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Venture Capital Model For The Growth Of VC- Backed Firms

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Abstract*-This article investigates how venture capital is related to the growth of VC-backed firms. After controlling the effect of a firm's age, we found that operational, financial, marketing and other services strongly affect the growth of VC backed firms, while the managerial services are weakly associated with the growth. This indicates that VCs provide every possible support but do not interfere in the managerial activities of their entrepreneurial firms. Further, we have tested how this growth is affected when value-added services are received from the experienced and high-quality venture capitalists. The results show that high qualities of operational, financial, and marketing services affect the growth while managerial and other services are irrelevant to the growth. The results would help VCs, entrepreneurs, and the policymakers for designing a growth model for their business firms.*

Keywords—*Venture Capital, Growth, VC-Backed Firms, Value-added services, SEM, Mediation analysis, Entrepreneurship*

1. Introduction

Value-added services of VCs are quite important in the context of entrepreneurial challenges as their main aim is to expand the growth and performance of their investee firms. Technological advancement and innovation across the global business provide opportunities for creating new products by starting a new business. The exploitation of these opportunities varies across the demographic change as not everyone is capable of starting a new venture, may lack in one or another entrepreneurial characteristic, the basic requirements of a new business. Scratching up an idea from the ground and making it a successful venture is a very difficult task where an entrepreneur requires financial support along with managerial support. Here come the VCs who prominently provide financial support and other value-added services to assist the entrepreneurial firms by bringing in additional management talent required for a new venture. Each venture capital firm has its own management style of functioning largely depends on the nature of business a new firm is venturing into and the level of risk a venture capital firm can bear. The services of VCs also vary from country to country, be subject to the economic health and business environment. VCs in some countries actively participate in the management and hold a seat onboard while others give free hands to use their money, neither hold a seat onboard nor involved in the day to day operational and management issues.

The main objective of the study is to develop a growth model for VC-backed firms. To this end, we have analysedthe impact of value-added services on the growth of VC-backed firms. Moreover, this relationship is also tested by adding a mediating variable VCs quality (VCQ) between the value-added services and the VC-backed firms. We have denoted Venture Capitalists as 'VCs', Venture Capital as VC and VCQ as Venture Capitalists Qualities. The rest of the paper has been divided into seven Sections. Section one provides a brief introduction to value-added services and the growth of VC-backed firms. Section two presents the recent literature related to the growth of VC-backed firms. Section three sheds light on the theoretical concepts and the hypotheses formulated. In section four we have provided the details of variables. Data and methodology have been provided in Section 5. Section six provides the preliminary investigation on data done through descriptive statistics, exploratory and confirmatory factor analysis. Results and discussion are presented in Section seven and, Section eight concludes the study by opening further space for future research.

2. Literature

The literature shows a variety of approaches that capture the VCs' role in the growth and development of VC-backed firms. Within the framework of principal-agent theory, Amit et al. (1990) show that the involvement of VCs creates the agency problem and VCs are not able to understand the entrepreneur's ability. Hellmann and Puri (2002) argued that venture capital is related to a variety of professionalization measures, such as human resource policies, hiring of a marketing VP and beyond those of traditional financial intermediaries. Similarly,Proksch et al. (2016) qualitatively provide the evidence on 433 seed investments that VCs provide financial and human capital as well, and establish strong governance mechanisms to reduce information asymmetries between founders and investors. Meglio et al. (2017) argued that VCs through scouting and coaching feed new ventures and help them to shift from an entrepreneurial to a professionally-managed state. In addition, scouting and coaching help to explain variance across venture-backed companies' growth that lasts even after the exit of VCs. Boadu et al. (2014) report the same positive effect on job creation, revenue, business growth and expansion in a manner consistent with economic expectation. Lahti (2014) also shows that advisors (VCs) offered extensive value-added services to the entrepreneurs of limited experience in the venture capital market. Moreover, the advisors help the entrepreneurs in secure funding on reasonable terms. Croce et al. (2013) compared the productivity growth of 696 entrepreneurial firms from six European countries and found no change in the productivity growth of VC and non-VC-backed firms before the first round of VC financing, significantly differ after the first investment. Guo and Jiang (2013) show that the differences in profitability and labor productivity significantly magnified after VCs entry. Moreover, VC-backed firms outperform non-VC-backed

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firms in terms of profitability, labor productivity, sales growth, and R&D investment. Pommet (2013) in his study shows that VCs' ability to improve the survival of companies depends on the duration of their investment. They proved this by splitting the sample into normal and bubble activity and found that during the normal periods the involvement of VCs for longer duration positively influences the firms' survival. However, this effect disappears completely for the bubble period. Memba et al. (2012) randomly draw a sample of 100 SMEs from Kenya and found that the SMEs using venture capital experience the growth. Balboa et al. (2006) confirm the positive impact of VC is indeed driven by the funding and managerial support on a panel of 250 Spanish VC-backed firms at the expansion stage.

Most of these studies present foreign evidence on the growth of VC-backed firms. The methodology adopted to examine the growth of a firm has its own limitations as most of the studies have used cluster analysis, descriptive statistics, regression analysis, and one-way ANOVA. We tried to overcome this by analyzing it by using structural equation modeling, the updated version of regression. More importantly, the scale used for measuring the growth of VC-backed firms has a lot of variation which may not truly represent the growth if applied to economies of developing nations like India. Moreover, no study was found that can characterizes the scale of value-added services at length. We have also developed a scale of venture capitalist quality, used as a mediating variable, is a new addition to the literature.

