

Chapter 12

MANAGING PRODUCTION AND SERVICE OPERATIONS

What Operations Is

- Operations refer to any process that accepts inputs and uses resources to change those inputs in useful ways.

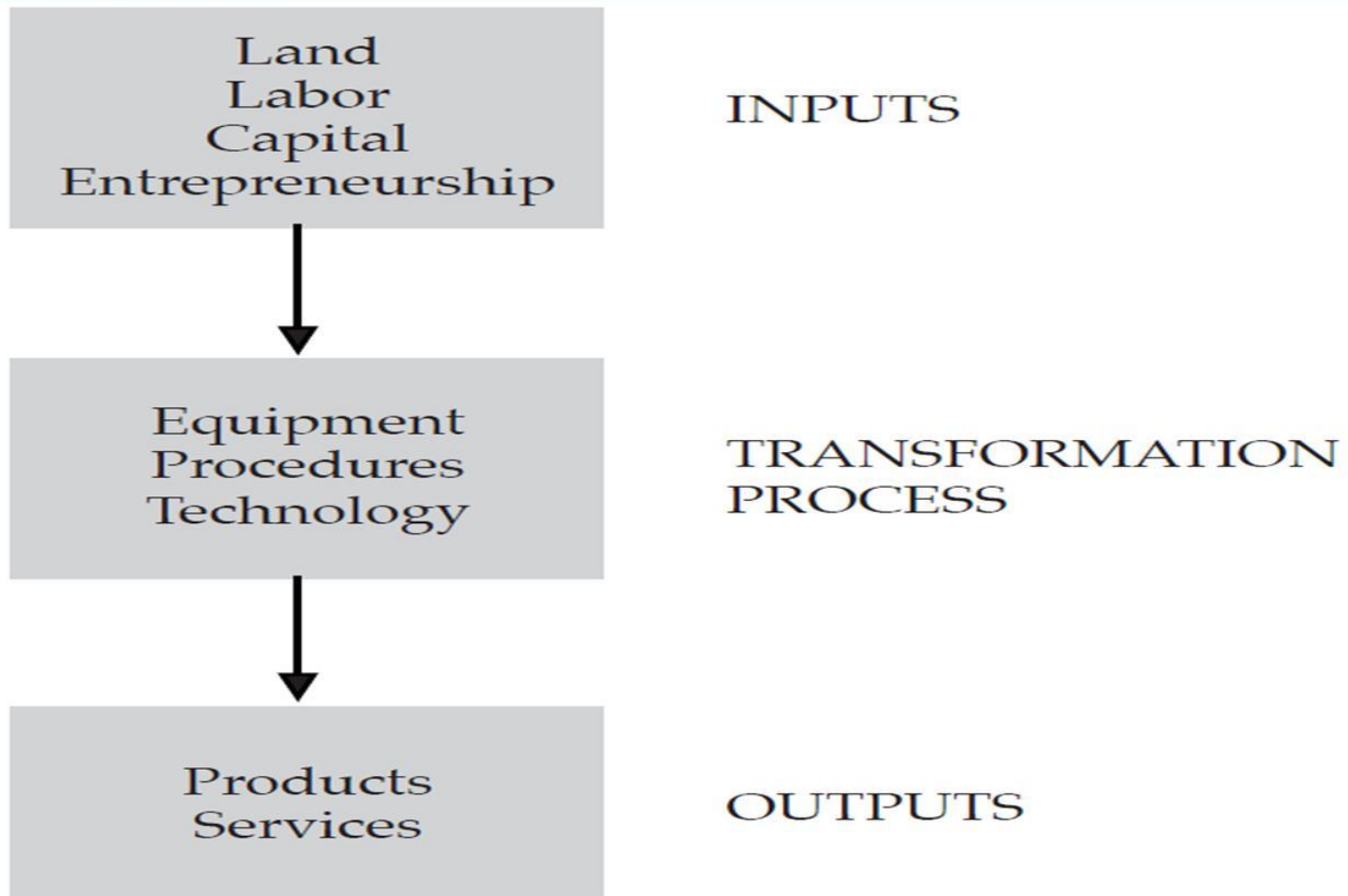


Figure 59. The Production Process

What Operations Management Is

- Operations is an activity that needs to be managed by competent persons.
- Operations management may be defined as the process of planning, organizing, staffing, communicating, motivating, leading, and controlling operations to achieve objectives effectively and efficiently.

- Effectiveness refers to goal accomplishment.
- Efficiency is related to the cost of doing something, or the resource utilization involved.
- Operations management must be performed in coordination with the other functions like those for marketing and finance.

Operations and the Manager

- The manager is expected to produce some output at whatever management level he is working.
- The operations manager must find ways to produce the required quality of goods and services and the reduction of costs in his department.
- The typical operations manager is one with several years of experience in the operations division and possesses an academic background in business or industrial engineering.

Types of Transformation Process

- The operations manager must have some knowledge of the various types of transformation processes.
- These are the following:
 1. Manufacturing processes consisting of the following:
 - a. job shop
 - b. batch flow

- c. work-paced line flow
 - d. machine-paced line flow
 - e. batch/continuous flow hybrid
 - f. continuous flow
2. Service processes consisting of:
- a. service factory
 - b. service shop
 - c. mass service
 - d. professional service

