Role of Organization Design Determinants in Innovation Ability of Indian Startups

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This paper examines the relationship between organization design determinants and innovation performance in a sample of 89 Indian startup organizations, which were at least two years old. Five factors i.e. strategic orientation, top management style, organization structure, practices and culture and effective management of innovation were chosen to determine the organization design of startups. It was found that out of five factors, strategic orientation and practices & culture had significant association with the ability to innovate of the startup firm. Logistic regression was the tool used to identify this association.

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Introduction

A startup may develop from a small business started by few people with an innovative idea and expand to a huge multibillion-dollar business. This transition may lean towards growth and development of business or may lead to a hard landing as a result of business contraction or stagnation. Being small firms with limited resources, startups are more susceptible to such vagaries of a capricious and turbulent environment. Whilst, the sensitivity to comprehend the changing environment and re-defining the organizational strategy may be feasible for big businesses which have dedicated teams and resources to invest for studying and recommending changes. However, it is the smaller businesses, and startups, which may not be able to provide the requisite focus and attention towards the changing environmental parameters as a consequence of their limited resources (Van De Vrande et al, 2009; Dahlander & Gann, 2010; Chesbrough, 2011). However, smaller firms have the advantage of flexibility, organic structure, proximity to market, dynamism and motivation. Their leaders have to weave through these capabilities to create a formidable position in

the market. In the absence of long-term sustainable advantage, startups have to keep innovating to create short-term wins to maintain a competitive edge. The founders of startups are extremely proficient in their areas of expertise; however, it is the capability to catalyze and manage the innovation process of the firm which shields it from deeply precarious situations and bolsters the innovation culture of their firm (Thom, 1990). This study essentially attempts to understand the elements of organization design and their association with innovation in startups in order to help them adapt to the changing organizational environment for ensuring their sustenance and longevity in the turbulent business environment. Though there cannot be templated solutions for the problems, however certain guidelines can be extracted from this research.

Organization design is a deliberate process of configuring strategy, structure, people, processes and reward systems to create an effective organization capable of achieving the business strategy (Galbraith, 2014). Startups, being small organizations in nascent stage can consciously design their organization in a manner that bind various elements of organization design to help them achieve competitive edge over their competitors. Various organization scientists have highlighted a myriad of factors involved in organization design which have helped organizations in achieving innovational efficiency. Service and Boockholdt (1998), after reviewing around 500 journals, identified eight broad factors that affect innovativeness. These were: management style, structure of organization, organization of human resources, key innovation promoters, culture and work climate and marketing and customer response system. In other prominent studies management support, customer market focus and a high level of internal and external communication, human resource strategies, flexible structure and flexible posture were considered important determinants of organizational innovation (Read, 2000; Baligh et. al. 1996). Damanpour (1991) asserted in his meta-analysis of the relationship between organizational innovation and its potential determinants that specialization, functional differentiation, managerial attitude towards change, internal and external communication, and professionalism are the factors which have significant relationship with innovation in the firm. Based on the literature, this study has adapted the model of Khandwalla and Mehta (2004) to explain the factors affecting innovation in a firm, which are: innovation supportive strategic management, top management style, innovation supportive organization structure, practices and culture and effective management of innovation. However, Khandwalla's study was based on large organizations whereas this paper focuses on startups, thus the variables included among the factors were moderated to explain a similar concept for startups.

Government definition of a startup is an entity incorporated or registered in India, which is not more than 7 years old, with an annual turnover not exceeding Rs.25 crores in any preceding financial year, working towards innovation devel-

opment, deployment or commercialization of new products and processes or services driven by technology or intellectual property. However, this definition is only applicable for government enlisted startups.

For this study the researcher considered startups as companies which are younger than 10 years and which have an innovative technology or business model and have to strive for significant employee and/or sales growth (Kollmann, 2016). Startups which were at least two years old were included in the study because most of the startups fail within two years of their life (Giardino, 2014), size of the firms included in sample ranged from six to 350 employees.

