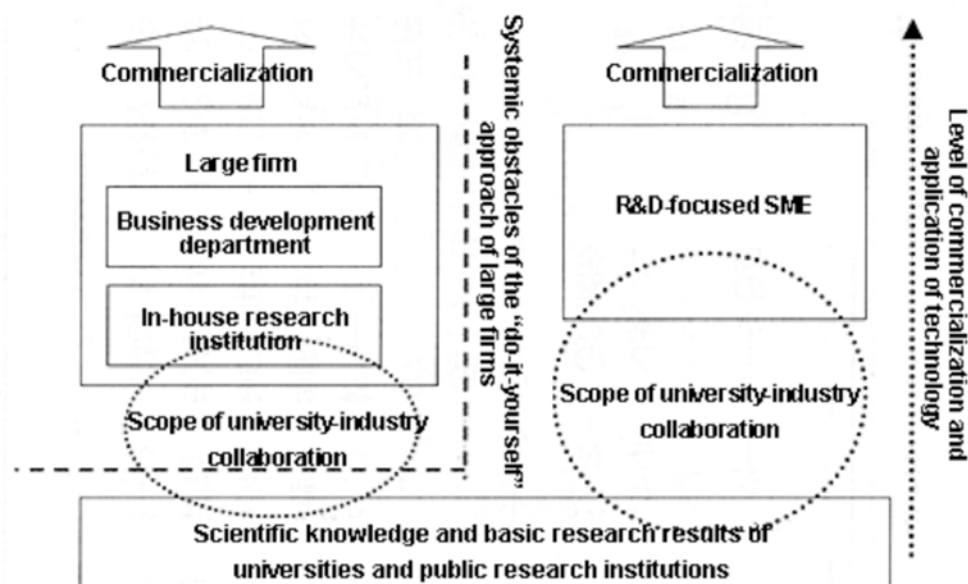


R&D-FOCUSED SMALL AND MEDIUM-SIZED ENTERPRISES AND IMPORTANCE OF UNIVERSITY-INDUSTRY COLLABORATION

As per our new trade policy and focus to become trade oriented country, there is need to revamp Pakistan's innovation system to encourage companies to become more innovative. The promotion of university-industry collaboration is a core part of such an overhaul, and systemic reforms to promote relationships between universities and public research institutions and private companies in the field of research and development are being rapidly undergone.

The following diagram shows the typical position of R&D-focused SMEs in reforms of Pakistan's innovation system.



Pakistan's innovation system has systemic obstacles such as a rigid labor market and an underdeveloped technology market. Because of this, there have been few efforts to pursue external partnerships for R&D and as a result, large companies have played the central role through innovation using their own R&D resources. However, Pakistan may fall behind the innovation competition in fields of rapid technological advances, such as the information technology revolution, if it sticks to this sort of do-it-yourself approach. In addition, the R&D process for pharmaceuticals has greatly changed as a result of advances in biotechnology, and it has become important to create effective alliances with institutions like universities, which have scientific knowledge such as gene function analysis. As this shows, in such high-tech areas as IT

and biotechnology, network-type systems that place priority on outside alliances are coming to gain a comparative advantage in innovation.

Because R&D-focused SMEs are not blessed with R&D resources like large companies, they have a strong incentive to overcome systemic obstacles and move toward university-industry collaboration that can lead to specific results such as the development of a new product. Furthermore, from the universities' side, compared to large companies, which lean toward basic research seeds, it is more likely that tie-ups with SMEs will satisfy their incentive to commercialize the results of their research. Such vigorous university-industry collaboration by R&D-focused SMEs that overcome systemic obstacles has a great chance of changing the entire Pakistani system to make it more fluid. In recent years, we have observed progress in the university-industry collaborations of small, young firms, but this sort of R&D-type collaboration between universities and industry is also very beneficial for society, and should be pursued further on the policy front.