

## Role of Venture capital on the survival of Startups: a fuzzy set Qualitative Comparative Analysis

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### ABSTRACT:

Startup needs financing at different stages from ideation to maturity stage. In the initial years the requirement of finance is small they need infrastructural support and networking. Increase in size of the firm requires large amount of firms, marketing, networking, expertise in their respective field. These funds are supported by Angel investors, Venture Capital(VC), Bank loan (some cases) and Government funding. Among these VC are prominent source of financing especially at the later stage. But Raising finance from VC is a crucial task involving pitching ideas, generation of traction and communication of business model. Most of the firms are unable to generate funds from VC due to problems in scalability and sustainability. Owing to the expertise VC would be offering in the funding stage the demand for VC funds is very high. But all the firms raising funds do not succeed and there is no guarantee that those firms who are unable to take advantage of VC fail. The present study uses fsQCA analysis to determine the legitimacy of VC funding. The study tries to find out the combinations with which VC funding will lead to favorable outcomes of survival. VC funding have strong impact on survival of firms but it proves to be insufficient alone in determining results. Size, sector, use of technology and social media also show positive influence on startup survival when combined with VC funding.

**Keywords:** Startup, Venture capital, Survival, fsQCA, Financing.

**JEL Classification:** G23, G24, M13, N25, O16.

### 1. Introduction

Researchers have shown that finance is the primary requirement for any kind of startup to grow and succeed. All the operations from development of prototype, launching of marketing campaign to scaling up operations the use of financing cannot be compromised for successful operations of activities. Startups go through different stages during their entire lifetime i.e. from ideation stage to maturity stage. In each of the stages the magnitude and size of financing requirements differs. In ideation stage firms mostly rely on own resources, sharing of assets, sacrificing imputed salary, deferring payments known as bootstrapping. Also the reliability is from own saved funds or from family, friends. Family and friends act as financiers and sometimes the motivator for founders. Finance requirements are not so large Firms even if being tech or non tech need funds and it is necessary for their survival to carry out their operations. Financing becomes difficult for younger generation as most of the founders have educational background having low business experience. Moreover, less experienced founders lack collateral and absent transactional history. As per reports of NASSCOM, 2020 50% of founders of new firms have engineering background, 25% are management graduates and rest 25% have other educational degrees.

Realizing the situation, the government has introduced incentive programs to encourage budding entrepreneurs in India from 2015. Startup India, Make in India and other such programs offer funding support to nascent firms. These initiatives give ample opportunities for entrepreneurs in smooth functioning of operations. Financial support is provided through incubation centers funded by government agencies. Sound ideas are nurtured in campus those fulfilling required criterion get financial support for nearly 1 year. Startups generating traction earn revenue in initial stages to meet up their expenses but these revenues are inadequate citing the expansion and growth. At the same point of time family and friends are found to be incapable of providing further round of financing due to their limited resource. Startup cannot depend on incubators/ accelerators for long period of time offering is for fixed cohort based program (Cohen, 2013) they may have to disrupt the further operation due to unavailability

of capital. Also, during the scaling period firm needs guidance and mentorship in handling technical and non technical issues arising out of business growth. They need expertise, networking with partners, organizational development for new firms is out of their reach due to lack of market and business knowledge. Thus, the role of an external agency i.e. venture capitalists becomes so important. In the early stage and later stage of startups VC firms investment becomes critical owing to the need of funds for scalability and expansion.

