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Startup Growth and Conditioning Factors: A conceptual framework for a survey-based study*

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Abstract

What accounts for the expansion of high-tech startups? This paper provides a selective but reasonably comprehensive review of studies attempting to answer this question, drawing from the economic and business literature, especially from the resource-based view of the firm. We seek a scholarly foundation to propose a set of hypotheses to guide the design of a questionnaire-based survey of Japanese startup companies. Our basic proposition is that the growth of a startup is a function of predominantly positive interaction among all or a subset of the following elements: the Schumpeterian spirit of the entrepreneur, the existence of a dynamic set of capabilities within the firm, including the capacity to market and explore potential demand, its location within reach of an innovatively dense ecosystem, the availability of adequate financing, and the effectiveness of appropriate public support instruments.

Keywords: resource-based view, equity finance, social network, startup ecosystem

JEL classification: M13, O38, R58

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1. Introduction

1.1 Aims of this paper

This paper aims to investigate recent and prospective startup growth trends and relevant determinant factors from the existing literature. This literature review provides a scholarly foundation for our intention to develop an analytical framework and propose a set of hypotheses to guide the design of empirical research based on a questionnaire-based survey for startups.

With the Japanese context as a reference, our basic proposition is that the growth of a startup is a function of predominantly positive interaction among all or a few of the following elements: the entrepreneur's Schumpeterian spirit, the existence of a dynamic set of capabilities within the firm, including the capacity to innovate and explore potential demand, its location within reach of a supportive business ecosystem, and the availability of general outside support.

We establish the tone of our analysis based on Penrose's resource-based view of the firm. In this sense, we analyze such a firm's resource view from an internal and external perspective. Concerning internal resources, we explore in the literature how the entrepreneur's profile and knowledge of technology and the firm's organizational capabilities may explain the variation of startup growth traits. Internal resources are both preinstalled endowments and qualities obtained in the course of operation. External resources include both local and general ones.

1.2 Defining startups

Despite the hype, precisely defining a startup for a scholarly analysis is quite challenging. To the best of our knowledge, there is no consensus on what constitutes a startup firm. One common reference is the firm's age. The European Commission (2018) roughly describes startups as "younger than ten years/ five years, depending on the sector." Kato (2022) considered a startup firm up to 6–8 years old since its inception.

Meanwhile, Looze and Goff (2022) distinguished a startup from a younger firm by (2–10 years old) defining it as a firm that is 0–1 years old. In addition, there is a broad range of age settings in startup-supporting policies. For instance, Startup Italia seeks firms that will be operational in less than five years. Brazil and India have programs that assist firms less than ten years old. Aside from the disagreement over the firm's age since its inception, we must also consider the pre-foundation phase of entrepreneurial trials, which is critical to later business success.

It is equally difficult to define a startup based on its size. Small size is not an inherent nature of a startup because the initial size is a part of the strategic decision of an entrepreneur. Entrepreneurs motivated by autonomy tend to start as small business (van Gelderen & Jansen 2006). Still, entrepreneurs with higher level of education and more management experience are more likely to establish larger ventures with the possibility of obtaining finance and information from external sources closely linked to their previous jobs (Cooper et al. 1989). Without such favorable

conditions, startup firms are founded at suboptimal scale and exposed to a higher risk of closure and exit (Audretsch & Mahmood 1995). For this reason, most startup support policies adopt size as the eligibility criteria (paid employees, working capital, or turnover, among others). Every country differs in the specific definition of size and every country faces two challenge when setting a parameter for the eligibility criteria: (i) the minimum and maximum for the chosen criteria (for example, number of employees) and, (ii) how to differentiate a startup from the traditional definition of small and medium enterprises in each country's legislation².

Despite the broad agreement that startups grow much faster than other small and medium-sized firms, the definition based on growth rate faces the same challenges as the size variable; that is, against which variable growth should be measured? Employment? Working capital? Turnover? This growth criteria are also problematic because we can only evaluate growth retrospectively, and we cannot predict whether and at what rate a firm is growing (Cockayne 2019). If 90% of startups fail (*Forbes*, Jan. 16, 2015), we run the risk of looking at only 10% of the total population by defining startups with successful growth rates.

Innovative technologies are of particular relevance when considering how to define a startup. The intensity of research and development, share of research personnel in employment, number of patents, number of unique products, intensity of information technology use, or nature of the firm's economic activity are all commonly used measures of innovative firms. Botelho et al. (2021) differentiated innovation-driven entrepreneurs (IDEs), who address unknown or unproven markets in high uncertainties, from traditional business entrepreneurs (TBEs). They explained that TBEs rely on debt financing with family wealth as collateral and bear most of the financial risks. Meanwhile, debt financing is difficult for IDEs because they rest on intangible assets such as unproven technologies, which are difficult to quantify and cannot be used as collateral. Thus, IDEs could be identified as those who rely more on equity investment, in which investors share financial risk. However, this definition is questionable in countries where the private equity capital market is not yet fully developed, such as Japan. Honjo and Kato (2019) stated that startup firms in Japan with higher financial demands rely on bank loans.

This examination of the definition of startup reminds us that specifying a startup firm as the subject of empirical study necessitates careful consideration. This is especially crucial when designing the questionnaire survey, such as determining to whom the questionnaire survey should be addressed, selecting relevant questions, and comparing the collected data.

² The Japanese law defines small and medium enterprises as those with the capital of 300 (100, 50, and 50) thousand yen or less, or 300 (100, 50, and 100) or less employees in manufacturing (wholesale, retail, and other service).

1.3 Are newness and smallness liabilities or advantages?

Previous managerial literature reveals that the above-mentioned organizational newness and smallness and technological innovativeness posit challenges to startups. The 'liability of newness,' first conceptualized by Stinchcombe (1965), refers to new firm's high cost in inventing and learning new roles and structuring mutual relations among strangers to get the maximum performance. It also involves a weak tie with customers. Aldrich and Auster (1986) added that new firms face several entry barriers; technological immaturity, adaptation to licensing and regulatory system, vertically integrated structure and illegitimate acts by incumbent competitors, and the lack of experience in learning from own failures. Aldrich and Auster (1986) also point to the 'liability of smallness' regarding small firm's disadvantageous position compared to a large firm in raising capital, tax, government regulations, and competition for labor.