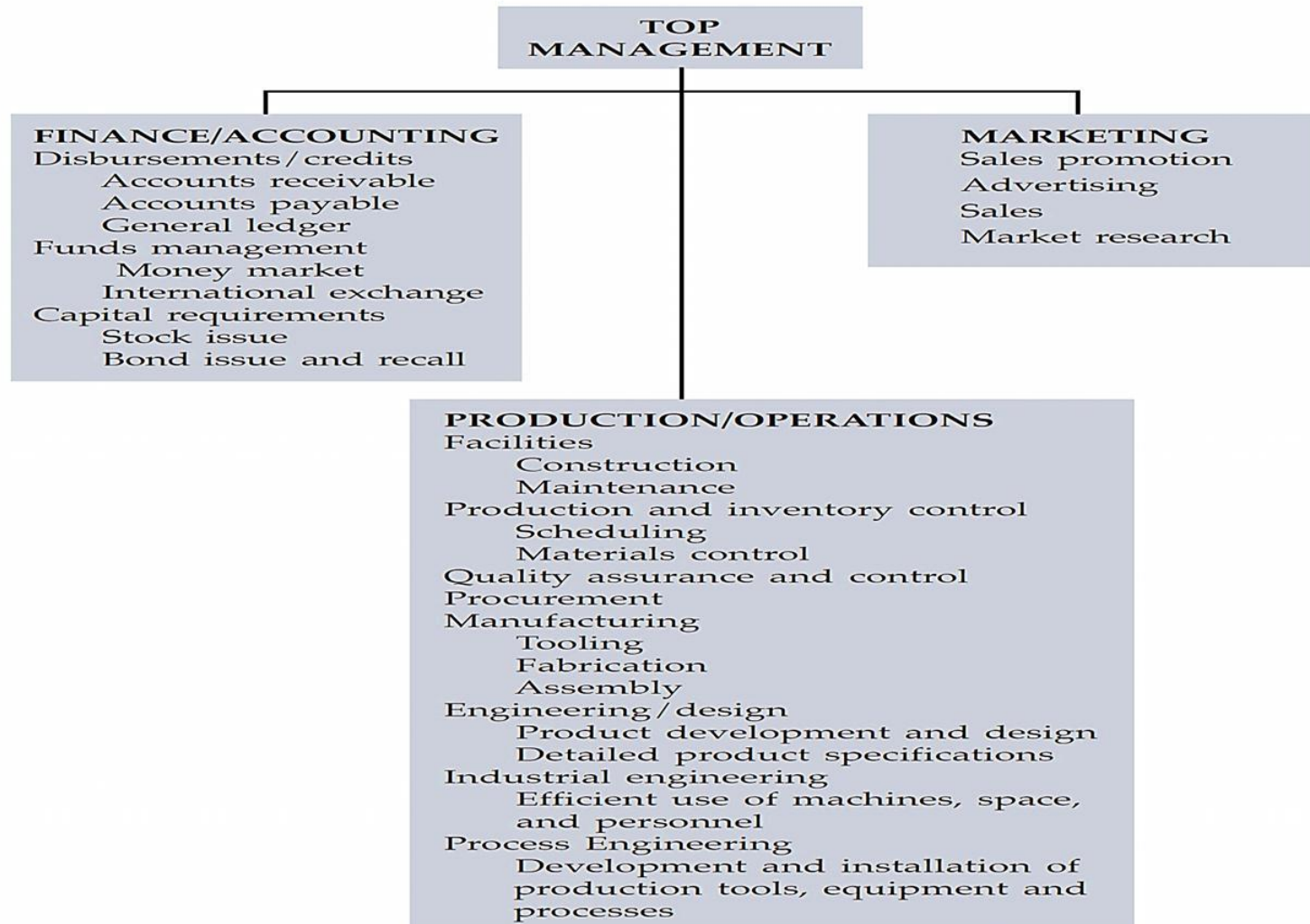


Figure 60. Organizational Chart of a Manufacturing Firm

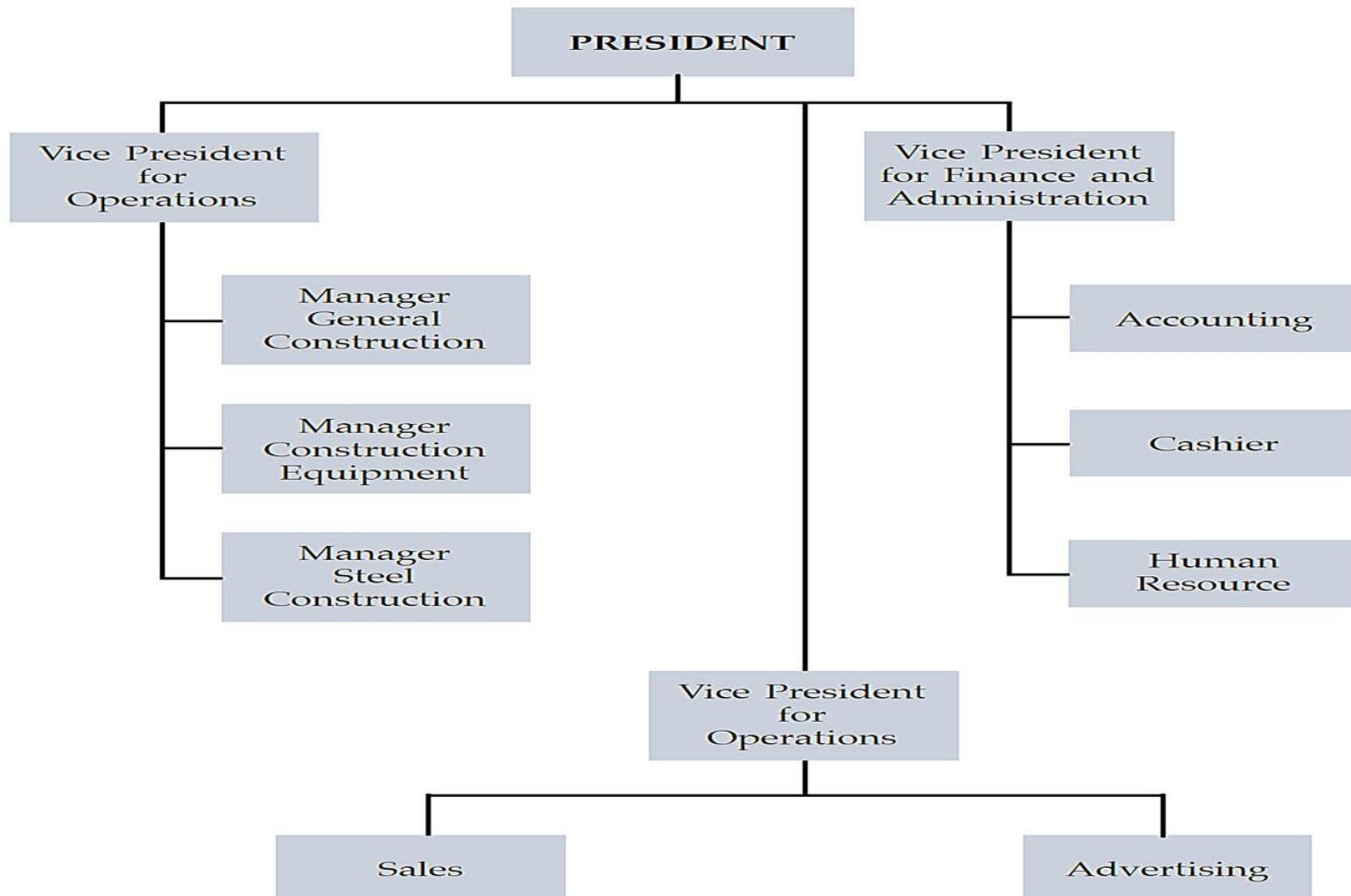


Figure 61. Organizational Chart of a Construction Firm

Manufacturing Process

- Manufacturing processes are those that refer to the making of products by hand or with machinery.

