Note on Capacity Management

Production capacity can be defined as the maximum rate at which a productive system can convert inputs into outputs. Capacity is typically measured as output per unit of time, that is, as a throughput rate (e.g., tons per hour). Measuring capacity is simplest for a single machine making a single standard product. Most productive systems, however, consist of an assemblage of people and machines acting in concert. For these more complicated systems, the processing capabilities of the system will depend upon design and control decisions, thus making the measurement of inherent capacity problematic. Following is a qualitative discussion of the constituents of capacity.

Design Constituents of Capacity

The term "design" is used here to include those things that are difficult to alter in the short run.

a. *Product design:* There are typically many alternative design possibilities for a given product, each of which will fulfill the same set of functional requirements. Some of these will be easier to produce than others with a given assemblage of people and machines. Such attributes as size, shape, materials, number of parts and assembly sequence can affect the rate at which non-defective units can be produced. This is reason enough for production to join R&D and marketing in the design phase for new products. The acronyms DFM and DFA stand for "design for manufacturability" and "design for assembly," respectively. These refer to designing products with attention given to how they will be manufactured.   The same ideas can be applied to the design of services.

b. *Process design:* This refers to the choice of technologies and skills and the arrangement of resources to execute the production task. Process design can include acquisition of new talent or machinery, or deciding how best to use the currently available resources. There is typically more than one way to produce a given product on any assemblage of people and machines.