Along with the well-established concepts of liabilities of (organizational) newness and smallness, we add the 'liability of strangeness' of product and service. While startup firms strive to be on the cutting edge with innovative idea and technology, their product and service may be completely unknown (strange) to consumers. Thus, proving a 'product-market fit' in the early stage is a critical challenge especially for hard-tech, science-based startups (Gimmon and Levie 2021).

By definition, newness, smallness, and strangeness are intrinsic nature of startup firms. However, they do not necessarily represent liabilities. If firms successfully mobilize internal and external resources, these characteristics may turn to advantages; the newness to organizational flexibility unrestrained by precedent, the smallness to agility in decision making, and strangeness to original idea that can dominate the market. We perceive that startups are quite heterogenous in the ownership of such resources. We expect that an empirical study reveals that such heterogeneity influences whether the intrinsic nature of startup firms turn liabilities or advantage, which, in turn, affects the fate of startups.

The remainder of this paper is structured as follows. Section 2 presents evidence on the economic relevance of startups. Section 3 considers external resource factors such as market conditions, labor supply, and access to financial resources. Section 4 focuses on reviewing the literature that considers location selection and the influence of a startup ecosystem as relevant factors driving firm growth. Section 5 emphasizes the importance of public policies in fostering the growth of startups. Finally, Section 6 summarizes the main findings.

2. Startups as a relevant economic phenomenon

2.1 Startup as investment opportunity

Recent monetary relaxation and low interest rates in developed countries encouraged investors to financially support high-potential technology startups, particularly those developing disruptive innovations. Investment in these firms is typically of high risk because their technologies have

not yet demonstrated economic viability. Nonetheless, taking a portfolio approach, investors invest in the expectation of high returns once firms successfully launch innovative products, while expecting, at the same time, that most startups will fail. The emergence of the startup phenomena and the possibility of interesting returns have led even conservative institutional investors, such as pension funds and insurance companies, to allocate resources for startups in their portfolios.

Aside from the vigor of financially motivated investors, startup ventures receive public policy attention due to the externalities they may induce. Recent studies have shown that young small firms substantially contribute to job creation (Decker et al. 2014). Looze and Goff (2022) reported that startups (0–1 year old) experienced positive net job creation from 2001 to 2020, whereas older firms (more than or equal to 11 years old) were responsible for more job destruction than creation. Haltiwanger et al. (2013) also found that young firms (those under ten years old) outperform mature firms in terms of job growth. They consider that successfully developed startups grow innovative businesses with higher productivity, and that they overcome the high job destruction rate of young firms (40% of elimination by exiting in five years). Exiting inefficient firms and reallocating resources to more efficient firms both contribute to industry-wide productivity growth (Dumont et al. 2016).

At the regional level, the effect of new business formation on employment is ambiguous because the latest entrant stimulates competition, displacing incumbent firms deploying traditional technology with low productivity level. Nonetheless, policymakers expect startup ventures to transform the local economy by introducing the better use of locally abundant relevant resources.

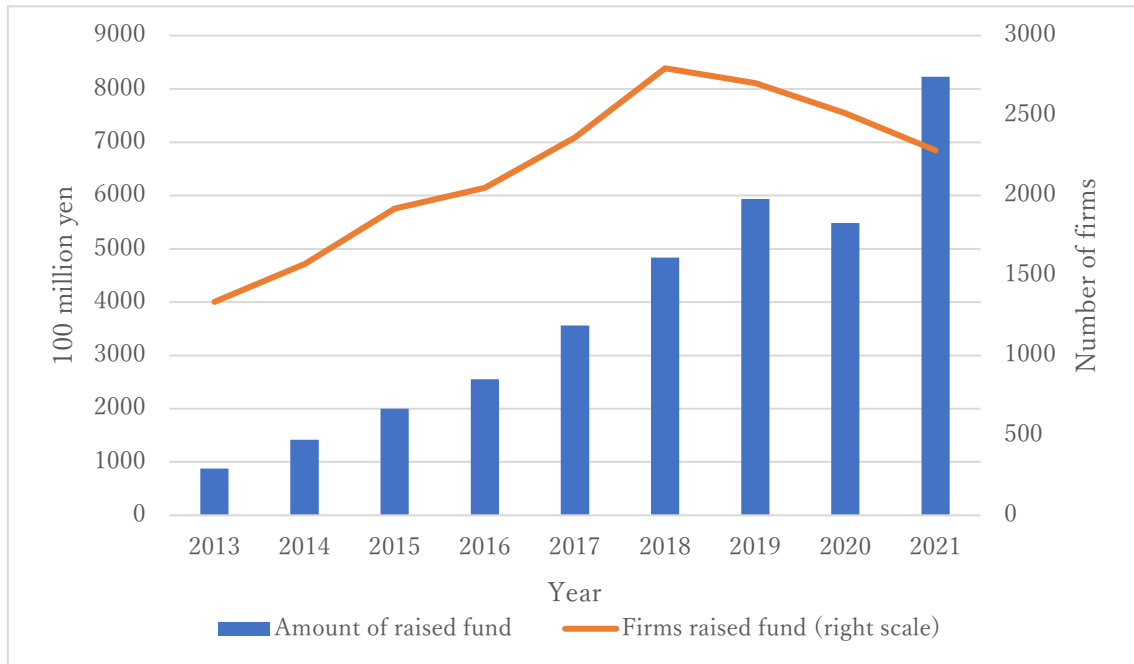
Another primary source of sustaining startup growth is the corporate investment. Large corporations seek new technologies developed by startups in business areas of strategic interest. They leverage startup innovation for posterior partnerships or acquisitions instead of developing by themselves. Furthermore, universities are becoming more interested in investing in venture capital funds to promote the commercialization of technologies developed by faculty and students.