Job Shop

- A job shop is one whose production is based on sales orders for a variety of small lots.
- Job shops are very useful components of the entire production effort, since they manufacture products in small lots that are needed by, but cannot be produced economically by many companies.
- Job shops produce custom products in general.

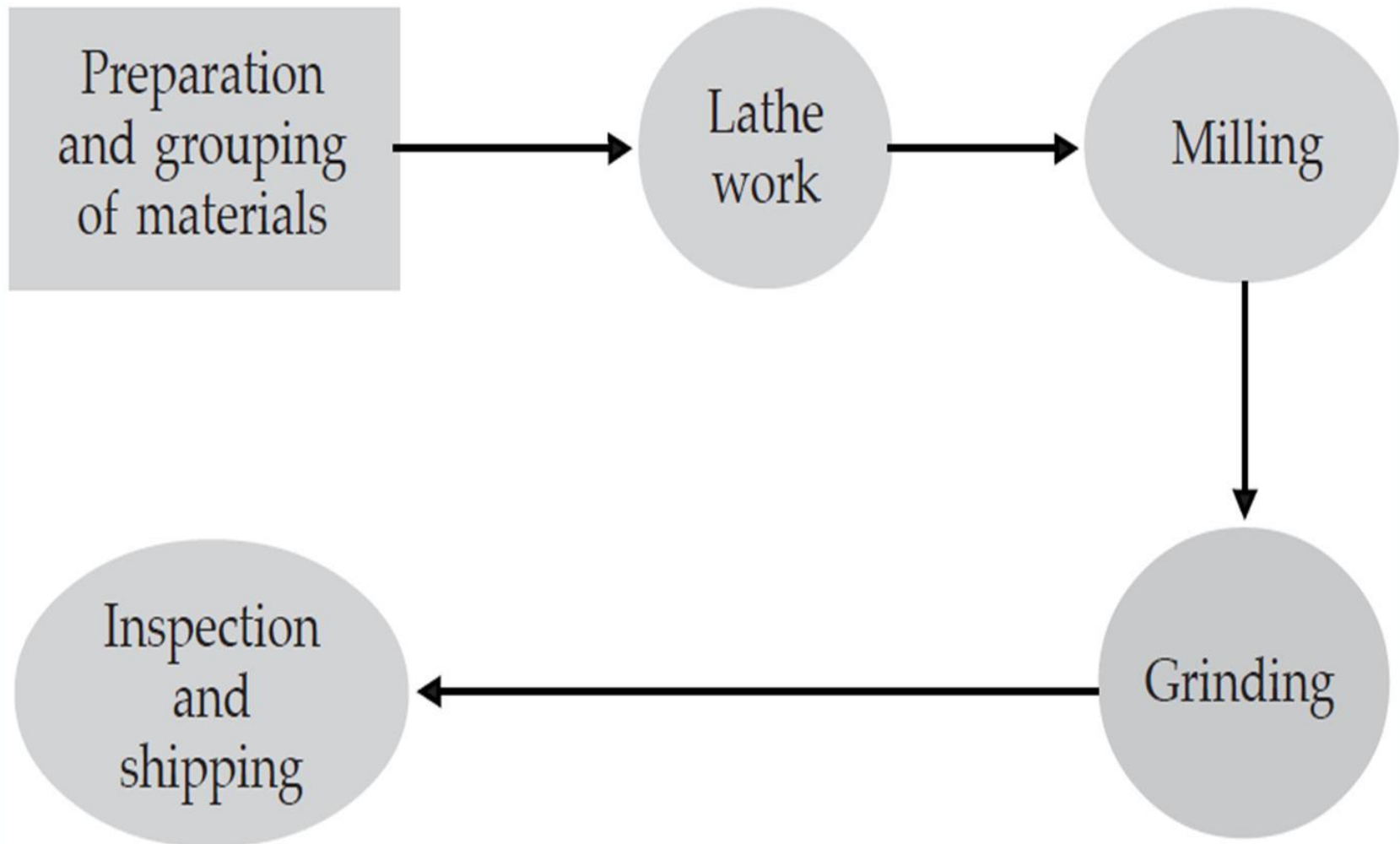


Figure 62. Process Flow Diagram of a Job Shop

Batch Flow

- The batch flow process is where lots of generally own-designed products are manufactured.
- It is further characterized by the following:
 1. There is flexibility to produce either low or high volumes.
 2. Not all procedures are performed on all products.
 3. The type of equipment used are mostly general purpose.

4. The process layout is used.
5. The operation is labor intensive, although there is less machine idleness.
6. The size of operation is generally medium-sized.

