THE IMPACT OF MANAGERIAL ABILITY ON DEBT FINANCING CONSTRAINTS OF CHINESE FIRMS: THE MODERATING EFFECT OF DIGITAL TRANSFORMATION

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by

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

REM	Random Effects Model
FEM	Fixed Effects Model
CEM	Common Effect Model
POLS	Pooled Ordinary Least Squares
OLS	Ordinary Least Squares
LSDV	Least Squares Dummy Variable
GLS	Generalized Least Squares
2SLS	Two-stage Least Squares

KESAN KEUPAYAAN PENGURUSAN TERHADAP KEKANGAN PEMBIAYAAN FIRMA DI CHINA: KESAN PENYEDERHANAAN TRANSFORMASI DIGITAL

ABSTRAK

Dalam konteks ketidaktentuan ekonomi China yang semakin meningkat dan pendigitalan yang pesat, kajian ini bersandarkan kepada Teori Isyarat dan Teori Kebergantungan Sumber untuk menyiasat kesan keupayaan pengurusan terhadap kekangan pembiayaan hutang korporat. Kajian ini seterusnya mengkaji peranan penyederhanaan transformasi digital dalam hubungan ini. Analisis ini menggunakan set data panel bagi 4,151 firma tersenarai A-share China dari tahun 2011 hingga 2023, yang merangkumi 30,611 pemerhatian firma-tahun. Hasil kajian menunjukkan bahawa keupayaan pengurusan mengurangkan kekangan pembiayaan hutang korporat secara signifikan, menyokong pandangan bahawa CEO yang berkeupayaan tinggi berfungsi sebagai isyarat positif kepada pemiutang. Selain itu, kesan ini lebih ketara bagi firma dengan tahap transformasi digital yang lebih tinggi, menandakan bahawa transformasi digital menguatkan peranan isyarat keupayaan pengurusan. Kajian ini menyumbang kepada literatur mengenai pembiayaan hutang korporat dengan mengetengahkan kepentingan untuk menarik bakat pengurusan yang berkebolehan tinggi dan mempercepat transformasi digital. Kedua-duanya membawa implikasi praktikal yang penting bagi membolehkan firma-firma China untuk mengurangkan kekangan pembiayaan hutang secara proaktif.

THE IMPACT OF MANAGERIAL ABILITY ON DEBT FINANCING CONSTRAINTS OF CHINESE FIRMS: THE MODERATING EFFECT OF DIGITAL TRANSFORMATION

ABSTRACT

In the context of China's escalating economic uncertainty and rapid digitalization, this study draws upon Signaling Theory and Resource Dependency Theory to investigate the impact of managerial ability on corporate debt financing constraints. This study further examines the moderating role of digital transformation in this relationship. The analysis employs a panel dataset of 4,151 Chinese A-share listed firms from 2011 to 2023, comprising 30,611 firm-year observations. The results show that managerial ability significantly alleviates corporate debt financing constraints, supporting the view that highly capable CEOs serve as a positive signal to creditors. Moreover, this effect is more pronounced for firms with a higher degree of digital transformation, indicating that digital transformation amplifies the signaling role of managerial ability. This study contributes to the literature on corporate debt finance by highlighting the importance of attracting highly capable managerial talent and accelerating digital transformation. Both carry important practical implications for enabling Chinese firms to proactively mitigate debt financing constraints.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Financing plays an essential role in the economic activities of businesses and has long been a point of academic attention (Hadlock & Pierce, 2010; Myers & Majluf, 1984). Within a financial system predominantly controlled by banks, debt financing serves as a crucial mechanism for businesses to obtain funds, constituting a major component of firms' financing. Unlike equity financing, which dilutes ownership stakes, debt financing allows existing shareholders to retain full control, often making it a primary financing vehicle for many established corporations. Given its importance, the cost of debt financing has become a key financial metric, serving as the foundation for numerous financing decisions (Easley & O'Hara, 2004). An extensive body of literature has addressed this issue because the perfect capital market allows businesses to pursue profitable investment projects without additional costs due to the ability to raise external funds (Modigliani & Miller, 1958). Nevertheless, the real-world capital market's limitations, including factors like monetary policy (Al-Hadi & Al-Abri, 2022), information asymmetry (Cheng et al., 2014), political connections (Cull et al., 2015), and agency conflicts (Almeida & Wolfenzon, 2006), often lead to external financing being more expensive than internal funds (Myers & Majluf, 1984). These higher costs ultimately give rise to debt financing constraints (Kaplan & Zingales, 1997).

