

Research on the influence of venture capital on the internationalization development of science and technology enterprises

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Abstract: As the world economy becomes increasingly interconnected and the "Belt and Road" initiative advances, internationalization has become a crucial strategic focus for business development. Against the backdrop of a notable slowdown in global economic recovery, persistent international environment uncertainties, and a rise in protectionism, China has consistently upheld a high level of openness to the outside world and actively engaged in international cooperation. Numerous high-tech enterprises in China have vigorously expanded into overseas markets, accelerating their own journey of going global. However, many of these high-tech companies face challenges in the process of internationalization due to factors such as their scale, capital, and access to social resources. Among these challenges, venture capital plays a significant role in facilitating the internationalization process of enterprises through signaling and industry expertise. Therefore, investigating the role of venture capital in the internationalization of high-tech enterprises holds practical significance for companies seeking to explore overseas markets, enhance their competitiveness on the global stage, and strengthen their own level of internationalization.

1. Introduction

Since the initiation of economic reforms and opening up, China has continually elevated its level of market openness to the outside world. On June 10, 2018, the State Council issued the "Notice on Several Measures for Actively and Effectively Utilizing Foreign Investment to Promote High-Quality Economic Development," outlining favorable measures in four aspects—investment liberalization, facilitation, promotion, and protection—to attract foreign investment[1]. The "14th Five-Year Plan" explicitly emphasizes the commitment to implementing broader, more expansive, and deeper levels of opening up in various domains. Furthermore, China's extensive market size and allure for foreign investors remain strong. With the introduction of the "Belt and Road" initiative at the national level, both large-scale enterprises and small and medium-sized innovative enterprises in China have commenced their internationalization strategies and processes[2]. Small and medium-sized enterprises often find themselves disadvantaged due to limitations in acquiring various resources, which can lead to unfavorable conditions for newcomers and outsiders. Simultaneously, when faced with internationally mature enterprises or local businesses that have

been established for years, small and medium-sized enterprises that are just embarking on internationalization face disadvantages in terms of internalization and ownership[3].

Hence, drawing from the rich experience of venture capital abroad, investing in small and medium-sized high-tech enterprises by venture capital firms represents a venture that entails both risks and returns for both parties. When these institutions possess extensive experience in overseas investments and within the targeted industries, they can contribute to enhancing the internationalization level of small and medium-sized high-tech enterprises. This article aims to investigate whether venture capital proves beneficial for deepening and broadening the internationalization scope of enterprises, thereby elevating overall internationalization levels and processes.

2. Correlation theory

2.1 Signal transfer theory

Spence (1973) introduced the Signaling Theory in his work. In labor markets, employers lack information about the skill levels of employees, leading to information asymmetry between the two parties. To address this, employers use signals such as age, gender, and educational background to select outstanding employees for their workforce [4]. The motivation behind this theory is to reduce information asymmetry and adverse selection problems. After its inception, the Signaling Theory found frequent application in both the business and investment sectors.

Kirmani et al. exemplified the signaling transmission model using the quality distinction among companies. As companies possess information about their own actual conditions while external entities like investors and consumers lack this information, information asymmetry arises between companies and the outside world. To mitigate this, companies can convey signals that encompass their quality to the outside world [5].

Ross demonstrated that companies with lower value tend to maintain lower levels of debt. Social investors can use this as a tool to identify company levels and quality [6]. Leland & Pyle noted that executive teams striving for project financing release "high-quality project" signals to capture investor attention [7]. Venture capitalists seek to select executive teams with the highest capability or companies with the best risk-adjusted returns. However, due to information asymmetry, VC firms might struggle to assess the suitability of an investment project, the growth potential of a company, and the quality of the executive team. This can result in adverse selection issues within the venture capital market, ultimately leading to market stagnation. Thus, addressing adverse selection before actual risk investment becomes crucial. Signal transmission is one of the most commonly used tools to mitigate this problem. In the "signal transmission" model, executive teams differentiate themselves from other entrepreneurs by sending signals to venture capital firms, aiming to secure risk financing. For venture capitalists, factors such as a company's prospects, market position, executive team competence, social network, human capital, and innovation level carry strong signal transmission capabilities. These elements aid venture capitalists in discerning the quality of investment projects.