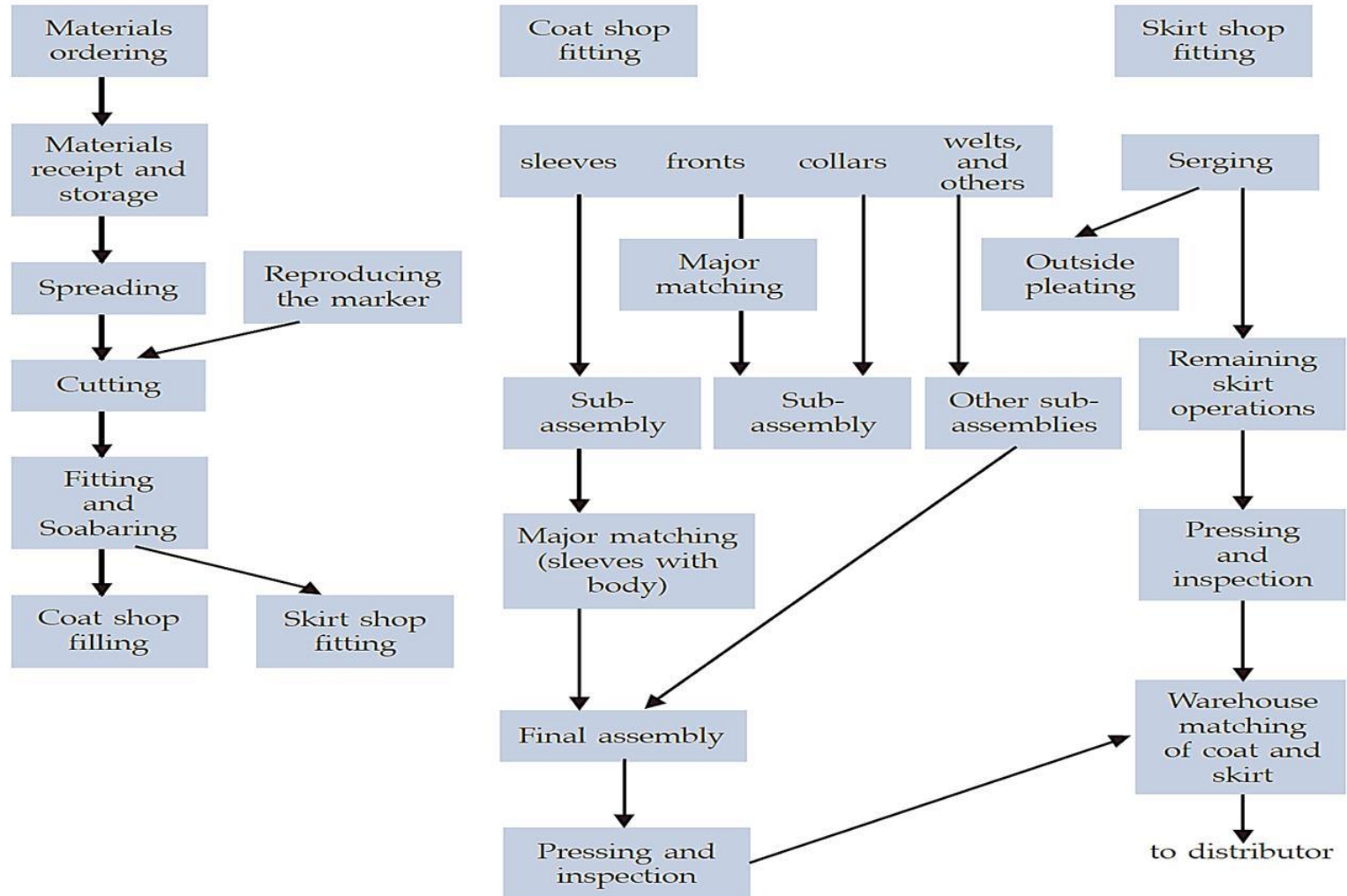


Figure 63. Batch Flow Process of a Large Manufacturer of Suits

Worker-Paced Assembly Line

- The assembly line refers to the production layout arranged in a sequence to accommodate processing of large volumes of standardized products or services.
- The quality and quantity of output in a worker-paced assembly line depends to a great extent to the skill of the labor utilized.

- The worker-paced assembly line is characterized by the following:
 1. The products manufactured are mostly standardized.
 2. There is a clear process pattern.
 3. Specialized equipment is used.
 4. The size of operation is variable.
 5. The process is worker-paced.
 6. The type of layout used is the line flow.
 7. Labor is still a big cost item.

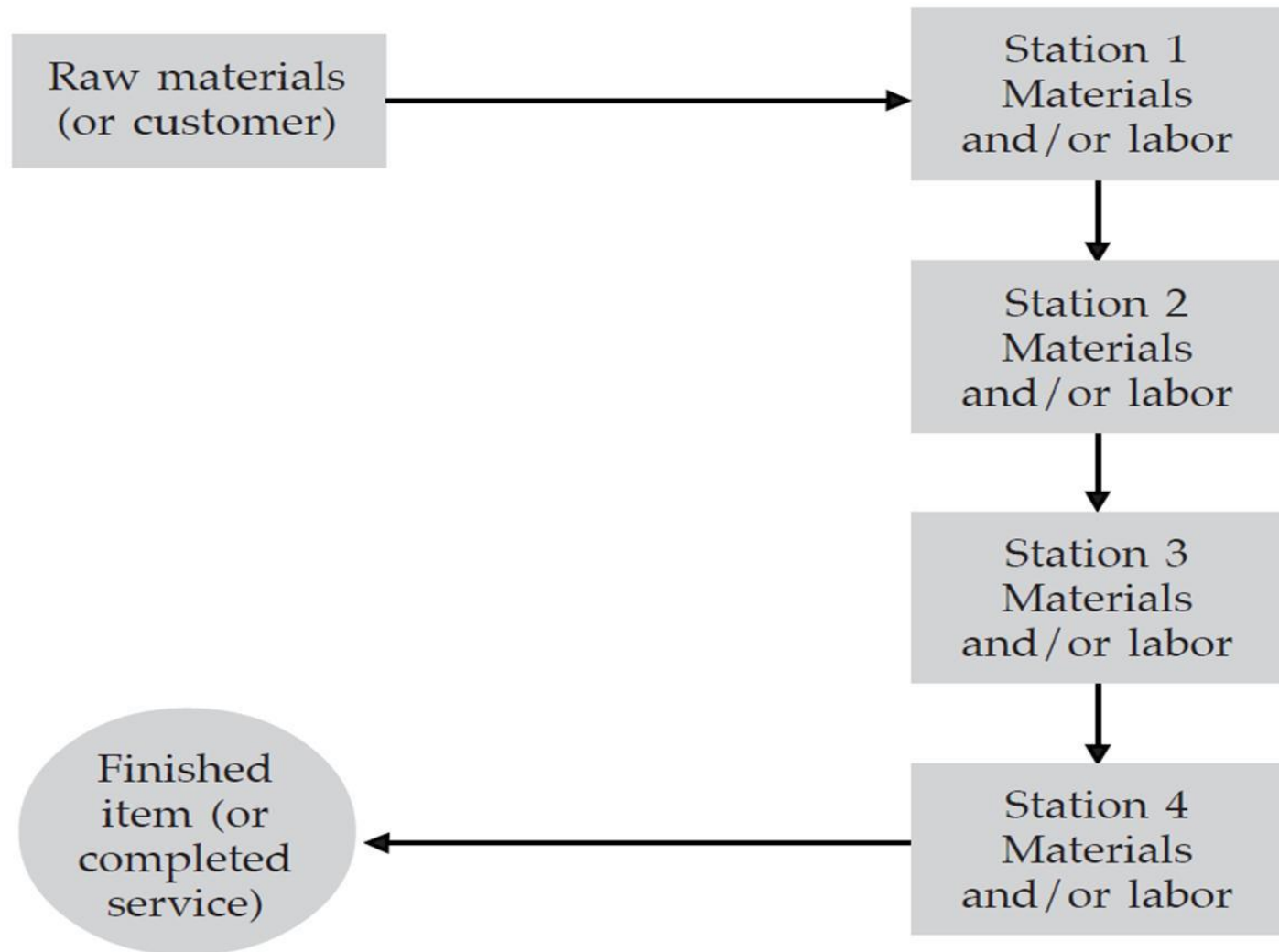


Figure 64. Assembly Line for Production of Goods or Services

Machine-Paced Assembly Line

- This type of production process produces mostly standard products with machine playing a significant role.
- Among its other features are as follows:
 1. The process is of clear, rigid pattern.
 2. Specialized type of equipment is used.
 3. The line flow layout is used.
 4. Capital equipment is a bigger cost item than labor.
 5. Operation is large.
 6. The process is machine-paced.

