

Team innovation capability: role of 'focus' and 'intensity' in academic and industrial research teams in India

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Keywords

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Abstract

Team-level innovation capability seems to be a relatively unexplored area as compared to 'organizational-level' or 'individual-level' innovation capability. Innovation capability of teams deserves attention due to the emerging importance of teams as a better way to utilize employee talents. This paper examines the role played by 'focus' and 'intensity' of research team's efforts towards innovation. 'Team Focus' constitutes three aspects – 'Inner Focus', 'Other Focus' and 'Outer Focus' whereas 'Team Intensity' is constituted of 'passion', 'commitment' and 'involvement' of team-members towards innovation-related activities, in an organizational setting.

An online questionnaire consisting of 30 items was developed to seek responses from academic as well as industrial research teams belonging to some of the most 'elite' research laboratories funded by the government in India. Comparative Analysis using independent sample t-test was performed on the data-set consisting of responses from 80 academic research teams (363 respondents) and 56 industrial research teams (265 respondents). Results reveal that Academic and Industrial research teams differ on 'focus-related' aspects such as (1) 'clearly understanding' their responsibility towards achieving organizational goals (2) 'total dedication' towards achieving its targets (3) living up to the expectations of all the "stakeholders" (4) "properly coordinating" all its work with partnering teams (5) "clearly communicating" all project deliverables with partnering teams. They also differ on 'intensity-related' aspects like (1) giving their "100%" while honoring their "commitments/deadlines". These can have important theoretical and practical implications while developing long-term 'innovation capabilities' in academic and industrial research teams, as discussed below.

Introduction

In high-velocity business environments, organizations compete against each other based on a 'capability' to develop and deploy new products or services within a quick time-limit (Lawson & Samson, 2001). This requires a 'strategic capability', which has the potential to be a vital source of competitive advantage', especially for a technology-driven organization. This paper attempts to highlight the importance of this strategic capability known as 'innovation capability', which is closely guarded by organizations. Colin et al (2016) elaborates upon the moderating role played by innovation (radical) capability while studying the influence of service-modularity on (new service) competitive advantage. In highly turbulent environments, it is tactically justified to invest in (organizational) learning, which eventually helps organizations to build long-term 'innovation capabilities' (Leopoldo et al, 2016). Hence, the significance of investing in long-term 'innovation capabilities' has gained a lot of recognition, irrespective of the nature of the organization (product or service-based).

Within an organization, the dynamics governing 'innovation capability' depend on the level-of-analysis: individual-level, team-level and organizational-level. Out of these three levels, innovation capability at an 'organizational-level' has already been studied quite extensively. This can be inferred from various studies done around the world; Sweden (Börjesson & Elmquist 2011), Russia (Gurkov 2011), Finland (Saunila & Ukko 2012), France (Boly et al, 2014), Turkey (Türker 2012), Iran (Rahmani

& Mousavi 2011), Spain (Camisón & Villar-López 2014), Brazil (Zawislak et al, 2012), European Union (Dervitsiotis 2010), China (Zhu et al, 2016; Yam et al, 2011), India (Parasher & Singh, 2005).

Innovation capability, at an individual-level, has also been extensively studied. Past researchers have explored factors like entrepreneurial skills, negotiating skills, motivation skills, interpersonal skills (Ritala et al, 2009); work-group relations, problem-solving style and leadership style (Scott & Bruce 2011); task-characteristics, motivation, individual-differences and contextual-influences (Hammond et al, 2011); opportunity-exploration, idea-generation and idea-championing (Jonget al, 2008). Unfortunately, innovation capability at the 'team-level' has not been awarded the attention that it deserves. Especially today, 'teams' have emerged as one of the best ways to explore and exploit employee creativity and potential. Unfortunately, academicians as well as practitioners of 'team innovation' haven't been able to properly take advantage of this phenomenon, majorly due to lack of sufficient theory available on this topic.