3. Theory and Hypotheses Formulation

Value-Added Services and the Growth of VC-Backed Firms

VCs' role as a supporter of entrepreneurs has been widely studied and is rationally understood by entrepreneurship scholars today. The most fascinating evidence on the positive impact of VC-backed firms' growth is (Wen and Xia, 2016; Croce et al.; Guo and Jiang; and Pommet, 2013), etc. There is a tremendous increase in the growth of VC backed firms due to financial involvement and services provided by VCs (Engel, 2002; Balboa et al., 2006). Venture capital increases the output and revenue scale of the firm by bringing in additional capital into the firm (Chemmanur et al., 2011). Venture capital companies provide financial and human capital and establish strong governance mechanisms (Proksch et al. 2016) and their beneficial (value-added services) help venture-backed companies' growth that lasts even after the exit of VCs (Meglio et al., 2017). The value-added services provided by VC investors imprint the portfolio firms by enhancing profitability, labor productivity, and sales growth (Guo and Jiang (2013; Bertoni et al., 2010; Bertoni et al., 2010).

Control Variable- Age of VC-Backed Firms

The age and growth of the firm are independent of each other regardless of the sample comes from multiple industries or a single sector. (Barron et.al., 1994; Sutton, 1997). As the age of the firm increases, there is a decrease in growth (Sutton, 1997). So, there is an inverse relationship between the age of the firm and its growth (Evans, 1987) where a firm uncover their true efficiencies over time (Jovanovis, 1982). Based on these arguments, we have assessed the pure effect of value-added services on the growth of firms after controlling the age effect. The proposed hypothesis is:

Hypothesis (H1): The value-added services are related to the positive growth of VC-backed firms while controlling the firms' age.

Venture Capitalists Qualities (VCQ) as a mediating variable

The financial performance of VCs cannot be treated under one uniform group. The financial performance may vary based on experience, deal monitoring behaviour and other services that differentiate them from other VC investors in the same community. Most researchers on venture capital treat all VCs as one uniform group. However, there are widely perceived differences in qualities among VCs. The reputation and qualities of financial services providers are important considerations for companies interested in raising capital. The qualities of advisory services and the risk capital provided are more likely to have faster growth and higher asset productivity of VC-backed firms, and also the returns for their limited partners. There are many pieces of evidence of venture failures at higher rates (Dorsey, 1977; Huntsman and Hoban, 1980; Schilit, 1996) which advocate that high-quality VCs are greatly needed. High quality of services prevent the reputation of VCs and also attracts potential investors as well as investee firms to employ venture capital in their firms (Sahlman, 1990). Thus, there are numerous reasons to measure and identify the VCs' qualities (Nahata, 2008). The VCs' qualities are related with a track record of past performance and the relationship with the entrepreneurs.

Surprisingly, there is little research on how best to measure VCs' qualities which also depends on the reputation of VC firms. The present study starts with the premise that high-quality VCs maintains a good relationship with entrepreneurs of VC-backed firms and provide high quality financial and advisory services. In other words, VCs' qualities in this study represent high quality financial and advisory services by experienced VCs, keeping a good relationship with the entrepreneurs of VC-backed firms. The high-quality VCs are more likely to provide high-quality value-added services that translate into higher operating efficiency for their portfolio companies (Nahata, 2008). Thus having a strong track record of managing funds and good personal relationships with entrepreneurs which represents the VCs' qualities will mediate the positive effect of value-added services on the growth of VC-backed firms.

Control Variables- Experience, Number of Employees, and Age of VC-backed Firms

For testing the mediation effect, the effect due to the experience of employees, the age of the firms and the number of employees on the growth of VC-backed firms have been controlled. It is based on the assumption that when there is an intervention of high-quality VCs, the growth will also be affected by these variables. In other words, the availability of finance to VC-backed firms from high-quality VCs depends on the experience of employees, the age of the firm, number of employees. In a simple word, younger VC-backed firms with numerous experienced employees attract high-quality financial providers.

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On the basis of the theoretical ground and the arguments presented above, we have formulated a single broad hypothesis for testing the mediating effect of VCs' qualities (VCQ)

Hypothesis (H2): The positive effect of value-added services on the growth of the VC-backed firm is mediated by VCs' qualities after controlling the experience, number of employees and age of VC-backed firms.

4.Scaling of Variables

Growth of VC-Backed Firms

The growth of a firm has received much attention in the literature and is one of the most widely researched topics in the economics literature. Firm growth is considered such an important measure of company success that some authors consider a distinction between firm growth and firm success obsolete (Roper, 1999; Bergström, 2000). The growth has been studied in different models by several authors. Garnering customers, firms' survival, stability, and profitability; an arrangement to finance are all the measures of growth. Some authors, Ardishvili et al. (1998) and Delmar (2006) used financial or stock market value, the number of employees, sales and revenue, productive capacity, the value of production, and value of production. Delmar et al (2003) suggested that if only one indicator had to be chosen as a measure of firm growth, then the preferred measure of growth should be sales. However, the most commonly used variables were employment and total sales for measuring the growth (Delmar, 2006). Although all of these parameters are highly correlated. Kirchhoff and Norton (1992) measured it through employment, assets, and sales whereas Kimberley (1976) stated that the number of employees is the most widely used to measure the size of the firm. Florin et al (2003) measured by sales growth, and return on sales. Quinn and Cameron (1983), Phelps et al. (2007), and Levie and Lichtenstein (2010) show the summary of growth models. All these studies provide common propositions about measuring growth. However, growth parameters vary from one entrepreneur to another and due to lack of integration, there is always difficult to draw any conclusion out of them. The growth variables depend on the environment in which the enterprise is operating (such as the social setting, formal or informal structure of the organization, country origin and its culture, and family) has different implications on the enterprise. However, each variable can paint a different picture of the firm depending on the purpose of the research. So, the prime need is to measure the VC- backed firm's growth which is done by selecting the variables on the basis of the above arguments and personal judgment. Based on the exploratory nature of the study, the present study, therefore, has selected the 13 most suitable variables that can represent the growth of the VC-backed firms and the requirements for meetings the objective of the study.

