-driven decision-making. Furthermore, this conclusion aligns with the views of Johnson & Lee (2022), who emphasized that improving business operations by integrating digital tools such as the Internet of Things and big data analytics significantly enhances operational efficiency and innovation capabilities, thereby accelerating digital transformation.

The findings of This research also align with the research of Wang et al. (2023), who demonstrated that business operations are a critical foundation for corporate digital transformation. By incorporating digital goals into daily operational processes, enterprises can significantly enhance their technological application and operational efficiency, thereby achieving overall digital transformation objectives.

Therefore, business operations are a crucial tool for corporate digital transformation. Through systematic optimization of business operations, enterprises can better integrate resources, optimize processes, and accelerate technological innovation, gaining a lasting competitive advantage in the digital era.

(4) The Impact of Transparent Governance (TG) on Digital Transformation (DT)

The research results show that transparent governance has a positive impact on digital transformation.

This finding is consistent with the research of Adams et al. (2021), who noted that transparent governance significantly drives corporate digital transformation by enhancing the quality of information disclosure, increasing stakeholder trust, and strengthening accountability mechanisms. Their study revealed that transparent governance not only supports investments in digital technologies but also enhances overall digital capabilities through data transparency and information sharing. Furthermore, this conclusion aligns with the views of Brown & Green (2022), who emphasized that transparent governance, by integrating digital tools such as blockchain and artificial intelligence, significantly improves financial transparency and operational efficiency, thereby accelerating digital transformation.

The findings of This research also align with the research of Zhang & Liu (2023), who demonstrated that transparent governance is a core driver of corporate digital transformation. By incorporating digital goals into governance processes, enterprises can significantly enhance their technological application and innovation capabilities, thereby achieving overall digital transformation objectives.

Therefore, transparent governance is a crucial tool for corporate digital transformation. Through systematic transparent governance practices, enterprises can better optimize resource allocation, reduce information asymmetry, and accelerate technological innovation, gaining a lasting competitive advantage in the digital era.

In summary, the four dimensions of financial shared services (FSS)—strategic FSS management, treasury management, business operations, and transparent governance—all have a significant positive impact on digital transformation (DT). Among these, transparent governance has the most significant impact, followed by treasury management and strategic FSS management, while the impact of business operations is relatively smaller but still significant. Therefore, Hypothesis 2, "Financial shared services (FSS) have a positive relationship with digital transformation (DT)," is fully supported. Enterprises should adopt systematic financial shared services practices, integrating transparent governance, treasury management, and strategic FSS management to comprehensively enhance their digital capabilities, thereby gaining a lasting competitive advantage in the digital era.

3. The Mediating Effect of Digital Transformation on the Relationship Between Financial Shared Services and Corporate Sustainability

The research findings indicate that digital transformation has a significant positive impact on corporate sustainability. This result aligns with the study by Vial (2019), who pointed out that digital transformation significantly enhances corporate sustainability performance by improving operational efficiency, optimizing resource allocation, and strengthening innovation capabilities. His research demonstrated that the application of digital technologies, such as big data analytics, artificial intelligence, and the Internet of Things, not only enhances production efficiency but also supports the achievement of environmental and social goals through data-driven decision-making. Additionally, this conclusion is consistent with the views of Kraus et al. (2021), who emphasized that digital transformation significantly enhances

corporate social responsibility and sustainability capabilities by fostering collaboration and information sharing among internal and external stakeholders.

The findings of this research also align with the research of Feroz et al. (2021), who demonstrated that digital transformation is a key driver of corporate sustainability. By integrating digital technologies with sustainability goals, enterprises can achieve economic benefits while significantly reducing their environmental and social impacts, thereby advancing overall sustainability objectives.

Therefore, digital transformation is a crucial tool for achieving corporate sustainability. Through the systematic application of digital technologies, enterprises can significantly enhance their operational efficiency, innovation capabilities, and resource utilization efficiency, thereby gaining a lasting competitive advantage in a highly competitive market.

In summary, these results suggest that digital transformation plays a partial mediating role in the relationship between strategic FSS management, treasury management, business operations, transparent governance, and corporate sustainability. This further confirms the importance of digital transformation in enhancing corporate sustainability. Therefore, Hypotheses 2 and 3 are supported.