2.2 Startup growth in Japan

Japan is not an exception to the growing wave of startups. As shown in Figure 1, based on the data provided by INITIAL, startup investment in Japan has been increasing in recent years, reaching a historically high of 822,800 million yen (7,940 million USD with an annual average exchange rate of 103.63 JPY/USD) in 2021 despite the sluggish economy, which has been negatively impacted by the COVID-19 pandemic. Meanwhile, the number of firms that have raised funds has been declining since 2019. According to the INITIAL report, investment is shifting to older (more than three years old) firms, and the amount raised per firm is increasing³.

³ <https://initial.inc/enterprise/resources/japanstartupfinance2022h1>

Figure 1. Startup fund raising in Japan: total amount and the number of firms, 2013–2021



Source: Authors' elaboration based on INITIAL, Japan Startup Finance, First Semester of 2022

<https://initial.inc/enterprise/resources/japanstartupfinance2022h1>

Noteworthy, Japan has an active capital market for startup through an initial public offering (IPO). According to Venture Enterprise Center (2021), there were 96 annual IPOs, in average, between 2015 and 2020. METI (2022) specified that the high share of IPO in startup exit (76%) is a distinguishing feature of Japan, compared to a mere 10% in the USA and 33% in Europe. Takahashi and Yamada (2015) noted that such an active IPO process may be an unintended consequence of several deregulations of listing requirements in the late 1990s. They found that IPO firms experienced slower growth in profitability and productivity following their IPOs. METI (2022) was also concerned that the equity offering price is significantly undervalued, and that startups' post-IPO growth performance is limited because they cannot obtain sufficient funds during the IPO process. Sun et al. (2013) found that independent venture capitalist-backed startups go public before they have grown sufficiently. They tend to use less reputable underwriters and be listed on stock exchanges with less stringent listing requirements due to their immaturity. The premature listing results in significant underpricing and poorer long-term operating performance.⁴

⁴ Ogura (2017) reported that establishing pre-IPO relationships with commercial banks through lending moderates IPO underpricing in Japan. This finding suggests that a pre-IPO banking

2.3 Startup support policies in Japan

Japanese large firms prefer financial liquidity by retaining profit from the revenue, which hovers around 40% of the net profit during 2000-2021, according to the figure from the Surveys for the Financial Statements Statistics of Corporations by Industry compiled by the Ministry of Finance. The retained profit is seen as unused resource, and the government intends to create a positive feedback loop from profit to investment, and vice versa. For this purpose, corporate income tax reduction was established for companies acquiring shares in startups.

It is also problematic that the ratio of unutilized cases to the number of domestic patent rights ownership is approximately 50%, according to the figure from Intellectual Property Activity Survey 2020 compiled by the Japan Patent Office. Typically, technologies developed jointly by university scientists and large firms have not been used because the latter apply patents just to prevent other firms from using developed technologies. According to the report on Intellectual Property Promotion Plan 2022 issued by the Prime Minister's Cabinet Office, the government will develop rules that allows universities to license unused technologies to startups.

Given the economic importance of mobilizing unused financial and technological resources capitalizing startups, the Kishida administration announced the Grand Design and Action Plan for a New Form of Capitalism in June 2022. This plan included a Five-Year Plan for Startup Promotion, which aims to increase startup investment from 800 billion yen to 10 trillion yen by 2027. The strategy is built on three pillars: (1) strengthening human capital and human networks; (2) increasing funds for investment and diversifying exit strategies; and (3) promoting open innovation. Startup assistance programs are developed in stages. Support for firms in the pre-seed, seed, and entry stages focuses on technology development, whereas increased capital supply is expected to support firm growth in the middle to later stages. The Kishida administration created a new ministerial post to oversee the startup policy in July 2022.

To expand the network of the startup community, METI established J-Startup as the accreditation system for qualified startup firms, linked to various support, such as acceleration programs, matching with big corporations and investors, internationalization, and requesting deregulation.

The government intends to induce private venture capital funds and attract overseas venture capital to increase investment funds. In line with the government's efforts to boost startup investment, the Japan Post Bank announced to quintuple the investment totaling 100 billion yen in venture business over the next four years through its subsidiary JP Investment. Financial Times (June 10, 2022) reported that the Government Pension Investment Fund, the world's largest pension fund, plans to invest in startups.

relationship validates an IPO firm's low risk.

Furthermore, the Small Business Innovation Research (SBIR) system was expanded to encourage open innovation. The Japanese SBIR is based on the original US SBIR. SBIR funds feasibility studies and proof of concept in the first phase, extensive research and development in the second, and commercialization in the third. Participating government organizations⁵ issue request for proposals from eligible firms for their research projects under SBIR. Support is provided through procuring research services from selected firms or a research fund grant. SBIR-approved projects will have preferential access to the growth fund, including loans from Japan Financial Corporation, investment from the government-sponsored venture capital fund of the Development Bank of Japan, and Japan Investment Corporation during the comprehensive research, development, and commercialization phases. Given the involvement of a diverse range of organizations, policy coordination presents a challenge to avoid issues being tackled in silos.

3. Setting the tone – the resource-based view of the firm as our analytical framework

We consider Penrose's (2009)⁶ resource-based view of firm growth as the reference for analyzing the growth and factors influencing startup survival. Her seminal contribution regarded the firm as a collection of resources and three factors limiting the growth of firms: managerial ability (resources within the firm), product or factor markets (resources outside the firm), and uncertainty and risk (a combination of internal and external factors). Thus, we understand that internal and external factors constrain a young and small firm developing and fostering unproven new technology-based solutions in different markets. They struggle to overcome liabilities of newness, smallness, and strangeness by deploying sufficient internal and external resources and successfully facing up external factors.

3.1 Resources within the startup

In terms of internal factors, this subsection looks for key takeaways from the literature on key issues such as a firm's managerial capability, the skill of employed workers, and a technological competence. Entrepreneurship and the quality and quantity of the management team are all aspects of managerial capability.