Financial constraints are known to negatively affect firms' innovation (Zhan & Zhu, 2021; Zhou & Li, 2023) and investment (Liu & Lin, 2018). Given the importance of financing in supporting corporate growth, this study investigates the driving factors behind financial constraints, with a particular focus on the role of the CEO. Effective corporate governance practices significantly influence the firm's strategic decisions, such as increasing debt financing and reducing debt financing costs, which are crucial for a company's success (Bajagai et al., 2019). Effective corporate governance aims to align the interests of managers with those of stakeholders, mitigating potential agency conflicts (Claessens, 2006). According to modern corporate finance theories, the importance of corporate governance stems from the potential conflicts of interest among various stakeholders (Agyei & Owusu, 2014). Good corporate governance strategies can strengthen a corporation's performance over the long term (Oh et al., 2017) and thus affect firms' debt financing.

With the rapid advancement of digital technology, the twenty-first century has been defined by a digital revolution, under which firms are experiencing unprecedented transformation. Data resources have now become the key driver of production. Some countries have successively promulgated plans to promote digital transformation, such as the 'The Federal Big Data Research and Development Strategic Plan' in the United States, 'Digital Strategy 2025' in Germany, and 'Outline of Digital Economy Development Strategy' in China, and countries strive to establish a digital innovation ecosystem and claim dominance in the digital realm (Du & Wang, 2023).

Recognizing the potential benefits of digitization is an important challenge for academic research and policymakers because the digital revolution is different from previous revolutions. This revolution is more inclusive, foundational, and its effects are more profound and expansive (Xu et al., 2023). As a significant contributor to economic prosperity, the digital economy has injected new impetus into global business development. Several academics have emphasized the beneficial impact of advancing digital transformation in enhancing financial stability, promoting sustainable development, narrowing the gap between urban and rural areas, upgrading industrial configurations, and expanding employment, among other benefits (Agarwal & Chua, 2020; Autor & Salomons, 2018).

However, building on these premises, the successful implementation of a digital strategy is contingent upon effective management. Developing an effective strategy demands more than digital resources; it necessitates effective leadership and superior managerial ability (Besson & Rowe, 2012). Accordingly, this research utilizes an extensive dataset of Chinese listed firms to investigate how different managerial abilities of chief executive officers (CEOs) affect debt financing constraints and whether this relationship is moderated by corporate digital transformation.

1.2 Background of the Study

1.2.1 Debt Financing Constraints in China

Debt financing constraints refer to the limitations that prevent firms from obtaining sufficient debt capital at a reasonable cost (Carreira & Silva, 2010). China's economy is entering a new phase of high-quality development, and traditional industries are facing urgent industrial transformation and upgrading requirements. As market participants, they require continuous investment in talent acquisition, technological innovation, and capital improvements, all of which intensify their demand for funding (Xu et al., 2023).

In its role as an emerging economy, China's institutional framework is distinct from the Anglo-American system (Komal et al., 2021). The system is characterized by concentrated ownership, significant government involvement, reduced investor protections, a fragile legal infrastructure, and a two-tier board system. Chinese firms typically face higher transaction costs and fewer financing channels owing to their underdeveloped institutional systems (Liu et al., 2014). In particular, although Chinese banks are the most important debt financing channel for domestic enterprises, their efficiency is relatively low, as their lending behavior is subject to government intervention and restrictions (Cong et al., 2019). Between 2012 and 2018, around 70% of medium-term and long-term loan balances were held by the seven largest publicly owned banks, with their dominance further expanding to 80% in the following years (Shi et al., 2023). As a result, lending behavior is frequently shaped by various government policies, ultimately leading to inefficient fund allocation and exacerbating the debt financing constraints faced by firms.

In summary, since the availability and efficiency of corporate financing are essential for economic prosperity, understanding how to alleviate debt financing constraints is of paramount importance, particularly in the case of China, which is undergoing significant economic transformation (Jia & Zhang, 2011).