The study argued that for understanding a firm's growth on surveyed data, the researcher needs to examine the market-share growth, employee performance, products newness, innovation in product, demand for product, product-quality development, customer-relationship performance, sales turnover competitors sales, profit margin, personnel development, reputation of the firm, and overall performance.

Valued Added Services

Value-added services are the post-investment activities of VCs towards their portfolios. VCs are typically far from passive investors, spend half of their time monitoring post-investment activities due to their large exposure to financial, labor, and other resource markets (Gorman and Sahlman, 1989). VCs value-added services save portfolios from the risk of failures by providing their industry-specific knowledge and expert services at the board. Hence, understanding deal monitoring behavior is important for both the parties i.e. VCs (fund provider) and entrepreneurs (recipients of the fund)

Besides providing equity financing, VCs have been recognized as providing valuable help to portfolio companies through the provision of advice and information to the entrepreneur (MacMillan et al., 1988) and bring knowledge and expertise through active participation on the board of directors to equip the companies with critical improvements in governance, financial accounting, access to markets, technology, and other drivers of business success (Divakaran et al., 2014). VCs collect the details of their portfolios to understand the problems of an entrepreneurial firm and monitor the deal by providing ex-post monitoring activities like recruitment, act as a board and shaping the top management team and the other activities closely related to their pre-investment appraisal (Kaplan and Stromberg, 2004). In this study, we have selected the most relevant variables from the literature that represent value-added services provided by VCs. List of value-added services namely operational, financial, marketing, managerial and other services are provided in Table 6 with descriptive statistics.

Venture Capitalists Qualities (VCQ)

The most representative measures of VCs' qualities have been selected from the theory of venture capital on the basis of arguments presented and personal judgment, and the ecosystem of venture capital in India. Based on the exploratory nature of the study, the present study, therefore, has selected 14 most suitable variables that can represent the VCs' qualities. The study argued that for determining VCs' qualities, the researchers need to examine that VCs (i) have track record of managing fund; (ii) provide financial resources with other value-added services; (iii) participate in the management and supervision; (iv) are well trained as well as well supervised; (v) are representative of VC-backed firms; (vi) have good personal relationship with entrepreneur; (vii) are knowledgeable and professional; (viii) always make positive contribution to portfolios; (ix) have trust among entrepreneur; (x) keep the promises made to firm; (xi) gain the trust of entrepreneur, (xii) are sincere and benevolence, (xiii) are available under different circumstances, (xiv) and share valuable information. These are the selected variables that represent the VCs' qualities. However, these variables were further refined by employing exploratory factor analysis.

5. Data and Methodology

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This study is a pragmatic investigation VCs impact on the growth of VC-backed firms. The choice of methodology is mostly determined by the nature of this research and reasonable considerations. A multi-phased research design that covers different data collecting and analyzing methods. The researcher followed several methods together for data collection viz. personal interview, online questionnaire, and telephonic conversation, etc. We have tried to overcome the sample size limitation on hand-collected data by obtaining a larger and more representative sample from the entrepreneurs of VC-backed firms. As per the information collected through the Venture Intelligence Database on 1/7/2015, the total population of VC-backed firms was 756 spread all over India. Since the process of data collection was very difficult and the response rate was very low, the sample of 211 was taken as a final sample, indicating the whole population. The geographic location preferred for the study is Mumbai, Bangalore, Chennai, and Delhi. These locations have received the highest (*CB Insights, July 23, 2015*).

We have framed a structured questionnaire for capturing the entrepreneurs' perception on several factors like VCs value-added services, their qualities, and the growth of VC-backed firms. Moreover, we have consulted some experts of the field in India itself before the visit for the pilot study and made changes in way of putting some questions that can save the time of respondents and increase their participation in the survey.

Data Collection

In the initial stage, the researcher put up with the entrepreneurs through professional networking sites like LinkedIn, Twitter and Facebook, etc. and followed them which help in building the relationship and archiving the relevant information on the activities of VC- backed firms in India. The precise research questions for quantitative examinations were then derived from the understandings in the existing literature and the interview. The researcher then approached the Chief Executive Officials personally along with the covering letter from the Head of the Department with the prior permission requested through e-mail. The preliminary survey was done with the Semi-structured open-ended questionnaire in the month of September 2015 on a sample of 167 VC backed from Delhi (including Noida, Gurgaon other nearby cities). The responses collected were 100 from VC-backed firms. The researcher made few changes in questions suggested by the respondents. This data was processed with factor analysis after confirming the reliability of the questionnaire and the final data was collected to meet the further requirement of the study.
In the second stage, the final data has been collected by adopting convenience sampling through the online Google questionnaire and by direct approaching the VCs during the period of 5 months i.e. 26th March 2016 to 31st August 2016. Total responses collected were 211 (response rate 27.94%), 113 by direct approaching them in Delhi and Mumbai and 98 through Google survey. The rest of the firms refused to answer because of a busy schedule or due to the business policy of their firms. 8 were removed from VCs and 5 from VC-backed firms. Although a high response rate is preferable, it is not uncommon in economic surveys to have a low response rate, is quite typical for similar survey (e.g. McDougall et al. (1994) 11%, Zahra et al. (2000) 24%) and Maula et al. (2009) 17%, Gratchev and Bobina (2001) 26%, Brau and Fawcett (2006) 19%, Bernile, Cumming and Lyandres (2007) 0.5%. However, in these studies, even though the response rates were low, they reached more than 30 observations as a rule of thumb for statistical analysis.