Attention towards understanding the fundamentals of team-level innovation (capability) has been inadequate (Burningham and West, 1995) especially on explaining the 'cross-level' influence of 'organizational-level' (higher-level) factors on the (lower-level factor) 'team-level' innovation (West 2002). Extant literature barely covers the relationship between factors such as team-tasks and team-composition (West & Sacramento, 2006, p. 25); task-characteristics and team-effectiveness in innovation (West 2002). Some aspects such as 'minority dissent' (De Dreu & West 2001); team creativity and innovation (Somech & Drach-Zahavy 2011); 'risk-taking' and 'constructive-controversy' (Tjosvold 2001); identity-integration and 'team-diversity' (Cheng et al, 2008), 'group potency' and 'group motivation' (Wong et al, 2009) on team-innovation has also been studied.

Hence, the existing literature on 'team-level' innovation capability seems to suffer from various deficiencies such as incoherence of basic fundamentals, insufficient conceptualization and scarcity of comprehensive models to explain the core concept. It also falls short of discussing critical aspects such as cross-level or multi-level impact, multivariate models and mediation or moderating effects. Thus, the factors influencing the core concept of 'team-level' innovation capability deserve to be studied and explored much more extensively. The proposed conceptual model is an attempt to comprehensively explain the influence of 'team focus' and 'team intensity' on 'team-level' innovation capability and overcome some of the gaps in the existing literature. 'Team Focus' constitutes three aspects - 'Inner Focus', 'Other Focus' and 'Outer Focus' whereas 'Team Intensity' constitutes 'passion', 'commitment' and 'involvement' of team-members towards innovation-related activities, in an organization.

Team-level Innovation Capability

Team-innovation has been fairly studied by previous researchers but not 'team-level innovation capability', which has been conceptualized from an organizational capability-perspective to achieve a long-term sustainable competitive advantage over the competitors. The paper proposes that 'teams' should be perceived as 'strategic' sources of competitive advantage. When top leaders in an organization start perceiving 'teams' as a source of competitive advantage, they will be able to reorient and restructure their organizations at 'team' levels. A conceptual model explaining this concept has been proposed in **Figure 1** at the end of this paper. Subsequent sections explain all the important aspects associated with this conceptual model.

Team-level innovation capability has been defined as team's ability to transform its collective knowledge and resources into new value propositions (products or services) for the benefit of the innovating organization through customer-orientation and manifestation of its innovative capabilities. Kandampully (2002b) suggested that the best method to ensure market success is through 'constant' innovation in close association with its target customers. Gressgård (2011) believes that new product success relies majorly on "efficient" exploitation of customer insights. The right customer-orientation enables research teams to understand the actual pain-points of the consumers and helps in developing the new value-offerings. Customizing value-offerings according

to 'target' customer's pain-points ensures high chances of commercial success and market leadership.

Manifestation of innovation capability by research teams plays a critical role in translating research from labs to the market. It has tremendous potential to revolutionize the way things have been done in order to make them better. This might lead to opening of new avenues to conduct fundamental as well as applied research, and conversion into new products. Manifestation (of innovative capabilities) can also be a tactic used by organizations to demonstrate 'power' or 'superiority' over competitors; eventually leading to long-term market dominance. Manifestation allows R&D teams to showcase their creativity and talent through their 'working' prototypes. Teams can tremendously benefit by exposing their 'lab' creations to the suggestions, feedbacks and criticisms from their 'target' customers. Manifestation also opens up a platform for teams to connect to their future customers, collaborators or competitors. The next section explains the role of team-level mediators 'focus' and 'intensity' towards innovation.

