2.5 Process-focused and product-focused system:

In process-focused system the arrangement of facilities is made according to the process layout and in product-focused system the arrangement of facilities is made according to the product layout.

Comparison of process oriented layout and product oriented layout

Sl No.	Different Aspects	Process oriented	Product oriented
1	Product	Diversified products using operations, varying rate of output or small batches of many different products	Standardized product, large volume,stable rate of output
2	Workflow	Variable flow depending on nature of job	Identical flow and same sequence of operations for each unit.
3	Human skills	Semiskilled craftsman and able to do various/different categories of work	Highly specialized and able to perform repetitive tasks at fixed place
4	Supporting staffs	Less;scheduling,material handeling,production and inventory control	Large; schedule materials and people, monitor and maintain works
5	Material handling	Material handling cost high,handeling sometimes duplicated	Less dectble , flow systematized and often automated.
6	Inventory	In process inventory less	In process inventory high
7	Space utilization	Space and capital are tied up by work in process	Less space is occupied by work in transit and for temporary storage.
8	Capital requirement	Comparatively low investment in machines required	Large investment in specialized equipment and processes
9	Production cost	Relatively low fixed cost, high variable cost(for direct labour,material and material handling)	Relatively high fixed cost, low variable cost (for labour and materials)
10	Production time	Through time is larger.	Throughput time is lesser.
11	Flexibility of design change	high	low
12	Effect of breakdown	Break down of any machine doesn't effect much on the final output	Seriously affected; as all are interrelated system.

2.6 Product life cycle

A product life cycle consist of 5 stages through which a product passes that is *introduction *growth*maturity*decline. the figure shown previously represent sales and profit associated with each stage and some practical example of products are also shown on it.

1. Introduction

At this stage, sales begin and profit goes from –ve to +ve. In this stage ,the demand is low .because the costumer don't know much about the product. The organization has to invest heavily in advertisement to make the product familiar to the costumers. the volume sales are low,and if proper care is not taken, there is chances to product failure.

2.Growth

The product next enters a stage at rapid growth. Early in this stage (due to acceptability of the product by the costumer) there is drastic jump in sales and profit rise. It is because of limited or no competition. During this stage the mandate for operation is somehow to keep up with demand; efficiency is less of concern.

3.Maturity

During this stage, sales level off and profit begins to decline. New competition create to cut costs and ultimately on unit profit margin. Now operation must stress on efficiency, although marketing can ease the pressure by intensifying to differentiate the product.

4.Decline

At last the existing product enters to a declining stage and becomes obsolete. Either demand despisers or a better less expensive product.

Life cycle suggest when to eliminate the existing product and introduce a new one. This life cycle varies greatly from product to product. For example it took 15 years for "Xerox" to introduce electrostatic copy m/c .in contrast and computer and microchip industry, products become obsolete in months.

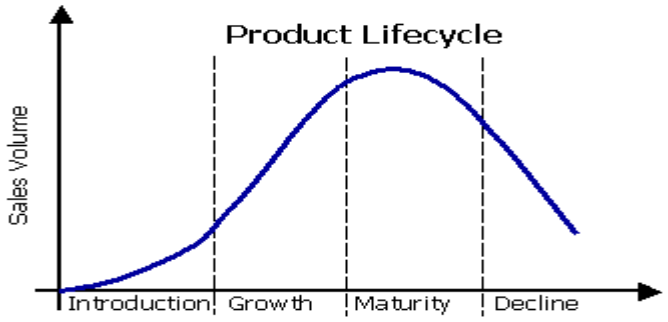

Fig 2.6. product life cycle

2.7 Production function

(a) Functions of industrial enterprise

(b) Functions of process

(a)Functions of industrial enterprise

The major functions of a relatively large industrial firm is represented by the following figure