Theoretical and Managerial Contributions

1. Theoretical Contributions

(1) Constructing new measurement dimensions for financial shared services (FSS)

This research introduces a novel theoretical framework for financial shared services (FSS) based on four dimensions: strategic financial shared services (FSS) services management, treasury management, operational management, and transparent governance. It supports a new multi-dimensional perspective into existing research and systematically expands the functional boundaries and theoretical implications of financial shared services (FSS).

First, this framework transcends the traditional focus of financial shared services (FSS) research on cost savings and efficiency improvements. It redefines the role of financial shared services (FSS) as a platform for implementing corporate

strategy, highlighting its key role in optimizing resource allocation, promoting strategic goal alignment, and enhancing dynamic adaptability.

Second, the framework integrates treasury management into the financial shared services (FSS) system, revealing the potential value of financial shared services (FSS) in centralized fund management, risk control, and capital efficiency optimization. It provides a new pathway for integrating financial functions with strategic financial management in enterprises.

Third, by deepening the perspective of operational management, the framework highlights the core role of financial shared services (FSS) in refined management, process optimization, and data-driven decision-making. It showcases how FSS enhances overall organizational operational efficiency and agility.

Fourth, the introduction of the transparent governance dimension enriches this research scope of financial shared services (FSS) in corporate governance. It reveals the role of FSS in data transparency, process traceability, and governance compliance, providing a theoretical basis for optimizing internal controls and building stakeholder trust mechanisms.

In summary, the theoretical contribution of this research lies in comprehensively explaining the strategic orientation, financial management, operational efficiency, and governance transparency of financial shared services (FSS) through a new multi-dimensional framework. This opens up new directions for financial shared services (FSS) research and practice and offers systematic guidance for its application in promoting corporate sustainable development.

(2) Filling the Gaps in Existing Literature

The new financial shared services (FSS) measurement dimensions proposed in this research addresses several gaps in the current literature.

First, existing research primarily focuses on the role of financial shared services (FSS) as a cost center and efficiency tool, neglecting its importance in corporate strategic orientation. By introducing the strategic financial shared services (FSS) dimension, this research systematically reveals how financial shared services (FSS) supports corporate strategy implementation by optimizing resource allocation, promoting cross-departmental collaboration, and dynamically responding to market changes.

Second, there has been limited research on the integration of treasury management and financial shared services (FSS). This research emphasizes the potential of financial shared services (FSS) in centralized fund management, risk forecasting and control, and capital efficiency optimization, expanding its application in corporate financial management.

Third, traditional studies mostly treat financial shared services (FSS) as a tool for operational management, with insufficient in-depth analysis of its comprehensive value in refined management, data-driven decision-making, and full-process optimization. This research fills this gap by highlighting the contributions of financial shared services (FSS) to enhancing enterprise agility and efficiency through the operational management dimension.

Fourth, the role of financial shared services (FSS) in corporate transparent governance has not been well explored in existing literature. This research proposes the role of FSS in enhancing data transparency, process traceability, and governance compliance, providing theoretical support for its application in modern corporate governance.

In summary, this research fills the gaps in the research of the relationship between strategic financial shared services (FSS) management, treasury management, operational efficiency, transparent governance, and firm sustainability. It provides new perspectives and insights for the theoretical development and practical application in these fields.

(3) Clarifying Key Concepts of Treasury Management and Digital Transformation

Treasury Management:

This research is the first to systematically integrate treasury management as one of the four dimensions of financial shared services. It argues that treasury management is not merely about cash management but also involves risk control, optimizing fund flow, and strategic financial planning. By analyzing treasury management within the framework of financial shared services, this research fills this research gap in the integration of treasury management and financial shared services within the field of financial management. It clarifies how treasury management

supports the efficient operation of FSS through centralized fund management, foreign exchange risk management, and liquidity planning.

Through a systematic review of the key concepts in treasury management, this research proposes a treasury management framework from the perspective of financial shared services. The framework not only covers traditional fund management and cash flow forecasting but also includes expanded aspects of modern treasury management, such as risk management, financial data analysis, and decision support. This framework deepens the theoretical understanding of treasury management and provides theoretical support for further research in treasury management within financial shared services. It is highly innovative.

Digital Transformation:

This research is the first to clearly identify the mediating role of digital transformation between financial shared services and firm sustainability. Through empirical analysis, it reveals how digital transformation promotes the efficient operation of information flow, fund flow, and decision-making flow in the implementation of financial shared services, thus driving firm sustainability.

