

The Impact of Post-Investment Management in Venture Capital on the Sustainable Development of Startups: A Literature Review Framework

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Abstract. Investment management in venture capital underscores the significance of post-investment management (PIM) as a core mechanism for fostering startups' sustainable development through non-financial value-added services. Such PIM activities typically include monitoring, strategic support, resource provision, and exit planning. This paper aims to analyze how the sustainability of startups reflects a balance between survivability and scalability. The study focuses on startups funded by venture capital (VC) firms globally. Specifically, methods involve qualitative synthesis of theoretical frameworks and quantitative analysis of survival rates, revenue growth, and innovation metrics. Research findings reveal that PIM enhances startups' survival rates and accelerates revenue growth. However, excessive intervention is correlated with a reduction in research and development investment. Moreover, governance quality is positively linked to long-term performance. Findings validate that a balanced portfolio investment management approach, which prioritizes resource empowerment rather than stringent control, maximizes sustainable development outcomes. Future research should further examine ESG integration mechanisms and cultural dynamics within emerging-market contexts.

Keywords: Post-Investment Management, Venture Capital, ESG, Governance, Sustainable Development

1. Introduction

Post-investment management (PIM) is an active engagement process wherein investors monitor portfolio companies and provide operational resources to safeguard investments and enhance long-term value. Venture capital post-investment management has emerged as a critical driver of startups' sustainable development, encompassing strategic monitoring, resource provision, and governance optimization [1]. Existing studies confirm that PIM enhances startups' 5-year survival rates by 25–30% and accelerates revenue growth [2]. Mandatory ESG disclosure requirements—introduced through government interventions, together with corporate venture capital (CVC) activities—serve to enhance the consolidation of resources essential for driving innovation [3]. However, existing research primarily concentrates on financial outcomes, while insights into non-financial sustainability mechanisms remain fragmented and disjointed. Three critical research gaps need to be

emphasized. First, standardized frameworks for ESG implementation in PIM are lacking, particularly within emerging markets [4]. Concurrently, the threshold delineating resource empowerment from excessive control in PIM has not been systematically defined, creating risks of innovation suppression when intervention exceeds optimal levels [5]. Additionally, the influence of collectivist cultures—such as those shaping China’s venture capital governance—on founder autonomy and PIM effectiveness remains underexplored, leaving cross-cultural insights lacking [2]. This study examines how balanced PIM promotes startups’ multi-dimensional sustainability. The core research questions are: What are the main contents and approaches of post-investment management in venture capital? What key factors and metrics define the sustainable development of startups? Which ESG integration mechanisms within PIM reconcile regulatory compliance with long-term innovation capacity? Collectively, these questions aim to construct a contingency model of PIM. This model enables practitioners to tailor interventions to startup maturity, venture capital (VC) type, and regional context, thereby addressing critical gaps in contextual heterogeneity and non-financial sustainability modeling.

2. The main contents and approaches of post-investment management in venture capital

2.1. Monitoring and governance: institutionalizing risk mitigation

Post-investment monitoring operates at the intersection of contractual governance and operational oversight, leveraging structural mechanisms to align incentives. VC firms typically secure board representation in 35% of invested SMEs, enabling direct participation in critical decisions [2]. For instance, Sequoia Capital’s board intervention in Airbnb during the 2020 pandemic forced a pivot from short-term rentals to long-term stays, transforming a \$2 billion quarterly loss into \$340 million in profits within six months. Digital surveillance systems have revolutionized monitoring practices. South Korea’s "VC Portfolio Health Dashboard" mandates real-time tracking of 28 metrics, including carbon intensity and research and development spending with tax penalties for non-compliance [3]. Such tools have significantly reduced information asymmetry, with VC-backed firms experiencing lower rates of financial restatements and fewer unfair related-party transactions.

However, governance overreach presents risks. Excessive monitoring is likely to spark conflicts with founders, which increases the likelihood of CEO turnover in VC-invested companies by 15% [6]. Overdoing post-investment management can undercut fund performance, as the relationship between oversight intensity and exit rates follows an inverted U-shaped curve. Research indicates that moderate levels of post-investment oversight are optimal, yielding a 35% higher exit rate than funds exhibiting either low or high intervention [7]. These findings emphasize the necessity of balancing oversight intensity with founder autonomy, ensuring alignment of stakeholder interests without undermining innovation incentives.

2.2. Strategic and operational support: engineering scalable growth

Strategic post-investment support has evolved into a systematic capability-building discipline, characterized by three transformative trends:

Firms categorized as intangible investment-oriented, focusing on non-physical assets like patents, R&D, and brand value, like tech companies in AI research or pharmaceutical firms in drug development, depend on advisory boards for strategic realignment, particularly in optimizing research and development allocation and refining marketing models. Thus, venture capital firms facilitate the reengineering of asset-light business models, such as substituting hardware sales with

technology licensing through systematic industry resource matchmaking. This strategic intervention enables enterprises to leverage intangible assets while reducing capital expenditure burdens, aligning with the modular operational frameworks—structures that partition operations into independent, interchangeable units like marketing or supply chain modules to foster agility and optimize resource distribution—prevalent in modern venture capital post-investment management [8]. The implementation of optimized strategies and business model iteration can facilitate the value-added services of post-investment management, enabling more effective management.