Founder's attributes

Entrepreneurship is defined as the founder's ability to recognize and capitalize on growth opportunities (Penrose 2009: p. 29): versatility (p. 32), fundraising ingenuity (p. 34), and ambition

⁵ The participating organizations include the New Energy and Industrial Technology Development Organization, National Information and Communications Technology, Japan Science and Technology Agency, Ministry of Health, Labor, and Welfare, National Agriculture and Food Research Organization, Ministry of Land, Infrastructure, Transport, and Tourism, Ministry of the Environment, and Ministry of Defense.

⁶ The first edition of her book was published in 1959.

(p. 35). Botelho et al. (2021) specified that running a startup business necessitates strong non-routine cognitive skills such as creativity, analytical flexibility, generalized problem-solving, and complex interpersonal communication. Furthering this point, he points out that innovation-driven entrepreneurs frequently have high education, diverse work experience, and good broad knowledge rather than being a specialist.

Younger entrepreneurs are as good as older ones in creativity and analytical flexibility, but they fall short in terms of the breadth of knowledge from work experiences. Hincapie (2020) finds that young entrepreneurs begin well into their 30s and suggests that entrepreneurship education can reduce entry costs and foster young entrepreneurship outperforms subsidizing entrepreneurs already running a business.

Previous studies point to gender gaps in entrepreneurship. Female entrepreneurs are less likely to receive venture capital funding (Guzman & Kacperczyk 2019). They are also underrepresented in innovation-driven business startups based in the science, technology, engineering, and mathematics fields (Kuschel et al., 2020). Moreover, they must mobilize more of their own resources because they receive less support from the entrepreneurial ecosystem (Sperber & Linder 2019).

Fonseca et al. (2022) and Brown et al. (2019) argue that size positively impacts a new firm's profitability, and firms that start large have a better chance of growing. Khurana and Farhat (2021) point out that early diversification reduces the risk of market exit. Larger and more diverse firms are more advantageous because of their market connections, better capital market standing, larger internal funds, accumulated valuable experiences, and economies of scale. Brown et al. (2019) related the positive effect of firm starting size on the likelihood of survival to the founder's attributes, such as gender, race, age, education, and the number of co-founders. Founders' attributes, such as female, African-American, younger, lower education, and fewer co-founders, are associated with a smaller starting size.

Founding team

According to Botelho et al. (2021), firms founded by teams outperform those founded by solo founders, but performance is dependent on the quality of the management team, which is shaped by shared experience and mutual trust within the team. D'Acunto et al. (2020) found that startups with more diverse founding teams grow faster than peer firms in the same industries. Munoz-Bullon et al. (2015) corroborate that team resource heterogeneity positively impacts the creation of profitable firms. Moreover, this positive effect is more remarkable as the team has more experience in the industry in which the new business will compete.

However, Botelho et al. (2021) warned that the benefit of a large diverse founding team may be offset in part by a higher internal coordination cost. Therefore, firm expansion and management

team expansion must occur in tandem. For example, Lee and Kim (2022) found that the timing of scaling can be determined by when startups first post jobs for professional managers and sales personnel. According to Kor et al. (2016), during the process of rapid scaling up with increasing structural complexity, startup firms' operations are disrupted as they go through planning, re-planning, and implementation simultaneously. These interruptions cause the conversion of experiences into standard operating procedures to be delayed. This management challenge combines a lack of resources with slack in startup firms.

Workers

Regarding employment, Ouimet and Zarutskie (2014) found that young firms with greater innovation potential exhibit higher growth and disproportionately employ and hire young workers. Young workers with higher skills and risk tolerance disproportionately join such young firms. The interaction of young firms and young workers explains a causal relationship between the supply of young workers and the rate of new firm formation, particularly in high-tech industries. Dahl and Klepper (2015) found an assortative matching between workers and firms, in which workers with greater abilities are assigned to firms with greater capabilities.

However, Rtischev (2017) found that working in a venture in Japan offers lower returns for more risk-taking than in Silicon Valley. Therefore, Japanese young people prefer working in a prestigious large firm. He attributes this outcome to the new-college-graduate hiring system in Japanese labor institution which makes being hired as a long-term core-employee the once-in-a-lifetime option.

Intellectual property

Coleman et al. (2013) found that, intellectual property reduced the likelihood of exit via merger or acquisition of the US non-service firms. Kato et al. (2019) corroborates using Japanese data that new firms with a higher patent stock are less likely to go bankrupt. These findings suggest that intellectual property is a potential resource for new firm survival.

However, Colombelli et al. (2020) discussed how young innovative companies frequently struggle to protect their innovations and monetize their returns. This difficulty may be overcome by combining legal provisions to protect intellectual property assets with informal ones (e.g., secrecy, lead time, access to complementary assets).

Arora et al. (2022) pointed out that innovations that face both technical and commercial challenges are significantly disadvantaged in a startup-based innovation system because startups often lack the complementary assets required to scale up and commercialize technologies they develop. Because incumbents own such complementary assets, startup firms do not receive a sufficient return in the technology market.

Synthesis

In this subsection, we analyzed founder's attributes (education and working experience), the funding team, workers, and intellectual property as startup firms' internal resources that may influence new and small firms' growth. It is worthwhile to point out two issues we must address in formulating a conceptual framework for an empirical study. Firstly, we found that these attributes interact with other factors, such as entry costs, gender gap, internal coordination costs, risk aversion of young workers in joining ventures, and the lack of managerial assets to protect and commercialize intellectual property. These factors represent risks for the young and small nature of startups turning to liability.

Secondly, our findings suggest that firms deploy pre-set internal resources and additional internal resources acquired over time in business, such as working experiences, a more diverse management team, more capable workers, and the cooperation with established firms with complementary assets for technology management. We can assert that a successful growth path is nonlinear because the higher the firm growth, the more accelerated the internal resources expansion, explaining the emergence of a unicorn company. However, the high death rate of startup firms suggests that the case for such positive feedback is somewhat limited.