Literature Review & Hypotheses

A startup company is an entrepreneurial venture which is typically a newly emerged business that aims to meet a market place need by developing a viable business model. However, the entrepreneurial firms are faced by rapidly changing and fast paced competitive environments which make enormous demands on organizations to actively interpret opportunities and threats when making key strategic decisions. An entrepreneurial strategy making process referred to as 'entrepreneurial posture' by Covin and Slevin (1989) and 'entrepreneurial orientation' by Lumpkin & Dess (1996) exists in a firm that engages in product market innovations. Startup firms are characterized as opportunity seeking and risk-taking firms led by strong leaders taking decisive actions. These firms go out of their way to assess the needs and wants of customers on a continuing basis (Manohar & Pandit, 2014). As per Wiklund and Shephard (2003), market knowledge can increase firm's ability to discover and exploit opportunities. It has also been asserted that customer familiarity and knowledge of ways to serve the market can increase the longevity and growth of the firm (Shane, 2000; Hippel, 1998). Porter's (1980) differentiation strategy which emphasizes on attempts to offer a product that is perceived industry-wise as unique is the strategy which drives the firm towards innovation. Miles and Snow's (1978) competitive strategy maintained that prospectors are the organizations which almost continuously search for production/market opportunities and they regularly experiment with potential responses to emerging trends. Five scales were developed based on the literature of strategy adopted by innovation driven entrepreneurial firms in their nascent stage. Strategic orientation was the first factor which was developed after aggregation of five scales. This leads to the first hypothesis:

Hypothesis 1: Strategic orientation of the startup has significant association with the innovation ability of the startup.

The second construct of this study focuses on the innovation supportive top management style. As per Khandwalla (1976), the beliefs and philosophy of an organization key decision maker i.e. top management, concerning the manage-

ment of organization is of strategic importance. He also emphasized that the most suited management style for organizations functioning in dynamic environments seeking creativity is entrepreneurial style, which is characterized by strong commitment to technocracy and planning and fairly high levels of participation, risk-taking and administrative flexibility and looseness. It is crucial that the founders and the top management of startups have a clear vision and a strategic plan that charts out the course of action to achieve their goals. Norbert Thom's (1990) study of SME firms suggests that one of the management's most important functions is to make executives and key persons aware of the fundamental goals and plans of the organization. As per Mason and Hambrick's (1984) perspective CEOs are responsible for setting up and directing the organization's strategic orientation. Business owners have a major role in influencing the manifestation of entrepreneurship orientation (Rauch et al, 2009) through risk-taking behavior, innovativeness and proactive orientation towards competition (Covin & Slevin, 1989); (Wales, 2011). Praveen Gupta (2006) asserts that to launch or sustain innovation, the leader must affirm the intellectual contribution of all employees, value all available information and support the development of all employees and processes.

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Curnow and Moring (1968), stated that top management support, efficient use of outside knowledge and better understanding of customer needs were prime drivers of innovation in successful firms. Top management is urged to create the organizational climate in which honest failures are tolerated, creativity is rewarded and inter-functional and interdivisional barriers are lowered to facilitate innovation across the organization (Kanter, Kao & Wiersema, 1997). Similar views are advocated by Felin and Powell (2016) wherein they advocate polyarchy as a guiding principle for the internal organization of companies, it has advantage of giving authority to those who are closer to action, it provides autonomy to specialists thereby facilitating local creativity, experimentation and innovation. Participation of specialists and autonomy being given to them is the core theme which can be deduced from these researches. However, startups are organizations which face resource constraint in their earlier years and hence accountability has to be attached to autonomy for facilitating the control over performance. One of the few agreed upon organization design principles is controllability principle, long standing precept is that authority over resources should be equal or aligned with responsibility for performance (Arrow, 1974; Merchant, 1985). Based on above literature nine scales were constructed and were aggregated to measure the extent of factor, innovation supportive top management style.

Hypothesis 2: Innovation Supportive top management has significant association with innovation ability of the startup

Third hypothesis was drawn from the works of Burns and Stalker (1961)), Andy Cosh et al (2012) and Fariborz Damanpour (1991), all of whom advocated organic structure for organizations functioning in turbulent environments. Decentralization is likely to contribute to effectiveness of organization (Govindrajan, 1986; Lawrence & Lorsche, 1967). Horizontal organizations described by shared tasks, relaxed hierarchy, few rules, horizontal communication, many teams and tasks and informal, decentralized decision making are congruent with new product development. (Anand & Daft, 2007). Eight scales were derived from the literature to examine flexible organization structure.

Hypothesis 3: Flexible organization structure has significant association with innovation ability of the startup.

As per Burns & Stalker (1961) "Innovation generally has two distinct phases, the first phase involves conceptualization and design of innovation, the second phase involves execution and institutionalization". Practices which promote a culture which drives innovation in the organization are to be adopted by the startups. Gupta (2006) found that it is essential that creativity, innovation and risk-taking are recognized and rewarded to establish them as basic principle of innovation promotion of the firm. Startup firms need techniques for supply of ideas which can reach degrees of practicability without huge investments in training. In most small firms creativity techniques like brain storming, brain writing, and morphology are used sparingly. The use of these methods should be encouraged as cost effective measures to precipitate new innovation proposals (Thom, 1990). Jacob's (1998) study of four Indian organizations, indicates that highly entrepreneurial organizations emphasized on recruitment of creative and dynamic youngsters to boost the creativity of their firm. Organization's impetus on persistent innovation is an element which is vital for firm's growth and to lead the organization towards a climate conducive for innovation (Triguero et. al., 2014). Five scales were inferred from the literature and that leads us to further hypothesis.