Team-level Focus towards Innovation

Lee et al (2003) posited that 'mental focus' plays a crucial role in goal-striving process. 'Focus towards innovation' has been conceptualized as a team-level construct influencing the innovation performance of the academic as well as industrial research teams. Goleman (2013) propounded that 'focus' is an ability to filter (undesirable) distractions and concentrate on the chosen thing. Teams that are able to maintain a 'healthy balance' between internal as well as external awareness seem to be better prepared to adapt themselves to constantly changing situations. A 'focused team' is able to master (1) Inner-focus: focus within the team (2) Other-focus: focus on some other teams in the same organization (3) Outer-focus: focus on teams outside their organization.

The ability of a team to 'filter out' undesired distractions and 'collectively concentrate' on the 'desired' goals by generating high levels of inner focus, other focus, and outer focus towards 'innovation' can be defined as 'team-level' focus towards innovation. Inner focus allows teams to introspect and be aware about their opportunities, threats, strengths and weaknesses. Other focus and Outer focus helps teams to be aware about other teams inside and outside their organization. This outward awareness can help teams during opportunity exploration and exploitation phase. A sharp focus on 'target' customers helps teams to identify their 'unmet' needs. Developing products and services according to these 'unmet' needs might increase their probability of market success.

Team-level Intensity towards Innovation

Innovation intensity of a team can be defined as, "ability of the team to generate high amounts of passion, commitment and involvement towards innovation". Vallerand et al (2003) defined 'passion' as a strong inclination towards a self-defining activity which a particular 'person' deeply values, likes and possesses the willingness to invest one's time and energy. Lee & Kelley (2008) studied the impact of selecting the right project leaders with passion towards innovation. Ramadani & Gerguri (2011) believe that leaders should be able to effectively balance the passion and the pain involved in developing innovations. Cooper (2011) suggested that world-class leaders provide all the necessary resources, autonomy and time, to their employees to work on and develop their own innovative pet projects. Thus passion emerges as an important sub-dimension to understand 'team intensity' towards innovation.

'Commitment' towards innovation at the team-level, has been mostly studied as a mediating (or moderating) variable to explain the nature of relationship between ambidexterity and firm innovation (Heavey et al, 2015); servant leadership and team-effectiveness (Mahembe & Engelbrecht 2010); firm innovation and performance (Zhou et al, 2013); proactive goal-generation and innovative work-behavior (Montani 2015). Thus 'Commitment' can be considered as an important aspect while studying 'team intensity' towards innovation.

'Involvement' of various stake-holders (customers, suppliers, investors and research teams) play a critical role in new product success in the market. Bessant et al (2010) proposed tools like idea-management funnels to manage large volume of ideas in high-involvement innovation. Thus, active participation and involvement of all the team-members in generating new ideas, decision-making and execution can be an important indicator of 'team-intensity' towards innovation. Hence, 'intensity' of R&D team's efforts towards innovation can be assessed by the passion, commitment and involvement of team-members in innovation-related activities. The following section briefs about the methodology followed to collect relevant data and the subsequent statistical analysis performed to generate meaningful insights from the conceptual model.

Methodology and Analysis

An online questionnaire consisting of 30 items was developed to seek responses from academic as well as industrial research teams belonging to some of the most 'elite' research laboratories funded by the government in India. The data-set consisted of responses from 80 academic research teams (363 respondents) and 56 industrial research teams (265 respondents). For each team, one team-leader and 4 or 5 team-members were asked to fill-up the survey. The questionnaire was designed to check for the respondent's "perception" about his/her "team" on various parameters critical for innovation. A five-point 'Likert' scale was used to grade the responses by the respondents.

Comparative Analysis using independent sample t-test was performed on the data-set consisting of responses from 80 academic research teams (363 respondents) and 56 industrial research teams (265 respondents). Table 1 and Table 2 indicate all the items belonging to 'team-level focus' and 'team-level intensity' respectively. Descriptive statistics such as sample mean and standard deviation for each of these items were calculated and reported in the tables. SPSS Version 21 was used to calculate all the descriptive statistics along with the computation of t-statistic for the independent samples. The independent-samples t-test is a statistical test used to infer whether there is a significant difference between the means from the two unrelated groups. In our case, we wanted to understand - how teams belonging to various research-driven organizations differ from each other on aspects related to 'team-level focus' and 'team-level intensity' towards innovation.

