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The role of corporate funds and other variables in startup performance

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Abstract
Survival remains an important determinant of success of startups in the startup ecosystem. The study investigates the role of corporate funds alongside size, sector, incubation and level of technology used on success of startups in India. Utilising fsQCA approach in the dataset containing early and later stage startups. the findings reveal that corporate funds in startups individually impact the survival of firms but the effect is not significant. There is a positive impact of corporate funds alongside other variables namely; size, sector, incubation and technology employeed.

Keywords: Startups, Financing, Corporates, Survival, fsQCA

1. Introduction
There are multiple source(s) of finance to be availed for startups depending in their usage and stage they are currently working on. In the seed stage family and friends, own funds, banks and in the later stage angel investors, venture capitalists, accelerators, crowdfunding, government programs and private equity is available for startups. each and every has its own advantages at the same point of time suffers from few limitations of their own. Among all these, investment in innovative enterprise by big corporate houses has been a new trend. These companies take the leverage of innovation by startups. these innovative ideas seem impossible for in house companies following traditional business practices. Startups help in upscaling and down scaling of operation boosting their supply chain. Moreover, investment in startups can generate long term return for companies.

Through corporate venture capital, companies play a crucial role in startup development. They offer startups sufficient funding to fuel their goals in different stages. Beyond money, corporate funds comes with company's vital resources, network chain and mentorship. Investment from corporates serves as signal of market validation to other financiers that it has growth potential. but apart from above merits, the question arises what is the role of corporate funds in long term success of startups. does startups sustain market competition by the help of corporate investment. The paper analyses the role of corporate funds in determining the survival of startups. Along with other variables like size, sector, level of technology, and support of incubators/accelerators corporate funds effect have been analysed on the survival of startups.

2. Literature review

Verdu et al. (2014) in their study 'Firm survival: the role of incubators and business characteristics' analysed the impact of business incubators on firm survival. FsQCA is used to compare incubated and non-incubated firms highly employed in social phenomenon with small sample size. Business size remains sufficient condition for firm survival measures as proxy variable. Firm sin manufacturing sector that used incubators have a greater survival rate than in the service sector. Incubators service needs to be supported by other business characteristics to have positive impact on survival.

Sarto et al. (2020) had conducted a study on 'The role of accelerators in firm survival: the fsQCA analysis of Italian startups' to explore the relationship between participation in acceleration programs and firm survival fuzzy set qualitative comparative analysis mostly used in small and intensive study was used to study the effectiveness of accelerators in determining of startup survival. Participation in accelerator program does not guarantee firm survival. Technological nature, and non-accelerated startups have higher chances of survival. Relationships between technology startups accelerated engaged in startups show better results in stability and long-term survival. The survival rates were higher in small teams in service sector.

Freemen and Engel (2007) conducted a study 'Models of innovation: startups and mature corporations' to explore the dynamics of innovation in startups and corporations, emphasizing the roles of venture capitalists, resource mobility, and incentive alignment. It outlines the evolution of startups from initial resource drawdown to revenue generation, highlighting the transition from inventor-led leadership to structured management as companies grow. The text contrasts the innovation processes of startups and established firms, noting the challenges faced by mature corporations due to bureaucratic structures and risk aversion, while also discussing the importance of aligning interests among stakeholders and the complexities of managing growth and creativity.

Reipe and Uhl(2019) had conducted a study on 'Startup's demand for non-financial resources: Descriptive evidence from an international corporate venture capitalist' to investigate the demand for non-financial resources among early-stage startups in Europe and Latin America. The study revealed that the requirement for assistance varies significantly basing on business model and size. Startups seek support in establishing commercial networks, fundraising, and marketing, with Business to Business startups showing a better demand for commercial connections, while Business to Consumer startups prioritize fundraising and marketing.

3. Objective of the study

The main objective of study was to determine the impact of corporate funds in the success of startups. the paper aims to find out the impact of startups whose major equity stake is in the hands of well established companies. Other factors that are size, sector, technology, and incubation have also been tested to determine their combine effect on survival of startups. Long term success is measured by way of survival in the form of Initial public offering or acquisition or being a unicorn.