3.2 Resources outside the startup

Labor

Consider the labor market to begin our discussion of resources outside the firm. Karahan et al. (2019) found that slowing labor supply growth due to demographic factors since the late 1970s explains the long-run decline in the US startup rate. When the total supply of young labor becomes constrained, as we see in Japan, and there is assortative matching between young innovative firms and young talented workers, we expect labor supply and demand to concentrate in larger cities.

According to Carlino and Drautzburg (2020) and Acs and Armington (2003), there is a co-evolution of labor force concentration and innovative startup business. This conclusion suggests that establishing good labor market access is critical to startup growth (Kiminami et al. 2021). Although hiring young qualified workers continue to be a challenge for startup firms in Japan because of the preference for working in large firms, as explained by Rtischev (2017), management teams in promising startups in Tokyo have been able to attract local professionals with working experience gained in prestigious consulting companies, investment banks, and marketing companies (Hemmert et al. 2019)

Funding

Let us now address the issue of funding. There is no doubt about the importance of financing to the establishment, survival, and growth of firms. Botelho et al. (2021) explained that startups find it difficult to obtain debt financing because they rely on unproven technologies that are rarely

accepted as collateral. Startups increasingly rely on equity investment, where investors share the business and financial risk. Lerner and Nanda (2020) reported that venture capital funds (VCs) grew significantly in the United States as prudential deregulation allowed pension funds and insurance firms to diversify their portfolios. They found that firms backed by VCs before an IPO have a higher valuation and disproportionately higher research and development (R&D) expenditure.

A recent study by Sariri (2022) found that, when compared to VCs, angel investors are more likely to provide experimentation advice, and startups are more likely to succeed in experimentation when guided by angels. By developing and growing their entrepreneurial ventures, angels have learned experimentation skills. They demand less control than VCs but influence investing firms through experimentation advice.

Botelho et al. (2021) noted that the venture debt market is surprisingly large. Loans, in general, allow firms to raise funds more quickly than equity, allowing them to address short-term challenges and adapt to unexpected market conditions. The venture debt has become appealing to entrepreneurs seeking to avoid further equity dilution while maintaining control of their company. It is also reported that startup firms are increasing debt financing for long-term investment, using VC funds as collateral and warrants that give the debt holder the right to purchase the company's stock at a specified price within a specified time frame (De Rassenfosse & Fischer 2016).

Technology

There is a growing body of literature on open innovation as it has become a common practice of both large and small firms to use external ideas and incorporate them into internal ideas to advance their technology (West & Bogers 2014). Startups engage in open innovation to overcome both the liability of newness and the liability of smallness. According to Spender et al. (2017), startups' innovativeness and growth depend on the structure of the network with which they are associated, characterized by the number of actors and the strength of relations. The network consists of creators and diffusers of knowledge, including incubators, large corporations, venture capital firms, and the higher education system. Engaging in open innovation, startups gain access to the incumbent's financial resources and broader knowledge base and gains legitimacy in the market. At the same time, the incumbent organization may exploit radical technologies proposed by startups (De Groote & Backmann 2020).

Despite potential benefits by offering complementary assets, open innovation projects may not always be viable. De Groote & Backmann (2020) explores the issue of partner selection between a startup and an incumbent firm. Alignment of the partnership might face challenges arising from asymmetry in bargaining power, goals, and organizational culture. They found that startups can rely primarily on personal networks to look for partnerships, while incumbents can utilize a broader range of screening sources, such as startup pitch competition events, business incubation,

and acceleration programs. Hewitt-Dundas & Roper (2018) studied market failure from incomplete information. They found that the level of engagement in open innovation falls below the optimal level because of the lack of information about the capability and trustworthiness of partners.

Social capital

Next, previous research has highlighted the importance of social capital in the entrepreneurial community and local economy. Malecki (2018) points to the influence of successful entrepreneurs serving as role models who offer advice and investment capital to new entrepreneurs. Andersson and Larsson (2016) empirically showed that individuals' decisions to become entrepreneurs are influenced by sharing residential neighborhoods with established entrepreneurs.

Not limited to the firm establishment phase, according to Linder et al. (2020), human and social capital combinations are also related to survival, whereas reliance on financial means alone is not. Connection to a social network affects fundraising (Casey 2012; Dudley 2021; Jones & Jayawarna 2010) and the probability of survival (Song et al. 2021). The young and small nature of a startup firm not only constrains the availability of internal resources but also restricts access to labor, capital, and R&D cooperation due to insufficient credibility. Social capital may provide an effective solution for dealing with the impasse.

According to Westlund and Bolton (2003), social capital provides knowledge (thereby increasing individuals' human capital) and trust (thereby lowering transaction costs) and promotes common actions (reducing market failure due to free-riding). Because these benefits reduce supply costs and increase producer surplus, social capital boosts entrepreneurship, which is typically constrained by internal resources. They observed that the effects of social capital are spatially limited by access to the social network, which helps explain entrepreneurs' uneven spatial distribution. Kiminami et al. (2021) found that attitudes toward business startups, inter-firm networks, social capital, and tolerance in each region have significant explanatory power for new business formation using Japanese data.

Market

Most startups seek to compete based on their novel technology. Because of unfamiliarity to consumers, shipping its first product for revenue is a significant accomplishment. Schoonhoven et al. (1990) found that startups in a market with a larger number of competitors tend to have a shorter time to introduce the first product. They suggest that customers will likely be familiar with and recognize the need for the new product in more competitive markets. They also find that firms founded in a region that centers innovative activities (e.g., Silicon Valley) have a shorter time to launch the first product.

While commercialization is a key challenge of a startup firm, Gans and Stern (2003) argue that

the presence or absence of established firms holding complementary asset necessary for commercialization crucially determines whether startup inventors seek cooperative options with incumbent firms or pursue greenfield competition. The complementary asset operates to integrate innovation to leverage an existing value proposition through licensing, strategic alliances, or acquisitions. Cooperative commercialization dispenses startups with investing significantly in internal resources, which incurs sunk costs. The market is favorable for a startup if innovation displaces existing technologies but sufficient complementary assets exist among established firms.

