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A Resource-Based Approach to Evaluating Technological Business Entities

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Abstract: - This research study provides a decision-support tool for technology sector investors. Grounded in the Resource-Based View (RBV), the research highlights how core resources, dynamic capabilities, and external synergies collectively influence firm performance. The research includes a rigorous review of nearly 200 peer-reviewed articles, identifying critical theoretical themes essential for developing the machine learning model, a process crucial for the development of the research model. Out of these, 80 articles have been selected for in-depth analysis. The findings outline steps for research model development, focusing on extracting leading themes to establish a robust theoretical foundation. The RBV framework emphasizes the importance of resources that are unique, valuable, non-replicable, and non-substitutable in driving competitive advantage. By integrating insights across venture capital, entrepreneurial ecosystems, disruptive business models, and technological capabilities, the research highlights the interplay between internal assets—such as financial capital, intellectual property, and R&D capabilities—and external factors like strategic alliances, mentorship, and institutional support. Dynamic capabilities, including managerial expertise and adaptability, are shown to be critical in leveraging these resources to navigate market uncertainties and foster innovation. The study concludes that the integration of these complementary elements not only enhances a firm's ability to innovate and disrupt markets but also ensures sustainable performance and long-term growth. This research offers a comprehensive framework for evaluating startup success and guiding strategic resource allocation.

Keywords: Machine Learning, Valuation, Emerging Technologies, Disruptive Innovation, Firm performance.

1. INTRODUCTION

The motivation stems from the high-risk nature of venture capital (VC) investments and the observed performance challenges within the industry. Start-ups, as defined by Ries (2011), operate under extreme uncertainty to create innovative products or services. This inherent uncertainty contributes to the startling statistic that approximately 9 out of 10 start-ups underperform or fail. Picken (2017) corroborates this, noting that over 75% of venture-backed firms either fail or operate at a loss. Despite these odds, VC funds remain a cornerstone of long-term growth and returns. However, studies, such as Harris et al., (2014), have shown VC performance, especially in the 2000s, often lagged the S&P 500 index This gap underscores the need for more effective tools and methodologies to evaluate and predict start-up success. This study aims to address this gap by proposing a business success prediction model, tailored to VC investments. Such a model could significantly by identifying start-ups with higher success potential, the model aims to improve investment outcomes, benefiting investors and fostering a thriving tech start-up ecosystem with better resource allocation.

2. LITERATURE REVIEW:

Significant advancement in tech company evaluation have emerged over the past two decades. Technology companies now rank among the most valuable entities in the world. The literature survey comprises

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of almost 200 top-notch articles, primarily sourced from renowned databases such as Springer, ScienceDirect, EBSCO, and Web of Science. Special attention was given to articles published from 2019 onwards to ensure the most recent and relevant content was included. A bibliometric analysis was performed and as seen below, major topics and the cross-linkages between them can be seen below:

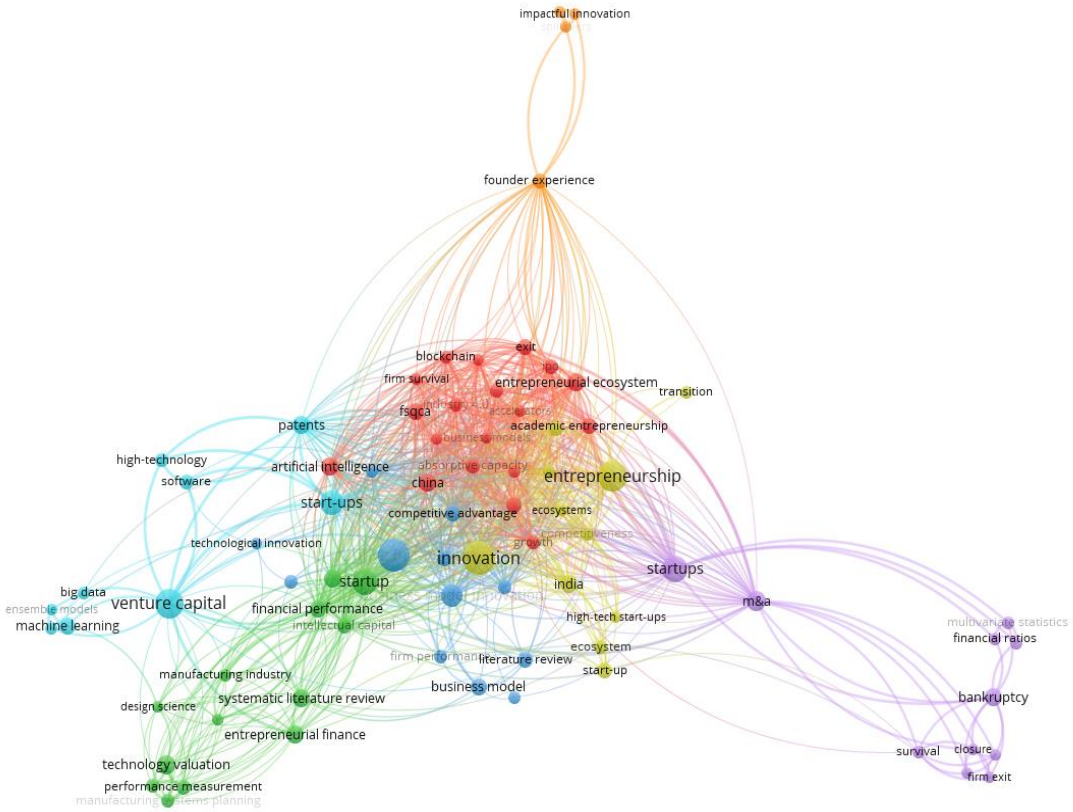

Figure 1: Bibliometric Analysis showing research topics and interconnections between them. (Source: The researcher's data analysis)

2.1. Entrepreneurial Ecosystem (EE)

Entrepreneurial ecosystems drive the growth of tech firms and start-ups. They consist of interconnected actors—such as institutions, incubators, mentors, and government thinktanks and policymakers and factors — culture and infrastructure that promote entrepreneurship and economic development. his review examines recent research to explore how these ecosystems influence the growth and success of start-ups, with a focus on technology-driven ventures.

2.1.1 Role of Incubators and Institutions

Start-up incubators serve as foundational pillars of entrepreneurial ecosystems, providing start-ups with resources, mentorship, and strategic direction. According to Muralidharan Loganathan and Bala Subrahmanya (2021) and Mungila Hillemane (2020), the effectiveness of incubators depends on their ability to specialize, align with host universities, and foster meaningful networks. These elements contribute to better technological outcomes and increase the odds of survival for nascent ventures. Institutions play a complementary role by embedding innovation within the entrepreneurial framework. Venâncio, Picoto, and Pinto (2023) emphasize that formal institutions, coupled with robust infrastructure and innovation resources, are crucial to the success of digital entrepreneurial ecosystems. At the same time, Gomes, Ferreira, and Lopes (2023) draw attention to the connection between an ecosystem's institutional quality and broader economic growth. Their findings suggest that while

entrepreneurial infrastructure and R&D transfers are transformative, basic entrepreneurial education often falls short in driving innovation in high-income economies. Finally, examining the role of technology business incubators (TBIs), Tang, Walsh, Li, et al. (2021), Del Sarto, Isabelle, and Di Minin (2020), and Mohan and Chinchwadkar (2022) emphasize the importance of knowledge transfer, stakeholder involvement, absorptive capacity, and collaboration. Their findings collectively advocate for a more comprehensive approach towards incubation models, which can shape the success trajectory of tech firms. Guindalini, Verreynne, and Kastelle (2021) underscore the significance of academics' characteristics, institutional organization and resources, and external environmental factors in shaping academic entrepreneurship. These elements form the bedrock for entrepreneurial progress, bridging the gap between scientific discovery and market-oriented solutions. Technology Transfer Offices (TTOs) are particularly impactful in academic ecosystems. Roche, Conti, and Rothaermel (2020) reveal that academic start-ups perform comparably to their non-academic counterparts in terms of patent production and funding access. The presence of TTOs bridges the gap between research institutions and venture capital markets, creating a seamless pathway for innovation to transition from the lab to the marketplace