Continuous Flow

- The continuous flow processing is characterized by the rapid rate at which items move through the system.
- This processing method is very appropriate for producing highly standardized products like calculators, typewriters, automobiles, televisions, cellular phones, and the like.

- Its other characteristics are the following:
 1. There is economy of scale in production, resulting to low per unit cost of production.
 2. The process is clear and very rigid.
 3. Specialized equipment are used.
 4. The line flow layout is used.
 5. Operations are highly capital intensive.
 6. The size of operations is very large.
 7. Processing is fast.

Batch/Continuous Flow Hybrid

- This method of processing is a combination of the batch and the continuous flow.
- Two distinct layouts are used, one for batch and one for the continuous flow.
- The typical size of operation is also very large, giving opportunities for economies of scale.

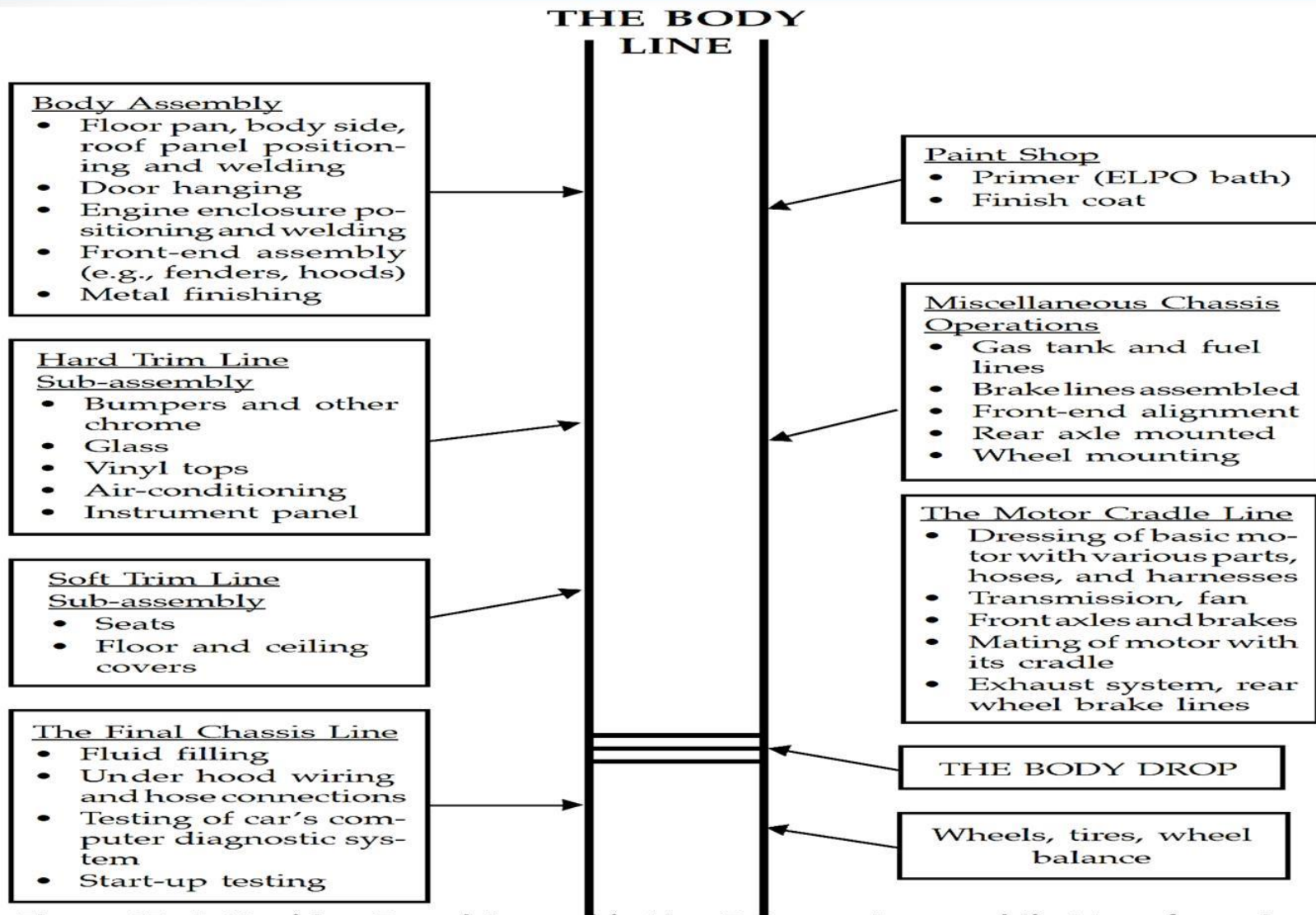


Figure 65. A Machine-Paced Assembly Line Process: Automobile Manufacturing

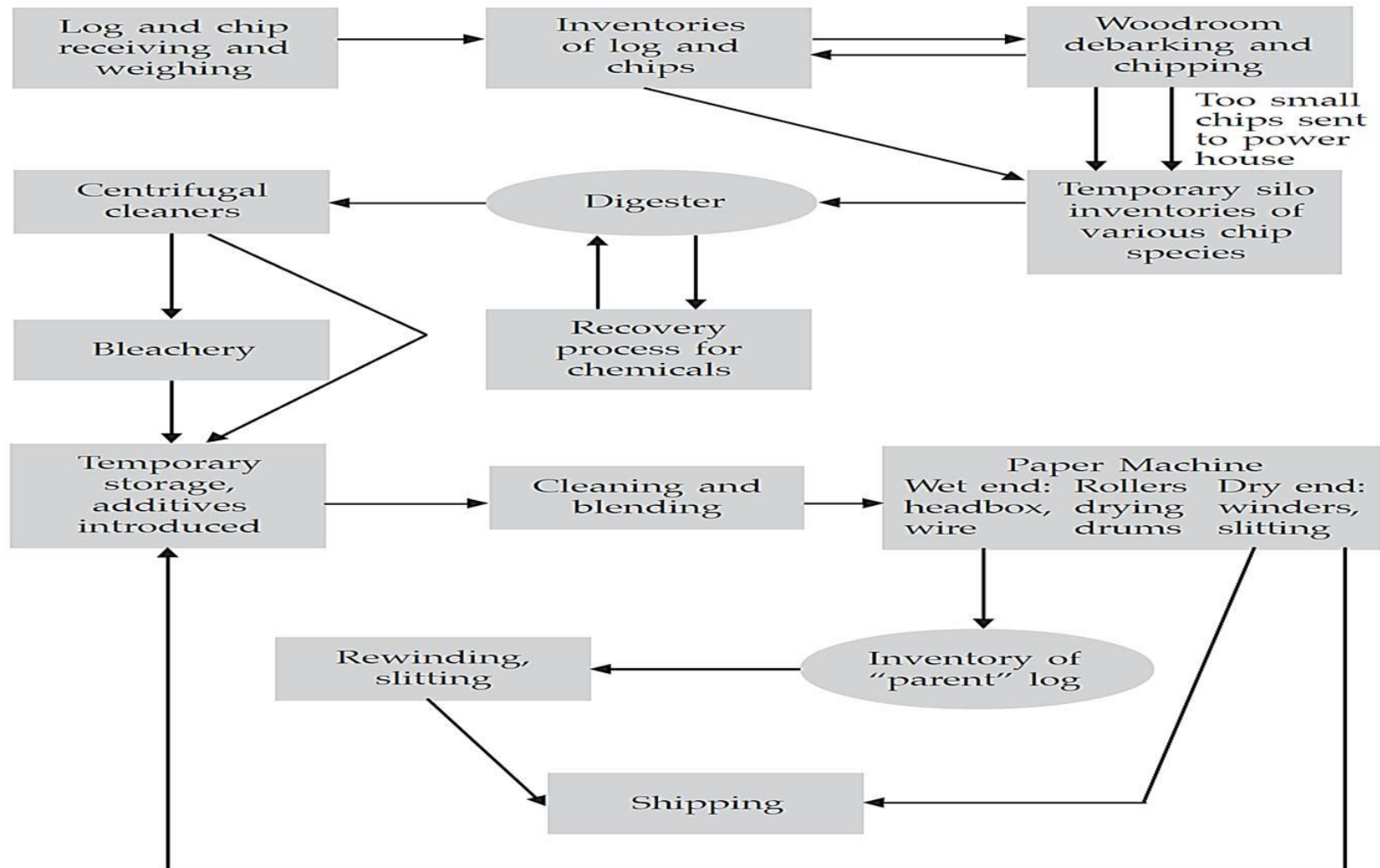


Figure 66. Diagram of the Continuous Flow Process of a Paper-Making Company

Service Processes

- Service processes are those that refer to the provision of service to persons by hand or machinery.

Service Factory

- A service factory offers a limited mix of services which results to some economies of scale in operations.
- This also affords the company to compete in terms of price and speed of producing the service.
- The process layout preferred by the service factory is the rigid pattern of line flow processing.

Service Shop

- The service shop provides a diverse mix of services.
- The layout used is that one also appropriate for job shops or those with fixed position and are adaptable to various requirements.

Mass Service

- The mass service company provides services to a large number of people simultaneously.
- A unique processing method is, therefore, necessary to satisfy this requirement.
- To be able to serve many people, mass service companies offer limited mix of services.

Professional Services

- These are companies that provide specialized services to other firms or individuals.
- Examples of such firms are the following:
 1. Engineering or management consulting services which helps in improving the plant layout or the efficiency of a company
 2. Design services which supply designs for a physical plant, products, and promotion materials

3. Advertising agencies which help promote a firm's products
4. Accounting services
5. Legal services
6. Data processing services
7. Health services