Although the determination of the appropriate sample size is a critical issue in SEM, unfortunately, there is no consensus in the literature regarding what would be the appropriate sample size for SEM. Some evidence exists that simple.
Some researchers consider an even larger sample size for SEM, for example, N = 200 (Hoogland and Boomsma 1998; Boomsma and Hoogland, 2001; Kline, 2005) and Weston & Gore, (2006).

Since SEM is closely related to multiple regression in some respects, 15 cases per measured variable in SEM is not unreasonable. Bentler and Chou (1987) note that researchers may go as low as five cases per parameter estimate in SEM analysis, but only if the data are perfectly well-behaved (i.e., normally distributed, no missing data or outlying cases, etc.).

The participation of respondents required significant time and personal concentration to fill in the questionnaire. Simultaneously, there were a number of refusals to participate in the study. Therefore, it was suggested that it is important in the Indian context to be well informed in approaching the venture capitalists and to meet with them personally as well as this denotes the seriousness of the effort. The consistent and repeated reminders to the respondents were one of the reasons people agreed to participate. Quite simply, they enjoyed the exercise.

Methods

The data initially was processed by using Harman's Single Factor Test for Common Method Variance (CMB), Descriptive Statistics, Exploratory Factor Analysis, (Maximum Likelihood) and Confirmatory factor analysis. After the preliminary investigation of the data, we have used Structural Equation Modeling to test the hypotheses. SEM is a comprehensive statistical approach to testing hypotheses about relations among observed and latent variables (Hoyle, 1995), especially testing a theoretical network of linear relations between variables (Rigdon, 1998). Unlike traditional methods, SEM is a highly flexible and comprehensive methodology that offers the formal specification of a model to be estimated and tested the best strategy for evaluating model fit e.g., chi-square, CFI, NFI, RMSEA, etc. The current study tests the hypothesized patterns of directional relationships between observed or measured variables (Growth of VC-backed firms) as the dependent variable, and unobserved or latent variables (Value added services operational, financial, managerial marketing and other services) as the independent variable (MacCallum& Austin, 2000), and added the age of VC-backed firms in the model as a control variable.

6. Preliminary Investigation on data

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Harman's Single Factor Test for Common Method Variance (CMB)

The data collected through the same questionnaire during the same period may have several deficiencies in self-reported problems. Common method variance, a variance that is attributed to the measurement method rather than the constructs of interest, may cause systematic measurement error and further bias the estimates of the true relationship among theoretical constructs. Method variance can either inflate or deflate observed relationships between constructs, thus leading to both Type I and Type II errors (Avolio,Yammarino, and Bass,1991; Bagozzi and Yi, 1990; Crampton, & Wagner, 1994; Podsakoff, MacKenzie, Lee, and Podsakoff, 2003; Podsakoff and Organ, 1986; Spector, 1994).

Harman's one-factor test was conducted to test the presence of a common method effect. All the independent variables were entered into an exploratory factor analysis and only one factor was extracted by using principal components without rotation. The result obtained, 12.06% of the variance is explained by the single factor which is less than 50%. So, it can be concluded that the sampled data does not have any problem of common variance.

Descriptive Statistics

This section provides descriptive statistics on a final sample of 206 surveyed VC-backed firms in India during March 2016 - August 2016). Total responses collected were 211 (response rate of 27.94%), out of which 8 respondents have been removed from the sample due to large missing or inappropriate responses not fitting the research objectives.

The sample includes different sectors, Biotech and Pharmaceuticals (6.8%), Consumer Services (5.8%), Healthcare (6.3%), Internet, Software and Services (16.0%), Information Technology (28.6%), Logistics (6.8%), Manufacturing (7.8%), Media (8.3%), Retail (9.2%) and others (4.4%). The highest percentage of participants are from the Information and Technology sector followed by internet software and services. The study however in the main analysis, does not consider any categorization made on the basis of sector type as there is a large ambiguity in the sample. The sampled group has 21.45% of firms functioning for less than 5 years, 47.6% between 5 to 7 years, the age group of 7 to 10 is 15.5%, and above 10 years is 15.5%. The number of employees these firms have is 10-100 (18.9%), 150-200, (24.3%), 250-500 (19.9%), 1000-3000 (36.9%). The number of employees however vary, depends on the type of business. The selected sample of VC-backed firms have employees with different experience, 23.79% have employees with experience less than 5 years, 47.09% of firms have 5 to 10 years, and above 10 is 29.3%.

Exploratory factor Analysis

Exploratory Factor Structure of Growth

We have employed the maximum likelihood technique of factor extraction under varimax loadings on a sample of 100 respondents. The total factors underlying the growth (13 factors) bounced a single factor for growth with 9 items (Table 1); explaining 66.41% of the total variance. 4 items GR6, GR7, GR9 and GR11 not loaded properly were removed. Bartlett's test of sphericity, which tests the overall significance of all the correlations within the correlation matrix, was significant (Chi-Square (36) = 1723.834, $p<0.001$), indicating that it was appropriate to use the factor analytic model on this set of data. The Kaiser-Meyer-Olkin measure of sampling adequacy indicates that the strength of the relationships among variables was high (KMO =.923), thus it was acceptable to proceed with the analysis.