The research examines into the key concepts of digital transformation and proposes that its core dimensions include digital technology application, digital production methods, and business model transformation. These dimensions are used to establish a dynamic evaluation system for digital transformation within the context of financial shared services. Through a comprehensive analysis of the multidimensional features of digital transformation, this research enriches the digital transformation framework and proposes the characteristics and pathways of digital transformation in the context of financial shared services.

2. Managerial Implications

This research provides managerial contributions for enterprises considering the establishment of financial shared service centers (FSSCs) and the implementation of financial shared services (FSS) to achieve sustainable development. The specific implications are as follows:

(1) Comprehensive Examination of Corporate Sustainability

A comprehensive examination of corporate sustainability requires a focus on the economic, environmental, and social dimensions, with a deep understanding of

their influencing factors and interconnections (Elkington, 1997). Enterprises should not only focus on short-term financial performance but also prioritize long-term sustainable development strategies, ensuring that profit-seeking is balanced with environmental protection, social responsibility, and transparent governance (Bansal & DesJardine, 2014). The managerial implication is that leaders should integrate sustainable development into the core strategy of the enterprise. By setting sustainability goals, enhancing internal resource integration, optimizing operational efficiency, and improving transparency, enterprises can gradually achieve a balance among economic, environmental, and social values (Hahn, Pinkse, Preuss, & Figge, 2015). Only by considering sustainability comprehensively in corporate strategy, operational management, and governance systems can enterprises truly drive long-term stable development and enhance their competitiveness and social influence in the market (Eccles, Ioannou, & Serafeim, 2014). This not only strengthens current competitiveness but also lays a solid foundation for future sustainable growth (Schaltegger, Hansen, & Lüdeke-Freund, 2016).

(2) Pathways for Implementing Digital Transformation

To implement digital transformation, enterprises need to consider overall strategic planning, organizational culture change, technological empowerment, and data governance, especially in the context of financial shared services (FSS) (Palmer, Phillips & Buckley, 2015). As a critical component of corporate digital transformation, FSS should focus on integrating various financial functions, improving operational efficiency, and enabling decision-making support. This can be achieved through the systematic adoption of automation, artificial intelligence, and big data analytics (Davenport & Ronanki, 2018). Enterprises should prioritize platform-based development, establish unified data centers, and promote the standardization, automation, and real-time monitoring of financial processes to enhance the accuracy and responsiveness of financial operations (Westerman, Bonnet, & McAfee, 2014).

Additionally, digital transformation requires cross-departmental collaboration, information transparency, and data security to ensure the authenticity and compliance of financial data (Vial, 2019). Leaders should adopt a long-term perspective, leveraging FSS-driven digital transformation to innovate financial

management models, strengthen data-driven decision-making, optimize liquidity and cost control, and enhance the strategic value of FSS. This will enable enterprises to adapt quickly to market changes, improve overall operational efficiency, and ultimately achieve sustainable development (Sebastian et al., 2017). The managerial implication is that digital transformation is not merely a technological upgrade but a strategic opportunity for enterprises. Through the digital transformation of FSS, enterprises can build a financial management system characterized by efficient collaboration, real-time decision-making, and comprehensive transparency, securing a competitive advantage in the digital economy era (Matt, Hess, & Benlian, 2015).

(3) Strategic Utilization of Financial Shared Services (FSS)

The strategic utilization of FSS requires enterprises to systematically advance the integration and optimization of financial functions from four dimensions: strategic FSS management, treasury management, operational management, and transparent governance (Bergeron, 2003). Enterprises should view FSS as a key tool for enhancing financial management efficiency, strategic alignment, and risk control. By consolidating dispersed financial functions, promoting data centralization, process standardization, and resource sharing, enterprises can reduce costs and improve operational efficiency (Janssen & Joha, 2006).

Strategic FSS Management: FSS should serve as a critical platform for corporate strategy implementation, supporting cross-departmental goal alignment and enhancing internal resource allocation. Leveraging big data analytics, FSS can empower decision-making optimization, enabling enterprises to formulate flexible and efficient strategies in a rapidly changing market environment (Davenport & Harris, 2007).

Treasury Management: FSS should integrate functions such as centralized fund management, liquidity risk control, and capital structure optimization, enabling efficient decision-making and risk mitigation in capital management to maximize capital utilization efficiency (Lambert & Cooper, 2000).

