

Impact of Culture on Innovativeness in IT Organizations in India

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Abstract:

Innovation has become core driver of cost-effective, sustainable growth in today's hyper-competitive business climate. Industry understood the need to have a well-defined innovation strategy for its business success. No one can rest on yesterday's success and expect lunch today. "Innovate or die" has become a rallying cry. Firms must be productive to keep the profit growing or to continue going good in the market. To become an innovative institution, one need to have a culture that inspire, build and nurture innovative minds. Thus, setting up the right innovation culture has become crucial for every organization.

This research study takes organizational culture and explores its effect on innovativeness of IT firms. The study conducts a culture audit among selected 8 IT firms and assesses its innovativeness. The study tests the culture-innovation relationship through the data collected from these IT firms. The findings offer significant facts on the effects of organizational culture on firm's innovativeness.

Keywords: Radical Innovation, Organizational Culture, Incremental Innovation, Innovativeness

Introduction:

Innovation is becoming an absolute necessity in today's business scenario. Companies are in the lookout for new ideas and disruptive technologies to boost its business potential and outsmart the rivals. Organizations are eagerly on the hunt for human resources proficient of developing new winning ideas. Companies are proposing huge investments to fuel the innovation pipeline. More and more companies are spending millions of dollars on Research and Development in its quest to produce 'unique' products. Be it in the service segment, or process or product development, innovation has become a decisive weapon to grab the market share.

Organizations like 3M, Google etc have a marvelous history of innovation. 30% of 3M's revenue comes from products that are relatively new to the market. Jerry Porras, co-author of the bestselling book 'Built to Last' outlines 3M way of innovation as: 'Every company seeks the keys to innovation, but few find them. Over the decades, 3M learned how to be innovative and today the company uses that skill to great competitive advantage'. Google, the most successful Internet Company, has lined up many breakthrough innovations like Google self-driving car ,

and has lobbied for two bills in USA to make autonomous cars legally operated on public roads. Another Google innovation, 'Glass', which is making wearable's the next computing trend. Forbes Magazine produces annual list of 'World's most innovative' companies. In 2014, TCS, an IT services and consulting firm from India also features in the list at 57th spot.

But the question remains, why only few organizations create cutting edge products? Research by many scholars points to the fact that organizational culture plays a critical role in pioneering organizational innovation (e.g. Johnson, 1996; Judge et al., 1997; Cronley, 2011; Danes et al., 2008). This research try to find the types of Organizational Culture that can produce maximum impact on raising innovativeness in Organizations? There are prior studies and scholarly works related to the connection between culture and innovation, however only few can be found examining the IT companies. The research also attempt to find out the supportive culture traits or type that can best help increase the innovation speed among IT employees.

Thus, the study is split into the three specific research questions:

- How does the organizational culture influence the degree of innovativeness?
- What culture types boost the innovation in IT Organizations?
- What is the current state of innovative practices in IT organizations – Is it more on existing product enhancement or something developing unique?

This study thus aims to find the key culture traits that need to be nurtured to boost the innovation capabilities in an organization. The corporate world can take these findings to better augment their resources for stimulating business growth. This research work is carried out with the help of a framework, to identify the role of culture on innovation in an IT organization.

Literature Review:

There are plenty of definitions for innovation. The term dates back to 4th century Rome, when Saint Augustine used the Latin term 'innovation' when speaking of reformation or change. Hauschildt and Salomo (2007) define innovations as 'qualitatively new products or processes which markedly differ from the preceding status'. Roberts (1988), gives it a more business treatment and define "Innovation = Invention + Commercial Exploitation".

Two types of innovation – incremental and radical innovation has been widely discussed in the literature. Incremental innovations are those that results product or process enhancements. Such innovations are dependent on existing skills and do not produce any breakthrough ideas. On the contrary, Radical innovations are new and unique; products often disrupt the existing technology (Tushman and Anderson, 1986).

Dennis Sherwood (2002) in his book titled 'Creating an Innovative Culture' stresses on a fast track route to make innovation happen .He defines innovation not just a simply having a great idea , but in business world, as a four stage process. Dennis list out the Innovation process (which he calls the innovation express) as:

- | | |
|-----------------|---|
| Idea Generation | -in which the initial ideas are created; |
| Evaluations | -Decision making stage to consider promising ideas; |
| Developments | -in which an idea is made fully fit-for-purpose; |

Implementation -in which the idea is brought to full fruition.