4. Hypothesis of the study

The following hypothesis have been tested in the study:

$H_0$1: **Survival of startups is independent of Corporates as a source of financing**

5. Research methodology

5.1: Data collection – Data about startup's size, sector, equity, sector, level of technology used have been taken from Tracxn. Data have been collected on the basis of stratified random sampling. 30 startups were randomly selected.

5.2: Determinants of survival

Prior studies have revealed that goal achievement, effective management, sales, profit, jobs created, market share, acquisition at higher value, listing, meeting consumer demands, high quality products and higher financial performance are the indicators (or factors) of successful startups.

5.3: fsQCA (fuzzy set Qualitative Comparative Analysis)

Configurational analysis is widely used in underlining the concept of equifinilty. It refers to a phenomenon where final outcome can be achieved from different initial conditions from a variety of paths. Qualitative Comparative Analysis (QCA) undertakes intensive studies of a small number of case studies to reach final result. It compares cases with presence or absence of two groups. The two groups are presence and absence of a particular source of financing of firms who have completed the stages of startup in maturity stage.

The variables used in fsQCA are size, sector, technology, and support of Incubators/Accelerators to determine their effects on survival of startups. Use of these variables are based on prior work done by different researchers. For example, 'size' which represents the number of employees as the fuzzy variable used in 'fsQCA' is based on the work of Mas-Verdu et al. (2015). Similarly, use of other variables, namely, sector, technology, and support of Incubators/Accelerators are based on the work of Coleman et al. (2013), Nerkar and Shane (2003), and Cohen and Hochberg (2014), respectively.

In the present study, the data has been analysed by using MS Excel 2016 and fsQCA 3.0 application.

Steps followed for fsQCA:

The following steps have been followed for fsQCA:

Step -1: Construction of truth table.

Step -2: Reducing the number of rows having minimum consistency of less than 0.75. Those cases which don't reach the threshold are removed.

Step-3: Construction of algorithm that simplifies combinations and minimizes solutions. In this step three kinds of solutions are obtained. They are parsimonious solution, intermediate solution and complex solution. Parsimonious solutions involve all simplifying assumptions, whether easy or difficult counterfactuals; intermediate solutions involve simplifying assumptions including easy counterfactuals; and complex solutions include neither easy or difficult counterfactuals.

Configurational comparative method contributes both quantitatively and qualitatively. QCA measures complex casualty between conditions and nonlinear relations.

The present study has attempted to establish logical connection between different combinations of factors such as size, sector, source of financing, support of incubators/accelerators.

5.4: Descriptions of variables and coding

Five indicators (or factors or variables have been used in this study to measure the success of startups in the form of survival. They are: size, level of technology used, industry/sector, source of financing, and incubation. A brief description about these variables have been given in Table 1. These variables have also been assigned quantitative value of '0'(zero) or '1'(one) as indicated in Table 1.

Table 1: Descriptions and Codifications of variables

Variable	Description	Conditions	Codes
Outcome: Survival	Dichotomous variable	Survival	1
		Not survived	0
Size of the firm represented by number of employees	Continuous variable based on number of employees	Fuzzy variable	0 to 1
Technology based firm **(TBF)**	Variable distinguishing between tech based and non tech based firm	Tech based	1
		Non-tech based	0
Industry **sector** divided into manufacturing or services	Dichotomous variable distinguishing between manufacturing and service sector firms	Product	0
		Service	1
Financing representing either corporate funded or not	Dichotomous variable whether they have been funded or not	Yes	1
		No	0
Incubation if the firm has received support from incubators and/or accelerators or not	Dichotomous variable whether supported by incubators/accelerators	Yes	1
		No	0

Prior research studies have proved these variables have positive impact on the firm's survival. Say for example, small firms have lower chances of survival compared to larger firms (Agrawal and Audretsch, 2001). Firms bigger in size are more likely to grow (Fritsch et al., 2006). Industrial sector also impacts the outcome of the firms (Coleman et al. 2013). Higher technological based firms have chances to survive better than non-technology based firms due to their ability of scalability and attractiveness (Wilbon, 2002). Incubation is a useful tool for improvement of firm performance through incubators (Schwartz, 2013). Finance is a central concern for survival of startups in the long run and absence of which may lead to failure (Casssar, 2004)