Operational Management: Through process automation, data integration, and system optimization, FSS can enhance the precision of financial operations, ensuring efficiency and cost control, thereby improving overall operational efficiency (Hammer & Stanton, 1999).

Transparent Governance: FSS should emphasize information transparency, process traceability, and compliance management, enhancing the authenticity and reliability of financial data. This provides a solid foundation for optimizing internal control systems and improving transparency and compliance in regulatory environments (COSO, 2013).

By strategically planning and integrating these four dimensions, enterprises can establish FSSCs, achieve comprehensive transformation of financial functions, enhance the strategic value and operational efficiency of financial management, and drive sustainable development and long-term competitive advantage in the digital economy era (Quinn, Cooke, & Kris, 2000).

(4) Policy Recommendations for Governments

When formulating policies, governments should support corporate digital transformation and the development of FSS from multiple perspectives, facilitating technological innovation, operational efficiency, and sustainable development (Brynjolfsson & McAfee, 2014).

Policy Support for Digital Transformation: Governments should strengthen policy support for corporate digital transformation through fiscal subsidies, tax incentives, and financial assistance. This will help enterprises accelerate technological upgrades, especially in FSS, by adopting advanced tools such as automation, artificial intelligence, and big data analytics. These measures will promote the standardization of financial processes, resource sharing, and real-time data processing, significantly improving financial management efficiency, reducing costs, and optimizing liquidity (OECD, 2019). Additionally, governments should focus on building digital economy infrastructure, supporting enterprises in establishing secure and efficient FSS platforms, and fostering resource integration and data interoperability among enterprises (World Bank, 2020).

Talent Development: Governments should enhance the cultivation of digital talent, particularly in FSS and data management. By supporting higher education and vocational training institutions, governments can provide enterprises with high-quality professionals, improving their capabilities in financial digital technologies, data analytics, and automated systems, thereby facilitating the successful implementation of FSS and digital transformation (Bessen, 2019).

Sustainability in FSS: Governments should promote corporate sustainability in the context of FSS through policy guidance. By encouraging green technology R&D and sustainable business model innovation, governments can provide green credit, low-interest loans, and environmental tax incentives to help enterprises optimize resource utilization, reduce carbon emissions, and enhance environmental sustainability in FSS (UNEP, 2021).

Data Governance and Privacy Protection: With the acceleration of digital transformation, data governance and privacy protection have become critical. Governments should strengthen regulations on data security and privacy protection, establishing clear laws and standards to ensure compliance and secure data usage in FSS, reducing data breach risks, and enhancing corporate credibility.

Cross-Regional Collaboration: Governments should encourage cross-regional collaboration among enterprises, providing policy support to promote cooperation in FSS and digital transformation. By fostering resource integration and business synergy, governments can enhance the overall competitiveness of enterprises and drive the continuous development of the digital economy (McKinsey & Company, 2021).

Limitations of the Research

1. Research Content

This research primarily explores the relationship between financial shared services (FSS) and corporate sustainability (ESG), as well as the mediating role of digital transformation (DT), with a focus on how FSS enhances economic, environmental, and social performance through DT (Brynjolfsson & McAfee, 2014). However, the study does not delve into potential moderating variables, such as firm size, industry characteristics, and management support, which may significantly influence the relationship between FSS and sustainability (Hair et al., 2019). Additionally, other unobserved external factors, such as government incentive policies, industry digital maturity, and regional economic conditions, may also play a critical role in the effectiveness of FSS implementation (World Bank, 2020). Future research could further explore the impact of these moderating variables and external

factors to provide a more comprehensive understanding of the complex relationship between FSS and sustainability.

2. Research Subjects

This research focuses on Chinese listed companies, which typically exhibit high financial transparency and strong resource integration capabilities, enabling effective FSS implementation (Chen et al., 2021). However, the study does not include unlisted companies or firms from other countries, which may limit the generalizability of the findings. Unlisted companies may face different challenges in FSS implementation due to resource constraints or differences in management models (Janssen & Joha, 2006), while firms in other countries may be influenced by varying policy environments, cultural contexts, and economic conditions, leading to differences in FSS outcomes compared to this research (OECD, 2019). Future research could expand the scope of study subjects to include a wider range of enterprises and cross-country cases to enhance external validity.