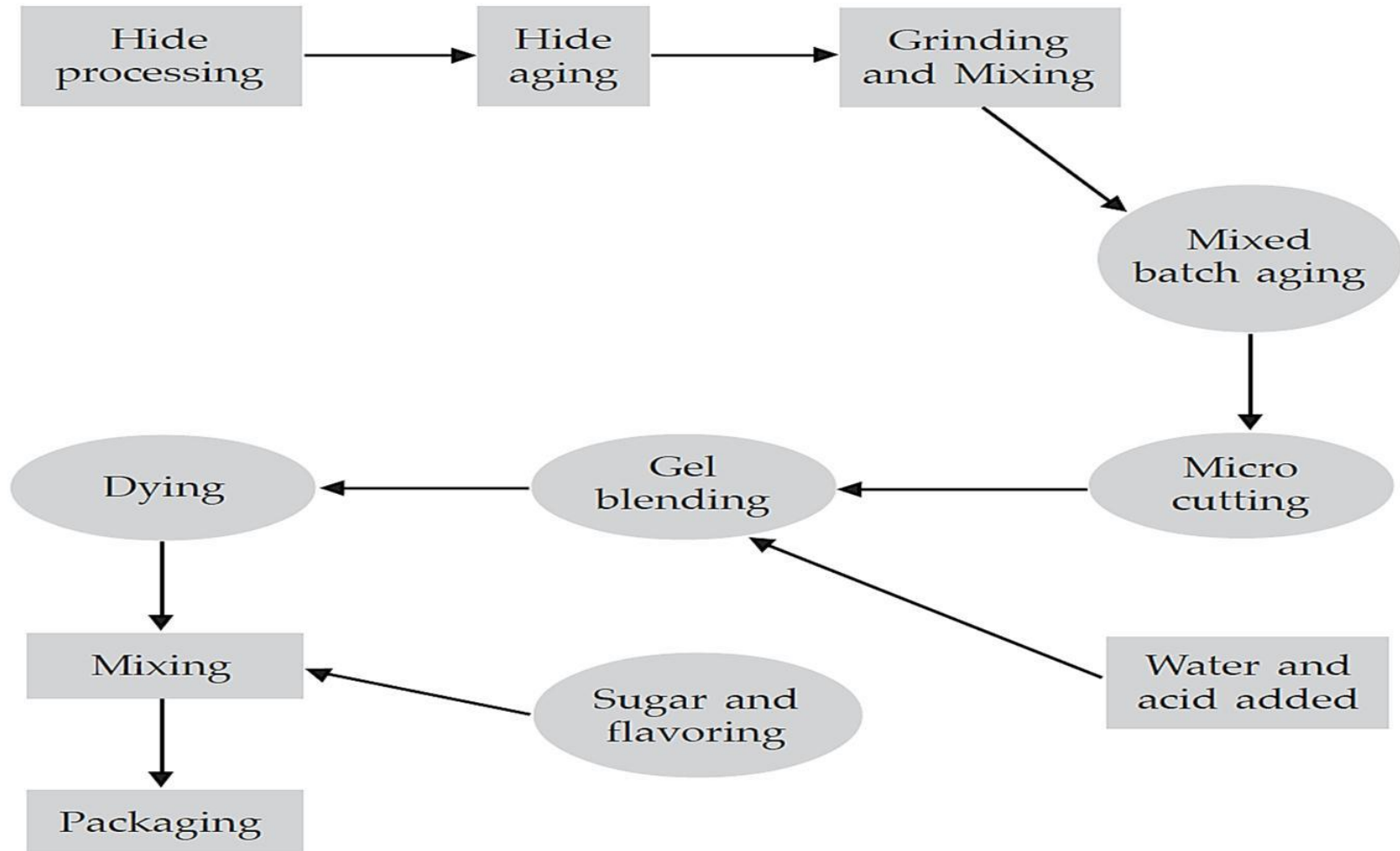


Figure 67. A Simplified Production Process of a Gelatin Manufacturing Company Using the Batch Continuous Flow Hybrid

- Professional service firms offer a diverse mix of services.
- There is a lower utilization of capital equipment compared to the service factory and the service shop.
- Professional service firms are, oftentimes, faced with delivery problems brought about by non-uniform demand.

- Strategies that may be used depending on the situation are as follows:
 1. the use of staggered work-shift schedules;
 2. the hiring of part-time staff;
 3. providing the customer with opportunity to select the level of service;
 4. installing auxiliary capacity or hiring subcontractors;
 5. using multi skilled floating staff; and
 6. installing customer self-service.