Table 1
Exploratory Factor Structure of Growth Measures

	Factors
Scale Items	Growth
(GR1) Market-share growth	.983
(GR10) Profit margin	.890
(GR12) The reputation of the firm	.864
(GR4) Innovation in Product	.857
(GR5) Demand for Product	.851
(GR3) Products newness	.826
(GR8) Sales turnover	.686
(GR13) Overall Performance	.666
(GR2) Employee Performance	.646

The factor labeled as 'GROWTH' consists of 9 items extracted under a single factor. The variable market share growth means that the firm has an increase in the size of a market. The product or services of the firm is available for everyone and widely acceptable. This can happen only when a firm has captured the market and the consumers or costumers are aware of the product or services of a firm. Employee performance is related to the job-related activities of employees working in a firm. The performance of these workers is related to the growth of the firms. However, employee performance is directly linked with managerial and policy execution activities. When the managerial team execute the policies in a good manner and train and motivate the employees by providing financial and non-financial incentives, the performance of the employees will positively contribute to the growth of the firms. Hence, employees' performance represents the growth of the firm. Products newness indicates that the product of VC-backed firms is not providing outdated products or services but has some newness or more updated among the product of non-VC-backed firms. The product innovation is another way that indicates the implementation of the new or significantly improved product. If the product quality is improving and developing, it will always remain the market. The continuous increase in demand, sales turnover, and profit margin are also directly and positively linked with the growth of VC-backed firms. As the firms gain maturity, gain reputation and there is an improvement in the overall performance of the firm.

According to the surveyed data, the information provided by the entrepreneurs of VC-backed firms, the growth factors are determined to know which among the 13 items of growth can represent the growth. It can be interpreted that the above items extracted under single factors are the most connected to each other and all together can represent the growth of the

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VC-backed firms. So, all these explored variables are the growth indicators of the sampled firms.

Exploratory Factor Structure of Value Added Services

The valued added-services factors were extracted under 5 heads, operational services (6 items), managerial services (6 items), financial services (4 items), marketing services (3 items) and other services (5 items); explaining 63.50% of the total variance (Table 2). The items from operational services (OP7), managerial services (MGT3, MGT5, and MGT7), financial services (FIN1, FIN4, FIN5, and FIN8) were not loaded properly have been removed. Bartlett's test of sphericity, (Chi-Square(276) = 3262.450, $p<0.001$); and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO =.799), is acceptable to proceed with the analysis.

The first factor labeled as Operational Services (OPS) consists of VCs establish a company's internal processes, offers industry experience, negotiates employment contracts, motivate personnel, and give advice on expansion internationalization. The second factor leveled as Management Services (MGRS) represents that VCs help in strategic planning, act as a soundboard, assist in hiring management, improve corporate governance, linked the VC backed firms with potential strategic partners and assist in establishing an organizational structure. The third factor labeled as Financial Services (FINS) reflected that VCs help in preparing business cases and financial prognoses, build internal financial management, assist in acquiring additional debt and equity and helped in polishing the business model or revenue plan.

Table 2
Exploratory Factor Structure of Value-Added Services

	Factors
	OPS
(OP1) Establish Company's internal processes	.847
(OP2) Offers industry experience	.831
(OP3) Negotiating employment contracts	.667
(OP4) Motivate personnel	.651
(OP6) Advices on expansion	.611
(OP5) Advices on internationalization	.562
	MGRS
(MGT4) Provides Help in Strategic Planning.	.892
(MGT2) Act as a sound board	.876
(MGT1) Assist in hiring management	.814
(MGT6) Improve Corporate Governance	.778
(MGT9) Linking our company to potential strategic partners	.714
(MGT8) Assist in establishing an organizational structure	.636
	FINS
(FIN2) Help in preparing business cases and financial prognoses	.955
(FIN7) Internal financial management	.699
(FIN3) Assist in acquiring additional debt and equity	.652
(FIN6) Helped in polishing the business model/revenue plan	.602
	MKTS
(MKT3) Improve the Brand Image	.893
(MKT2) Advices on suppliers and equipment	.859
(MKT1) Acquisition of customers	.857
	Others
(OT1) Increasing our company's reputation	.951
(OT4) VCs enhance the credibility of the firm in the eyes of the third party	.784
(OT3) Venture capitalists are both adviser and operators	.767
(OT5) Overall, I am very satisfied with the VCs Services.	.724
(OT2) Investor as mentor or coach	.709

The fourth factor labeled as Marketing Services (MKTS) indicates that VCs improve the brand image, give advice on suppliers and equipment and help to create and acquiring customers. The fifth factor labeled as Other Services (OTS) reflects that VCs increase the company's reputation, credibility, act as advisers and operators in additions to mentoring or coaching and provide overall satisfaction to investee firms. Hence, according to the information provided by the entrepreneurs of VC-backed firms, the value-added services provided by venture capitalists can be best represented by five main heads discussed above. More importantly, these explored factors can be assumed as the widest services provided by VCs which can affect the growth of VC-backed firms.

Exploratory Factor Structure of Venture Capitalists Qualities

Table 3 highlights the factor structure of the VCQ. 14 VCQ factors driven from the theory of venture capital are assembled under one head with 9 items; explaining 61.32% of the total variance which is above satisfactory level (Hair and Anderson, 2010). The five variables VCQ5, VCQ6, VCQ8, VCQ9, and VCQ10 have been removed, either not loaded properly or loaded below .40.
Bartlett's test of sphericity, (Chi-Square (36) = 1332.057, $p<0.001$), and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO =.925) satisfy the assumptions.

Table 3
Exploratory Factor Structure of VCQ Measures

Items	Factor
	VCQ
(VCQ1) VCs have a good track record of managing the fund	.947

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(VCQ2) Attractive financial resources with other value-added services	.747
(VCQ3) Active towards participation in the management and supervision of the enterprise	.693
(VCQ4) VC Fund representative are well trained as well as supervised	.784
(VCQ7) The VC Fund manager is knowledgeable and professional	.735
(VCQ14) VCs always offer a significant source of valuable information for the venture	.803
(VCQ11) Whenever the VCs gives us advice on our business operations, we know that he is sharing his best judgment	.781
(VCQ12) Our organization can count on the VCs to be sincere and benevolence	.774
(VCQ13) Although circumstances change, we believe that the VCs will be ready and willing to offer us assistance and support	.752

The factor labeled as ***Venture Capitalists Qualities (VCQ)*** consists the variables which indicate that VCs (i) have track record of managing fund; (ii) provide financial resources with other value-added services; (iii) participate in the management and supervision; (iv) are well trained as well as well supervised; (vii) are knowledgeable and professional; (xi) gain the trust of entrepreneur, (xii) are sincere and benevolence, (xiii) are available under different circumstances, (xiv) and share valuable information. These are the selected variables that represent venture capitalists Qualities (VCQ). However, these variables were further refined by employing exploratory factor analysis.