Hypothesis 4: Practices and culture adopted have significant association with the innovation ability of the startup.

Highly entrepreneurial organizations emphasized on recruitment of creative and dynamic youngsters to boost the creativity of their firm.

The process of innovation begins by promoting and driving the organization towards generation of new ideas. Then comes management of ideas, which involves the mechanism of implementation and institutionalization of innovative ideas thereby transforming the ideas into good currency (Van de Ven, 1986). Khandwalla and Mehta (2004) have emphasized on effective management of innovation to boost organization's performance. They have maintained that factors such as recruitment of bright and young individu-

als, effective reward management system, continuous planning, extensive internal and external communication and planning, phasing and reviewing innovations are some of the important elements which leads the firm towards corporate excellence. It is important that employees of start-up firms are encouraged to attend external programs to get exposure of fresh ideas. The use of external sources to innovate is important to speed up innovations (Laursen & Salter, 2006; Van De Vrande et al, 2009). New knowledge skills can be acquired through external networks and other formal relationships with external parties and start-up firms have to constantly emphasize on generation of fresh ideas. Such ideas can stimulate creation of new products by enhancing firm's own capacity to process and to apply its own knowledge (Gupta & Govindrajan, 2000; Jansen et al, 2005; Zahra & George, 2002). As expectations of innovation from various functions are established, the leadership must verify performance against expectations and make appropriate adjustments (Gupta, 2006). Constant monitoring and realistic appraisals of innovations in the firm are crucial to manage innovations. Aggregation of six scales was done to measure the extent of effective management of innovation in the startups.

Hypothesis 5: Effective management of innovation has significant association with innovation ability of startups.

Data & Variables

Data for this study was drawn from founders / top executives of startups through convenience and random sampling. A sample of 102 organizations was drawn from startups functioning in business and manufacturing sector. These organizations were functioning in similar business environment and facing similar problems. The researcher used online publications and offline journals and newspapers to identify the startups which were going through various stages of their funding and tried to contact their founders through social media and through sending e-mails. Data was collected through a structured questionnaire on a 5-point Likert scale. The frame of sample for this study were startups which were at least two years old but less than ten years old. Data of 102 startups firms was gathered, however due to missing data, the sample size got reduced to 89 organizations. The average number of employees working in these firms is 50. Thirty-eight startups had employees in the range of 1-20. And 51 startups had employees in the range of 20-350.

A questionnaire of 34 questions was developed on the basis of literature review. It measured the independent variables which were strategic orientation, top management style, flexible organization structure, practices and culture and effective management of innovation. Dependent Variable was taken as the ability of the firm to innovate. The participants were asked whether their firm has innovated any product or service which was new to the market in past 2 years and firm's response was taken in yes or no options. Later these options were dummy coded as 1 for the firms who have innovated new product/service

in past 2 years and 0 as firms which did no innovation in past 2-3 years.

Reliability of Data

Before analyzing the data. its reliability was verified with the help of Cronbach's alpha. The questionnaire of each construct was developed separately. The reliability of all the constructs except organization structure was found to be above .80 which is considered to be reliable (Table 1). Organization structure had the Cronbach Alpha of 0.64, which is also considered reliable (Griethuijsen et. al., 2015)

Table 1 Reliability Statistics

	Cronbach's Alpha	N of Items
Innovation Supportive Strategic Management	.876	6
Innovation Supportive Top Management	.930	9
Innovation Supportive Organization Structure	.645	8
Innovation Supportive Practices and Culture	.911	5
Effective Management of Innovation	.877	6

Correlation Analysis

Correlation was used to establish the association between independent variables (Table 2). Excepting the case of organization structure and effective management of innovation, there is strong correlation between various independent variables. This is corroborated by previous findings of (Miller, 1982), who investigated configurations by examining multiple interactions among variables of organization design and found highest performance among firms whose alignment of strategy, structure and other variables were consistent.