2.1.2 Government Policies as Catalysts

The entrepreneurial ecosystem cannot thrive without proactive government support. Policies designed to spur high-tech clusters, improve access to funding, and encourage innovation are vital to ecosystem health. Biancalani, Czarnitzki, and Riccaboni (2022) and Shi et al. (2021) highlight the role of targeted government programs in fostering start-up growth and job creation. Iizuka and Hane (2021) provide a nuanced view of policy impact, advocating for long-term vision formation, coordinated stakeholder efforts, and adaptive regulation. These actions are particularly important in rapidly transforming economies. For instance, Nel-Sanders and Thomas (2022) detail how South Africa faces challenges in policy implementation, emphasizing the need for a strong governmental role in creating innovation-friendly environments. In the Gulf Cooperation Council (GCC) region, Andersson and Formica (2018) and Andersson and Djeflat (2013) highlight the ongoing transition from petrostate economies to knowledge-driven entrepreneurial hubs. Their studies underscore the importance of talent inflow, international collaboration, and aligning education with labour market demands to create innovation-driven ecosystems.

2.1.3 The Diversity of Ecosystem Models

Entrepreneurial ecosystems are not monolithic, but a complex entity that morphs based on its surrounding environment. Their structure and effectiveness vary significantly based on regional and socioeconomic contexts. Sendra-Pons et al. (2022) shed light on the influence of institutional factors, noting the variation in their impact across countries due to differing socioeconomic and cultural contexts. Echoing the importance of institutional support, Blank (2021) accentuates the role of mentorship and customized incubator resources in fostering startup survival, particularly in less mature ecosystems. This highlights the synergistic interaction necessary within the ecosystem, where knowledge exchange and shared resources are paramount. While analyzing this in international developing markets, Mungila Hillemane (2020), in this context, noting the lack of robust involvement of education and research institutions in developing and relatively new startup ecosystems such as Bangalore, India. This points to a gap in the ecosystem, exposing the need for a more balanced and integrated approach that includes academic, market, and mentorship structures. This contrasts with the GCC region, where governmental and institutional alignment has fostered a robust entrepreneurial environment. These comparisons demonstrate that while entrepreneurial ecosystems share common elements, their successful implementation requires localization and adaptation to unique regional challenges.

2.1.3 Collaboration, Innovation, and Network Dynamics

Wu Zhao and Lei Yi (2021) advocate for the creation of an open innovation ecosystem architecture that is created with open, dynamic, and ecological 'platform thinking' that unleashes the full innovation ecosystem's innovative potential. At the same time, core firms must ensure value creation and gain the benefits of partners in the innovation ecosystem, which is critical to long-term development. Singh et al. (2022) build on this by examining how network cooperation mediates the relationship between innovation, internationalization, and firm performance. Their study found that innovation and internationalization have direct and indirect effects on firm performance mediated by network cooperation. However, their study also revealed a two-way effect of network

cooperation on firm performance, indicating the intricate balance between innovation, internationalization, and network cooperation in influencing firm performance.

2.1.4 The Founders: Building the Ecosystem's Backbone

A thriving ecosystem cannot succeed without strong founders and leadership teams. Lahiri and Wadhwa (2021) showed that an entrepreneur's prior experience in specific industries and technologies could significantly influence innovation in subsequent ventures. The research highlighted the importance of industry-specific knowledge and openness to new industry contexts in fostering innovation among serial entrepreneurs. Hemmert et al. (2022) further corroborated this by showing that founders can leverage their human capital through networks to enhance business performance. Stayton and Mangematin (2016) underscored the importance of startup time, innovation, and organizational emergence for technology startups. They identified the organizational formation pivot as a critical transition that inspires trust for transactions and investments. Del Sarto et al. (2019) further connect founder education levels and export activity with start-up survival, offering a roadmap for developing resilient leadership teams.

2.1.5 Survival and Financial Insights

Start-up survival is a recurring theme in entrepreneurial literature. Fuertes-Callén et al. (2020) demonstrate the power of financial indicators, coupled with machine learning techniques, to predict the likelihood of survival, illustrating the effectiveness of financial data in predicting startup success. Singh and Mungila Hillemane (2021), who connect startup financing with the lifecycle of tech firms sheds light on the financial perspective. The choice of funding source is shaped by the specific requirements of the startup, suggesting that the ecosystem must accommodate diverse financing avenues for different growth stages. Entrepreneurial ecosystems are dynamic, adaptive, and multifaceted. They require the seamless interaction of incubators, institutions, government policies, and founders, supported by a culture of innovation and collaboration. While certain principles—such as mentorship, innovation, and network cooperation—are universal, the most successful ecosystems are those that adapt to local conditions. This review highlights the importance of a holistic approach to ecosystem design, where all stakeholders work collaboratively to nurture start-ups, foster innovation, and drive sustainable economic growth.