1.2.2 Managerial Ability in China

1.2.2(a) CEOs' education level in China

Above all, as outlined in Article 54 of the 2002 Corporate Governance Code by the Chinese Securities Regulatory Commission, educational background is recognized as an essential component, alongside professional qualifications and experience (Bilal et al., 2023). According to the China Economic and Financial Research Database, the proportion of CEOs with a master's degree or above in Chinese listed companies has increased from 38.33% in 2009 to 50.33% in 2022. The upward trend in the proportion of CEOs with higher education underscores the growing importance of educational background and further reflects the continuous strengthening of corporate governance in China's capital market.

Additionally, in response to the talent requirements of the 14th Five-Year Plan's economic objectives (2021-2025), the government has implemented proactive strategies to incentivize superior Chinese managers and CEOs to pursue further education, thereby bolstering firm competitiveness and overall performance (Shahab et al., 2020).

Overall, with its multitude of regional cultures and broad spectrum of education levels throughout the country (Luo et al., 2021), China provides an ideal context to investigate the signaling role of CEOs' education attributes in alleviating debt financing constraints.

1.2.2(b) CEOs' foreign experience in China

First and foremost, since the 1970s, the number of Chinese students enrolling in international education has grown, reaching 1.55 million in 2012. Many studies have been conducted in developed countries such as the United Kingdom and the United States, where the majority of individuals gain valuable foreign work experience after completing their studies. As China's economy develops, the number of returnees increased from 5,000 in 1995 to 272,900 in 2012 (Zhang et al., 2018). Nonetheless, the top management of Chinese corporations had historically exhibited a significant deficiency in foreign experience (Lau et al., 2016).

Due to the national developments, institutions are carrying out the government's Thousand Talents Plan, which was initiated at the end of 2008. This program aims to encourage Chinese managers with international experience to return and leverage the knowledge acquired abroad, particularly in fields of strategic management and corporate governance (Elmagrhi et al., 2019; Shahab et al., 2018; Yuan & Wen, 2018). The Thousand Talents Plan plays a pivotal role in shaping China's evolving economic environment, with Chinese returnees integrating diverse organizations and contributing to strategic policy formulation (Shahab et al., 2020).

More specifically, amid the ‘brain gain’ trend, China’s status as the world’s second-largest economy, coupled with its rapid economic expansion and diverse career opportunities, has made it an attractive destination for returnee talent. The number of Chinese students studying abroad increased significantly, rising from 450,900 in 2020 to 661,200 in 2022 (Zhang & Dong, 2023).

1.2.2(c) CEOs' financial expertise in China

The majority of CEOs in the Financial Times Stock Exchange 100 Index possess backgrounds in finance and accounting, whereas approximately 30% of Fortune 500 CEOs likewise have strong foundations in finance. More specifically, in China, prior studies also reported that among 3,373 listed companies in 2015, 411 CEOs (12%) possessed prior professional experience in finance (Yang et al., 2021). CEOs with financial expertise possess unique perspectives derived from their backgrounds in finance, which may lead them to adopt distinct strategic decisions that ultimately enhance overall corporate performance. The growing prevalence of financial expert CEOs has spurred increasing scholarly attention, thereby becoming a prominent topic in the literature.

1.2.3 Digital Transformation in China

China has been making ongoing efforts for the past decade to advance the integration of digital technologies with the real economy. China's digital economy has expanded from RMB 9.5 trillion in 2011 to RMB 55 trillion in 2023, and its share of GDP has risen from 20.3% to over 40% during this period (He et al., 2024). Specifically, the added value of China’s fundamental digital economy industries reached RMB 12.75 trillion in 2023, accounting for 9.9% of GDP. As China enters a "new normal" stage, where growth rates steadily decline, the digital economy has become a crucial tool for China in its pursuit of becoming a high-quality, innovative nation (Zhai et al., 2022). Meanwhile, achieving sustainable economic growth is a key priority of China's economic and social progress during the Fourteenth Five-Year Plan period (2021–2025) and beyond, and is closely aligned with the overall perspective of socialist modernization (Sang et al., 2024).

Positioning digitalization as a key pathway to achieving sustainable economic development has become a central objective of the Fourteenth Five-Year Plan, which emphasizes "accelerating digital development and building a digital China" (Du & Wang, 2023), thereby gradually facilitating the implementation of corporate digital transformation.

More specifically, digital transformation is a step-by-step process that can be broken down into three stages: turning analog data into storable digital formats, utilizing artificial intelligence to make business processes more efficient, and transforming the strategic business framework (Verhoef et al., 2021). Chinese companies are primarily engaging in digital transformation through automation, which converts analog information into digital data, and the application of artificial intelligence, which streamlines business processes (Wang & Du, 2022).