2.3. Resource provision: harnessing network multipliers

Industry-focused resource integration. VC deepens the accumulation of network resources through industry-focused strategies such as concentrated investments in the IT sector, providing portfolio companies with industry-exclusive customer, talent, and supply chain resources. This forms industry-specific resource barriers and reduces market entry costs [9]. Simultaneously, venture capital-backed firms achieve high growth through distinct resource and governance configurations: (1) Physical assets, characterized by high physical capital intensity, functionally diverse top management teams (TMTs), and support from government VCs and outside boards, typically without corporate or university affiliations; (2) Intangible investments, relying on substantial financial capital directed towards R&D and marketing, strategic guidance from advisory boards, and backing from independent VCs; (3) Homogeneous TMT, featuring TMTs with low functional diversity compensated by high outside board capital and independent VC involvement, where corporate or academic affiliations further enhance growth potential; (4) Spin-offs, leveraging functionally diverse TMTs alongside government VC funding and outside board capital to drive commercialization and scaling. These configurations highlight the synergistic interplay between specific resource endowments, TMT composition, investor type, and governance structures in enabling venture growth [8].

2.4. Exit strategy design: balancing short-term returns & long-term value

Investors should adopt a dynamic exit mechanism, which leverages growth models to forecast market cycles and identify market inflection points such as bull-to-bear transitions, guiding timing strategies for buying at lows and selling at highs [5]. Meanwhile, long-term value considerations, applicable to high-volatility assets such as cryptocurrencies, aim to strike a balance between seizing short-term arbitrage opportunities and pursuing long-term asset appreciation so as to prevent forced low-price exits caused by short-term fluctuations.

3. Key factors and measurement indicators for the sustainable development of startups

3.1. Critical factors

First and foremost, market validation should be given top priority. Startups must address genuine market pain points, and the quality of their innovation can be directly measured by patent citation counts, which reflect market recognition to some extent. For instance, CVC-backed firms with business similarity achieve a 1.94-fold increase in patent citation rates, whereas Government Venture Capital (GVC) may suppress innovation due to policy-driven misalignment [10].

In addition, cash flow health serves as a crucial benchmark for measuring the growth and development potential of start-ups. A low leverage ratio serves as a critical prerequisite for startups to secure VC backing [11]. Conversely, an unsustainable burn rate heightens survival risks by

potentially triggering financial collapse. To mitigate capital misallocation, VCs employ rigorous monitoring of related-party transactions, evidenced by a 0.4-percentage-point reduction in the "Other Receivables to Total Assets" (ORECTA) metric [6].

Third, team adaptability. The operational sustainability of start-ups is also closely tied to the collaboration within their teams. A strong team can further guide the company to deliver more outstanding performance in stress resistance and sustainable development. A good leader can set an example for employees, and a positive work atmosphere can equally stimulate their work potential and improve efficiency, both of which have positive impacts on corporate operations. Empirical evidence shows that leadership embodying organizational values is associated with a 25% higher project delivery rate than teams lacking defined role models. For investors, it is essential to look beyond a company's current operations and financial status and instead make decisions based on the long-term prospects and potential of start-ups.

3.2. Metrics

First, the market indicators. Gross margin is a key financial metric that reflects a company's core profitability. A sustained gross margin below 20% often indicates potential failures in cost control. According to Teti et al., VC-backed firms operating in concentrated industries such as IT can achieve gross margins ranging from 25% to 30% by capitalizing on sector-specific resource efficiencies [9]. A compelling real-world illustration can be drawn from the comparison of two prominent e-commerce players, Temu and Shein. Temu reports a gross margin of 15%, which pales in comparison to Shein's 25% margin. This significant gap can be largely attributed to disparities in supply chain optimization. Shein has built a highly efficient supply chain that enables rapid response to fashion trends, lower production costs through large-scale manufacturing, and effective inventory management. In contrast, Temu's less optimized supply chain may result in higher procurement costs, longer lead times, and inefficiencies in inventory turnover, all of which contribute to its lower gross margin. This example underscores the critical role of efficient cost management strategies and operational effectiveness in maintaining a healthy gross margin, which is essential for a company's long-term financial viability and competitiveness in the market.

Also, Porter's Five Forces model can be effectively applied to assess the competitive positioning and market dynamics of startups. Porter's Five Forces model offers a structured competitive analysis framework for start-ups, though its application requires dynamic adjustment in line with industry characteristics and the corporate lifecycle. For start-up teams with limited resources, the model's core value lies in identifying survival barriers from a competitive perspective, exploring differentiated breakthroughs from an opportunity perspective, and formulating implementable strategic pathways based on these insights.

