Information Sharing through Informal Interaction in Low-Tech Clusters

Anant Kamath

This thesis is about the nature and characteristics of information sharing by means of informal interaction among small, low-technology, producers located in clusters. It aims to understand intra-cluster interaction channels and dynamics of information sharing among producers in low-tech clusters surviving on defensive innovation. And importantly, the thesis studies this information sharing in settings where economic relations arise as emergent properties of social relations.

Low-tech small firms need to constantly observe technological developments among their peers to keep abreast of the velocity of technical change among their close allies or competitors, as they are often too small to work in isolation, and cannot undertake R&D in the formal, conventional, sense. To do so, these producers often employ strategies of *defensive* innovation and learning, which include observation, constant communication, informal information exchange, and so on. Geographical proximity and reliance on social networks are placed at the forefront, with local producer groups agglomerating not simply for economies of scale, but to evolve a knowledge system and a rich interactive milieu. This gains special importance as it is these kinds of economic agents (and environments where social relations drive economic relations), that constitute the vast majority of industrial and artisanal clusters in a country like India.

The thesis employs two methods: simulation modelling and empirical study. There are two simulation models, and two empirical studies undertaken. The first simulation model motivates two empirical studies out of its findings: a descriptive case study and a network study, of low-tech rural and semi-urban clusters in traditional technology industries in Kerala state in southern India. The thesis then returns to a second simulation model based on a few key findings and new concepts evolved from the empirical studies.

The first simulation model finds that the small-world network structure may still be the best network structure for high performance, but not so for most equitable knowledge distribution in a cluster, when information sharing is undertaken in various types of complex social relations environments. In addition, it is confirmed that generally the highest and most equitable knowledge distribution is achieved when there is universal affinity among the cluster's agents. With this confirmation, the thesis undertakes empirical study of a coconut fibre spinning cluster in Kerala characterised by universal affinity among its members, studying how its producers adapted to an exogenous innovation purely through informal information sharing. In the second empirical study, the thesis graduates to a more complicated setting by studying handloom-textile producing clusters where social relations have driven information sharing relations for an extended period of time, intensively involving social capital. Evidence is provided that it is not just social embeddedness alone, but in its *combination* with homophily in various intensities that is detrimental. The empirical study argues that affiliation to rigid networks, and traits of homophilous-embeddedness passed on through generations, can weaken even a seemingly prosperous group of producers, regardless of industry performance. Based on these findings, the thesis presents another simulation model on the performance of cohesive agents in a population, when exogenous innovations arrive; and the conditions under which homophilous-embeddedness in the cohesive group actually benefits them.

This thesis aims at contributing to the literature on defensive innovation and collective invention, and on the role of networks in knowledge diffusion. These areas appear to have skipped a deep enquiry into the economic-sociology of knowledge diffusion among small producers in defensively innovating clusters, set in scenarios where social relations drive economic and innovation relations. The thesis also provides a few specific policy lessons for India. It aims at broadening the stunted perspective of the general mainstream approach towards science and technology and innovation for development in India; usually characterised by a top-down policy prescription view, and a high-tech-preference view. The thesis projects innovation and learning as more inclusive processes, a perspective essential while crafting development policy for an economy like India that is trying to tap its innovative potential.

This thesis contributes towards the larger theme of the economic-sociology of knowledge diffusion and technological learning. In the analysis of informal information sharing in low-tech clusters, this thesis mainly subscribes to an economic-sociology approach, maintaining social structure and social relations as central to the economics of knowledge diffusion and learning.