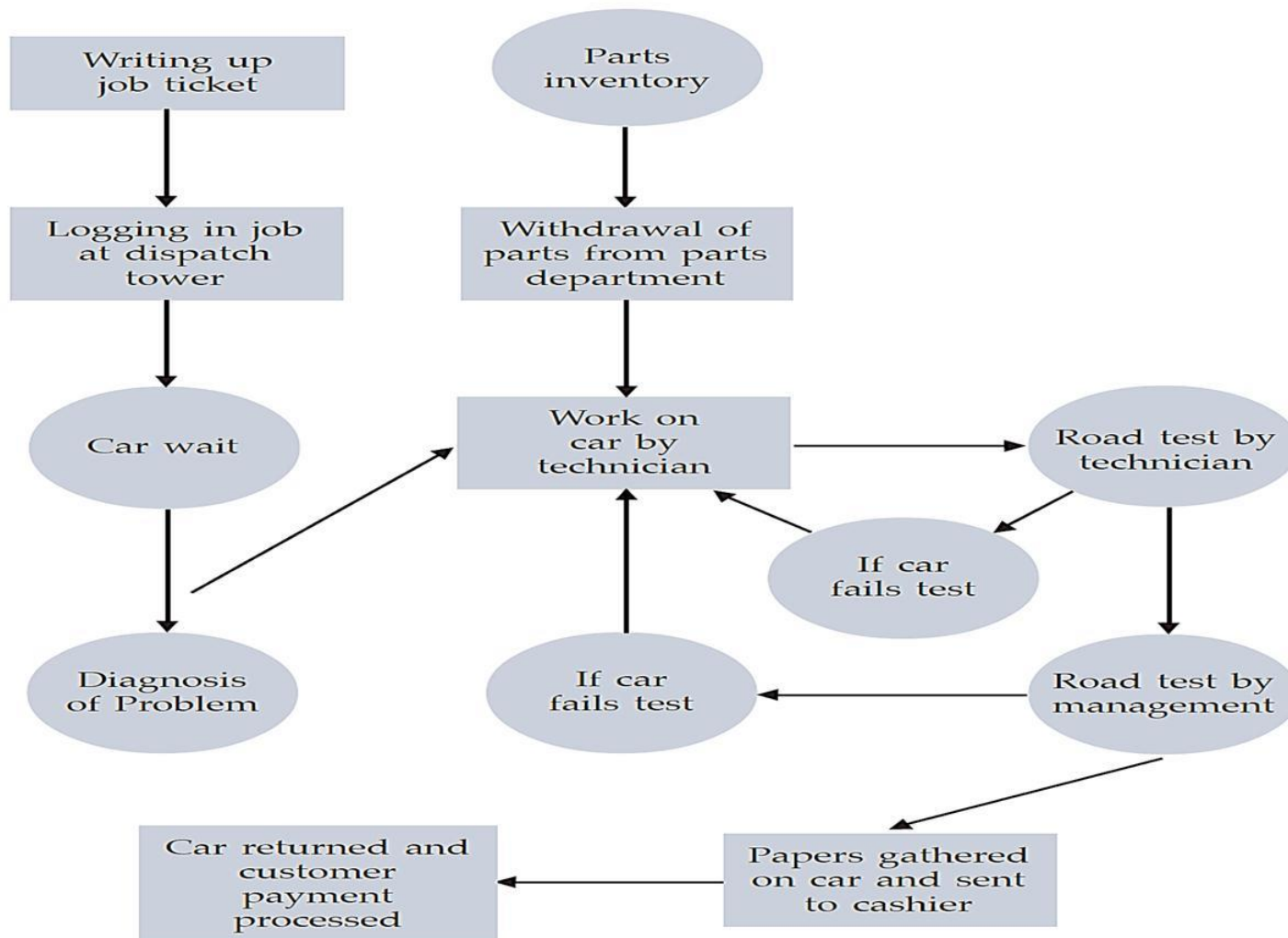


Figure 68. Process Flow of a Car Repair Service Shop

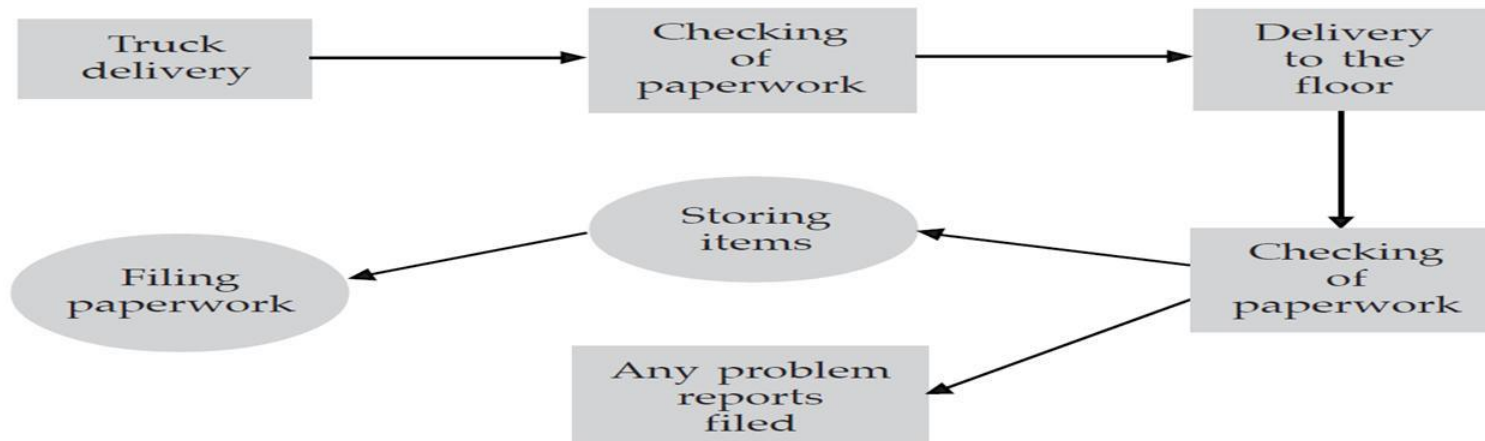
Important Parts of Productive Systems

- Productive systems consist of six important activities which are as follows:
 1. product design
 2. production planning and scheduling
 3. purchasing and materials management
 4. inventory control
 5. work flow layout
 6. quality control

Product Design

- Customers expect that the products they buy would perform according to assigned functions.
- Product design refers to the process of creating a set of product specifications appropriate to the demands of the situation.

I. MATERIAL RECEIPT



II. SALES TRANSACTIONS

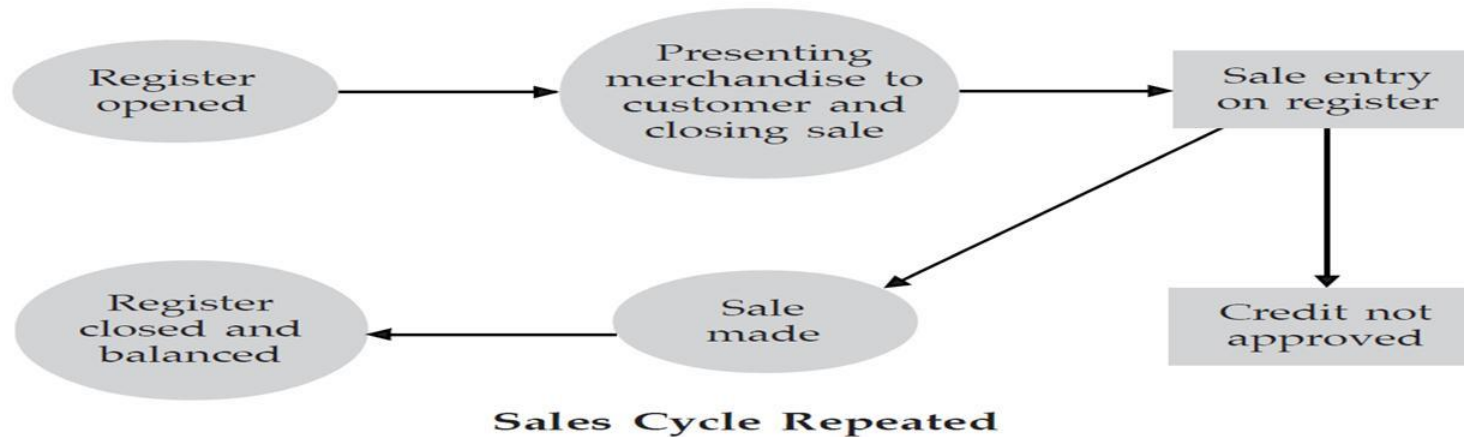


Figure 69. Process Flow for Material Receipt and Sales Transactions in a Mass Service Retailing Institution

Production Planning and Scheduling

- Production planning may be defined as forecasting the future sales of a given product, translating this forecast into the demand it generates for various production facilities, and arranging for the procurement of these facilities.

- Scheduling is that phase of production control involved in developing timetables that specify how long each operation in the production process takes place.
- Efficient scheduling assures the optimization of the use of human and non-human resources.

Purchasing and Materials Management

- Firms need to purchase supplies and materials required in the various production activities.
- The management of purchasing supplies and materials must be undertaken with a high degree of efficiency and effectiveness specially in firms engaged in high volume production.

- Materials management refers to the approach that seeks efficiency of operations through integration of all material acquisition, movement, and storage activities in the firm.

Inventory Control

- Inventory control is the process of establishing and maintaining appropriate levels of reserve stocks of goods.
- There are ways of achieving proper inventory control. These are the following:
 1. determining re-order point and re-order quantity
 2. determining economic order quantity
 3. using the just-in-time (JIT) method of inventory control
 4. using the material requirement planning (MRP) method of planning and controlling inventories

Work-Flow Layout

- Work-flow layout is the process of determining the physical arrangement of the production system.
- In the transformation process, the flow of work may be done either haphazardly or orderly.

- A good work-flow layout will have the following benefits:
 1. minimize investment in equipment;
 2. minimize over-all production time;
 3. use existing space most effectively;
 4. provide for employee convenience, safety, and comfort;
 5. maintain flexibility of arrangement and operation;
 6. minimize variation in types of material-handling equipment;
 7. facilitate the manufacturing (or service) process; and
 8. facilitate the design of the organizational structure.

Quality Control

- Quality control refers to the measurement of products or services against standards set by the company.
- Certain standard requirements are maintained by the management to facilitate production and to keep customer satisfied.