2.2 Disruptive Innovation Business Model

Disruptive Innovation (DI) is a a concept that describes how new technologies and practices displace established market leaders, products, and alliances by either creating new markets or entering existing ones at the lower end and eventually overtaking incumbents (Christensen et al., 2018). This review explores the multifaceted aspects of DI, focusing on its impact on dynamic capabilities, strategic alliances, institutional contexts, and business models, particularly for New Technology-Based Firms (NTBFs).Socorro Márquez and Reyes Ortiz (2021) offered a theoretical model suggesting that disruptive currents in thinking, creativity, and innovation can elevate the entrepreneurial spirit and enhance competitiveness. This perspective aligns with Petzold, Landinez, and Baaken's (2019) focus on the process behind disruptive innovation, identifying the timing of entry, synchronization of actions, and adaptability as crucial drivers of disruption. Wang, Ling, and Chok (2020) presented a more market-oriented approach, suggesting that exploratory learning can enable potential market outsiders to outsource transformative and exploitative learning through supply chains, leading to disruptive innovation. This focus on learning and adaptation resonates with Klos, Spieth, Clauss, and Klusmann's (2021) work on digital transformation of incumbent firms. They emphasized dynamic capabilities as drivers of digital business model innovation (BMI) in environments characterized by rapid change. Mao, Su, Wang, and Jarvenpaa (2020) proposed a novel approach to swiftly manage disruptive BMI, which suggests a two-stage process of separation and integration for incumbent firms to develop new business models.

2.2.1 Institutional and Macro-Environmental Contexts

A multinational perspective is offered by Kim, Parboteeah, Cullen, and Liu (2020), who highlighted the impact of regulatory institutional contexts, particularly the rule of law and regulatory quality, on disruptive innovation. This shows the necessity of understanding the macro-environmental factors that can influence disruptive innovation, especially for NTBFs. Zubizarreta, Ganzarain, Cuadrado, and Lizarralde (2021) put

forward a management model for disruptive innovation projects. This model, focusing on business sustainability, provides a practical tool for managing the risks and benefits associated with disruptive innovation.

2.2.2 Strategic Alliances and Social Innovation

Strategic alliances can serve as catalysts for DI by enabling collaboration and resource sharing. Cacciolatti, Rosli, Ruiz-Alba, and Chang (2020) analyze the performance of startups with a social mission, revealing that while social innovation may negatively impact profitability, firm size has a positive influence. Their findings suggest that strategic alliances and other contextual factors impact startups differently depending on their development stage and mission. Pigola et al. (2022) and Singh et al. (2022) complement this discussion by examining the interplay of dynamic capabilities, network cooperation, innovation, and internationalization.

2.2.3 Measurement and Performance Indicators

Evaluating the success of DI initiatives requires robust performance measurement tools. Benková, Gallo, Balogová, and Nemec (2020) explore the Balanced Scorecard (BSC) methodology, demonstrating a significant relationship between non-financial indicators and BSC usage. This approach provides firms with a comprehensive framework for assessing both the tangible and intangible outcomes of disruptive innovation.

2.3 Venture Capital

Venture Capital (VC) plays a pivotal role in the growth and success of startups. It provides much-needed financing and, often, expertise and mentorship that can help guide a young company toward successful operations and, ultimately, toward an exit strategy such as a merger, acquisition, or initial public offering (IPO). The recent research articles provided give insights into the dynamic nature of VC and how it impacts startups from different perspectives.

2.3.1 The Role of Strategic Alliances and Partnerships in VC Success

Bruneel, Clarysse, Bobelyn, and Wright (2020) explored the role of search alliances in VC-backed academic spin-offs. They discovered a positive relationship between exploitative alliances and liquidity events. These findings underscore the importance of market search and exploitation alliances in ensuring the long-term success of VC-backed startups. However, explorative alliances were found not to significantly contribute, suggesting a nuanced approach to different types of alliances in startups. Venture capital activities vary across regions and countries. Joshi et al. (2022) examined VC-funded startups in India and identified unique challenges and opportunities. They observed that the level of radical innovations in India is not at par with that in developed economies and highlighted how factors like tax laws could affect the attractiveness of investing in Indian startups. This signifies that the success and challenges of VC-funded startups can be significantly influenced by local economic conditions and regulatory environments.