Consequently, the study of digital transformation, particularly with regard to deep organizational transformation, has emerged as a prominent focus in the era of the digital economy.

1.3 Scope of the Study

As the world's most influential emerging economy, China provides an ideal context for investigating the impact of CEOs' specific managerial abilities on corporate financing behavior within a rapidly digitalizing capital market.

On the one hand, in developing countries, firms face more financial constraints due to imperfect markets (Lee & Wang, 2021; Wen et al., 2022). The main avenue of funding for firms is indirect financing, with bank loans being the most common method (Stiglitz & Weiss, 1981). The state-owned banking system has long discriminated against small and medium-sized enterprises (SMEs) in China, with commercial banks in particular treating enterprises unequally due to severe information asymmetries, thereby limiting SMEs' access to the capital market (Lee & Lee, 2022).

On the other hand, concentrating on China as a research topic is particularly insightful because China is undergoing a significant economic transformation alongside a boom in digital financial technology (Du & Wang, 2023). However, the gap between China and developed economies in digital development has gradually diminished; certain disparities still exist (Du & Wang, 2023). By comparison, China's digital development has primarily focused on the digital resources generated by these technologies, particularly standardized forms of knowledge such as the internet and websites, largely as a result of financial repression and dependence on replicated technologies (Guo et al., 2023). Moreover, the substantial debt financing constraints faced by many Chinese listed companies may hinder investment in advanced or customized digital technologies, thereby limiting the depth of corporate digital transformation (Du & Wang, 2023). Finally, the availability of comprehensive data on Chinese listed companies provides an opportunity to examine whether acquired managerial abilities and digital transformation jointly contribute to alleviating debt financing constraints.

Therefore, this study focuses on Chinese listed companies over the period 2011–2023. The scope is restricted to non-financial firms, as financial institutions are subject to unique regulatory frameworks and capital structures that differ from those of other industries. The analysis primarily draws on firm-level data obtained from the CSMAR database. This study first examines how specific managerial abilities of CEOs, namely educational level, foreign experience, and financial expertise, influence corporate debt financing constraints and further investigates whether this relationship is moderated by digital transformation.

1.4 Motivation of the Study

While a substantial body of literature has examined the relationship between CEOs' managerial ability and debt financing constraints, these studies exhibit several key limitations.

First, the majority of these studies have been carried out in developed markets (Lema et al., 2021; Haryanto et al., 2021; Sun et al., 2016), whereas this issue remains underexplored in the context of emerging markets. Owing to the disparities in accounting standards and economic institutions between China and developed markets, the findings from developed markets may not be directly generalizable (Du et al., 2014; Elmagrhi et al., 2019; Shahab et al., 2018, 2019). Therefore, existing research based on data collected in developed markets may not be readily applicable to developing countries (Shahab et al., 2018, 2019). This gap has hindered a comprehensive understanding of the drivers of financial constraints and therefore warrants further investigation. Accordingly, this study examines the impact of CEOs' managerial ability on debt financing constraints within the Chinese context.

Second, more recent literature tends to concentrate on isolated CEO attributes, such as CEO gender (Elmagrhi et al., 2019), CEO age (Andreou et al., 2017), CEO tenure (Baatwah et al., 2015), CEO political connections (Deng et al., 2019; Shen & Lin, 2016), CEO confidence (Tang & Chang, 2024), CEO duality (Krause et al., 2014; Yu, 2023), CEO personality (McClelland et al., 2010), CEO nationality (Saidu, 2019), which have been recognized in previous studies as crucial determinants of firm performance. This study extends the previous research by constructing and empirically examining a composite measure of CEOs' managerial ability. More specifically, this study broadens the focus from a single CEO trait to a more comprehensive combination of personal attributes that collectively constitute CEOs' managerial ability (Coff & Kryscynski, 2011; Miller et al., 2015), including education level, foreign experience, and financial expertise, which are both objectively measurable and empirically reliable. This multi-faceted approach enriches the theoretical perspectives discussed above and provides a more holistic understanding of how CEOs' managerial characteristics influence a firm's access to debt financing.