Measurement of size of firm is a fuzzy variable. Zero (0) is assigned to micro firms and small firms are assigned values above zero and close to 1. The number of employees has been used as a proxy for size, as many startups lack sufficient assets. Number of employees has been grouped and ranked starting from 1- 5000 employees (Verdu, et al.2012). Technology based firm (TBF) refers to firms who use technology for operation extensively, and are represented as a dichotomous variable. Industry sector is also dichotomous where '1' is assigned to Service and '0' is assigned to Product. A particular major source of financing is represented as dichotomous variable where '1' is assigned to presence of the source and '0' is assigned to absence of the source. For the purpose of analysis of results of presence or absence of

a particular source of financing, startups have been divided into two categories Corporates backed and other financing mode.

6. Analysis

Role of Corporate funds on startup survival.

Sample include the startups whose major stake (equity) is held by big corporate houses and startups which are backed from other sources. In order to test if corporate funds determine the success of startups, the fsQCA has been applied taking the five factors, namely; size of firm, sector, incubation, corporate investment and use of technology and the result has been displayed in Table 2.

Table 2: Analysis of necessary conditions for survival of startups backed by corporate funds

Conditions	Consistency	Coverage
Size	0.4444	0.2758
~size	0.5555	0.3448
Sector	0.5555	0.2380
TBF	0.6666	0.2500
~TBF	0.3333	0.6000
Corporate	0.5555	0.3571
~corporate	0.4444	0.2666
Incubators/Accelerators	0.1111	0.2000
~incubators/Accelerators	0.8888	0.3333

Note*: Conditions tested: exit, Outcome variable: exit*

It is observed from the Table 2 that none of the factors has a coverage value of 0.9 or more. This implies that no single variable has a determining effect on the survival of the firms under study. This further means that a combination of factors drives success of startup in India. Therefore, to determine which combination of factors has contributed to the success of startups in India that analysis of causal conditions has been done by using the equation:

Survival = f (size, sector, TBF, incubators/accelerators, corporate funds)' and the result has been displayed in Table 3, with frequency cutoff: 1, and consistency cutoff: 0.8.

Table 3: Analysis of causal conditions of factors impacting survival

Combinations	Raw coverage	Unique coverage	Consistency
~size*~sector*~TBF*~Corporate*in/acc	0.0833	0.0833	1

Note: Solution coverage: 0.277778, solution consistency: 0.909091

Explanation: Size = bigger size firms, size = smaller size firms; Sector = product sector, sector = manufacturing sector firms; TBF= Technology backed firms; Corporate funds = presence of major equity by corporate funds and corporate funds = absence of major equity stake by corporate funds; In/acc = presence of support of incubators/accelerators, In/acc = absence of support of incubators/accelerators.

As stated in the aforesaid paragraph, as per Ragin (2008) and Woodside (2012), the solution consistency value should be higher than 0.75 and the coverage value should be more than 0.25 in order to consider that the given combination of factors contributes to the success of the firms. It is observed from Table 3

that smaller size of firms, in the manufacturing sector, with the use of technology, incubation, and corporate funds have higher consistency value, i.e., 1 (> 0.9) for survival of the firm but has a lower coverage value, i.e., 0.0833 which is less than the threshold limit of 0.25. It may therefore be concluded that corporate funds with size, sector, TBF and incubation are not sufficient to determine the survival of startups in India. In other words, survival of startups in India is independent of Corporate funds as a source of financing. Hence, the hypothesis ***H_o1:*** **Survival of startups is independent of Corporates as a source of financing** is accepted.

Conclusion

The paper analysed the role of corporate funds in the long term success of startups. long term success measured by the survival of startups after 5 years had been used as the indicator in the study. The analysis revealed corporate funds individually impacts survival of startups positively but the impact is not significant. Combining with other factors i.e., size, sector, incubation and level of technology used corporate funds have higher consistency but doesn't impact survival of startups with above mentioned factors.

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