

FUNCTIONS OF PRODUCTION PLANNING AND CONTROL

“The highest efficiency in production is obtained by manufacturing the required quantity of product, of the required quality, at the required time, by the best and cheapest method.”¹ To attain this target, management employs production planning and control, the tool that coordinates all manufacturing activities.

Production consists of a sequence of operations that transform materials from a given to a desired form. The transformation may be done in one or in a combination of the following ways:

1. Transformation by disintegration, having essentially one ingredient as input and producing several outputs. This transformation is almost invariably accompanied by changes in the physical shape of the input, such as changes in the physical state or in the geometrical form. Examples: producing lumber in a sawmill, rolling steel bars from cast ingots, making components from standardized materials on machine tools, oil-cracking which yields several products, etc.

2. Transformation by integration or assembly, using several components as inputs and obtaining essentially one product as output. Examples: producing machines, furniture, household appliances, automobiles, radio and television sets, alloys, sulfuric acid, concrete, etc.

3. Transformation by service, where virtually no change in the object under consideration is perceptible but where certain operations are performed to change one of the parameters which define the object. This may include: operations for improving the tensile strength, density, crystallographic structure, wear, or other mechanical properties of the object; operations that change its locality or state by transportation or handling means; maintenance operations. Examples: sizing and coining in press work, servicing and light repairs of automobiles, loading and unloading of trucks, etc. Many pure service operations are

¹ Alford, L. P., and Bangs, J. R., *Production Handbook*, Ronald Press Co., 1952 (a later edition, edited by Carson, G. B., was published in 1958.)