2.3.2 The Influence of Mega-Deals and IPO Performance

Lehnertz, Plagmann, and Lutz (2022) examined the effects of venture capital mega-deals on the success of initial public offerings (IPOs) and post-IPO performance. They found that young companies that received mega-deals performed significantly better during IPOs and had stronger post-IPO performance for at least two years. The study emphasized the role of signaling in attracting investor interest. However, the signalling effect diminished over time, suggesting a limit to its utility in influencing long-term performance. Venture capital's influence extends to the corporate world. Dushnitsky and Yu (2022) studied the antecedents of corporate venture capital (CVC) in China. They found that Chinese CVC activity is mainly driven by a 'harness industry growth' rationale, indicating the industry's structural differences between the U.S. and China. This shows that the motivations behind VC investments can vary significantly based on geographical and cultural contexts.

2.3.3 Portfolio Strategies and Tailored Financing Approaches

Hyun and Lee (2022) explored the importance of a portfolio financing strategy for startups. They underscored the need for dynamic financing ratios and variable equity cost of capital, lending rate, and investment horizon based on the startups' characteristics. This research reaffirms that a one-size-fits-all approach is insufficient in VC investments, and customized strategies based on the unique circumstances of each startup are

crucial. Berger and Hottenrott (2021) compared the performance patterns of firms financed by different types of venture capital investors. They observed similar performance patterns among firms financed by independent venture capitalists and corporate venture capital in terms of sales growth and exits. However, firms backed by business angels and governmental venture capital investors showed different performance trajectories. This research emphasizes the impact of the VC funding source on startup performance outcomes, suggesting the need for startups to carefully consider their potential funding sources.

2.4 **Technological Capabilities**

Technology Capabilities have a profound impact on New Technology-Based Firms (NTBFs). The articles reviewed provided presents diverse perspectives on this theme, highlighting various dimensions such as dynamic capabilities, patent assets, regulatory policies, R&D strategies, and technological forecasting.

2.4.1 Dynamic Capabilities and Organizational Adaptation

Wang and Feng (2020) explored dynamic capabilities in China's manufacturing industry and found a positive impact on technical breakthrough innovation, with organization optimization ability also positively associated with market breakthrough innovation. This aligns with Guckenbiehl, Corral de Zubielqui, and Lindsay's (2021) finding that dynamic innovation capabilities influence the survival and performance of start-ups. Both studies underscore the significance of capabilities that allow organizations to adapt to changing conditions and create innovative solutions.

2.4.2 Patents and Intellectual Property Management

Intellectual property assets are both a tool and a challenge for innovation. Kwon (2020) highlighted the potential negative impact of patent holdups on innovation, suggesting that patent transfer can deter competitors from developing related technologies. On the other hand, Yuan, Hou, and Cai (2021) found that patent quality and count influence firm performance differently across industries. These studies highlight the importance of managing intellectual property rights to drive innovation while noting potential drawbacks in certain scenarios.

2.4.3 Regulatory Environments and Government Policies

Hine and Floridi's (2022) comparative analysis of American and Chinese governmental AI policies underscores the critical role of regulatory environments in shaping the development and deployment of innovative technologies. Similarly, Wang, Liu, Chan, and Fung (2023) found that government trust significantly influences R&D investments, with the level of marketization modulating this effect. Both studies suggest that governmental policies and trust can create an environment conducive to innovation.

2.4.4 R&D Strategies and Corporate Performance

Effective R&D management is crucial for NTBF success.Coad, Segarra-Blasco, and Teruel (2021) investigated R&D strategies and their relation to firm growth and performance, identifying a transition from basic research to applied research as firms mature. In a similar vein, Rađenović et al., (2023) highlighted the positive correlation between R&D performance indicators and profitability, underlining the importance of effective R&D management in enhancing firm performance. Satyanarayana, Chandrashekar, and Hillemane (2021) emphasized the influence of sales and R&D capabilities on startup success. Therefore, it can be said the multifaceted nature of technology tools has a significant role to play for NTBF survival and performance. Several factors, such as dynamic capabilities, patent assets, regulatory environments, R&D strategies, and technology forecasting, play a pivotal role in shaping the performance and innovation capacities of these firms. Investing in Research and Development (R&D) is seen as inherently risky due to a range of factors, including the technological uncertainties and the long-term nature of investments involved. This issue, a standard discussion point in neoclassical economics, is framed as a market failure phenomenon.