Table 2 Correlations

		Strategic Management	Top Management	Org. Structure	Practice & Culture	Effective Man. of Innov.
Strategic Management	Pearson Correlation	1	.780**	.454**	.751**	.577**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	89	89	89	89	89
Top Management	Pearson Correlation	.780**	1	.459**	.863**	.719**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	89	89	89	89	89
Org. Structure	Pearson Correlation	.454**	.459**	1	.452**	.108
	Sig. (2-tailed)	.000	.000		.000	.316
	N	89	89	89	89	89
Prac.& Culture	Pearson Correlation	.751**	.863**	.452**	1	.756**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	89	89	89	89	89
Effective. Man. of Innov.	Pearson Correlation	.577**	.719**	.108	.756**	1
	Sig. (2-tailed)	.000	.000	.316	.000	
	N	89	89	89	89	89

**. Correlation is significant at 0.01 level.

Logistic Regression

After determining the association between various independent variables, logistic regression was processed between independent variables and the dependent variable to understand factors affecting the innovative ability of startups. However, due to strong multicollinearity between the independent factors, forward Wald stepwise regression method was adopted. Out of these five independent variables, two were selected due to their significant relationship with the dependent variable, these were strategic orientation and practices and culture. Table 3 shows the sample included for analysis and missing cases, if any. As observed in the iteration history (Table 4), the initial log -2 likelihood of the model was 92.299, after introducing, the independent variable strategic orientation, – 2 log likelihood of the model reduced from 92.299 to 61.11 8. In the second step after the introduction of predictor variable practice and culture, it further reduced to 56.403, explaining the significant effect of predictor variables. -2 log likelihood is analogous to residual sum of squares in multiple regression

Table 3 Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	89	100.0
	Missing Cases	0	.0
	Total	89	100.0
Unselected Cases		0	.0
Total		89	100.0

a. If weight is in effect, see classification table for the total number of cases.

Table 4 Iteration History

Iteration		-2 Log likelihood	Coefficients		
			Constant	Strategic Management	Practices & Culture
Step 1	1	65.694	-3.020	.176	
	2	61.350	-4.258	.246	
	3	61.119	-4.660	.268	
	4	61.118	-4.695	.270	
	5	61.118	-4.695	.270	
Step 2	1	62.330	-3.462	.106	.107
	2	56.929	-5.276	.156	.159
	3	56.415	-6.242	.179	.187
	4	56.403	-6.442	.183	.193
	5	56.403	-6.448	.183	.193
	6	56.403	-6.448	.183	.193

a. Method: Forward Stepwise (Wald)
b. Constant is included in the model.
c. Initial -2 Log Likelihood: 92.299

In table 5 omnibus test of model coefficients it can be seen that step 1 represents the chi square statistic of 31.181, which is the result of the reduction of -2 log likelihood from 92.299 to 61.694 showing the effect of first variable viz. strategic orientation to be significant at 0.00 significance level. Step 2 block shows chi square statistic to be 35.897 showing a further reduction of -2 log likelihood from 61.694 to 56.403 describing the effect of second variable viz. practice and culture to have significant effect on the model at a significance level of 0.00. This showcases the fitness of the model.

Table 5 Omnibus Test of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	31.181	1	.000
	Block	31.181	1	.000
	Model	31.181	1	.000
Step 2	Step	4.715	1	.030
	Block	35.897	2	.000
	Model	35.897	2	.000

Table 6 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	61.118	.296	.458
2	56.403	.332	.514

Model summary explained in Table 6 reports the pseudo R square, explaining the strength of relationship in step 1 and step 2.

Table 7 displays the result of Hosmer and Lemeshow test which posits that there is no difference in the value of observed and expected values, and this is corroborated by the significance levels of .546 at level 1 and .400 at level 2 both of which are more than .05.

Table 7 Hosmer & Lemeshow Test

Step	Chi-square	Df	Sig.
1	5.950	7	.546
2	8.351	8	.400

Table 8 shows classification matrix, which helps us to find the accuracy of the model. The model predicts accurately to the extent of 89.9% of the cases in step 1 and 89.9% of the cases in step 2.i.e after adding the variable, practice and culture.

Table 9 Shows variable not in the equation, viz. top management style, organization structure and effective management of innovation. The contribution of these variables in explaining innovation ability of startup was insignificant, as can be seen in table 9, hence they were not included in the equation.