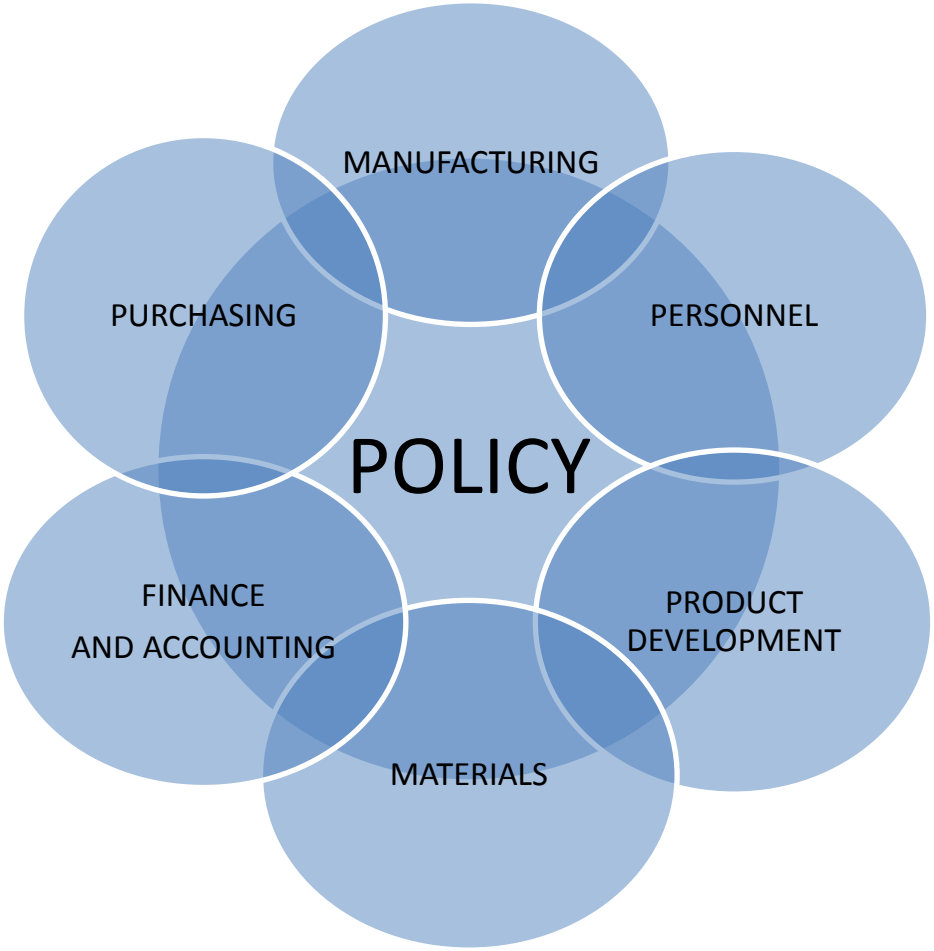

Fig 2.6 of production function a enterprise

The core area of the diagram represents the organization's policy making group. In a hierarchic triangle, this group would occupy the apex. The overlapping portions of the circle denote the co-operation needed from the two groups in order to establish overall policy. The slope of each function and its relationship to the production process are briefly discussed in the following.

(i)Manufacturing

A fundamental function of much production system is to produce a physical output. Manufacturing includes the operations and direct support services for making the product operation management is concerned with production scheduling, performance standards, method improvement, quality control, plant layout and material handling. A plant service section handles shipping receiving, storing and transporting raw material parts and tools. The plant engineering group is usually responsible for in-plant construction, maintenance, design of tools and equipment and other problems of mechanical, hydraulic or electrical nature.

(ii) personnel

The recruitment and training of the personnel needed to operate the production system are the traditional responsibilities of the personnel function. Along with it, this department takes care health, safety, wage administration of the employees. Labour relation and employee services and benefits are increasingly important.

(iii) Product development

Many organizations give major emphasis on product development because the ultimate profit of any organization depends primarily on the nature/quality of product. The product must be customized. A separate section is responsible for this task.

(iv)Marketing

Many ideas of product development comes through the marketing function. Selling is the primary interest of marketing. Sales forecasts and estimate of the nature of future demands is also performed by this department. Contact with customers provide feedback about the quality expected from the firm and opinion on how well the products meet quality standard.

(v) Finance and accounting

Internal financing includes reviewing the budgets for operating sections, evaluating of proposed investments for production facilities and preparing balance sheet. Besides these the other responsibilities is to see how well the firm is scoring in the business competition game.

In this business game analogy the accounting functions are collection of cost data for materials direct labour and overhead. Special reports are prepared regarding scarp, parts and finished goods inventories, pattern of labour hours and similar data applicable to production activities.