Dennis argues that for a company to seed innovation spirits among its employees, Company executives must have below set of motivators and enablers:

Motivators	Enablers
» The role of senior management	» The physical environment
» Performance measures	» Budgets
» Reward and recognition	» Project funding
» Training	» Managing projects
» Embedding innovation into the day-job.	» Managing the pipeline of ideas.

James Christiansen (2003) in his practical and actionable guideline on building a culture of innovation articulates about a three stage structure to handle innovation. First stage is all about idea generation. Second stage deals with executive decision making in funding the idea. Third stage is to fasten the R&D process to deliver the outcome in a cost effective way, such that the product marketing as well as the return from investment is attractable. H.G.Barnett is considered as one of the accomplished scholars in the field of organizational culture. Barnett (1953) defines Innovation as “any thought, behavior, or thing that is new because it is qualitatively different from existing forms. Barnett argues that the cultural conditions have a role to play in stimulating one to innovate.

Bronwyn H. Hall on his Paper on Innovation and productivity presented at ‘Economic policy Conference, Finland. Apr 2011’ with empirical evidence concludes that firm’s innovative actions generally increase its ability to derive revenue from its inputs. Robert D. Atkinson on his paper titled “Competitiveness, Innovation and Productivity: Clearing up the Confusion (Aug, 2013)” stresses the point that economies cannot ignore innovation. Innovation helps productivity and competitiveness. And innovation means that future goods and services will not only be cheaper but better.

In the path breaking research by Burns & Stalker (1961) on Management of innovation, articulates a key parameter called ‘code of conduct’ and its effect on the degree of innovation between mechanistic and organic organizations. The authors defined the code of conduct for an individual as ‘feasible, acceptable, worth taking into account behavior’. Nord and Tucker (1987) later extended the work from Burns and synthesized the ‘code of conduct’ as what we know today as organization culture. Gundry et al.(1994), citing anecdotal evidences from three companies, examines creativity and innovation using 4 categories namely: attribute, conceptual, behavior and process. Attribute theory states that one’s creativity is related to his/her specific characteristics or traits. Conceptual skills theory states that organizations promote an out of the box thinking or unconventional modes of thinking to arrive at innovative ideas. Behavioral theory stresses on the need to reinforce the desired creative actions to increase creativity by use of organizational expectations and rewards. Process theory holds creativity to be highly complex as it relies on one’s talent, skills, actions, and most importantly organizational conditions. Combining all these perspectives, Gundry proposed that to be creative and innovative - employees must share and exhibit creativity enhancing values, norms

and behaviors. The research details the 10 dimensions that have an influence on organization's creative environment namely: challenge, freedom, dynamism, trust & openness, idea time, playfulness/humor, conflicts, idea support, debates and risk taking.

Schein (1988), the world renowned expert on organizational culture, proposes model of organizational culture to foster innovation. Schein considers innovation as itself 'a property of culture'. According to him, to be an innovative culture, it must imbibe and assume properties like pragmatism, welcome to change, adherence to time lines, diversity and equality, participative decision making, encouragement, and pro-activeness.

Van de Ven (1986) considers 'Ideas' as the foundation for innovation. He encourages people development in organizations, since it's the employees that carry, react to, and develop ideas and stresses management attention to employee motivation. Ancona and Caldwell (1987), considers the need for organization to focus on the R&D efforts and stress the pivotal role of innovation in the long-term survival of organizations.

Kanter (1988) explains individual innovation as a step by step process. It begins by problem recognition and generation of ideas – be it novel or adopted one. During next stage, individual asks for sponsorship and attempt to sell his ideas looking for supporters. Finally in the last stage of innovation process – the individual start producing a prototype.- something that can be touched or experienced , something now that can be mass produced or institutionalized.

Robert Hurley (1995) examines culture variables that can bring in change and support the innovativeness of organizations and summarizes - participative decision making, power sharing, support and collaboration-support and people and career development – as key variables. Kotter and Heskett (1992) considered importance of group culture and its impact on the innovation speed of the organizations. Quinn (1988) talks about group performance aspects getting influenced by the culture. Quinn hypothesized that a culture that values innovation and receptive to new ideas and processes produce innovative outcomes. RaduanChe Rose et. al. (2008) proved with empirical data that companies with innovative workplace environment often increase employee productivity and engagement.

Scott Edinger, in Forbes 2012, November edition makes a bold statement-'Don't Innovate. Create a Culture of Innovation'. Scott summarize his paper by encouraging leaders to create an environment for innovation and advice leaders to develop quickly implementable strategies in order to foster innovation. Scott's first strategy recommends focusing on outcomes and leaves the creative process to its owners. Second strategy talks about developing reciprocal trust and encourage the leaders to be seen as protectors than silly motivators. The third strategy talks about challenging the status quo. Fourth one talks about being an inspirational role model to the employees.

