Chapter 4

The Management of Basic Production Functions

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ABSTRACT

The production achieved in any industrial company is generically called basic production that needs an appropriate management that is different for every type of mass, serial, or individual production. Every type of production is based on a set of mathematical restrictions that quantitatively and qualitatively quantify that type of production. The fundamentals of the management of any basic production refers to: the production cycle that has a certain structure, and the total duration, the size of which considers both the way that product is made and the graph of moving the benchmarks from one operation to another; the manufacturing batch and, respectively, the optimal manufacturing batch, meaning the time elapsed between the release into production of two consecutive batches. A special case is the production achieved on a single object and multiple object flow manufacturing lines variably and constantly, continuously and discontinuously, etc. Every flow manufacturing line has a certain cadence, a certain tact, generates certain costs, and has certain characteristics. In the case of control production, it can be organised by taking into account the product position or the nature of the manufacturing process. Every type of production generates costs that are different in terms of the structure and calculation, and the use of the electronic calculation technique is imperatively necessary.

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TYPOLOGY OF INDUSTRIAL PRODUCTION

The concrete organisation of production processes under various forms depends directly on the number of names of products manufactured in the cell concerned, the amount of production manufactured for each type of product and the determination of the manufacture nomenclature. Therefore, all these parameters are related to the typology of industrial production (Courtois, Pillet, & Martin, 2000).

The industrial production is the result of the manufacturing process that is performed in an industrial company resulting in obtaining industrial products for the individual or social consumption,
goods of current use or long use (vehicles, equipment, machines, TVs, refrigerators, etc.).

The main difference between production and industrial production primarily aims at the place where it is performed, meaning both the difference between the industrial company and the company in general, and the difference between the specificity of the technological manufacturing process for industrial production which is different from the production process performed in general.

The type of production may be defined as all the technical and organisational factors characterising the stability of the nomenclature of manufactured production, the amount of production, the degree of specialisation of jobs, sections, or companies, and the movement of material production factors along workstations. The practical importance of structuring by types of industrial production consists in that the type of production to which a company’s organisational cell belongs determines the used methods of management, technical preparation of manufacture, record, and control, etc.

Theoretically, three types of production can be determined, as follows: mass production, batch production and individual production, even though, in practice, none of them exists in a pure form. For this reason, the inclusion of an organisational cell of the company in one or another of the three types of production must consider not only a single criterion, but all the criteria characterising, separately, each of the three types of production.

Any differences existing between the various types of production influence the degree of burdening of workplaces, the level pleine flux sur l’entreprise and, hence, the degree of specialisation of each workplace. To this purpose, we individualize the following workplaces: workplaces where a certain operation is permanently performed, in the same benchmark (characteristic for mass production); workplaces where some types of operations are permanently performed in various benchmarks, which are repeated after some periods of time (characteristic for batch production); workplaces where different operations are executed in a various amount of benchmarks, repeated at undetermined time periods or which do not repeat at all, developing without a certain succession (characteristic for individual production).

The type of production influences not only the degree of concentration of the manufacture of any of the benchmarks, but also the coefficient of burdening of workplaces, which may have the following values: less than 0.1 for individual production; 0.11-0.8 for batch production; 0.8-1 for mass production (Dima, Marcincin, Grabara, Pachura, Kot, & Man, 2011). The type of production has an important influence on production costs, meaning that, if the organisation of production is closer to the mass type, the cost is lower, pursuant to the reduction in the share of salaries, as a consequence of the increase in work specialisation and productivity. Otherwise, the closer the production organisation gets to individual production, the higher are the costs.

Each of the three types of production presents certain characteristics and own conditions for organisation, as follows:

**The Mass Production Type**

The organisation of this type of production only occurs when the permanent loading of each workplace with the performance of the same benchmark is ensured, i.e. when the amount of production and labour expenses required for the performance of production meet the following formula, for each operation of the technological process or for all the operations executed by a performer, successively for each product unit:

\[
Q \cdot t \geq F_i
\]

(1)

where:

- \( Q \): Represents the amount of production of the benchmark concerned, in the considered period;