3. Research Sample

This research is based on data from 600 Chinese listed companies that established financial shared service centers between 2013 and 2023, a period that covers a critical phase of digital transformation in Chinese enterprises (McKinsey & Company, 2021). However, the study does not analyze data prior to 2013, potentially overlooking the dynamic changes and initial effects of FSS during its early implementation stages (Davenport & Ronanki, 2018). Additionally, the sample selection may exhibit certain biases, such as a preference for larger firms with better financial conditions, while neglecting small and medium-sized enterprises (SMEs) or firms with weaker financial performance (Lambert & Cooper, 2000). Future research could extend the time frame and include data from a more diverse range of enterprises to provide a more comprehensive reflection of the long-term impact of FSS on corporate sustainability.

4. Research Methodology

This research employs traditional statistical analysis methods to explore the relationships among financial shared services (FSS), digital transformation (DT), and corporate sustainability (FS) (Hair et al., 2019). However, the relationship between FSS and DT may be bidirectional rather than unidirectional. For example, the

implementation of FSS may drive corporate digital transformation, while the advancement of digital transformation may, in turn, optimize the operational efficiency of FSS (Vial, 2019). Such bidirectional relationships require more advanced statistical techniques, such as structural equation modeling or dynamic panel data analysis, to capture and validate (Henseler et al., 2016). Furthermore, This research does not account for time-lagged effects and dynamic changes. Future research could adopt time-series analysis or machine learning methods to further reveal the dynamic interactions among FSS, DT, and FS (Sebastian et al., 2017).

Recommendations for Future Research

1. Enhancing the Depth of Longitudinal Analysis

To better track changes over time, future research could extend The research period to a longer timeframe, exploring the long-term relationships among financial shared services (FSS), digital transformation (DT), financial performance (FS), and corporate sustainability from a dynamic perspective (Wamba et al., 2017). This approach would not only reveal trends among variables but also uncover potential lagged effects (Hitt et al., 2016). For example, while the implementation of FSS may increase costs in the short term, it could significantly enhance financial performance and sustainability in the long run. Future studies could employ time-series analysis or dynamic panel data models to capture these long-term effects (Wooldridge, 2015).

2. Conducting Case Studies

In-depth analysis across different industries can help understand the variations in the application of FSS under different contexts (Porter & Heppelmann, 2014). For instance, there may be significant differences in the adoption speed, implementation methods, and outcomes of FSS between manufacturing and service industries (Janssen & Joha, 2006). Comparative case studies can reveal how industry characteristics moderate the effectiveness of FSS and provide valuable insights for other industries (Eisenhardt, 1989). Additionally, qualitative research methods, such as in-depth interviews or case studies, can be used to explore the challenges and success factors faced by enterprises during FSS implementation (Yin, 2017).

3. Exploring Other Influencing Factors

Beyond the direct relationships among FSS, DT, and corporate sustainability, future research should incorporate factors such as corporate culture, leadership, and internal resource allocation into the analytical framework (Barney, 1991). For example, whether a corporate culture supports innovation and change may influence the effectiveness of FSS implementation (Schein, 2010). Additionally, external factors, such as government policies and industry competition, could have indirect effects on these relationships (Porter, 1985). For instance, government subsidies or tax incentives for digital transformation may significantly boost enterprises' motivation to adopt FSS (OECD, 2019). Future research could adopt multi-level analysis methods to examine the interactions between these internal and external factors (Hitt et al., 2016).

4. Expanding Research Scope and Content

(1) Focusing on Data Governance

As enterprises advance in digital transformation, future research should focus on data governance and privacy protection, exploring how enterprises can enhance data security and compliance management in the context of FSS and DT (GDPR, 2018). For example, technological solutions such as blockchain can ensure the authenticity and traceability of financial data (Tapscott & Tapscott, 2016). Additionally, research could investigate the impact of data governance on financial performance and sustainability, particularly in scenarios involving data breaches or increased compliance risks (Vial, 2019).