Table 8 Classification Table*

Observed			Predicted		
			Sales		Percentage Correct
		.00	1.00		
Step 1	Sales	.00	10	9	52.6
		1.00	3	67	95.7
	Overall Percentage			86.5	
Step 2	Sales	.00	10	9	52.6
		1.00	0	70	100.0
	Overall Percentage			89.9	

* The cut value is .500

Table 9 Variables not in the Equation

			Score	df	Sig.
Step 1	Variables	Top Man. Style	1.019	1	.313
		Org. Structure	.010	1	.922
		Pract & Culture	4.827	1	.028
		Effective Man. Of Innov.	2.166	1	.141
	Overall Statistics		5.450	4	.244
Step 2	Variables	Top Man. Style	.476	1	.490
		Org. structure	.071	1	.790
		Effective. Man. Of Innovation	.002	1	.966
	Overall Statistics		.489	3	.921

Table 10 Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Strategic Management	.270	.062	18.665	1	.000	1.309
	Constant	-4.695	1.422	10.901	1	.001	.009
Step 2[b]	Strategic Management	.183	.078	5.510	1	.019	1.201
	Practices &Culture	.193	.093	4.262	1	.039	1.213
		-6.448	2.030	10.089	1	.001	.002

a. Variable(s) entered on step 1: Strategic Management.
b. Variable(s) entered on step 2: Practices &Culture.

Two models can be derived from Table 10:

Model Fit 1: lop(p/1-p) = -4.695 + .270 *Strategic Orientation

Model Fit 2: log(p/1-p) = -6.448 + 1.83*Strategic Orientation +1.93* Practices and culture.

The researcher has considered Model 2 for further analysis. The estimates give us the relationship between the independent variables and the dependent variable, where the dependent variable is on the logit scale. These estimates tell us the amount of increase (or decrease if the sign of coefficients is negative) in the predicted log odds of innovation

ability =1, that would be predicted by one unit increase in the predictor variable, holding all other predictor variables constant. In this case the predictor variables are:

- Strategic Orientation – for every one unit increase in strategic management score it is expected 1.83 increase in the log odds of innovation ability, holding all other predictor variables constant.
- Practices and Culture - for everyone unit of increase in practices and culture score it is expected that a 1.93 increase will be in the log odds of innovation ability.

Exp(B) are the odds ratio for the predictors; which are exponentiation of the predictors, they indicate how the risk of the outcome in the comparison group i.e. ability to innovate compared to the risk of outcome ratio greater than unity (> 1) indicates the risk of the outcome succeeding in the comparison group (ability to innovate) in relation to the outcome falling in the referent group (inability to innovate) increases. The exp(B) given in the second model is 1.201 for the top management style and 1.213 for effective innovation management, indicating both the predictor variables are likely to increase the innovation ability of the start-up.

Discussion &Conclusion

An examination of the data analysis indicates that strategic orientation and practice and culture are the factors that contribute significantly in promoting the ability of a startup firm to innovate.

Strategic orientation and practice and culture are the factors that contribute significantly in promoting the ability of a startup firm to innovate.

Hence hypothesis 1 and hypothesis 4 are supported. The other factors viz. top management style, flexible organization structure and effective management of innovation did not show significant association with organization's ability to innovate. Hence hypothesis 2, 3 and 5 are not supported.

India is at the cusp of becoming a major global innovation hub, and Indian startups have a huge role to play in driving the innovation engine and adoption of adequate strategies to drive innovation is propelling Indian startups towards generation of new products and services. Mutual trust, risk-taking and tolerance for mistakes become key cultural values in an innovation centric organization and though it takes determined and consciously planned effort over a long period of time to develop a culture, startups are adopting practices which are conducive to create innovation centric culture. Organization structure has not been found instrumental in assisting the startup's ability to innovate, a study of 65 Indian corporate also had shown less correlation between organization structure and innovation performance (Khandwalla & Mehta, 2004).This may be because redesigning organizations to facilitate corporate creativity is not easy in cultures that are traditionally authoritarian (Khandwalla & Mehta, 2004).

It also suggests that top management style and effective management of innovation, or at least its dimensions measured in the study play a much smaller role in the innovation performance of the startups. This finds some congruency with the Grant Thornton report (Harish et al, 2015) published on the government website for startups, which states that Indian entrepreneurs are sensitive about risks and rewards because the Indian culture conditions people look down upon failures. This does not fit well with the entrepreneurial style of top management or the 'Prospector' types (Miles & Snow, 1978) of management which believes in taking calculated risks, continuously scanning the market and readiness to delegate. Most Indian startups are still in their inceptive stage, but are showing growth in right trajectory. With proper plans related to goals and execution on these goals through delegation, team work and proper mentorship, Indian startups can become prospectors in true sense.

Limitations& Suggestions

Although, the present study made an attempt to understand the innovation phenomena in the context of organization design, however, the innovation in startups is ambiguous and still remains to be a defined construct. The study provides further scope for large samples and controlled sample size of startups specializing in specific areas. A comparative study can be undertaken to examine the startups with reference to their age and size.

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