2.4.5 Innovation, Market Value, and Forecasting

Wang et al., (2021) examined the influence of intellectual capital on firm performance and identified innovation speed and quality as critical mediating factors. Similarly, Drivas et al., (2021) found that while innovation activities increase a firm's market value, the relationship between R&D spending and market value

isn't always linear. Both studies emphasize the nuanced relationship between innovation investments and firm performance. Forecasting technologies also play a role in ensuring sustainable innovation. Erzurumlu and Pachamanova (2020) proposed frameworks for assessing the commercial viability of healthcare innovations, providing tools to evaluate future market potential.Similarly, Nuscheler, Engelen, and Zahra's (2019) study emphasized the importance of top management teams play a crucial role in transforming product introductions into growth for technology-based new ventures.

2.4.6 Digital Technologies and Emerging Trends

Digital transformation has further reshaped NTBF strategies. Crittenden (2019) encouraged firms to embrace digitalization while investing in employee training to maximize technological gains. Behl (2022) examined the role of big data analytics, finding that digital capabilities significantly impact organizational performance, with national culture and IT infrastructure as moderating factors. Additionally, Chaudhari and Sinha (2021) identified emerging trends like big data, crowdfunding, and the shared economy are driving innovation particularly in Indian startup ecosystem.

2.4.7 Post-Crisis Dynamics and R&D Investments

Before the 2008 global financial crisis and particularly Covid-19, there was generally a more liberal approach towards R&D investments. Investors were willing to embrace a "leap-of-faith" attitude, permitting scientists the freedom and time to pursue innovative projects without the immediate pressure for returns. This was based on a belief that granting researchers ample space and time would foster quality innovation. However, post Covid-19, there has been a shift in this perspective, with a fall in market demand and greater macroeconomic uncertainties considerably reducing the incentives and opportunities for firms to invest in innovation-centric R&D projects. This change was partly due to a tightening of financial conditions and a transition to a "new normal" growth paradigm, as Hazarika (2021) noted, which saw investors becoming more conservative in their approach to R&D expenditure. In the recovery period following the crisis, a significant shift occurred in how R&D success was measured, moving more towards an analysis based on corporate financial performance (CFP). This trend involves a meticulous evaluation of the potential returns of each R&D initiative, guiding decisions on whether to continue or reduce funding for these projects.

2.5 Theoretical perspective for model development

The Resource-Based View (RBV) offers a robust theoretical framework to analyze startup performance by connecting the resources and capabilities of firms to their competitive advantage and sustained success. By integrating RBV into the earlier reviewed topics of Venture Capital (VC), Entrepreneurial Ecosystems, Disruptive Business Models, and Technological Capabilities, a comprehensive model for startup performance analysis can be developed. The RBV asserts that resources which are unique, valuable, non-replicable, and non-substitutable can provide a significant competitive edge by creating value and enhancing a firm's performance (Barney, 1991; Ghasemaghaei, 2021). VC-backed startups benefit from the infusion of financial capital, strategic expertise, and mentorship, which are intangible yet high-value resources (Mikalef and Gupta, 2021). These resources, when effectively aligned with the startup's internal capabilities, enhance their market positioning and scalability. For instance, strategic alliances facilitated by VCs can amplify resource complementarity, creating synergy that exceeds the standalone value of individual resources (Chen et al., 2022). Entrepreneurial ecosystems thrive on the interplay of institutional support, mentorship, and knowledge sharing. The RBV underlines that startups embedded in supportive ecosystems can leverage complementary resources such as incubator support, institutional networks, and government policies to enhance their innovative potential (Mikalef and Gupta, 2021). These external resources act as catalysts for internal capability development, fostering sustainable competitive advantages for startups operating within dynamic ecosystems (Bag et al., 2021c). Disruptive innovation often requires startups to reconfigure their resources and capabilities to penetrate new markets or create value in existing ones (Ghasemaghaei, 2021). The RBV highlights the importance of resource uniqueness and adaptability, which are key to developing and implementing disruptive business models (Chen and Lin, 2021). Startups that can combine tangible assets, like cutting-edge technologies, with intangible resources, such as dynamic managerial capabilities, are better positioned to disrupt traditional market leaders and sustain competitive advantage. The role of technological capabilities aligns closely with the RBV's emphasis on resource uniqueness and complementarity