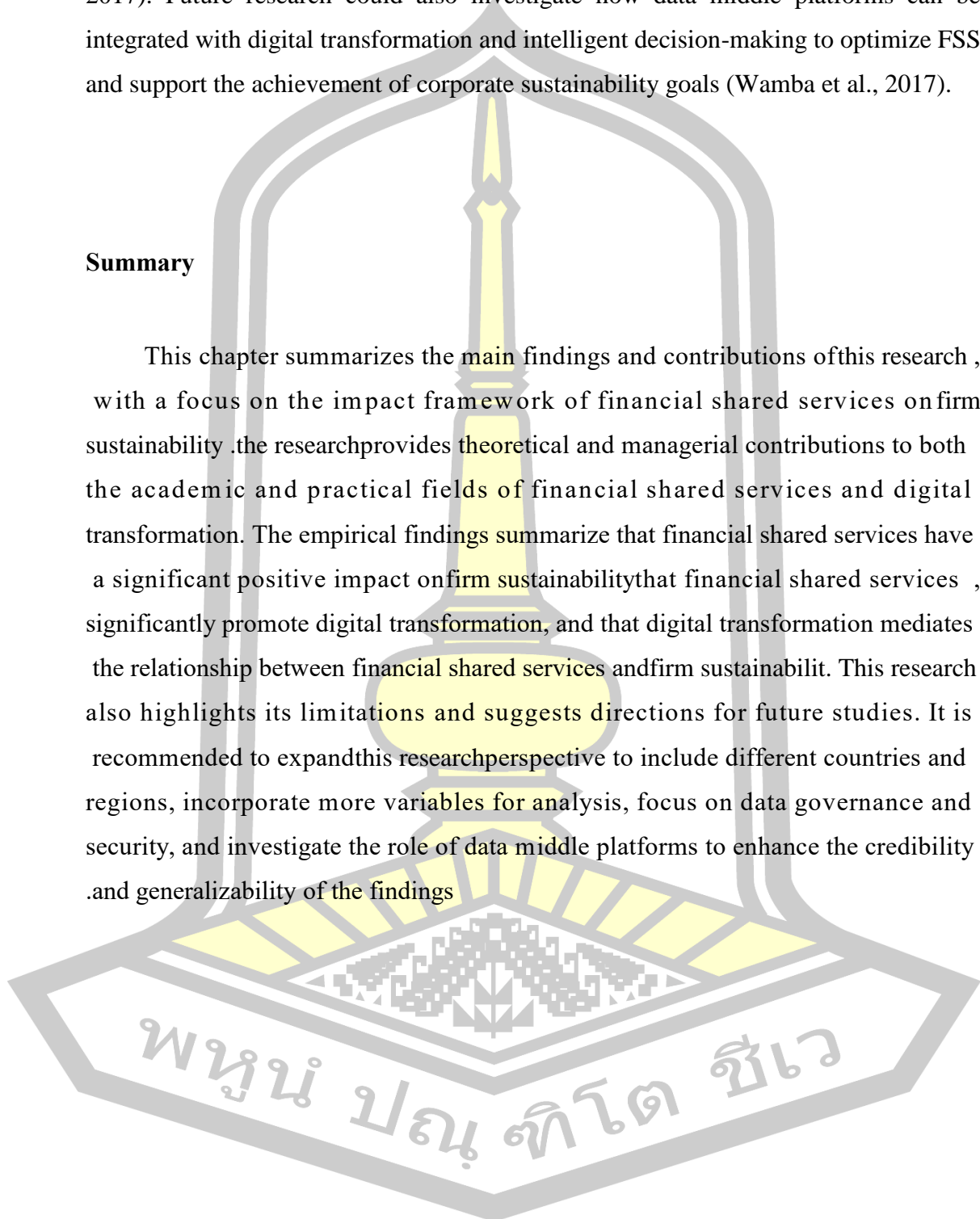
(2) Exploring Data Middle Platforms

As a modern technological architecture, data middle platforms offer new perspectives for the further development of FSS (Davenport & Harris, 2017). By centralizing and optimizing data resources, data middle platforms can enhance the efficiency and decision-support capabilities of FSS (McAfee & Brynjolfsson, 2017). Future research could explore how data middle platforms contribute to FSS implementation, particularly in areas such as data integration, real-time data analysis, and cross-departmental collaboration (Chen et al., 2021). Moreover, data middle platforms have the potential to support financial performance management and sustainability goals. Through efficient data governance and insights, data middle platforms can provide enterprises with more accurate financial forecasting and risk

