

Summary

Innovation Studies: Where do we stand?

The main purpose of the Brain Storming Session (BSS) is to explore and understand the connecting story underlying the outcome of various innovation projects and to suggest a way forward in advancing this subject of national and global importance. The first National Innovation Survey (NIS) report was presented in various BSSs in different parts of the country for critical reviews before finally released by DST in 2014. While shortcomings of this first ever initiative were discussed threadbare, the need for more focussed supplementary studies were also highlighted as a desirable step towards the next round of NIS.

Subsequently, NSTMIS division of DST had initiated eight sponsored studies during 2014-16. These are:

1. Study on ‘Status, Systems and Strategies of Innovation in SMEs in the Equipment and Machinery Sector; Global Projects & Services, New Delhi
2. Extent of R&D and innovation in MSMEs in West Bengal: Strategies, Determinants and Effects; Calcutta Business School, Calcutta.
3. Innovation Management and Practices in SMEs’: Antecedents & Challenges; Sri Ramakrishna College of Arts and Science for Women, Coimbatore
4. Assessing Industrial Innovation Process and Suggesting Policy Support Framework in India; Foundation for MSME Clusters, Delhi
5. Innovation in Large Manufacturing Firms: In the Era of “Make in India”; Administrative Staff College of India (ASCI), Hyderabad
6. Assessment of Research & Development & Innovation Practices in Micro, Small & Medium Manufacturing Enterprises (MSMEs) in India; Market Insight Consultants (MIC), NOIDA
7. MNCs’ R&D in India: A glimpse; Confederation of Indian Industries (CII), Delhi
8. Organisational Practices for Innovation in Indian Industries: A firm level case study on Human Resources and Work Culture; Centre for Knowledge, Ideas and Development Studies (KnIDS), Delhi

This brief attempts a consolidated overview and understanding derived from the above studies. In the following discussion, studies would be referred by the serial numbers shown in the above list.

We shall follow the familiar project template–

- a. Key questions/objectives/hypotheses
- b. Methodologies
- c. Data sources
- d. Findings/observations
- e. Conclusions/policy implications

Key questions/objectives/hypotheses

Six out of eight studies had focussed on Micro, Small & Medium Enterprises (MSMEs), one study was on MNCs initiatives on R&D and innovations and the other one was on innovations by large firms. The MSME focussed studies had dealt with four broad questions: Identification of innovative firms, types of innovation, and extent of innovation; Determinants and Strategies for innovations; Gains from innovations; Constraints and challenges of innovation.

A general hypothesis that emerges from the studies is that while firm level parameters are important for innovativeness of the firms, there is an overall inertia towards innovation as the driving force for creating competitive advantage. The inertia is reinforced by the disconnect between the innovation support system and the firms' production system. Firms operate in the comfort zone of competition by adopting the practices in the market place. In brief, the innovation ecosystem is inadequate for innovative drives of the firm.

Methodologies

Methodologies adopted by the studies have interesting variations in approaches. Broadly, while some studies approaches the issue by verifying the determinants that are known from earlier studies and literature; the other look at the issue for how to activate the determinants in the Indian ecosystem. Either ways, most of the studies try to capture the process of innovation and/or firms' strategies for innovation in terms of mobilisation and deployment of resources (physical, financial, knowledge/information and Human resources), and accessing the sources and support system for the same – tracing and evaluating the innovation value chain.

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Important take away from the methodologies adopted by these studies is the need for developing a micro level (firm level) system of innovation that will complement NIS, RIS and SIS. It is the firm level system of innovation that effectively brings out, as most of the studies suggest, the inadequacy of the innovation systems at higher level of aggregation. In other words the need for articulation of the macro level systems of innovations.

Data/information Sources

Two distinct ways of collection of data/information are discernible. One was based on questionnaire structured on the basis of theoretical understanding of the issues that were to be addressed, and the other was empirical exploration of the insights to the questions to be investigated. The first set of studies adopted sample survey either for a state or for a selected set of states, or a selected sector in a state. Three studies used the innovative firms identified in the NIS for further exploration of the issues underlined above. Others have identified own set of innovative firms and their innovations and innovativeness. The second set of studies, on the other hand, used case study method to delineate the and after innovation.