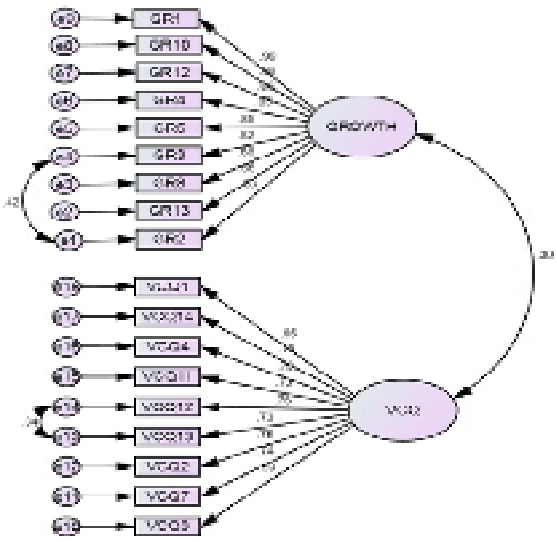
Confirmatory Factor Analysis

Confirmatory Factors of Growth and Venture Capitalists Qualities (VCQ)

We have employed the confirmatory factor analysis for the final sample of 206. Since there is a single construct for the growth and venture capitalist qualities (VCQ), we choose to process both the variables together in the confirmatory factor model. The growth measured on a single construct has more than three observed variables whose error terms are uncorrelated with each other. (see Kenny, Kashy, and Bolger's 1998; Handbook of Social Psychology).

The measures of global fit indicating how well each variable indicates or fits for the growth factors and VCQ. Initially, the model achieved, chi-square ($\chi 2/d.f.$)=2.208, d.f. = 134, p-value = .000; GFI (.862), NFI (.908), CFI (.947), RMSEA (.07). GFI was below the threshold indicating that the data is not fitted well in the model. In order to achieve a better model fit, we covariate the error terms of observed variables chosen through modification indices improved the model, achieved chi-square ($\chi 2/d.f.$)=1.790, D.F. = 236.229, p-value = .000; GFI (.889), NFI (.927), CFI (.966), RMSEA (.06). ($\chi 2/d.f.$), values of 1.716 with 132 degrees of freedom and p-value = .000, indicate that the hypothesized model adequately describes the growth factors and the VCQ. The validity and reliability of growth and VCQ, composite reliability >.70, AVE>.50 and AVE>SIC, indicate that there is no validity concern. The significant Cronbach's alpha, growth =.94, and VCQ =.93, computed for independent item showed in the CFA model indicates the reliability of two constructs. Hence, the variables used for measuring the growth of VC-backed firms and venture capitalists quality demonstrate adequate validity and reliability which can be used for analysis.

Figure 1: Confirmatory Factors of Growth and VCQ



Confirmatory Factor of Value-Added Services

Confirmatory factor analysis (CFA) on 31 exploratory factors of value-added services confirmed five latent constructs OPS (5 items), MGRS (6 items), FINS (4 items), MKTS (3 items) and OTS (5 items). The confirmatory factor of investment criteria thereby fulfills the common threshold for model fit, and reliability and validity of constructs. There was a Heywood case (regression weight =1 or greater can) in one of the latent construct FINS. The Heywood case indicates that the items in the construct have some of the possibilities i.e. bad prior communality estimates, too many common factors, too few common factors, not enough data to provide stable estimates or the common factor model is not an appropriate model for the data. The Heywood case was fixed by shifting the regression weight from item of the construct (observed variable) to the main latent variable and equally constrained (balanced) the regression weights of an observed variable by assigning "aaa". In this case of FINS, the regression weight was shifted to FINS and 'aaa' was assigned to all the parameters of observed variables (Lowry, P. B., & Gaskin, J. (2014). The global fit index initially achieved, chi-square

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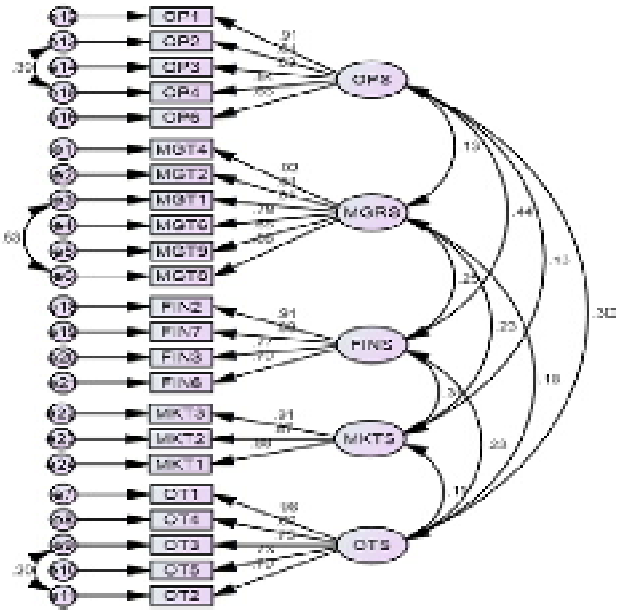
($\chi 2$/d.f)=2.243, D.F. = 223, p-value = .000; GFI (.851), NFI (.868), CFI (.909), RMSEA (.78). After the covariation of error terms of observed variables chosen through modification indices, chi-square ($\chi 2$/d.f)=1.891, D.F. = 220 degrees, p-value = .000; GFI (.906), NFI (.914), CFI (.935), RMSEA (.06) indicates that the hypothesized model is adequate normal fit. Before testing for a significant relationship in the structural model, it has been demonstrated that the measurement model has a satisfactory level of validity and reliability (Fornell and Larcker, 1981).