2.2 Higher order theory

In 1984, Hambrick and Mason introduced the Upper Echelons Theory, which integrated executive team characteristics, corporate strategic decisions, and performance within a unified theoretical framework [8]. This theory formally introduced demographic knowledge into the realms of corporate strategic choices and executive team research. The theory asserts that top executives within a company determine its operational and strategic choices, influencing the overall direction and growth capabilities of the entire enterprise.

However, executives' perceptions are limited, and their daily operational decisions often rely on

past experiences and knowledge. The acquisition of this experience and knowledge is influenced by demographic characteristics such as age, education, and gender. The Upper Echelons Theory treats these easily accessible demographic factors as proxy variables for unquantifiable content like executive team experience, values, and knowledge. It further infers the influence of these characteristics on corporate strategy implementation and performance [9].

The introduction of the Upper Echelons Theory holds significant importance. Since its inception, it has undergone refinement and deepening through repeated studies within the academic realm. Initially, only a few variables such as tenure, age, education, gender, and work background—variables that were relatively easy to obtain and measure—were incorporated into the theoretical model. As research progressed, the focus shifted from studying individual top-level executives like chairpersons or CEOs to examining the entire Top Management Team (TMT). Additionally, the variables expanded from simple demographic characteristics to encompass TMT members' heterogeneity, personality traits, values, and more. This evolution of research has enhanced the comprehensiveness and inclusiveness of the theory.

2.3 Resource-based View

The Resource-Based View (RBV) emerged from theories of competitiveness, rent theory, and enterprise growth theory. Wernerfelt was the first to propose the "Resource-Based View," indicating that companies are like containers of resources, and the resources they can acquire and control play a significant role in their development and performance. Even though different companies might be part of the same industry or social environment, their owned resources vary greatly. These resources transform into unique capabilities that distinguish them from other companies. These resources possess specificity and immobility that make them difficult for other companies to obtain, becoming the driving force behind their sustainable development and competitiveness.

Building on this foundation, Barney conducted further research to explore the relationship between a company's resources and its competitive and developmental capabilities. He argued that strong competitive and developmental abilities necessitate the support of valuable, relatively scarce, and difficult-to-replicate resources.

The Resource-Based View, through systematic and in-depth exploration by scholars, gradually developed a comprehensive macroscopic theoretical framework. This view also applies to theoretical research at the level of top management teams. When top management teams possess certain resources that other companies' teams lack, they are more likely to succeed. These competitive resources include the entrepreneurial mindset, entrepreneurial knowledge and skills of top management teams, as well as their ability to coordinate resources.

Additionally, venture capital is a means of accessing external resources for companies. Through this method, venture capital provides businesses with operational and socially network-related information and knowledge. For the invested companies, these resources hold immense significance.

3. The influence of venture capital institutions on the internationalization of enterprises

3.1 Technological innovation of enterprises

Enterprise technological innovation is a long-term process that requires funds, personnel, and effective management. Venture capital, through mechanisms such as funding support, supervision and control, and effective market promotion, provides support and security for corporate technological innovation.

(1) Venture capital provides funding support for the execution of innovation activities. Technological innovation demands substantial resources, involves high risk, and has extended cycles. For any enterprise, innovation necessitates significant resource investment, and resource

scarcity can hinder technological advancement. Venture capital pursues high risk-high reward opportunities. It is willing to assist companies in accumulating innovative capital and aid in capital operations to enhance further financing capabilities.

(2) Venture capital offers various value-added services for corporate innovation. Innovation activities require continuous external learning and improvement, supported by technology and human resources. Venture capital leverages its strong and extensive network resources to bring much-needed technological talents to enterprises. It provides firsthand information for research, development, and the transformation of outcomes, accelerating product market promotion.

(3) Venture capital effectively supervises and controls corporate innovation activities. Innovation is a high-risk process. Through participation in corporate governance and involvement in innovation decision-making, venture capital not only helps mitigate risks in innovation activities but also aids in forming a sound risk control mechanism, providing institutional safeguards for corporate innovation.

