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Role of Technology and Capital in Economic development



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INTRODUCTION

- <u>Technological change or progress refers to the discovery of the new and improved methods of producing goods.</u> Sometimes technological advances result in the increase in available supplies of natural resources. But more generally technological changes result in increasing the productivity of labour, capital and other resources. The productivity of combined inputs of all factors is called total factor productivity. <u>Thus technological progress means increase in total factor productivity.</u>
- As a result of technological advance, it becomes possible to produce more output with same resources or the same amount of product with less resources. <u>The technological progress takes place through inventions and</u> <u>innovations.</u>



- The process of economic growth involves the increase in the production of goods and services. Increase in production can be achieved either through the use of more resources and/or through the realization of higher productivity by means of using the resources of labour, capital and land more efficiently.
- The process of growth of technical knowledge can be divided into following stages:
- (a) Formulation of scientific principles
- (b) Application of these principles to solve technical problems
- (c) Development of technical inventions to the point of commercial exploitation.

Technological change or precisely, technological progress brings about a change in the production process which results in an increase in output per head.



Technological change and capital formation

- The process of technological progress is inseparably linked with the process of capital formation. In fact, both go hand in hand.
- It is because the introduction of superior or more efficient techniques requires the building up of new capital equipment which incorporates new technology. In other words, new and superior technology can contribute to national product and its growth if it is first embodied in the new capital equipment.
- The capital accumulation has, therefore, been called the vehicle for the steady introduction of new technology into the economy



- Adam Smith viewed technological progress as a rise in productivity of workers as a result of increase in division of labour and specialization. This leads to the growth in national income. But it was J.A. Schumpeter who laid great stress on the role of technological innovations in bringing about economic growth. He visualised technical innovations in bringing about economic progress.
- Prof. Rostow has proposed four stages in the development of an economy.

These stages are:

- (i) Traditional society;
- (ii) Preconditions for takeoff;
- (iii) Drive to maturity and
- (iv) Stages of high mass consumption.

<u>The economic transformation of society from one stage to another</u> <u>requires, along with other things, a change in the level and character of</u> <u>technology.</u>



Role of capital in economic development :-





Role of technology in economic development :-





<u>Graphical representation of role of technological</u> progress on economic development

Impact of technology on production curve :





Explanation of the graph :-

In the figure 6, OP represents the production function which rises to OP1, OP2 and OP3, with technological progress. On curve OP, if amount of capital per worker raised from Rs. 150 to Rs. 200, the output per worker of labour is raised from SM to XM1, when capital per unit of labour is Rs. 300 the output per labour is ZM3.
The main objective of technological progress is to make a better utilization of labour and other resources and hence the production function shifts upward which means that more output per labour can be obtained by the same amount of capital per worker.

The quantity of capital per worker remains at Rs. 150, the production per worker goes on increasing from SM to NM. This is due to the upward shifting of the production function. In the same fashion, more production can be produced at other levels of capital intensity. Thus, technological progress results in shifting the production function upward which enables more output per labour with same amount of capital per worker.





Technological progress holds the key to economic growth. As technological progress takes place, capital accumulation will proceed further and economic growth will take place. Without technical progress, capital accumulation can raise the output and income to a limited extent. With constant labour force and the given technology, capital accumulation can lead to the increase in output so long as all the workers of the labour force are not equipped with the latest capital equipment embodying the latest technology. After this, technological progress can lead to the growth of output and income.



THANK YOU