Hurley and Hult (1998) relate innovativeness to firms key culture attribute – Its openness to new ideas. Risk appetite is another key factor of any culture supportive of innovation. Firms need to have a certain degree of risk taking mentality to ensure organization support to innovative minds. In the United Nations meet on Post 2015 Development Agenda (2013), stressed the importance of innovation and supporting culture in promoting entrepreneurship. Wycoff, (2003) in his article titled 'The Big 10 Innovation Killers', identify, 'not creating a culture that supports innovation' as the No: 1 innovation killer.

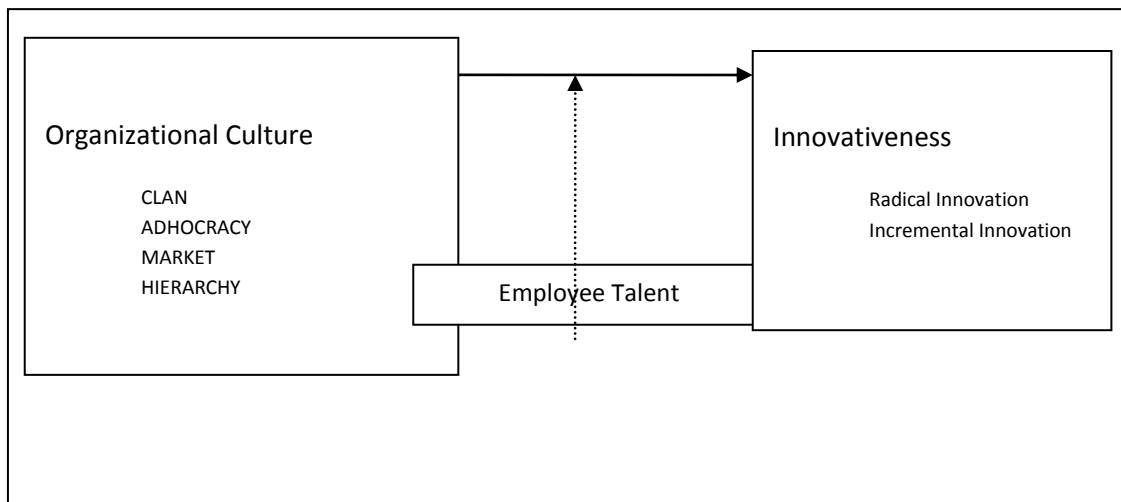
Geert Hofstede's cultural dimensions theory proposes four dimensions that can be used to explain the differences between cultures. The dimensions are individualism-collectivism, uncertainty avoidance (high/low), power distance (high/low), long-term/short-term orientation and masculinity-femininity. The findings are the result of a gigantic survey exercise that covered IBM offices across the world wide. Power distance enquires the distribution of power and society acceptance to it, especially from a weaker section's perspective. Individualism-collectivism looks into people preference to work in a group or alone. Masculinity-femininity represents society's preference to 'heroism, assertiveness, material rewards etc' while femininity looks for cooperation and caring. Uncertainty avoidance, expresses a member's feelings towards ambiguity or uncertainty. Long term/short term orientation means long term focus compared with short term satisfaction.

Competing Value framework

Competing Value Framework is widely employed in the industry to ascertain organizational behavior and how it produces organizational culture competencies and how they produce various types of values. In order to study the effectiveness of organizations, competing value framework classifies the cultural characteristics of organizations into six dimensions namely dominant characteristics, organizational leader, organizational "glue", organizational climate, criteria of success and management style. Based on these dimensions there are four culture types. The first one Adhocracy refers to culture that foster innovation and synergy. Adhocracy is belongs to 'create' profile, someone who make revolutionary ideas say like Steve Jobs. The employees in such organization are risk taking and come out with breakthrough solutions. The next type is Market culture that real focus is making money from the market. Third type is more formalized and more disciplined, known as Hierarchy culture. Each and every action in Hierarchy profile is guided by well documented procedures. The last one Clan culture refers to the culture that cares for the people.

Conceptual Framework for the Study:

The conceptual frame work for the study and responses to questions raised are based on premise that innovations in organizations are deeply influenced by the culture surrounding it. The research refers to various studies conducted by researchers to establish this linkage and endeavor to show that the organizational culture causes a great impact on innovation. Based on these findings, a framework (Figure: 1) has been proposed advanced with hypotheses for testing through empirical data.