Another external resource discussed in the literature is participation in the export market. Baek and Neymotin (2016) found that the exports of a small firm are positively related to their level of productive efficiency. According to Del Salto et al. (2021), the interaction between export activity and human capital influences startup survival through learning by exporting. The export activity provides the knowledge required to capitalize on the potential of qualified human capital.

Synthesis

This subsection reviews the discussion on factors outside the firm conditioning the survival and growth of a startup business. We analyzed issues related with labor, funding, technology, social capital, and market. It is essential for startups with limited internal resources to deploy sufficient external resources. Previous researches suggest that external resources not only influence directly but also affect the outcome of firms through stimuli on internal resources. For example, a larger pool of high-quality labor promotes knowledge spillover. Internal human capital is also strengthened through learnings from coaching by venture capitalists, joining open innovation projects, and social and commercial connections.

Previous studies also point out that sources of external resources (labor, funding, technology, social capital, and market) tend to localize in particular locations. Although startups cannot control the availability of outside resources, they can control proximity to them by choosing locations.

4. Location and ecosystem

4.1 Choice of location

The previous section suggests that a firm's growth is constrained by access to adequate human resources and funding. Choosing the right location is a critical managerial decision to establish access to strategic external resources. In 2021, it was in the Tokyo region, where a remarkably 83.4% of the amount of startup finance in Japan was raised (INITIAL 2022). It comes as a correlation that, according to the Venture Enterprise Center (2022), venture business investment is also highly concentrated in Tokyo (76.3% of value and 65.9% of cases in 2020).

The disproportionate concentration of startup activities in Japan inspires some interpretations.

The first line of reasoning is based on knowledge spillovers and subsequent agglomeration economies. Acs et al. (2009) argued that entrepreneurship is systematically higher in the presence of knowledge spillovers. According to Yi (2018), startups and young firms prefer to stay in or move to municipalities characterized by own-industry agglomeration in their initial location decision. Andersson and Larsson (2016) reported that sharing a residential neighborhood with established entrepreneurs statistically significantly and robustly influences an individual's likelihood of becoming an entrepreneur. According to Sorenson (2017), the proportion of small and young employers in a region shapes the environment for would-be entrepreneurs in three ways: (i) beliefs about the desirability of starting a firm, (ii) opportunities to learn about entrepreneurship and develop the skills needed to succeed, and (iii) the ease of obtaining critical resources.

The second type of argument contends that startups with limited internal resources cannot make a location decision based on rational optimization. Dahl and Sorenson (2012) found that entrepreneurs prefer to settle in areas where they have deep roots ("home" regions). Barrios et al. (2021) found that time-invariant location-specific (historical, cultural, and geographic) factors explain 75% of the variation in new business formation across US counties. This explanation appears to be partially convincing for the spatial concentration of startups in Japan because top universities and large technology-based firms from which entrepreneurs are supplied are heavily concentrated in Tokyo.

As startups expand rapidly, diversify their activities, and strengthen their capabilities within firms, the initial location may no longer be adequate. Hence, we require a dynamic view of startup location preferences. Yi (2018) found that startups avoid intra-industry agglomeration afterward. Lee (2022) startups' early growth prompts them to relocate to a new location; relocating within the original state, instead of inter-state relocation, yields higher performance levels in terms of firm survival and sales growth.

4.2 The startup ecosystem

Given the importance of location in determining the proximity to strategic external resources, there is a growing view that regional factors act as a systemic resource to foster startup formation and growth. A business system comprises a set of elements and their relationships. Motivated by Japan's technology policy during a high-growth period of remarkable technological catching up, Freeman's (1987) seminal work introduced the concept of an innovation system, leading to the generation of extensive literature on the subject.

Although innovation and entrepreneurship are closely related, the research on innovation systems has a gap about entrepreneurs and new firms. Thus, specific systems approach to entrepreneurship has been proposed. Qian et al. (2013) argue that the system of entrepreneurship must be characterized at three levels; individual, organization (firm), and institution (rule of the

game). Systems of innovation approach pays attention to the interaction of the latter two, but it fails to address individual entrepreneurial decision on new firm formation as an important reflection of innovative activity, while its primary focus has been on incumbent firms.

Consisting of the three levels, the entrepreneurship system presents a holistic approach to human capital, knowledge transfer, and the formation of startups. Here, researches in economics and geography points to the geographical boundary of the institutional aspect. To begin with, regions that provide more amenities (natural, social, and cultural) have the advantage of attracting people with more creative and absorptive capacity. In such regions, people engage in exchange for more valuable information. This environment enhances the amenity for talented people, leading to a self-reinforcing agglomeration force. In this assertion, it is likely that agglomeration is positively associated with human capital and knowledge spillover, which are essential external resources for startups, as we discussed in the previous section. In a related discussion about agglomeration and entrepreneurship, previous empirical studies such as Delgado et al. (2010) point out that the presence of complementary economic activity in the neighborhood, rather than diversity of industries per se, creates externalities that enhance incentives and reduce barriers for new business creation.

The conceptual evolution from system to ecosystem is more recent. The analogy to ecology gives rise to the ecosystem concept. The National Geographic (<https://education.nationalgeographic.org/resource/ecosystem>) defines an ecosystem as "a geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life." It is further explained as "Every factor in an ecosystem depends on every other factor, either directly or indirectly." This concept has been applied to economic life in the form of a "business ecosystem," "innovation ecosystem," and "startup ecosystem." It specifies a limited geographic space in which various interconnected elements form a self-organizing system of business, innovation, and startup nurturing.

Previous works on the startup (entrepreneur) ecosystem comprise a broader range of actors than those in the startup (entrepreneurship) system. According to Tripathi et al. (2019), the term "ecosystem" refers to a network of people (entrepreneurs and investors), organizations (funding institutions, large companies, and universities), and other sources of resources needed by startups. It includes elements of support, finance, and localization. Support elements include incubators, accelerators, co-working spaces, events, government, legal framework, media, and mentors. Established companies, seed investors, and venture capitalists are all important components of finance. A stable and growing economy; a competitive market; good access to the global market; sound agglomeration economies providing access to technology, solid practical experiences, talents, customers, and suppliers; culture and history favoring new business ventures and openness to newcomers; and a high-level education that nurtures young talents are all examples

of local elements. Taken together, Malecki (2018) concludes that the local scale is the most appropriate for studying the function of these elements depending on each other.