Findings

Results reveal that Academic and Industrial research teams differ on 'focus-related' aspects such as (1) 'clearly understanding' their responsibility towards achieving organizational goals (2) 'total dedication' towards achieving its targets (3) living up to the expectations of all the "stakeholders" (4) "properly coordinating" all its work with partnering teams (5) "clearly communicating" all project deliverables with partnering teams. They also differ on 'intensity-related' aspects like (1) giving their "100%" while honoring their "commitments/deadlines". These can have important theoretical and practical implications while developing long-term 'innovation capabilities' in academic and industrial research teams.

Implications

The proposed conceptual model has important theoretical as well as practical implications. It may serve as a reference model for Top Management Teams (TMT) responsible for designing organizational-level practices and policies to improve innovation performance of R&D teams irrespective of their academic or industrial nature of research. It helps them to understand the importance of these organizational-level factors which significantly impact the long-term team-level innovation capability within an organizational setting, as shown below:-

1. Top Management Teams (TMT) in research-driven organizations should ensure that research teams working with them **'clearly understand' their responsibility towards achieving their organizational goals.**

2. **Top Management Teams (TMT) can regularly check if their research teams are working with 'total dedication' towards achieving their targets.**
3. **Top Management Teams (TMT) can explore new ways to ensure that the research teams are living up to the expectations of all the "stakeholders" involved in the project**
4. **Top Management Teams (TMT) can help their research teams to "properly coordinate" their work with all the partnering teams**
5. **Top Management Teams (TMT) can ensure that their research teams "clearly communicate" their project deliverables and critical information with all of their partnering teams.**
6. **Top Management Teams (TMT) can work on some of the 'intensity-related' aspects like inspiring their research teams to give their "100%" to innovation-related activities while honoring their "commitments or deadlines" promised to their clients.**

Summary and Conclusion

In this study, we have highlighted that 'team-level innovation capability', seems to be unexplored as compared to innovation capability at organizational-level or individual-level. There seems to be a growing need among academicians as well as practitioners to understand the dynamics that govern 'team-level innovation capability'. Especially, due to the emerging importance of teams in an organizational setting it will be interesting to study how this team-level phenomenon can impact innovation and market performance of an organization, in the long run. The proposed conceptual model explains the impact of two team-level factors 'focus of the research team towards innovation' and 'intensity of the research team's efforts towards innovation' on 'innovation capability' of R&D teams.

Data was collected through an online-questionnaire consisting of 30-items seeking responses from academic as well as industrial research teams operating in India's most 'elite' research-driven organizations, funded by the government. An online questionnaire consisting of 30 items was developed to seek responses from academic as well as industrial research teams belonging to some of the most 'elite' research laboratories funded by the government in India. Comparative Analysis using independent sample t-test was performed on the data-set consisting of responses from 80 academic research teams (363 respondents) and 56 industrial research teams (265 respondents). Results reveal that Academic and Industrial research teams differ on 'focus-related' aspects such as (1) 'clearly understanding' their responsibility towards achieving organizational goals (2) 'total dedication' towards achieving its targets (3) living up to the expectations of all the "stakeholders" (4) "properly coordinating" all its work with partnering teams (5) "clearly communicating" all project deliverables with partnering teams. They also differ on 'intensity-related' aspects like (1) giving their "100%" while honoring their "commitments/deadlines".