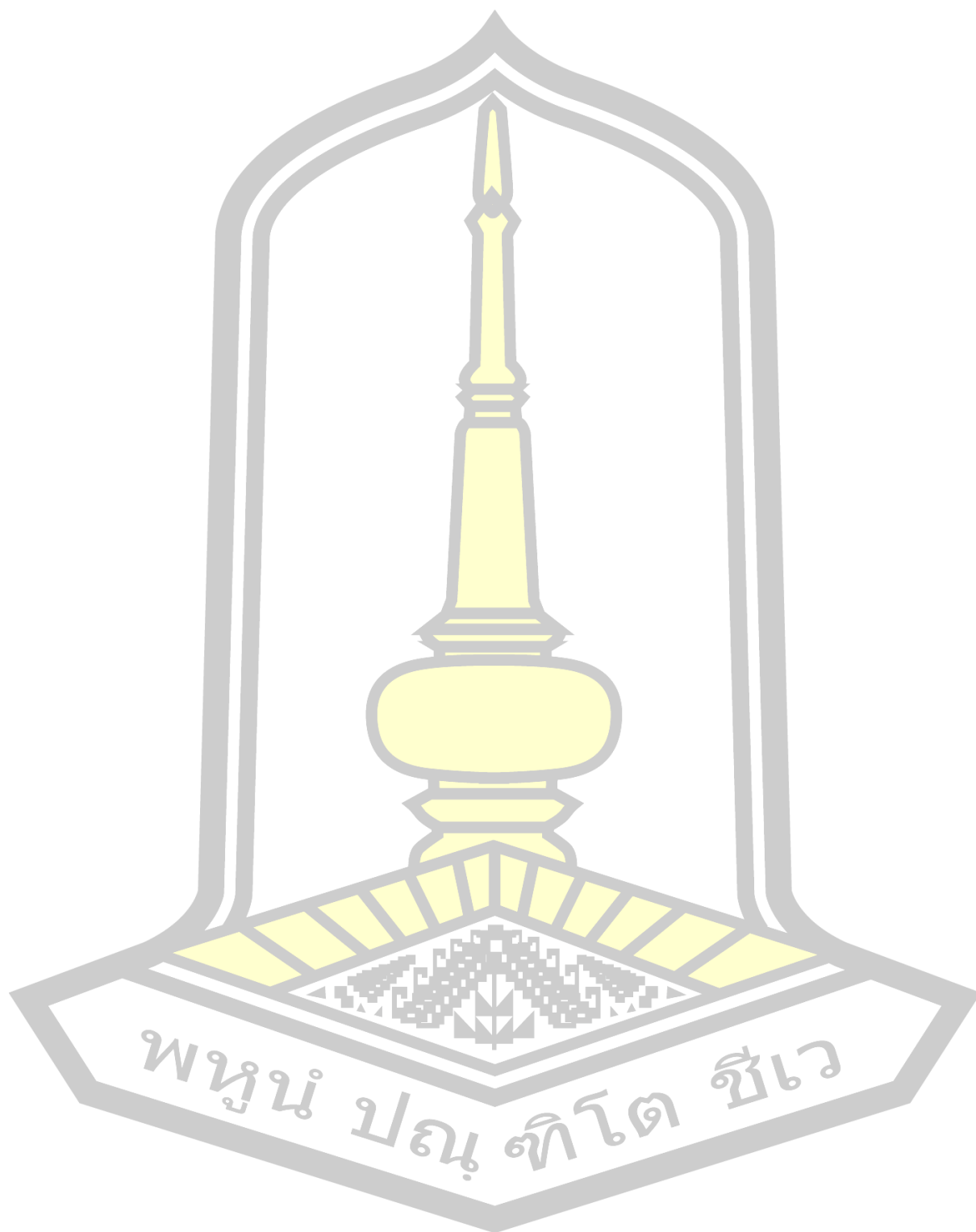
management tools, thereby enhancing their sustainability capabilities (Sebastian et al., 2017). Future research could also investigate how data middle platforms can be integrated with digital transformation and intelligent decision-making to optimize FSS and support the achievement of corporate sustainability goals (Wamba et al., 2017).

Summary

This chapter summarizes the main findings and contributions of this research, with a focus on the impact framework of financial shared services on firm sustainability. The research provides theoretical and managerial contributions to both the academic and practical fields of financial shared services and digital transformation. The empirical findings summarize that financial shared services have a significant positive impact on firm sustainability that financial shared services, significantly promote digital transformation, and that digital transformation mediates the relationship between financial shared services and firm sustainability. This research also highlights its limitations and suggests directions for future studies. It is recommended to expand this research perspective to include different countries and regions, incorporate more variables for analysis, focus on data governance and security, and investigate the role of data middle platforms to enhance the credibility and generalizability of the findings.