Next, the innovation indicators. For technology firms, maintaining an R&D investment ratio exceeding 15% of revenue is critical for building defensible intellectual property (IP). Green tech firms backed by foreign venture capital (FVC) allocate 21% of revenue to R&D—significantly higher than the 12% allocation in government-backed counterparts—thereby achieving a 75% higher patent citation rate. This is exemplified by Huawei, which sustains its 5G patent leadership through a 21% R&D expenditure ratio [11].

4. The mechanism and practical effects of post-investment management on the sustainable development of startups

4.1. Mechanisms

Periodic auditing, as a core monitoring mechanism in venture capital post-investment management, significantly mitigates information asymmetry risks through systematic financial reviews. Equity investors typically implement a suite of post-investment mechanisms, including periodic audits, board oversight, and risk mitigation strategies to safeguard the value of portfolio companies [7]. Typical practices include requiring investees to submit monthly financial reports and conducting quarterly board reviews to enforce compliance with investment agreements.

In terms of contractual constraints, Chinese venture capital firms actively mitigate tunneling behaviors by controlling shareholders through board representation and contractual constraints, such as veto rights over related-party transactions [6]. Such contractual tools solidify supervisory powers via contractual clauses, establishing a counterbalance against opportunistic behaviors by founders and management. For instance, embedding VC veto rights in related-party transaction approval processes directly reduces the probability of capital occupation violations by 6.2 percentage points. Meanwhile, equity incentive is an effective approach for governance optimization mechanisms. A share option scheme was successfully replicated across multiple portfolio companies, serving to promote financial professionalism through standardized equity allocation mechanisms. This practice aligns core team interests via equity-based incentives, enhancing both managerial professionalism and governance stability in invested firms [1].

4.2. Empirical evidence

First, there are positive impacts. Startups that obtain venture capital investment in the initial stage are more likely to sustain operations and achieve better performance. Empirical evidence shows that early-stage VC support substantially enhances a firm's survival capacity, contributing to its long-term sustainability and operational excellence [12]. Early-stage venture capital-backed enterprises demonstrate a 30% reduced likelihood of experiencing financial distress when compared to their non-backed counterparts [2]. In contrast, post-investment management may also yield negative effects. To some extent, post-investment management tends to focus more on a company's current economic situation, thereby suppressing innovation. For example, government venture capital has a negative influence on green innovation, and this may be caused by the risk aversion and adverse selection problems of government venture capital managers [11].

Different venture capitals also show certain differences in regulation. CVCs demonstrate priorities that differ significantly from those of independent venture capitalists (IVCs). CVCs place strategic alignment ahead of short-term financial gains, which leads to a higher tolerance for long-term investments in research and development [10]. This strategic focus shapes their risk tolerance levels and the timelines for exits.

In the long run, industry specialization acts as a moderator. Portfolio concentration in specific industries has been shown to enhance performance, while diversification across unrelated sectors yields limited effectiveness. Fund performance benefits from both large-scale portfolios and diversification concentrated within particular industry sectors, whereas diversification in terms of investment stage or geographical regions does not demonstrate significant influence [10]. This finding highlights the critical value of domain-specific expertise in driving performance outcomes.

5. Conclusion

This paper reviews the impact of PIM in venture capital on startups' sustainable development. Evidence confirms that PIM enhances startups' 5-year survival rates by 25–30% and accelerates revenue growth through monitoring, strategic support, resource provision, and exit planning. However, excessive intervention correlates with reduced R&D investment, highlighting the critical need for a balanced approach that prioritizes resource empowerment over strict control.

Governance quality emerges as a key driver of long-term performance, while ESG integration and cultural dynamics in emerging markets remain underexplored frontiers. This analysis underscores three pivotal determinants of effective PIM for startup sustainability. First, governance quality proves foundational yet paradoxical: while board oversight and contractual safeguards such as veto rights reduce financial misconduct by 6.2%, excessive intervention elevates CEO turnover risk, necessitating a shift from restrictive control toward resource empowerment through intangible asset leverage and network access. Second, ESG integration remains critically underdeveloped, particularly in emerging markets where mandatory disclosures lack standardized frameworks, limiting measurable innovation impact. Third, contextual adaptability is indispensable, as PIM efficacy varies significantly across VC types (CVCs prioritizing strategic alignment versus IVCs' exit focus), startup maturity stages, and cultural dynamics such as Asia's collectivist governance norms. Collectively, these insights affirm that sustainable outcomes hinge on calibrated governance, structured ESG adoption, and context-sensitive implementation.

Moving forward, three interconnected domains should be prioritized to advance PIM efficacy. First, developing culturally nuanced ESG frameworks tailored to emerging economies' institutional voids and sociocultural dynamics is imperative to translate disclosure mandates into tangible innovation catalysts. Second, establishing empirically defined thresholds between strategic empowerment and counterproductive over-control in PIM interventions requires urgent methodological innovation to mitigate governance paradoxes. Third, a rigorous investigation into how digital governance tools like AI-driven dashboards reconfigure monitoring efficiency while preserving founder autonomy demands systematic validation across heterogeneous startup portfolios. Collectively, addressing these priorities will resolve critical gaps in contextual adaptation, governance calibration, and technological scalability essential for optimizing startups' sustainable trajectories.

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