Findings and observations

- Overarching observation of the studies is the passive approach to innovation in Indian industries, especially among the MSMEs. However, growing realisation of the need for innovation for sustenance in a globalised market place is palpable. Different studies have arrived at this observation through different routes. Study on Machinery and Equipment industry (study 1) suggests that innovation is essentially driven by the foresight and dynamism of the owner of the firm. Even in such cases innovation is reactive as opposed to proactive.
- Most of the innovative firms do not have any formal internal system of promoting innovations; customer requirements and/or market prompts are the main driving force for innovation. Study 3 arrives at the similar findings suggesting that success in innovation is achieved through continuous monitoring and quality improvement of the products – the

initiative that depends much on the owner's drive for innovation. The same study shows that innovation happens when there is a internal system of promoting innovations.

- Similar are the findings from the Human Resource and work culture related study (study 8), which takes the human resource perspective of innovation and finds few evidence of creating firm specific human resource development strategies of the firms across industries and states.
- Study 2 has found some evidence suggesting firm size as an advantage for innovation. The study also finds sector specific dynamics for types of innovations, namely, product and/or process innovations. Study 3 suggests positive relationship between age/gender and innovativeness. Study 1, however, does not support any such observations.
- Study 2 examines relationship between skill base of the firms and innovation and finds evidences suggestive of positive relations between the two. Study 8 also presents positive relation between skill base of the firms and firm size, and also with types of innovations. It has been observed that firms with low skill base and/or small firms do engage mostly in marketing innovations. Study 3 also suggests similar observations.
- Study 4 examines the five stages of innovation at the enterprise level, from ideation to sustainability, for both successful and failure cases and suggests that the ideation remains the most important driving force for innovation. The study 8 resonates similar observation for what it calls firm level system of innovation. In addition, the study treats Human Resource in a firm as source of ideas for innovation and much of the success depends on work culture of the firm in deploying, nurturing and effective utilisation of HR. The study observes that Indian firms are far away from the ideal practices in this regard. In fact, the emphasis on the ownership of the firm as driving force of innovation, as it is in Study 1 can be interpreted as similar to the above.
- Study 6 examines MSMEs in terms of different indicators of innovation and innovativeness. The sample survey assesses present state of MSMEs' in terms of size, ownership, manpower (S&T and others), training, R&D expenditure etc. This study finds survival in the market as the main driving force innovation. Innovative firms try to follow changes in the practices in the industry and also market signals on changes in the consumer preferences.
- Study 7 focuses on the MNCs contribution to Indian innovation system. The study suggests that MNCs' interest in R&D in India is mainly product centric development. However, the

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study does not report a very encouraging scenario of MNCs' R&D collaborations with Indian institutions.

- Study 5 focuses on large firms' R&D behaviour, innovation and related issues using both quantitative and qualitative analysis to tests some of the well-articulated hypotheses on innovativeness and firm size. The study also identified the industry sector specific gaps and constraints in the policies and the related suggestions of the industry.
- Most of the studies reported availability of finance, risk funding, market uncertainty, support for training, skilled manpower and development, information etc as main barriers to innovations.

Conclusion and policy implications

- Except study 5 and 7, remaining 6 studies focussed on MSMEs. The overall scenario that emerges is that of innovation dynamics essentially led by the instinct to survive in the market. However, creating market advantage by building enterprise specific assets is yet to be caught up as a firm level strategy in the MSMEs. The studies highlight the disconnect between innovation support system and the MSMEs' innovations, as reflected in the findings as most of the firms essentially depend on internal resources for skill development, training, finances, access to new information and knowledge. Internal resources are complemented with the feedback received from customers and vendors.
- Among others, important barrier to innovation appears to be lack of skilled manpower and availability of finances. The most important take away from the studies is that MSMEs are aware of the importance of innovation for their survival in the market in the wake of local and global competition. What they appear to be unsure of is about handling of associated challenges and uncertainties that come with new initiatives.
- Strengthening of the existing innovation support system and its reach at the local level requires a major policy thrust; encouraging large firms including MNCs to bring into their fold MSMEs as part of their innovation value chain emerges as a suitable option leading to a win-win situation.

- Skill development is another area that requires serious attention if innovations in Indian industries is expected to be the future dynamics. The initiatives in this regard, require to be taken up in consultation with the demands from the MSMEs. Suitable organisational structure has to be planned towards this end.



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