Third, most existing studies on corporate digital transformation focus on its direct impact of digitization on corporate outcomes (Cui & Wang, 2023; Li & Zhou, 2024; Xue et al., 2022; Zhuo & Chen, 2023). However, the potential moderating effects of digital transformation remain largely underexplored, presenting an opportunity to investigate the indirect relationship between CEOs' managerial ability and debt financing constraints in the context of Chinese firms. In other words, this study focuses on the moderating role of digital transformation, exploring whether it amplifies or attenuates the effect of CEOs' managerial ability on alleviating debt financing constraints.

As noted above, the existing literature exhibits several research gaps. Given the above gaps, this research examines the relationship from different perspectives, aiming to address these gaps and contribute to the relevant field.

1.5 Problem Statement

Financial constraints are defined as the difficulties firms face in obtaining sufficient funding to pursue valuable investment and potential growth opportunities, stemming from challenges in securing external financing (Carreira & Silva, 2010). Financial restrictions can obstruct optimal investment allocation and ultimately reduce firm value (Ağca & Mozumdar, 2008). For example, non-state-owned firms mainly depend on the market for financing and face higher risks. Therefore, the financing of non-state-owned firms usually relies on debt financing methods, such as bank loans, to support investment (Han & Gu, 2021). Meanwhile, the private enterprises in China suffer from credit discrimination, resulting in significant financing challenges, such as higher costs and limited access to capital (Allen et al., 2005), which are frequently attributed to inferior and incomplete financial information, arising from less transparent financial reporting. This issue is particularly acute in emerging and high technology sectors, where financing constraints are known to distort investment and innovation decisions (Lou et al., 2024). In essence, financially constrained enterprises incur higher costs for external financing and often struggle with more information asymmetry between market investors and corporate insiders (Chen & Wang, 2011).

In recent years, debt financing constraints have emerged as a critical barrier to corporate growth, particularly in emerging economies where capital markets are still developing. In particular, according to the World Business Environment Survey and the Investment Climate Assessment Surveys, which evaluated 80 countries, China is ranked among the top five nations facing the greatest financial constraints for businesses. An overwhelming 75% of surveyed Chinese listed companies identify financing as their primary obstacle (Claessens, 2006). The 'Chinese Enterprise Operator Survey Report (2021)' additionally emphasized that financial constraints remain a significant impediment to the growth of Chinese businesses (Li et al., 2023). This financing challenge is particularly paradoxical, as the literature widely acknowledges that China's economic take-off and growth are inseparable from the contributions of the private sector, which plays a more prominent role than publicly owned enterprises and exhibits higher efficiency and profitability (Ge & Qiu, 2007; Song et al., 2011). Although private firms are generally more efficient than SOEs and have contributed most of the country's economic growth, they continue to face persistent bank discrimination (Song et al., 2011).

This issue is particularly pronounced in China for several reasons. From one perspective, given China's underdeveloped stock and bond markets, formal corporate financing is predominantly reliant on bank loans, especially from state-owned institutions, with state-owned enterprises (SOEs) receiving preferential access to this financing (Cong et al., 2019; Ru, 2018; Wu et al., 2012). Financial institutions, such as banks, face a higher level of information asymmetry when dealing with private enterprises because banks struggle to process non-public 'soft information' effectively (Berger et al., 2005). As a result, private businesses are often subjected to credit discrimination (Brandt & Li, 2003). From another perspective, financing through bonds and equity in the capital markets accounts for only one-fifth of total credit (Song & Xiong, 2018). Moreover, China's bond and equity markets are less developed and more constrained compared to those in developed economies (Allen et al., 2019). Additionally, the growth of formal financial institutions like factoring and leasing is still lagging owing to reliance on interpersonal networks and the absence of legal protection, reducing Chinese firms' access to finance via these pathways (Wang & Du, 2022). In conclusion, the Chinese financial market presents unique challenges, with financing constraints often manifesting as debt financing limitations, particularly for firms disadvantaged by the traditional banking sector.

Given that debt remains the primary and most accessible form of external financing for Chinese companies, debt financing constraints continue to pose significant challenges. At the firm level, debt financing constraints hinder access to sufficient external funds, limiting the ability to generate returns and ultimately affecting corporate survival (Allen et al., 2005). In other words, businesses give up profitable investment opportunities due to insufficient external funds, which adversely impacts their performance and long-term sustainable development (Kaplan & Zingales, 1997). Furthermore, debt financing constraints result in prohibitively high financing costs for firms due to imperfections in the financial market (Wang & Du, 2022), which in turn exacerbates financial restrictions by limiting access to affordable external finance (Lin et al., 2011). Consequently, the challenge of debt financing constraints remains prominent (Du & Wang, 2023). Addressing these constraints is a critical issue for China's continued economic development.