5. Public support

In the final part of our analysis, we discuss policies as the most relevant external resources for startups. As previously discussed, interests in job creation and promoting innovation motivate national and local governments to implement policies and programs to encourage startups.

As Chambers and Munemo (2019) specified, new business creation is significantly lower in countries with high entry barriers and a lack of high-quality governmental institutions. Such argument may justify government interventions to favor startups by lowering entry barriers, but these measures must be implemented with the institutional assurance of not undermining efficiency and impartiality. We presented the recent measures adopted in Japan in Section 2.3, but the evaluation of these policies is the subject of future work. This section reviews empirical works from cases in other countries.

5.1 Financial support

Financial supports include direct subsidies, tax credits, or investment through government-backed venture capital funds. Previous researches have been skeptical about the effectiveness of financial incentives in promoting startup growth. For instance, Partridge et al. (2020) argued that government incentives have a statistically significant, negative relationship with overall and specific startup rates, including export-based and other industries that frequently receive incentives. These findings back up other critics' claims that incentives crowd out other economic activity, potentially slowing long-term growth.

Regarding the support through increasing the supply of investment capital by fostering venture capital funds, according to Breschi et al. (2021), the design and performance outcomes of supported firms differ depending on the type of sponsor. His analysis shows that startups financed by government-backed venture capital outperform startups sponsored by private investors.

Concerning the R&D tax credit, Fazio et al. (2020) found that it reduces research costs, encouraging investment in innovation, and promotes new firm formation. However, they showed that it does not significantly encourage high-growth-potential entrepreneurship, which is responsible for most new job creation. They conclude that counting R&D credits is no more effective than assisting startups without them to achieve growth outcomes. Accetturo (2022) found that although subsidies were effective at encouraging the entry of new firms with advanced technology, they did not increase the innovation potential or value-added of treated firms.

5.2 Support through public procurement (SBIR)

Japan adopted the Small Business Innovation Research (SBIR) system following the US model.

The US program was established with the enactment of the Small Business Innovation Development Act in 1982. Several pieces of research have been conducted to evaluate the effect. Galope (2016) found a positive impact on the propensity of small high-tech startups to innovate. According to Audretsch and Link (2019), firms with more technical and sector experience have seen higher growth rates from SBIR-funded research.

Gray et al. (2022) found that SBIR firms benefited from R&D benefits such as research cost avoidance, research savings, and access to expensive equipment. Realizing or expecting to realize commercial benefits (e.g., new investors, new products, and improvements to existing products). They found that SBIR assisted startups in making new connections with faculty and industry. SBIR firms that developed social capital through interactions with faculty and industry members saw significantly greater R&D and commercialization benefits.

Lanahan et al. (2021) found that SBIR awardees were motivated to increase open innovation. Outsourcing a portion of R&D allows these firms to hire fewer workers than non-awardees. They argue that SBIR should not be designed to boost innovation and increase employment. Galope (2016) rejected the "certification effect" or receiving an SBIR award to attract additional investment.

5.3 Acceleration programs

Acceleration programs assist startups in moving forward quickly by leveraging pre-existing networks and filling inexperienced entrepreneurs' resource gaps. Yang et al. (2018) posited that startup acceleration programs contribute to the entrepreneurial ecosystem by transforming entrepreneurs and their ventures at an early stage.

According to Cohen et al. (2019), acceleration programs, like venture capital, vary in design and performance outcomes of supported firms depending on the types of sponsors. Government-sponsored programs are motivated by regional development, investor-sponsored programs aim at a profit, and corporate-led programs have strategic objectives. Graduates of investor-sponsored programs are more likely to raise significant amounts of external funding and achieve higher valuations after graduation. Meanwhile, graduates of government-sponsored and corporate-led programs show no significant increase in the likelihood of receiving substantial funding. The former is valued lower, while the latter is valued higher. The improved performance of the portfolio of firms in investor-led accelerators comes at the expense of the investor's value captured in the form of equity.

5.4 Place-based policy

In Section 4, we discussed the importance of choosing a suitable location for startups to access necessary external resources, where those resources tend to agglomerate geographically through the interactions of individuals, organizations, and institutions. Given the presence of human

resource and knowledge spillover externalities, we may find a case for a place-based policy targeting such locations. One can imagine a scenario where a local government can increase the creation of new businesses by concentrating on certain types of economic activity.

However, Chatterji et al. (2014) caution that there could be decreasing returns to spillovers if localized externalities are real and powerful. Additionally, they argue that place-based policy favoring startup formation requires justifications based on local competence and impartiality for choosing a specific industry and preferring startups to incumbents. They propose regional policies to increase the local supply of entrepreneurs (i.e., entrepreneurship education and general science, technology, engineering, and math education programs, and high-skilled immigration policy) and to spur knowledge transfer across various local organizations.

5.5 Discussion about public support for startups

Previous studies reviewed in this section reveal the following issues. Existing studies do not support the effectiveness of financial aid and tax and subsidy per se on startups' growth. However, if they are combined with the facilitation of networking through SBIR with government agencies and acceleration programs with venture capital and established companies, more evidence for positive results is reported. In this regard, place-based policies aiming at increasing the local supply of human and financial resources and enhancing local interaction among actors in the entrepreneurial ecosystem, if they are well-targeted and guided, will complement the startup support policies.

Additionally, given the challenge of taking an ecosystem approach in fostering startups, a holistic approach is required to establish an adequate set of policies. It is crucial to pay attention to the coordination of policies between different ministries with different competencies, between sectors, and between central and local governments.