These findings stand out as our 'original contribution' towards the 'innovation capability' literature and innovation-driven organizations can exploit these findings to design their innovation processes and people practices. Organizational level interventions can be designed to improve the overall 'innovation performance' of their respective organizations. **Top Management Teams (TMT)** of innovation-driven organizations should work on developing the right environment which enables, encourages and facilitates innovation throughout the organization. Orienting research teams to develop innovations from customer's perspective and manifesting such abilities have emerged as significant aspects while developing 'innovation capabilities' in research teams operating in technology-driven organizations. Thus, in order to build long-term 'capabilities to innovate', organizations should work on intensity-related aspects such as passion, commitment and involvement of team-members in customer-centric innovation activities.

Through this paper, it also emerged that, along with high levels of intensity it is also important to have the right kind of 'focus' while undertaking innovation. Teams should be able to maintain a healthy balance between all three kinds of focus - inner focus, other focus and outer focus. Inner focus helps teams to carefully introspect and be aware about their strengths,

weaknesses, opportunities and threats. Other focus and Outer focus helps teams to be aware about the kind of work undertaken by other teams inside and outside their organization. This might help in opportunity exploration and exploitation in future. A sharp focus on 'target' customers allows identification of their 'unmet' needs. Developing products according to these 'unmet' needs, might increase their chances of market success.

At the end, we have also suggested some important theoretical as well as practical implications for **Top Management Teams at innovation-driven organizations**. They are suggested to focus on aspects such as – ensuring that the research teams have a 'clear understanding' about their responsibility towards achieving organizational goals, 'total dedication' towards achieving their targets and living up to the expectations of all the 'stakeholders'. Research teams should also ensure that they properly 'communicate' as well as 'coordinate' their work with partnering teams and give their "100%" to innovation while honoring their "commitments/ deadlines" from clients.

Research limitations and direction for further research

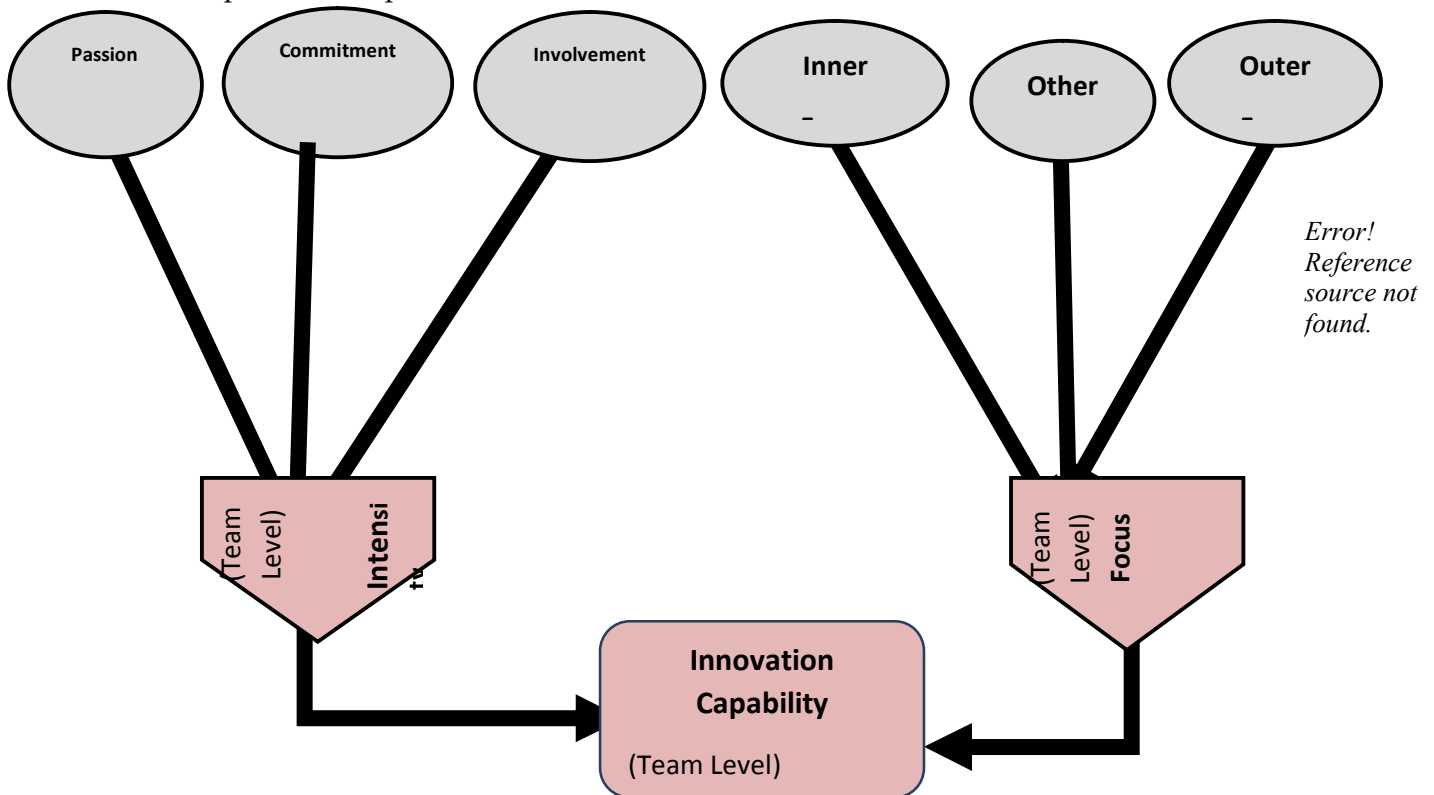
This conceptual paper does not contain any organizational-level factors (like leadership, culture, structure) or individual-level factors (like individual excellence, personality types etc.) which may impact team-level innovation. Future research may include multi-level or cross-level influence of 'higher-level' (organizational-level) factors on 'lower-level' (team-level or individual-level) factors, or the other way around.