The Chinese context provides a particularly compelling setting to examine how CEOs' managerial ability influences corporate debt financing constraints, primarily because the country's rapid economic growth has frequently outpaced the development of corresponding managerial expertise (He & Wei, 2011). Furthermore, managers in China frequently operate within an imperfect financial system marked by limited or asymmetric information, creating structural impediments to effective corporate management (Shi et al., 2023). These inherent constraints undermine effective decision-making, especially when trying to secure financing or attract investors. Therefore, these challenges underscore why effective corporate governance and strong managerial capabilities are arguably even more critical in emerging markets, such as China, than in developed economies. China is trying to further improve its corporate governance structure and to gain attractiveness to global talent (He & Wei, 2011). Previous research indicates that successful firms actively navigate the complexities of a changing economy by retaining the existing talent and developing managerial skills in response to evolving economic demands (Zhang & Nesbit, 2018). This underscores the critical role of talented managers in ensuring the long-term viability and growth of Chinese organizations, highlighting the necessity for firms to maintain experienced personnel within their organizational structures (Naheed et al., 2021). Under these circumstances, the role of CEOs has become increasingly significant. Their observable managerial abilities, including their educational level, foreign experience, and financial expertise, may convey important signals about corporate reputation, thereby mitigating debt financing constraints.

Concurrently, as China undergoes this economic transformation, the booming digital economy introduces both new complexities and opportunities for firms (Xu et al., 2023). Technological innovation promotes scientific and technological research and corporate development activities, encouraging changes in the financial environment (Han & Gu, 2021). Digital transformation not only changes operational efficiency but also improves firms' external financial environment, optimizing financing conditions (Wang et al., 2021). Through proactive digital transformation, firms can transition from being passive recipients to actively shaping their external financial environment (Wang & Du, 2022). Building on this premise, this study argues that when firms are led by CEOs with strong managerial ability, the existence of digital resources can further amplify their positive impact on alleviating debt financing constraints. As a result, the internal signal of CEOs' ability becomes more detectable and credible, enhancing its impact on external perceptions of the firm's creditworthiness and thereby alleviating debt financing constraints.

Taken together, this study posits the managerial ability of CEOs to play a pivotal role in alleviating corporate debt financing constraints, with digital transformation acting as a reinforcing role that further magnifies this positive effect in the context of China. Understanding these relationships is critical for emerging market firms to improve managerial practices and leverage technological developments, thereby fostering long-term economic growth.

1.6 Research Questions

This research addresses the following key research questions:

1. Does CEO's managerial ability alleviate debt financing constraints in Chinese firms?

2. Does digital transformation moderate the relationship between CEO's managerial ability and debt financing constraints in Chinese firms?

1.7 Research Objectives

This study embarked on the following objectives to answer the above research questions:

1. To examine whether CEOs' managerial ability is negatively associated with debt financing constraints in Chinese firms.

2. To examine whether digital transformation strengthens the negative relationship between CEOs' managerial ability and debt financing constraints in Chinese firms.

1.8 Significance of the Study

1.8.1 Theoretical Significance

First, previous research has often applied the upper echelon theory, which posits that managers' experiences and backgrounds shape their cognitive frameworks and values, ultimately guiding strategic decisions and influencing organizational performance (Hambrick & Mason, 1984).

In contrast, drawing on signaling theory (Spence, 1973), this study focuses on the external communication role of CEOs. From this perspective, the observable managerial ability of CEOs can act as credible signals, conveying a company's underlying quality to external stakeholders (Zhang & Wiersema, 2009) and signaling to the market that the firm is trustworthy and responsible.

Furthermore, this study extends the literature on the influence of managerial ability on debt financing constraints by moving beyond direct effects. Specifically, this study investigates how digital transformation moderates the relationship between CEOs' managerial ability and debt financing constraints. Accordingly, this study contributes to the burgeoning literature on the economics of digitalization by demonstrating how it can amplify the effectiveness of CEOs' managerial ability in capital markets.

In summary, this study contributes to theory by integrating two distinct theoretical perspectives: signaling theory and resource dependency theory. By demonstrating how a firm's technological environment shapes the efficacy of managerial ability, the study provides a more nuanced understanding of the determinants of firms' debt financing strategies.