Venture capital being an intermediary of those who are investing and those who need investment. They channelize funds pooled from investors into portfolio companies to maximize the return for their investors. Venture capitalists acts as stimulator for entrepreneurship activities in an economy. In the early stages startups needs expertise in distribution channels, networking with partners, negotiating and industrial knowledge. VC firms provide financial and non-financial services. These services assist nascent firms in building strong organizational base. Research have been focused on the services provided by VC to unstable firms. Venture capital are drivers of financial and non financial support in early development, pre-operation, market research, product development and product launch phase (Gompers and Lerner, 2004). Most of the research have been surrounded in deciding out the benefits of VC given to startups. They help in accelerating innovation through increased patenting (Gompers and Lerner, 2001). They provide Powerful mentorship under VC firms helping in building company (Lerner, 1995). The service of Social networks of VC's is assisting these firms to secure resources. VC's social capital having a network of financiers, service providers, partners can bring in developing startups (Shao and Sun, 2021). VC's have required expertise and skill in solving critical investment problems. They are believed to be competent enough to take risk selectively avoiding capital invested by other parties from failing because VC are managed by industrial experts having strong knowledge of business and market operations owing to their experience. But the domain of research i.e. effect of lack of financing from VC is still unexplored and on the other hand only 10% startups get to acquire funds matching certain criteria of VC firms (Maier and Walker, 2003) from VC. It shows the constant perseverance of firms to acquire VC funds whereas other alternative can also be assessed. These alternatives include business angels, corporates and if possible revenue generated can be of great help for further expansion in some sectors. Now the question arises regarding legitimacy of VC investment in startups. There are thousands of startups in India and lot of them even if having good revenue model they fail to succeed in long term (Report of IBM 90% failure rate). As per venture capital association of India failure rate of VC invested firms is 25% -30% which means not all the firms funded by VC succeed. So, is VC's role overestimated or underestimated in success of startup? Even if studies showed contribution in terms of their services during the tenure, there is studying potential gap in proving legitimacy of VC funds. The high % of failure raises a question to be answered. We have tried to solve this question by offering a model whether VC firms investment leads to successful exits or not. Moreover, there are different factors that may influence their survival. There may be difference in outcomes as startups differ in their size, technology they use, sector in which they operate. Using the factors from past literature survival of firms is analysed. They have been divided among different categories i.e. manufacturing or service and other basis. We try to answer the questions as to what configurations are vital for survival. IPO (Initial Public Offering) and M&A (Mergers & Acquisition) are taken to be measure of successful outcome for startups. We have tried to answer the above questions. Findings will contribute to existing literature regarding VC role in financial market. it will assist founders in deciding about the need of VC funds. Do VC influence activities so much that the survival of startups is affected. research will entail the role of VC in startups survival we will be driving out the configurations of combination necessary for survival of startups. These configurational features provide VC firms to decide before taking investment decisions. Ist section starts with introduction, IIInd section relates to literature around VC, IIIrd section contributes in theoretical building of Hypothesis, IV section covers research design, V section analyses the results and discussion of results and last section ends with conclusion and contribution made to the existing literature.

## 2. Literature Review

Traditional VC structure originated in Silicon Valley can be mainly applied to startups which are mature enough and have generated some kind of revenue (Robb and Robinson, 2014). In the case of corporate VC, they invest both for return and strategic vested interest relating to technology and markets (Dushnitsky and Lenox, 2006). Corporate in house research sometimes are insufficient to match up with the current innovation ecosystem. Startups in innovation are far more superior in introducing new technology therefore corporate VC take the benefits of innovation by providing expertise and market knowledge. Specially Corporate VC gives assess to technical, market and business knowledge (Maula and Murray, 2001). As corporates are well established firm they have better hold in the market in dealing with any kind of situation. Foreign VC located in a country different from portfolio company helps in introducing more wide variety of customers and suppliers compared to domestic customers (Makela and Maula, 2005).

Different dimensions of literature have studied the following benefits of VC: (a) Social capital of founders and cofounders shows a positive effect on VC financing. social capital i.e. structural, cognitive and relational social capital showed that structural and

cognitive dimension facilitate venture capital financing (Shao and Sun, 2021). (b) Venture capitalists give access to networks like lawyers, accountants, strategic partners play an active role in monitoring (Lerner, 1995). (C) Through VC Increasing potential is achieved by exploitation of large network of partners, clients and suppliers (Hochberg et al. 2007). There are 2 signals that are traditional quality signals and digital signals determining venture capital investment. Traditional quality signals include experience in industry, collateral, work experience. (d) VC assists in strategic and management process and additional financing requirements (Macmillan et al. 1989; Hellaman and Puri, 2002). (e) Venture capitalist play significant role in financing young and innovative firms (Gomper and Lerner, 2001). (f) Venture capital have technological expertise which makes them fit to identify projects that banks and to undertake projects risky in nature (Bergleof, 1994)