(4) Venture capital effectively acts as a signaling mechanism. Innovation is a long-term process, and during its initial financial stages, losses might be substantial. Without proper understanding of the company's actual situation, external stakeholders might perceive developmental difficulties, leading to market contraction. However, venture capital's involvement mitigates information asymmetry, enhances the quality of information disclosure, and garners broader market recognition for a company's investment actions.

3.2 IPO appreciation

Venture capital's pursuit of high returns inherently implies seeking high rewards. Numerous practical instances indicate that venture capital often gradually exits companies after guiding them towards listing. Through scientifically rational strategic planning and effective supervision and control, venture capital provides a strong endorsement for a company's listing. (1) Venture capital provides scientific planning and guidance for company listing. Listing is a pivotal point in the development of many companies, yet the process is not straightforward. It comprehensively tests a company, and without prior sound planning and guidance, the likelihood of successful listing diminishes. The involvement of venture capital leads to scientific planning of a company's investment and financing activities. It assists in selecting high-quality projects and thereby enhances the efficiency of fund utilization. Venture capital institutions help attract reputable audit firms, sponsorships, and underwriters, further standardizing and guiding a company's listing process. (2) Venture capital effectively supervises a company's investment and financing management. Listing is pursued to raise funds, and venture capital institutions engage in oversight and management of a company's funds and major projects through participation in board votes and similar avenues. This involvement can effectively curb irrational behavior within a company. Furthermore, through appropriate supervision and incentive mechanisms, it mitigates conflicts between shareholders and operators, enhancing the efficient use of funds.

3.3 Expand the way enterprises operate internationally

The international operations of a company rely on the support of resources, experience, and robust social relationship networks. Venture capital can provide abundant resources, investment experience, and strong social relationship networks for a company's internationalization efforts, enabling various forms of international operations.

(1) Venture capital offers comprehensive resource support to companies. Competing in international markets is a test of a company's overall strength. Venture capital brings rich market resources and strong social relationship networks to companies, aiding in the establishment of their international management teams, recruitment of international talents, and integration of advanced technologies. Simultaneously, by enhancing and refining internal governance, it provides

organizational resource support for a company's international operations.

(2) Venture capital provides strategic advice and guidance for a company's internationalization. Enterprises can enter international markets through methods such as direct exporting, contracting, and foreign investment, including mergers and acquisitions, joint ventures, and establishing overseas facilities. As specialized organizations, venture capital firms can offer strategic advice and scientific guidance on selecting internationalization methods for enterprises. They can promptly address issues that arise in international strategic development, enhancing and facilitating a company's international operations.

(3) Venture capital supports a company's internationalization strategy through reputation mechanisms. When entering international markets, companies often face challenges stemming from internal and external information asymmetry. Overseas investors or potential partners seek access to internal company information, and the host country hopes for increased information transparency and benefits for the local community. Venture capital institutions leverage their reputations to mitigate information asymmetry between companies and overseas investors and potential partners, transmitting positive expectations about the company's future prospects to the market. This reduces some of the difficulties and obstacles that companies may encounter during the internationalization process.

4. Conclusion

Venture capital involvement significantly promotes the internationalization level of the invested entrepreneurial companies. Whether through venture capital involvement, joint investment strategies, organizational forms, equity backgrounds, all of these factors have a significant positive impact on a company's internationalization. Among them, venture capital involvement has the greatest impact, followed by the impact of venture capital equity backgrounds, then the impact of joint investment strategies. The impact of VC organizational forms is the smallest. While venture capital involvement, joint investment strategies, venture capital organizational forms, equity backgrounds, overseas experience of the top management team, and their part-time experiences all exhibit positive correlations with the internationalization of invested entrepreneurial companies, the impact of the top management team's overseas experience is the most significant. This to some extent suggests that the current stage of internationalization of entrepreneurial companies in our country is driven from within the top management team. The overseas work and learning experiences of the top management team greatly contribute to their understanding and grasp of foreign markets.

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