1.8.2 Practical Significance

This study contributes to a key aspect of the corporate governance mechanisms in Chinese listed firms by illustrating the tangible benefits of CEOs' superior managerial ability in alleviating debt financing constraints. The findings also offer practical applications for multiple stakeholders, including senior corporate executives and policymakers.

On the one hand, the findings of this study offer direct implications for executive development and selection. Based on the empirical results of this article, this study provides useful insights into how CEOs with comprehensive abilities can serve as a strategic mechanism to mitigate financing frictions, particularly in a dynamic economic environment such as China.

On the other hand, this study highlights a synergistic relationship between managerial talent and digitalization. Policies that not only encourage the adoption of digital technologies but also support the development and attraction of high-quality executive talent are more effective at enhancing the financial resilience of the corporate sector.

1.9 Definition of Key Terms

Managerial ability refers to the efficiency with which managers convert corporate resources into revenues, thereby reflecting their contributions to firms' economic outcomes (Demerjian et al., 2012).

Consistent with the literature suggesting that CEO's managerial ability is highly correlated with their personal background (Berry et al., 2006), this study employs three key proxy variables to measure this construct: CEOs' education level, CEOs' foreign experience, and CEOs' financial expertise.

The relevant definitions are as follows: CEOs' education level is defined as the highest degree obtained across the different types of educational programs (Gounopoulos et al., 2021).

This study defines a CEO's foreign experience as having studied or worked in a foreign country for at least one year before assuming a senior executive position in a domestic firm (Carpenter et al., 2001; Wu et al., 2024).

Following Custódio and Metzger (2014), this study defines a CEO as a financial expert if they have prior work experience in financial institutions or finance-related professions.

Digital transformation is defined as an enterprise's use of digital technologies to revolutionize operations, enhancing efficiency, customer experience, innovation, and agility (Ritter & Pedersen, 2020).

Financial constraints are defined as the barriers that prevent an enterprise from funding all its valuable investment opportunities with external capital (Almeida & Campello, 2007). The current literature offers a wealth of knowledge on financial constraints, distinguishing between internal and external constraints (Manez et al., 2014; Zhang & Tang, 2017). Among these, external financing research explores two fundamental dimensions: debt financing and equity financing. Particularly, bank loans are categorized as debt financing, which refers to enterprises borrowing funds from commercial banks' short-term and long-term loans to support their daily business activities (Han & Gu, 2021).

1.10 Organization of Thesis

The remainder of this study is structured as follows. Section 2 reviews the relevant literature and develops the research hypotheses, explaining the influence of CEOs' managerial ability on debt financing constraints and the moderating impact of digital transformation. Next, Section 3 outlines the research design, including sample selection, variable construction, and the empirical models. Then, the empirical results, including the baseline findings and a series of robustness tests, are presented and analyzed in Section 4. Finally, Section 5 concludes the study by discussing its theoretical and practical implications, acknowledging its limitations, and suggesting avenues for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Empirically, the causes of financing constraints are complex. Extant literature on financing constraints has demonstrated that the severity of a firm's debt financing constraints is influenced by multiple factors, including institutional-level elements (Chan et al., 2012; Cui et al., 2023; Ma & Hao, 2022; Zhang et al., 2020) and firm-level elements (Lin et al., 2011; Malik et al., 2021; Shen & Lin, 2016; Xia et al., 2023). Existing literature reports substantial evidence that debt financing constraints, shaped by multiple sources, significantly influence corporate debt funding strategies (Luo et al., 2015).

However, while prior research has largely emphasized firm-level characteristics, macroeconomic conditions, or isolated factors influencing debt financing constraints, the role of CEOs' comprehensive managerial ability remains relatively underexplored. This study seeks to fill this gap by systematically examining the extent to which managerial ability alleviates debt financing constraints.

As principal members of the leadership team, CEOs play a pivotal role in shaping and implementing corporate strategy (McGuinness et al., 2017). Managerial ability can be conceptualized as a critical intangible asset of the company, representing the influence of managers' actions on financial outcomes (Demerjian et al., 2012). With the rapid development of the global economy, the role of CEOs' managerial ability in shaping corporate strategy has attracted increasing scholarly attention. Consequently, a substantial body of theoretical and empirical research has been devoted to this topic. At the core of these analyses are the strategic choices made by executive management, which are critical determinants of corporate financial behaviour (Chu et al., 2017).