After establishing goodness-of-fit of the model, reliability and construct validity is checked using Stats Tool Package in excel. The composite reliability (CR) greater than .70 indicates reliability of the model; average variance extracted (AVE) greater than .50 indicates convergent validity; maximum shared variance (MSV) less than average variance extracted (AVE), and square root of average variance explained (SQ (AVE)) greater than inter-construct correlation indicates discriminant validity.

Figure 2: Confirmatory Factors of Value-added Services

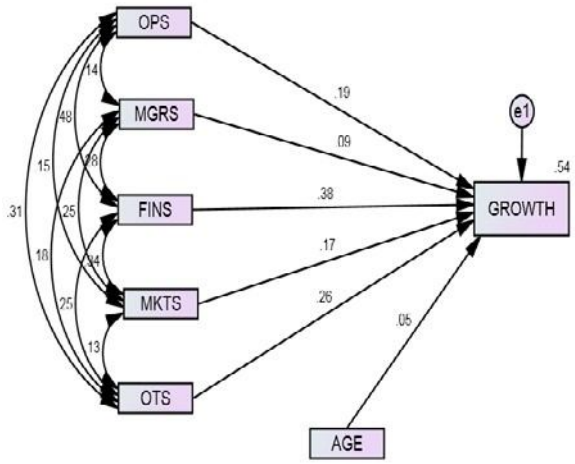


7 Results and Discussion

Hypothesis Testing (H1)- Impact of Value-Added Services on the Growth of VC-Backed Firms

The variables of value-added services in the structural model are able to explain 54% of the variance for the growth of VC-backed firms. The R-value associated with the regression is significant at 0.01 level. Hence, the independent variables representing value-added services are well able to predict the growth of VC-backed firms.

Figure 3: Structural Model for Growth of VC-Backed Firms



The model fit summary of the structural growth model, chisquare ($\chi 2$/d.f) =2.043, df= 5, 2.395, p-value = .035; GFI=.984, NFI =.960, CFI =.975, AGFI=.910, SRMR=.060 and RMSEA =.07. This indicates that growth model is adequate normal fit and can explain 54% of the variance.

Table 4
Structural Model for Growth of VC-Backed Firms

	S.E.	C.R.	SRW[a]	P
OPS	0.07	3.343	0.186	***
MGRS	0.054	1.843	0.093	0.065*
FINS	0.046	6.44	0.375	***
OTS	0.058	5.131	0.26	***
MKTS	0.056	3.315	0.17	***
AGE	0.037	1.139	0.054	0.255

Dependent Variable- Growth, a-Standardized Regression Weights

The hypothesis (H1) stating that the value-added services are related to the positive growth of VC-backed firms while controlling firms age is supported for OPS (SRW=0.19, $p < .05$), FINS (SRW=.37, $p < .01$), OTS (SRW =.26, $p < .01$) and MKTS (SRW=.17, $p < .01$). Moreover, the hypothesis is also supported for MGRS (SRW=.06, $p > .10$) (*see* Table 4) but is statistically weak. The results show that the operational services, financial services, marketing services and other services provided by venture capitalists strongly affect the growth of the VC backed firms. The highest standardized regression weight of FINS in addition to OTS indicates that financial and other services have a stronger effect if compared with the marketing and operational services. The managerial services provided however very weakly affect the growth of the VC-backed firms. This indicates that VCs provide every possible support but do not interfere in the managerial activities of their entrepreneurial firms. Moreover, the excess involvement of VCs in managerial activities will make entrepreneurs less motivated due to the absence of sufficient equity participation. Unlike the findings of Sahlman (1991), the positive effects of VCs dominate the possible negative effects.

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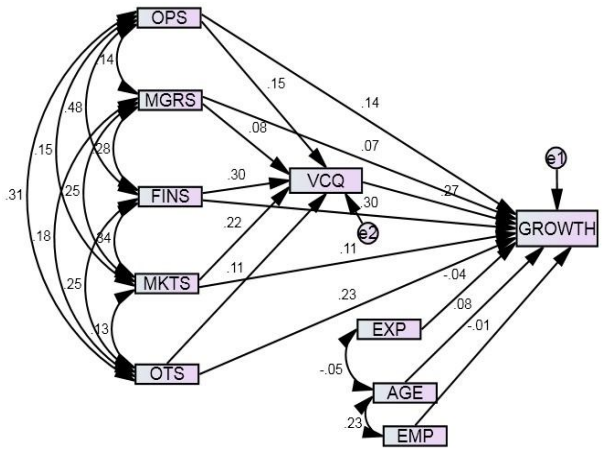
Hypothesis Testing (H2)-Mediation effect of Venture Capitalists Qualities

After testing the directional relationship, we have used Preacher & Hayes (2004, 2008, and 2013) bootstrap method of non-parametric resampling to test the mediation effect. This approach for investigating mediation effect first uses bootstrapping without the presence of a mediator to test the statistical significance of direct path, no mediation if not significant (Wong, 2015; Hair et al., 2014). Secondly, if the direct path is significant, bootstrapping the procedure again by including mediator in the model to test the statistical significance of the indirect path, if not significant then no mediation. If this indirect effect is significant, calculated the variance accounted for (VAF) mediation. According to Hair et al. (2014), a VAF value of greater than 80% is full mediation, a value between 20% and 80% are partial mediation, and a value less than 20% means there is no mediation. The benefit of using this method is that it does not rely on the assumption of normality, and is thus also fit for smaller sample sizes (Pardo & Roman, 2013; Hair et al., 2014). In accordance with the guidelines, we have evaluated the mediation effect of venture capitalists' qualities. The indirect effect in the structural model is measured by keeping the individual path for particular variables and deleting other paths to release the degree of freedom (Lowry, P. B., & Gaskin, J. (2014).