where advanced R&D and intellectual property, such as patents, serve as non-replicable resources that enhance firm performance (Kwon, 2020; Yuan et al., 2021). Integrating these capabilities with external resources like funding and regulatory support creates compounded value that drives innovation and market success (Hine and Floridi, 2022; Satyanarayana et al., 2021). Thus, the Resource-Based View (RBV) provides a framework for analysing startup performance by focusing on core resources, dynamic capabilities, and external synergy. Startups rely on financial capital, technological assets, and intellectual property as foundational resources, while dynamic capabilities like managerial expertise and adaptability enable them to navigate changing markets. External support from venture capital, entrepreneurial ecosystems, and collaborative networks enhances resource value. By integrating these unique and complementary resources, startups can drive innovation, disrupt markets, and achieve sustained performance.

3. ANALYSIS OF RESEARCH

This table is essentially a synthesized overview of a systematic literature review, focusing on the latest and most relevant articles in the field. The structure and content of the table are designed to present a consolidated view of key findings under major topics:

Major Topic	Key Findings and Cited Studies
Entrepreneurial Ecosystem (EE)	- Importance of incubators, networking, and university alignment in startup outcomes (Muralidharan Loganathan and Bala Subrahmanya, 2021; Mungila Hillemane, 2020). - Role of formal institutions, innovation resources, and infrastructure in digital entrepreneurial ecosystems (Venâncio Picoto and Pinto, 2023). - Connection of ecosystem conditions with economic growth and critique of basic entrepreneurial education (Gomes Ferreira and Lopes, 2023). - Influence of mentorship and incubator resources on startup survival (Blank, 2021). - Variations in institutional impact due to socioeconomic contexts (Sendra-Pons et al., 2022). - Role of government in promoting innovation-led ecosystems (Nel-Sanders and Thomas, 2022; Biancalani et al., 2022). - Influence of government policies on high-tech clusters and startups' access to capital (Shi Mu Yang and Huang, 2021).
Disruptive Innovation Business Model (DI)	- Theoretical model for disruptive innovation and its impact on competitiveness (Socorro Márquez and Reyes Ortiz, 2021). - Role of learning, adaptability, and strategic alliances in disruptive innovation (Petzold Landinez and Baaken, 2019; Cacciolatti et al., 2020). - Management model for disruptive innovation and its business sustainability (Zubizarreta et al., 2021). - Impact of regulatory institutional contexts on disruptive innovation (Kim Parboteeah Cullen and Liu, 2020).
Venture Capital (VC)	- Role of search alliances in VC-backed spin-offs and their impact on liquidity events (Bruneel et al., 2020). - Regional variations in VC and challenges in Indian startups (Joshi et al., 2022). - Impact of VC mega-deals on IPO success and post-IPO performance (Lehnertz et al., 2022). - Corporate venture capital in China driven by 'harness industry

	growth' rationale (Dushnitsky and Yu, 2022). - Importance of portfolio financing strategy for startups (Hyun and Lee, 2022).
Technological Capabilities	- Dynamic capabilities in innovation and their impact on breakthrough innovation (Wang and Feng, 2020; Guckenbiehl et al., 2021). - Role of patents in innovation and firm performance (Kwon, 2020; Yuan et al., 2021). - Influence of governmental AI policies on innovation (Hine and Floridi, 2022; Coad et al., 2021). - Relationship between R&D strategies and firm growth (Rađenović et al., 2023).

4. CONCLUSION AND FUTURE SCOPE:

The major determinants of firm performance were discovered to be ecosystem advancement strategies, competitive advantage, and entrepreneur attributes. Thus, the current study added to the body of knowledge by revealing the true determinants of performance and external macro environment conditions as a mediator under State regulatory policy moderation. Building on this theoretical foundation, future research could expand the proposed model by integrating advanced financial metrics like Economic Value Added (EVA) and exploring machine learning algorithms beyond clustering and classification, such as ensemble methods. Deep learning applications can be extended with models like GRUs or Transformers to capture long-term trends. Incorporating external macroenvironmental factors, conducting cross-industry comparisons, and developing real-time performance monitoring frameworks would further enhance the model's robustness and practical relevance.

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