Table 1: Focus (Academic and Industrial Research Groups)

ITEM	Academic Researchers (80 Teams) N1 = 363	Industrial Researchers (56 Teams) N2 = 265	Academic -Industrial Researchers
	Mean (SD)	Mean (SD)	T - test 99 % Confidence
My team has a "clear vision" which guides its innovation efforts	3.70 (1.12)	3.80 (1.05)	0.217
My team "clearly understands" its roles & responsibilities towards the goals of our organization	3.85 (1.54)	3.97 (0.99)	0.009
My team is "totally dedicated and focused" towards achieving its targets	3.92 (1.18)	3.94 (0.95)	0.001
My team members "completely trust" each other	3.91 (1.11)	4.03 (1.04)	0.525
My team "clearly understands" its strengths & weaknesses	3.79 (1.16)	4.00 (1.13)	0.076
My team tries its best to live up to the expectations of all the "stakeholders" associated with it	3.79 (1.10)	4.10 (1.10)	0.002
My team "properly co-ordinates" all its work with the partnering teams	3.83 (1.11)	3.93 (1.01)	0.027
My team "clearly communicates" all the "project deliverables" with all the partnering teams	3.84 (1.25)	3.89 (0.94)	0.001
My team "amicably resolves" all the conflicts occurring inside /outside the team	3.86 (1.12)	3.87 (0.92)	0.346
My team "benchmarks" itself with other teams to improve its performance	3.74 (1.12)	3.89 (0.92)	0.09
My team has strong outward focus and is well	3.93	3.87	0.38

aware of the latest news & events	(1.54)	(1.05)	
My team thinks about the future consequences of today's decisions	3.88 (1.18)	3.88 (0.92)	0.93
My team consists of "Good Listeners" and "Good Questioners"	3.93 (1.11)	3.87 (0.97)	0.48
My team constantly explores "new opportunities to learn & collaborate"	4.01 (1.16)	3.97 (0.97)	0.50
My team is "open to incorporate" new ideas even from other domains	4.14 (1.10)	4.03 (1.00)	0.196

Where *: p < 0.05; **: p < 0.01



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