Hypotheses

The survey will have few hypotheses to test

- H1: Adhocracy has highest positive impact on bringing out innovativeness of the firm.
- H2: Hierarchy has the lowest impact on bringing out innovativeness of the firm.
- H3: IT Firms produce more Product Enhancements (incremental Innovation) than new product (radical) innovations.

Methodology and Data

A quantitative empirical research approach has been used to indicate the degree of impact on culture types based on their innovativeness. Standard OCAI tool is used to identify culture first, followed by a 'Value Innovation Development Enabler Assessment' instrument.

Sample Size:

The questionnaire was posted to a sample of 8 IT firms in India with an employee size of 40-150 considered for the study. A total of 240 invitations are sent and 210 accepted the invite. The respondents included unit head, managers, architects and senior engineers from the company. Sampling method was random sampling. The survey consists of OCAI questions that examined the current organizational culture setting and an innovation tracker questionnaire assessment.

Instruments:

Two instruments, Organizational culture assessment Instrument (OCAI) and Value innovation development enabler assessment instrument are used in this research study.

1) Organizational culture assessment Instrument (OCAI)

The Organizational Culture Assessment Instrument (OCAI) is developed by Kim Cameron and Robert Quinn (2005) and it is a validated research method to examine organizational culture. The survey contains 6 set of questions with each having 100 points over four alternatives that correspond to the four culture types, according to the present organization. The culture types are as defined on Competing Values Framework

and they are: Clan, Market, Adhocracy Competing Values Framework and Hierarchy culture. Using OCAI tool one can measure the mix of or extent to which one of the four culture types dominates the present organizational culture

2) Value Innovation Development Enabler Assessment instrument

Value Innovation Development Enabler Assessment instrument is used to measure value innovativeness of the firm. This self-assessment instrument is developed by Léo F. C. Bruno (2010) and the questionnaire focuses attention on organizational systems that enables innovation. This instrument contain set of statements which describe “the way we do things around here” – the pattern of behavior which describes how the organization handles the question of innovation. The instrument has a score between 0 (= not true at all) to 5 (= very true). The instrument’s scoring formulae gives value innovation index of each organization.

Both of these instruments are tested numerous times.

The survey had a dichotomous question that enquires the type of innovation present in the organization. The choices were ‘Incremental (Feature improvements in existing products), Radical (Completely new product or a breakthrough idea) or Not applicable.

ANOVA Analysis and Testing of Hypotheses

A descriptive ANOVA procedure was carried out and the results are depicted in Table 1. Organizations having adhocracy as the dominant culture type, have recorded the highest mean for innovativeness (3.52). This is followed by second highest innovativeness mean value (2.96) for Market type and comparatively low scores for Clan (1.79) and Hierarchy (1.14).

This result support the hypothesis 1 that suggests adhocracy has highest positive impact on bringing out innovativeness of the firm and hypothesis 2 that suggests hierarchy type has the lowest impact for bringing out innovativeness of the firm. Thus according to the results hypotheses 1 & 2 are validated.

Post-Hoc comparisons to evaluate pair wise differences among group means were conducted using Tukey HSD Test since equal variances were tenable. Test revealed significant group wise difference as shown in Table 2 & Table 3. The culture type ranked 1st and 2nd for Organizational innovativeness – Adhocracy and Market culture - is shown in Table 4. This requires considerable attention as both of the culture profiles shows external orientation as per the Competing Value Framework.

Hypotheses 3 suggests that IT firms tend to focus more on product enhancements than new unique products. In other words IT firms tend to focus more on incremental innovations vis-à-vis radical innovations. During the test as shown in the Table 5, Product enhancements type show clear highest count of 169. More than 80% survey participant s vote for product enhancements than new product invention. Thus the data suggests that IT Firms produce more Product Enhancements (incremental Innovation) than new product (radical) innovations therefore the hypothesis 3 is validated.

Discussion

The research findings in fact corroborate the Competing Value Framework. As per the CVF, Adhocracy culture emphasizes on innovation and risk taking and leaders are visionary and innovative. In Adhocracy culture, the willingness for change and meeting new challenges are important, and the emphasis is on being at the leading edge of new knowledge, services and products (Shepstone and Currie, 2008). Adhocracy stood first in offering the best workplace environment for fostering innovation. Market culture, came closer in the degree of innovativeness in this study, which shows that market culture also support the environment boosting innovation in organizations. The worst performer in the study was by those institutions showing hierarchy culture profile. This requires serious attention. The participating firms with hierarchy as its culture reported poor set of product innovations. This support previous research findings that suggested of a negative relationship exists between hierarchy culture and innovation (Dobin, 2008; Henard&McFadyen, 2008; Schein, 2004)

The key take away is that organizations with Adhocracy culture type are best suited for nurturing innovation. To have a pioneering innovation environment, business leaders must instill the elements that can bring their organizations into an adhocracy culture type or develop 'change agents' that can move their existing culture patterns into more of Adhocracy types. And for a company to perform innovatively, it should also reduce the influence of hierarchy culture traits.