Research have been conducted on the factors affecting VC investments. Educational backgrounds known to have insignificant impact on venture capital financing while networking and digital signals have positive effect on assessing VC financing (Nigam et al., 2010). Startup experience positive affect VC financing. (Beckman et al., 2007). On the other hand, use of social media influence overall performance and VC financing. (Goh et al., 2013). Studies have been conducted on the effect of VC investment in numerous firms. Observation was made that VC backed firms have higher potential to generate revenue from optimization of capital and the effect of VC have marginal effect on operating cycle efficiency (Alperovych and Hubner, 2013). In the areas of factors that affect literature surrounds on numerous factors i.e. Digital entrepreneurship attracts VC investments and as it has a significant and positive impact on financing (Khan et al. 2021). ICT penetration and digital economy have positive effect on early, later and total investment (Khan et al. 2021).

Compared to banks, government programs, incubators which don't have any say in management being only fund provider's VC take equity stake in the company/ equity is superior mode of finance for innovation activity (Hart, 2001) given by VC. Venture capitalist have higher technological expertise by which they can identify quality startups and Monitor firm's operations. VC monitoring can help in assessing discipline, development of portfolio firms, reducing moral hazards and wasteful expenditure (Gompers, 1995). Effective mentoring may lead to reducing moral hazard for both the parties and wasteful expenditure of the society (Gomper, 1995). Venture development can be enhanced by the assess to network of participants in the market namely lawyers, suppliers, strategic partners (Hochberg et al. 2007). In the areas of other financing alternatives, Banks also play a significant role in financing startups. In Germany, small and innovative firms are more likely to be backed by VC rather than banks. The same goes with other European countries like Belgium, Italy where banks are still prominent (Colombo and Grilli, 2006). Presence of VC's enhance growth rate of firms (Audrestsch and Lehmann, 2004). VC shows strong quality signals to externals regarding quality and future prospects of ventures (Megginson and Weiss, 1991)

There are differences in opinion among researcher's regarding performance of VC backed companies. VC backed companies doesn't grow faster than non VC backed companies (Bottazi and Da Rin, 2002). Also Venture capital association of India says 30% failure rate of VC backed companies. VC investments patterns can be different in developed and developing countries since no two countries have similar economic conditions. In India the whole economy condition of startup ecosystem has unique features different from rest of the world. So, it becomes imperative to study role of VC in achievement of their objective. VC takes stake in the equity of companies they appoint directors in the management of the company. They monitor the activities of the firm by taking important strategic decisions. Vested interest may lead to taking decisions which hamper the rights of founders or less fruitful for investment.

### 3. Theoretical background

#### 3.1.1. Meaning

Venture capital are active investors which pursue strategic decisions by controlling equity stake (Gompers and Lerner, 1998). They can be described as financial intermediaries investing in small, privately held companies (Gompers and Lerner, 2001). VC share knowledge of market and business conditions to the portfolio firms. These knowledge is a result of their own experience in which they have invested. VC funds have limited life and close ended funds. They are investors intermediaries between borrowers and lenders for markets where both of them have to increase costs to come together (Jeng and Well, 2010). VC experts are primarily active as advisor or even a manager of the firm (Korton and Lerner, 1998). The investment by VC support a firm in early development, pre-operation, market research, product development and product launch phase (Gompers and Lerner, 2001). There is a common view in entrepreneurial finance angel investors take care of seed funding and companies surviving seed stage proceed to VC funding.

Citing the benefits that VC provides to its portfolio companies, there are other literature citing that neither positive nor significant impact of VC on performance of startups. In the research of Bottazi and Da Rin, 2002 showed that there is no difference in growth and development of VC backed and non VC backed companies. At the same time venture tend to have higher dynamic

capabilities due to product and management development (Arthurs and Busen, 2006). The study also revealed VC companies do not show dynamic capabilities relating to legal and government regulation threats.