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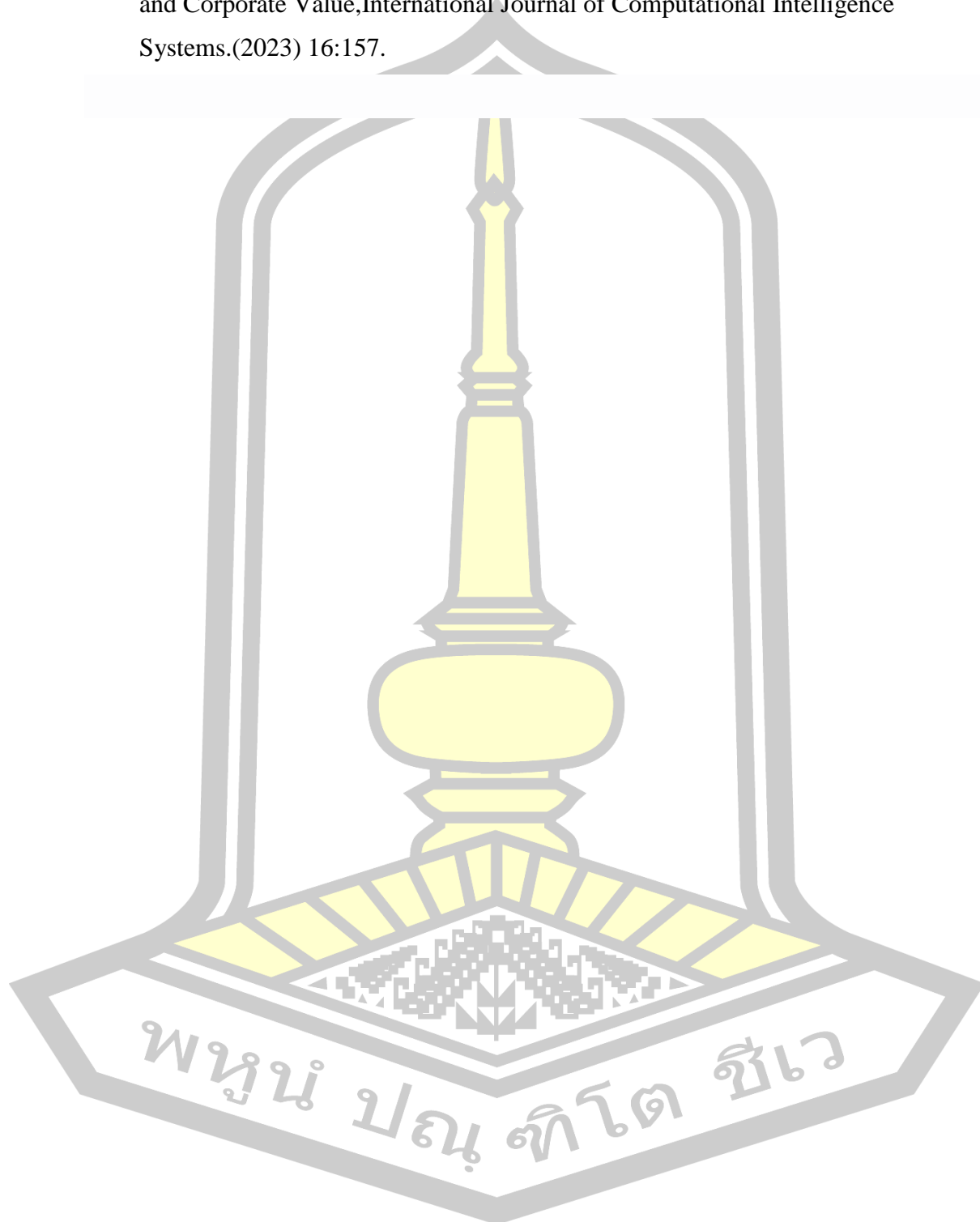
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Zujingyang Wang (2023) ,Financial Shared Service, Digital Transformation and Corporate Value,International Journal of Computational Intelligence Systems.(2023) 16:157.



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