Global Production System

Innovation systems, technological development and Globalization: Innovation is an interactive process, which links agents that respond to market incentives, such as firms, to other institutions that operate on the basis of strategies and rules that are independent of market mechanisms. Globalization has also helped to transform innovation systems. On the one hand, globalization has led to profound changes in consumption patterns. While it has levelled out differences in taste and reduced selectivity by homogenizing consumers on the basis of internationally recognized brand names, it has also enhanced the value of ethnic, small-scale and handicraft products. On the supply side, the innovation systems of the countries of the region have shifted, tending to become more internationalized owing to greater integration into internationally integrated production systems (IPS), which are managed at the global level by transnational corporations. Organizing production and consumption on a global scale means making the most of economies of scale, capturing the advantages of specialization and making use of opportunities for rationalizing costs. Moreover, it means thinking of consumers as a homogeneous group of people who, regardless of their culture or specific circumstances, exhibit similar preference functions.

Productivity has risen not only because of the increase in the capital/labour ratio but also because of the gradual introduction of a more highly sophisticated generation of machinery and equipment that necessarily involves more efficient styles of labour organization.The performance of innovation systems is directly related to the production structure and the firms and public institutions that constitute it. Four patterns of behaviour are associated with the transformation and new pattern of acquisition of technological and innovative capabilities that today characterizes the production system and its enterprises:

The first pattern involves a **simultaneous process of modernization and inhibition of national capacities**. Owing to the globalization of production and greater integration with an international IPS, many local subsidiaries of transnational corporations (TNCs) have narrowed their product mix, specializing in one (or a few) products out of the range produced by the corporation at the global level and, at the same time, importing the remaining items from that product range. On the other hand, the incorporation of computer-based equipment and machinery and the transition to digital forms of labour organization have accelerated integration into global IPSs. This ultimately influences the nature of production processes, which today have less down time, shorter lead times between design and manufacture, and lower defect and rework rates. In other words, productivity has risen not only because of the increase in the capital/labour ratio but also because of the gradual introduction of a more highly sophisticated generation of machinery and equipment that necessarily involves more efficient styles of labour organization. The decline in the prices of imported capital goods brought about by trade liberalization encourages the replacement of local machinery, equipment and skilled labour. On the one hand, this tends to increase the capital-intensiveness of the various production sectors. On the other, as imported equipment becomes less expensive than locally-produced equipment, the latter is replaced, and the local capital goods industry’s market share shrinks. Finally, since the new machinery incorporates operational capabilities previously provided by skilled workers and engineers, the demand for this type of worker declines.The great advantage of the IPS is therefore that it captures the benefits of economies of scale, but its cost for the countries of the region derives from the abandonment of the local adaptation of products and processes in favour of the “commoditizing” of goods and services.

The second pattern is the **marginalization and destruction of national production chains**. While advances in the internationalization of processes are taking place, another part of the production apparatus is being increasingly marginalized from the new industrial organization model now being consolidated. Thus, major pre-existing production chains are being disrupted, and national producers in many cases small and medium-sized enterprises have lost access to markets as their products are replaced by imported substitutes.

The third behavioral pattern that has been **emerging is uneven specialization in the production of knowledge**. Although there are sharp differences across countries in terms of the new specialization pattern and the way in which, in each case, firms and industries have been absorbing new sectoral technological and competitive regimes, a common feature in the region is that enterprises have tended to specialize in relatively less technology-intensive production activities and processes. In other words, they have chosen to tap the available natural resources, without subsequently moving towards the acquisition of knowledge rents or committing significant amounts of resources to technological deepening.

The fourth behavioral pattern is the **transfer of some pre-existing R&D activities out of the region**. Many foreign-based enterprises that have recently established operations in the region, through the purchase of a pre-existing local plant, have chosen to cut back or simply discontinue, national R&D efforts and the project offices that local firms had set up to support their production and investment activities in previous decades. The transition to an international IPS has led to the outward transfer of engineering and R&D activities previously carried out by local firms.