**3.1.2. VC as medium of financing:** VC is not the only source of financing there are other modes of financing namely, Angel investors, Bank loan, Incubators, accelerators, and government programs. Family and friends provide finance idea stage at the time when firms lack tangible assets. Angel investors are wealthy individuals who analyse business opportunities, negotiate deals and manage investment. Angels are high worth individuals are motivated by societal development goals in form entrepreneurship developments. In some situations Angels and VC complimentarily develop startups and in some cases they are treated as substitute (Sabarinathan, 2014). Bank loan does not affect the equity position as they are more interested in timely payment of fixed dues. At the same time, they don't exercise management rights and are of no use when it comes to guidance and mentorship is concerned. Government programs in India namely Startup India, Startup Odisha, Make in India the amount sanctioned under the above is only beneficial for smaller concerns in the initial stage. In the long run the firm will have to depend on other financing sources. These financing options have pros and cons of their own.

The above discussion puts forward a lot of questions regarding legitimacy of sources of financing especially venture capitals for survival. Whether funds for venture capitalists effect the survival of firm and are other sources of financing be helpful in survival of the firm.

#### **H1: Financing from VC affects positively outcome of startups**

Easy infrastructure support, hassle free setup, scalability and repeatability of operations have led to continuous increase in the number of startups firms. But these firms rarely survive due to inadequate finance they receive over the course of time. There is clear link between survival rate of firms and capital resources (Coad, Frankish, Roberts and Storey, 2016). Nascent firms may not receive adequate finance from the market making it difficult to survive. Finance rounds depends on a lot of factors i.e. revenue, growth, innovation and founding team. A lot of factors both macroeconomic and firm level factors affect the survival of firm. For our study we take firm specific factors determining survival. The factors include firm size (Agrawal and Audrestch, 2001), industry sector (Dunne et al. 1989), technological nature (Wagner and Cockburn, 2010), export activity (Lee et al. 2012). These factors are consistent with (Sarto et al. 2019) determining impact of accelerators on survival of firms. In the current era startups use social media as powerful means of communicating their novel ideas. Social media network can disperse knowledge attracting investors and potential customers. It can be used to build a strong brand which can help in survival of startups. So, we have taken social media also as indicative factor impacting startups.

#### **H2: The different configurations like size of the firm, technology, export activity, social media and industry sector impact the outcome of the firm.**

The different configurations discussed here are the sector involved whether manufacturing or service, size of the firm, support of VC and presence in social media.

### **4. Research Methodology**

**4.1 Data collection:** Data has been collected from Bengaluru, the Startup hub of India According to Economic survey, 2022 report it has the highest number of surviving startup nearly 11000. New Delhi and Mumbai have grown in terms of number of startups registered but sustainability of startups in Bengaluru is high. Startup ecosystem in the city is accompanied by supportive government policies, engineering and management colleges, software industry, hub of MNC contribute towards growth of startup. Inconsistency and absence of government record was a problem confronted while data collection. Data was collected from secondary sources using startups company's websites, Tracxn, LinkedIn, Crunchbase. The data collected was cross checked to determine the current condition i.e. outcome of startup. Samples have been drawn by the method of simple random sampling technique. In total of 51 startups were taken in the study from Bengaluru. Those startups outside the geographical location were removed. Data included both survived and non-survived firms, this was done in order to reduce sampling biasness. There are mainly two outcomes of the operation

- I. Initial Public Offering/ Merger & Acquisition
- II. Closure of the firm due to poor performance.

Limited availability, no compulsion of submission of documents and disruptive activities of startup limit the scope of using secondary data for analysis. compared to listed company's startups failure rate is very high (90% as per reports of IBM). Also all the startup achieving success may not go for IPO. Some of them are merged and acquire by big companies at a very high rate of valuation (Case of Flipkart acquired by Walmart). Both IPO and M&A mark moderate

success of startup in reaching their target. Their main aim is to offer a sustainable, scalable business model and IPO is definitely a means to achieve it. We will be using IPO and M&A as positive outcome of financing.