Another important aspect of this research is the type of innovation existing in Indian IT companies. The Indian IT companies surveyed for this study reported their innovation being more towards product enhancements or upgrades, which requires serious attention. Product enhancement is comparatively easy. Sometimes such innovations are guided by the client demands or may be forced upon due to new technological advancement or policy changes. But the thrust for creating radical innovations, new and unique products is not seen much in the surveyed IT firms. This may be due to the fund restrictions, lack of R&D facilities or not been enough supportive ambience. Sometimes this can also be due to management interest in meeting keeping short term targets than investing on long term goals.

Limitations

This drawing of any conclusion from this study should be done carefully. The study is based on a smaller sample, hence can't be generalized to larger population. Application of the analyzed relationships to the whole world can be considered a research topic for future studies. Also the study applies only to IT companies based in India and the conclusions are drawn considering companies in IT (information technology) domain.

Conclusion

Innovation is the fundamental driver for organizational growth. In today's competitive market space, innovation has become the differentiator that can give competitive advantage in today's marketplace. The research examined innovativeness of IT firms and its possible relationships

with the organizational culture. The study investigates the impact on innovation by dominant cultural types based on competing value framework. It is important for the business leaders to be extremely careful in building up an innovation culture in the firm and hence improve its performance. The research stresses the need companies to do a culture audit, identify those factors that are inhibiting innovation speed and effectively change those attributes to support a good innovation culture mainly 'Adhocracy' culture, that offered the best workplace environment for fostering innovation.

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Appendix:

Table 1: descriptive ANOVA

Culture Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Clan	54	1.794444	1.1057596	.1504748	1.492630	2.096259
Adhocracy	52	3.523077	1.1625893	.1612221	3.199410	3.846744
Market	52	2.957692	1.0464405	.1451152	2.666361	3.249023
Hierarchy	52	1.142308	1.0579941	.1467174	.847760	1.436855
Total	210	2.349048	1.4342692	.0989740	2.153932	2.544163

Table2: Post-Hoc comparisons using Tukey

(I) Type	(J) Type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Clan	Adhocracy	-1.7286325*	.2126075	.000	-2.279312	-1.177953
	Market	-1.1632479*	.2126075	.000	-1.713928	-.612568
	Hierarchy	.6521368*	.2126075	.013	.101457	1.202817
Adhocracy	Clan	1.7286325*	.2126075	.000	1.177953	2.279312
	Market	.5653846*	.2146038	.045	.009534	1.121235
	Hierarchy	2.3807692*	.2146038	.000	1.824919	2.936620
Market	Clan	1.1632479*	.2126075	.000	.612568	1.713928
	Adhocracy	-.5653846*	.2146038	.045	-1.121235	-.009534
	Hierarchy	1.8153846*	.2146038	.000	1.259534	2.371235
Hierarchy	Clan	-.6521368*	.2126075	.013	-1.202817	-.101457
	Adhocracy	-2.3807692*	.2146038	.000	-2.936620	-1.824919
	Market	-1.8153846*	.2146038	.000	-2.371235	-1.259534

*. The mean difference is significant at the 0.05 level.

Table 3: Homogeneous Subsets

TukeyHSD^{a,b}

Culture Type	N	Subset for alpha = 0.05			
		1	2	3	4
Hierarchy	52	1.142308			
Clan	54		1.794444		
Market	52			2.957692	
Adhocracy	52				3.523077
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 52.486.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table 4: Ranking of culture types based on the innovativeness survey response

CultureType	Ranking	Mean	N	Std. Deviation
Adhocracy	1	3.523077	52	1.1625893
Market	2	2.957692	52	1.0464405
Clan	3	1.794444	54	1.1057596
Hierarchy	4	1.142308	52	1.0579941

Table 5: Mean Scores of Innovation types for IT firms

Innovation Type		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Incremental	169	80.5	80.5	80.5
	NA	6	2.9	2.9	83.3
	Radical	35	16.7	16.7	100.0
	Total	210	100.0	100.0	

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