Theoretically, signaling theory highlights the significant role of credible signals to external markets, particularly in the presence of information asymmetry (Spence, 1973). In this context, top managers, particularly the CEO, play a pivotal role in conveying reliable signals, as their observable characteristics are often interpreted by external stakeholders as indicators of the firm's underlying quality and future prospects (Spence, 1973). More specifically, among the various factors influencing debt financing constraints, the CEO, positioned at the peak of the management structure and responsible for steering strategic decisions (Jeong & Harrison, 2017; Walls & Berrone, 2017), possesses personal and professional attributes that serve as particularly salient signals to capital providers.

In addition, the concept of digital transformation mainly includes the digital resources provided by digital technologies and their application within traditional firms, spanning areas like strategy, production, and management (Guo et al., 2023). The digital technologies involved in digital transformation encompass both conventional and emerging technologies, distinguished by whether they have been widely adopted (Karim et al., 2022). Therefore, digital transformation is becoming a critical factor in firm competitiveness as it reshapes the external environment, but few studies have examined how it interacts with executive traits to affect financial outcomes. The resource dependency theory emphasizes that external resources and interdependencies shape a firm's strategic decisions and its access to critical resources, such as financial capital. From this perspective, digital transformation can be viewed as a strategic tool that mitigates a firm's reliance on external capital providers, thereby facilitating access to debt financing. Accordingly, this research addresses a gap by focusing on emerging digital technologies and introducing digital transformation as a moderating variable.

In summary, this chapter reviews the relevant literature on CEOs' managerial ability, digital transformation, and debt financing constraints in order to identify salient gaps, thereby providing the theoretical foundation for the research hypotheses.

2.2 Underlying Theories of Debt Financing Constraints

2.2.1 The signaling theory

The essence of signaling theory is that the internal signaler has more detailed internal information that is either privately held or not yet transmitted to the external parties (Spence, 1973).

Signaling theory rests on the premise of information asymmetry, whereby the receiver responds positively only when the signal sent is deemed credible (Stiglitz, 2002). A core tenet of signaling theory is that external decision-makers can leverage credible signals to gain insights into a firm's true value, thus potentially improving their decision outcomes (Connelly et al., 2011). Thus, signaling theory emphasizes the importance of effective signals in reducing information asymmetry between managers and creditors, which in turn helps to alleviate the debt financing constraints that arise from such asymmetry (Spence, 2002).

By conveying effective signals, firms can enhance their standing in the external capital market, thereby potentially improving financing conditions (Shapiro, 1983). Successful signals are characterized by two main attributes. On the one hand, signal visibility refers to the extent to which insiders can convey information that is effectively perceived and understood by external stakeholders, thereby facilitating effective communication with receivers and reducing the perceived risk faced by potential lenders (Connelly et al., 2011). On the other hand, signal cost constitutes the other critical attribute. It similarly plays such an integral role in signaling theory that some scholars even refer to it as 'theory of costly signaling' (Bliege & Smith, 2005). The essence is that costly signals are credible precisely because low-quality firms cannot afford to mimic them. Signals that are difficult or expensive for a low-quality firm to replicate can reliably convey the true characteristics of high-quality firms, thereby ultimately alleviating debt financing constraints. In summary, a substantial body of research indicates that effective and credible signals from a trustworthy management team can significantly reduce information asymmetry and agency costs between managers and debtholders (Yasar et al., 2020). By alleviating creditors' concerns about a firm's future repayment capabilities (Chemmanur et al., 2010), such signals play a crucial role in mitigating corporate debt financing constraints (Fazzari et al., 1988).

Consequently, a key premise of signaling theory is that firms can proactively communicate positive, yet unobservable, organizational attributes through credible signals (Connelly et al., 2011). The effective transmission of such signals is understood to play a crucial role in mitigating the information asymmetries that lead to debt financing constraints (Fazzari et al., 1988). For one thing, signals that convey positive information can directly lead to more favorable financing terms. For example, observable actions, such as obtaining third-party accreditations, achieving high official rankings, or appointing prestigious top executives serve as powerful signals of firm reputation. These signals reduce lenders' uncertainty about the firm's future prospects, thereby lowering the perceived risk and facilitating greater access to debt financing