#### 4.2. Sample

Data has been collected from IT hub of India that is Bengaluru. All the startups registered after 2012 have been selected. Existence and non-existence has been finalized by study of internet articles and their official websites.

**Table I: Sample in the study**

VC backed	Non VC backed	Survived	Not survived
30	21	20	21

**4.3: Methodology:** Due to limited data we have used Configurational Qualitative comparative analysis. The method is vastly used in studying social phenomenon. Qualitative study permits analysis of small number of cases but intensive and integrative (Ragin, 2008). Following are the steps followed:

- (1) Construction of truth table
- (2) Reducing number of rows having less consistency
- (3) Construction of algorithm that simplifies combinations and minimizes solutions.

Configurational comparative method jointly contributes in research both quantitatively and qualitatively. The method can be applied when we can reach the same outcome irrespective of starting from different initial conditions. The same final state is the outcome of activities i.e. survival of the firm. QCA measures complex causality between conditions and nonlinear relationship. We have used fuzzy set as the causality in research phenomenon is different and conjunctive (Kraus et al. 2018). The study aims to establish logical connections between different combinations. Combinations could be size, sector, industry, VC support.

Any Startup works for sustainable revenue model being a full-fledged company or being acquired at higher valuations marks moderate success for new firms. We have used dichotomous variable for outcomes. These variables are coded as 0 or 1 showing presence or absence of a variable. Number of employees is the proxy for size for startup; it is used as a fuzzy variable. The variables are presented as under:

**Table II: Descriptions and Codifications**

Variable	Description	Codification
Outcome: survival	Dichotomous variable	Survival 1 Not survived 0
Size	Continuous variable based on number of employees	Fuzzy variable
TBF (Technology based firm)	Variable distinguishing between tech based and non-tech based firm	Tech based 1 Non-tech based 0
Sector	Dichotomous variable distinguishing between manufacturing and service sector firms	Manufacturing 0 Service 1
VC financing	Dichotomous variable whether they have been funded by VC or not	Yes 1 No 0
Social media	Dichotomous variable whether the startup is active on social media platform	No-0 Yes -1

Earlier research has proved these variables to be affecting firm survival. Small firms have less chance to survive 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 firm (Coleman et al. 2013). The resources in manufacturing and service sector contribute towards growth of new firms. Technology has chances to survive better than non-technology based firms due to their ability of scalability and attractiveness (Wilbon, 2002). Social media is a tool for mass communication of ideas and innovations. It can assist in development of traction in seed stage and early stage.

The following conditions comprise firm size, technology-based firm, size, use of venture capital, sector of operations and use of social media. Measurement of size of firm is a fuzzy variable (micro firms (0) and small firms (close to 1)). Number of employees have been used as a proxy of size as most of the startups lack sufficient assets. Number of employees has been

grouped and ranked starting from 10- 5000 employees. TBF is use of technology for operations is a dichotomous variable, innovation is driving force for distinction. sector is also dichotomous (service -1 and manufacturing -0). Use of social media is a powerful tool for marketing and promotion, it is a dichotomous variable (use – 1, not using -0). Presence in social media applications basically LinkedIn has been used for study. The firms have in the past raised finance from VC is a dichotomous variable (presence – 1, absence- 0).

## 5. Data analysis and Discussion

The section provides the analysis of fsQCA in determining the role of VC and configurations needed for survival of startup. Outcome is the dependent variable (survival). by using the above conditions, the model for analysis is Survival = f (size, TBF, social media, VC, sector)

The first step will be to determine conditions necessary for outcomes. The acceptable consistency should be greater than 0.75 for any condition solely applicable for determining dependent variable. Analysis have been performed for each variable to arrive at consistency for survival.

**Table III: Analysis of Necessary Conditions**

Outcome variable: Survival

Conditions tested: Consistency Coverage

	Consistency	Coverage
Size	0.737500	0.670455
Social media	0.700000	0.642857
TBF	0.650000	0.515152
Sector	0.700000	0.466667
VC funding	0.740000	0.600000

Table 3 shows consistency of each variable. None of the variable has more 0.75 consistency that means all the variable individually are inconsistent to determine outcome (survival of firms). Bigger Size of firms and VC funding having higher consistency but are insufficient solely to affect results. The analysis confirms that VC funding alone cannot give startups survival result.