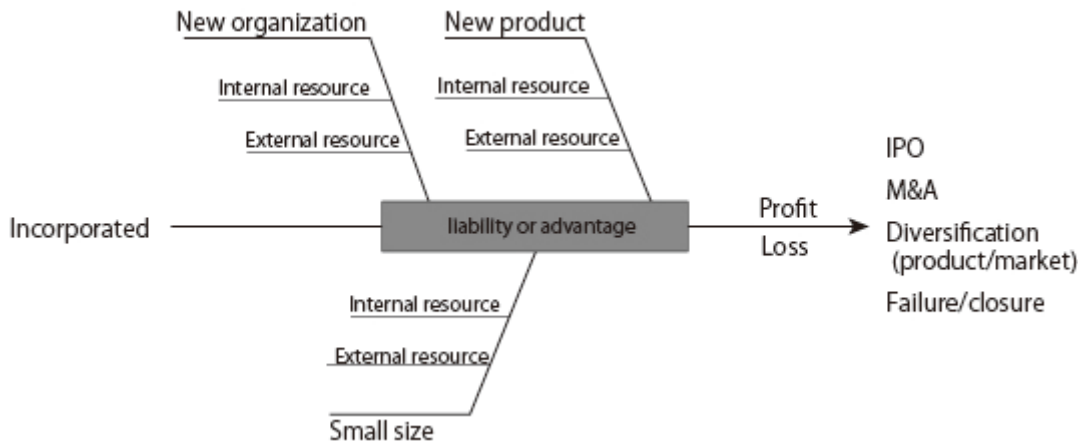
6. Concluding remarks

This paper reported essential takeaways from a scoping study on the startup firm's growth issues. It is intended to serve as the basic study to support a questionnaire-based survey on the growth of Japanese startups and the relevant determinants. For this purpose, we provided a selective but reasonably extensive review of studies, primarily from authors who refer to the resource-based view of the firm framework.

The schematic summary of our conceptual framework is provided in Figure 2. Once the company is incorporated, a startup is characterized by a new and small organization involved with the generation of more or less radical innovation aiming at introducing a new product or service to markets. They deploy available resources inside and outside the firm to conduct a venture. The newness of the organization and the product and the smallness often become liabilities to firms. But these organizations also have assets or advantages such as agility, flexibility, and originality

if successfully managed. In triumphant outcomes, entrepreneurs may exit with IPO or M&A or maintain the firm growth with product and market diversification. However, as shown by the high death rate of startup firms, many elements are involved in pushing the highly uncertain bid for making the newness of the organization and product and the smallness into liabilities or advantages.

Figure 2. The conceptual framework for analysis



Source: Authors' elaboration

The literature review provides a scholarly foundation for our intention to develop an analytical framework and propose a set of hypotheses to guide the design of a questionnaire-based survey for Japanese startups. The following seven issues drew our attention.

First, we found no broad consensus on the precise definition of a startup. Hence, we will have to carefully consider combining the various characteristics of the firms (e.g., age, size, growth performance, and technology fields) to define the contours of the survey and the targeted sample of firms.

Second, we reviewed previous research on resources within and outside firms using Penrose's (2009) resource-based approach. We understand that startups face severe limitations in terms of internal resources due to their young age, small scale, and unproven technology. These characteristics may drive startups to fail because liabilities of newness, smallness, and strangeness dominate. Firms strive for survival by deploying external resources, occasionally relying on social capital to gain a foothold in labor, capital, technology, and product markets. Location choice is another important managerial decision to improve access to external resources. We will examine firms' policies on engagement with social capital and location.

Third, our review suggests that the variables to inquire about a firm's internal resources at the firm level should include investment in innovation, new product introduction, and intellectual property issues. These variables are important to assess a firm's capacity to innovate, meet product-to-market needs, and deliver products or services on time (product-market fit). At the level of entrepreneur, the personal attributes of the founder, such as age, gender, education, and previous work experiences, are very important. At the level of the management team involved in decision-making, we should address the size, capacity (e.g., finance, marketing, and sales), and team diversity. The relationship between management team expansion timing and firm growth will also be examined.

Fourth, in terms of external resources, the study must evaluate access to finance, qualified labor availability, and the intended market's nature. Our emphasis on equity finance does not negate the importance of debt financing. Bank loans are the traditional funding source for small and medium-sized firms in Japan. In the case of startups, the relationship between venture capital and angel investors should be carefully analyzed. Moreover, R&D collaboration, outsourcing, and external consulting services will be critical variables in this regard. Another crucial factor is the knowledge gained from serving the market. Regarding markets, we should pay special attention to whether a company exports its products.

Fifth, we must consider the importance of the ecosystem. Therefore, we should investigate the relationship between firm growth and shifting emphasis on location-specific factors. Location choice models will be extremely useful. The emphasis on the ecosystem reflects a potential limitation of startup firms' internal resources.

Sixth, we shall propose a set of questions to explore what is the perception of respondents and their strengths and weakness. We shall attempt to do so by relating the attributes of the internal and external resource to the firm's recent performance and future growth prospects. We must also connect their self-evaluation to their views on the regional policy environment.

The policy dimension is the last issue requiring our careful attention. Our research should consider how to question startup representatives about the relevance of different policy instruments to the growth of the firm and the availability, efficacy, and effectiveness of different policy instruments being mobilized in Japan.

In summary, with the Japanese context as a reference, our basic proposition is that the growth of a startup is a function of predominantly positive interaction among all or some of the following elements: the Schumpeterian spirit of the entrepreneur, the existence of a dynamic set of capabilities within the firm, including the capacity to market and explore potential demand, its location within reach of an innovatively dense ecosystem, the access to adequate financing and the effectiveness of proper public support instruments.

We hope that, with an adequate research instrument and proper access to firms provided by an experienced survey institution, we will be able to analyze the recent and prospective growth of Japanese startups and the relevant determinant factors. If we are successful, we trust that we can provide interesting insights into the startup research field and contribute to the enhance the knowledge base for policies aiming at fostering the startup ecosystem in Japan. We expect that we will be able to report the empirical results in the near future.

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