Figure 4 depicting the structural model of mediation effect is a fully constrained model which is slightly different from the original model. The regression weight may differ with the actual model as we have obtained the regression weights through the unconstrained model.

Figure 4 Structural Model of Mediation Effect



The model fit summary of the structural model of VCQ mediation effect, chi-square ($\chi 2/d.f.$) =1.344, df= 2, 3.214, p-value = .035; GFI=.984, NFI =.960, CFI =.975, AGFI=.910, SRMR=.060 and RMSEA =.07. This indicates that mediating model is adequate normal fit.

Table 5 reports the standardized regression weights (SRW) and p-values (in parenthesis) of mediation effects.
The hypothesis (H2) stating that the positive effect of value-added services on the growth of VC-backed firm is mediated by venture capitalists qualities while controlling the firms' age is supported for OPS (SRW=.19, p <.05); FINS (.064, p <.01) and MKTS (SRW=.066, p <.05). The effect size of 35.50%, 22.42%, and 21.20%, reflects the partial mediation of the respective variables MKTS, OPS, and FINS. The hypothesis is not supported for MGRS and OTS due to the low effect size of 14.45% and 11.87%.

Table 5
Mediation Effect of VCQ

	Direct effect		Indirect Effect	Total Effect	Effect Size (%)	Result
	Without Mediator	With Mediator				
OPS-VCQ	.184 (***)	0.173 (.009**)	.05 (.022**)	.223	22.42	PM
MGRS-VCQ	.092 (.069)	0.071 (0.194)	.012 (.138)	.083	14.45	NM
FINS-VCQ	.376 (***)	0.237 (***)	.064 (***)	.301	21.20	PM
MKTS-VCQ	.169 (***)	0.119 (0.054**)	.066 (.001**)	.184	35.50	PM
OTS-VCQ	.263 (***)	0.264 (.001**)	.036 (.067*)	.299	11.87	NM

Dependent Variable- Growth; ***Significant at .05 level, **Significant at .10 level; p-values are given in parenthesis; PM-Partial Mediation, NM=No Mediation

The empirical results show that operational services, financial services, and marketing services partially mediates the growth of VC-backed firms. It indicates that if the value-added services received from the venture capital investors that possess certain qualities, then the relationship between the value-added services and the growth of VC-backed firms are partially mediated by VCQ. However, this relationship is not supported for MGRS (managerial) and other services (OTS). This implies that in spite of receiving the value-added services from the venture capital investors that possess certain qualities, the growth of VC-backed firms remains unaffected. The results conclude that the venture capitalists' qualities like the track record of managing funds, good personal relationships, knowledgeable and professional VCs, etc.; and value-added services like MKTS, OPS and FINS equally (partially) contribute to the performance and growth of VC-backed-firms. However, the value-added services like MGRS (managerial) and other services of venture capital investors do not affect the growth of VC-backed firms.

Conclusion

The study investigates that venture capital impact on the growth of VC-backed firms. To this end, we have developed a conceptual framework of how venture capital is related to the growth of VC-backed firms. In this context, we have formulated two broad hypotheses that have been tested by using structural equation modeling. The hypothesis (H1) stating that the value-added services are related to the positive growth of VC-backed firms while controlling the firms' age is supported for operational, financial, marketing and other services. This relationship is weakly supported for

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managerial services. The findings show that operational services, financial services, marketing services and other services provided by venture capitalists strongly affect the growth of the VC backed firms while the managerial services are weakly associated with the growth. This indicates that VCs provide every possible support but do not interfere in the managerial activities of their entrepreneurial firms. Moreover, the excess involvement of VCs in managerial activities will make entrepreneurs less motivated due to the absence of sufficient equity participation. These findings contradict with the findings of Sahlman, (1991), the positive effects of VCs dominate the possible negative effects.

Further, we have tested the relationship between the growth and value-added services by introducing a mediating variable represented by venture capitalists' qualities and found that venture capitalists qualities mediate operational, financial, and marketing services. This relationship is not supported by managerial and other services. This shows that the value-added services received from the venture capital investors that possess certain qualities, then the relationship between the value-added services and the growth of VC-backed firms are partially mediated by venture capitalist qualities. However, this relationship is not supported by managerial and other services. This implies that in spite of receiving the value-added services from the venture capital investors that possess certain qualities, the growth of VC-backed firms remains unaffected. The venture capitalists' qualities like the track record of managing funds, good personal relationships, knowledgeable and professional VCs, etc.; and value-added services like marketing, operational and financial services equally (partially) contribute to the performance and growth of VC-backed-firms. However, the value-added services like managerial and other services of venture capital investors that possess certain qualities do not affect the growth of VC-backed firms.

The findings have practical implication for the VC investors who wants to invest in the new ventures where they expect positive growth of their investee firms. They can invest by keeping in mind their own role in the development and growth of VC-backed firms. Moreover, the study would help the entrepreneurs to understand and learn VCs' abilities by looking at the role played by them in the growth and development of VC-backed firms. The study suffers from one of the most important limitations that it does not consider the particular industry sector which can be further refined in the future. Moreover, the findings of the study can be validated if the growth of the VC-backed firm is measured by using real values.

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