There are in total three solutions in standard analysis of fsQCA that is parsimonious solution, complex solution and intermediate solution. parsimonious solution involves simplifying assumptions while intermediate solutions involves simplifying assumptions by including easy counterfactuals. Complex excludes both easy and difficult counterfactuals. We have used intermediate solutions for analysing configurational results.

**Table IV: Results of Intermediate solutions (Outcome: Survival)**

Casual configuration	Raw coverage	Unique coverage	Consistency
size*social*vcfunding	0.5875	0.2625	1
size*TBF*~Sector*~vcfunding	0.1375	0.1375	1
social*TBF*~Sector*vcfunding	0.45	0.125	1
~size*~social*TBF*Sector*~vcfunding	0.0375	0.0375	1

Solution coverage: 0.8875

Solution consistency: 1

In table 3 size\*social\*vcfunding are sufficient condition for survival. It means smaller size firms and bigger size firms with the support of VC funding and active social media presence can achieve successful outcome for startup. Second configuration size\*TBF\*sector\*vcfunding show high consistency which means it is a significant configuration for analysis. Social\*TBF\*sector\*vcfunding is also a significant configuration for survival. Size\*TBF\*social\*vcfunding also proves that these are sufficient contributions for survival.

The second analysis is about non survival of firms (closure of firms). The analysis shows none of the configuration have raised a consistency of 0.75. By default, options fsQCA applications does not show result of value less than 0.50. non survived firms have not met the threshold of size, TBF, sector and VC funding.

## 6. Conclusion and Implications

**6.1. Results:** The objective of research was to evaluate the role of VC in determining the successful result of startup and to derive out configurations needed for survival after considerable time. VC literature showed ample studies that have been conducted in the services and intangible and tangible benefits VC provide to portfolio firms. Taking Bengaluru, the Startup hub of India sample we contribute towards existing literature in setting up the exact role in VC in the result and what configurations impact its survival. Does presence of VC will determine the outcome. The current research has analysed the qualitative phenomenon of survived and non-survived firms. The results show that size, social media, VC funding have profound impact on survival of firms. Sector doesn't specify whether manufacturing or service that a startup will grow or not. Both the samples of survived firm revealed that size, sector, social media and VC funding important configurations having higher consistency but they alone are not effective in determining results. VC funding is an important configuration in combination which needs legitimate support of bigger size, social media presence and use of technology in innovation.

Unsuccessful firms which have not survived lack adequate social media presence are smaller in size and have failed in using technology in creating market. the consistency of these firms was less than 0.5. lower consistency implies absence of necessary conditions in the configurations. VC firms should look into size of the employees, use of technology while investing in a startup. Technology based firms have higher chances of survival VC should make arrangements in enhancing their capabilities. Higher rate of consistency implied greater role of VC in performance of startups but they alone explicitly cannot determine outcome. Founders should look forward to deriving maximum benefits from VC experts and at the same time other crucial features of social media presence, use of technology and other important factors that may adversely or positively influence their activities for exit be considered. It leaves scope for future work in the areas of factors that are seem to be crucial in impacting the performance. It could relate to organizational design, areas where they operate, export, financial support from government. Taking IPO/ M&A was crucial in determining the results of operations. profit can also be taken into consideration as dependent variable but careful consideration must be made as in initial years' startup incur huge losses owing to cash burning process.

**6.2: Limitations of the study:** The study suffers from few limitations first the sample was collected in a geographical location in the state of Karnataka, India. The startup ecosystem of Bengaluru can be different from any other locations. So, consciousness must be taken while generalizing statements. Second, even if fsQCA works with lower sample. Still the results need to be validated through larger samples. Clear segregation must be made to divide the source of financing.

## Conflict of interest

*The authors declare no conflict of interest.*

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