**Chapter Four**

**Product and Service Concept**

**4.1. Production Technology**

Technology is the process of applying the finding of science and other forms of enquiry to applied situations. Production technology therefore involves applying the work of researchers to develop new products and processes. There are a range of new technologies that are being applied to improving production methods and outputs. For example, in recent years we have seen the development of ice cream varieties of chocolate products in the confectionery industry - an example of food technology. At the same time we have seen the widespread application of Information and Communications Technology to a wide range of production methods, such as:

* The use of computer databases for online booking in the airline industry.
* The development of broadband services, benefiting small businesses to communicate using the Internet across the country.
* The use of company internet systems to inform, and train, employees in companies like Communications creating a more skilled and highly efficient workforce.

**Technologies and Industrial Processes:**

The following overview can provide an insight into the varied nature of technologies:

* **Manufacturing technology** that includes such processes as casting, molding, forming, machining, joining and rapid manufacturing
* **Semiconductor fabrication** using photographic and chemical processes
* **Production lines** that can consist of a series of refining processes ending in a finished product, or sequential adding of components to make the final product
* **Industrial processes** such as chemical processes, electrolysis, liquefaction, drying, scrubbing and so on
* **Construction** activities involved in constructing a building, bridge or other structure
* **Publishing** activities involving content development and its dissemination through printing or otherwise
* **Information technology** involving equipment and processes to facilitate management control and other goals
* **Primary sector** activities like agriculture, fishing, forestry, mining and quarrying that adopt increasingly sophisticated technologies
* **Service sector** activities like transportation, banking, entertainment and healthcare that too utilize technology for better service provision

**4.2. Product Development Processes**

**Product development** (PD) is the term used to describe the complete process of bringing a new product or service to market. There are two parallel paths involved in the PD process: one involves the idea generation, product design and detail engineering; the other involves market research and market analysis. Companies typically see new product development as the first stage in generating and commercializing new products within the overall strategic process of product life cycle management used to maintain or grow their market share.

**The process**

1. **Idea Generation** is often called the "fuzzy front end" of the PD process
* Ideas for new products can be obtained from basic research using SWOT analysis (Strengths, Weaknesses, Opportunities & Threats), Market and consumer trends, company's R&D department, competitors, focus groups, employees, salespeople, corporate spies, trade shows, or Ethnographic discovery methods (searching for user patterns and habits) may also be used to get an insight into new product lines or product features.
* Idea Generation or Brainstorming of new product, service, or store concepts - idea generation techniques can begin when you have done your OPPORTUNITY ANALYSIS to support your ideas in the **Idea Screening Phase** (shown in the next development step).
1. **Idea Screening**
	1. The objective is to eliminate unsound concepts prior to devoting resources to them.
	2. The screeners should ask several questions:
	* Will the customer in the target market benefit from the product?
	* What is the size and growth forecasts of the market segment/target market?
	* What is the current or expected competitive pressure for the product idea?
	* What are the industry sales and market trends the product idea is based on?
	* Is it technically feasible to manufacture the product?
	* Will the product be profitable when manufactured and delivered to the customer at the target price?
2. **Product Development Concept and Testing**
	1. Develop the marketing details
	* Investigate intellectual property issues and search patent data bases
	* Who is the target market and who is the decision maker in the purchasing process?
	* What product features must the product incorporate?
	* What benefits will the product provide?
	* How will consumers react to the product?
	* How will the product be produced most cost effectively?
	* Prove feasibility through virtual computer aided rendering, and rapid prototyping
	* What will it cost to produce it?
	1. Testing the concept by asking a sample of prospective customers what they think of the idea. Usually via Choice modeling
3. **Business Analysis**
	1. Estimate likely selling price based upon competition and customer feedback
	2. Estimate sales volume based upon size of market
	3. Estimate profitability and breakeven point
4. **Market Testing**
	1. Produce a physical prototype or mock-up
	2. Test the product (and its packaging in typical usage situations)
	3. Conduct focus group customer interviews or introduce at trade show
	4. Make adjustments where necessary
	5. Produce an initial run of the product and sell it in a test market area to determine customer acceptance
5. **Technical Implementation**
	1. New program initiation
	2. Finalize quality management system
	3. Resource estimation
	4. Requirement publication
	5. Publish technical communication such as data sheets
	6. Engineering operations planning
	7. Department scheduling
	8. Supplier collaboration
	9. Logistics plan
6. **Commercialization** (often considered as post-PD)
	1. Launch the product
	2. Produce and place advertisements and other promotions
	3. Fill the distribution pipeline with product
	4. Critical path analysis is most useful at this stage
7. **Product Pricing**
	1. Impact of new product on the entire product portfolio
	2. Value Analysis (internal & external)
	3. Competition and alternative competitive technologies
	4. Differing value segments (price, value, and need)
	5. Product Costs (fixed & variable)
	6. Forecast of unit volumes, revenue, and profit

These steps may be iterated as needed. Some steps may be eliminated. To reduce the time that the PD process takes, many companies are completing several steps at the same time (referred to as **concurrent engineering** or **time to market)** Most industry leaders see new product development as a *proactive* process where resources are allocated to identify market changes and seize upon new product opportunities before they occur (in contrast to a *reactive strategy* in which nothing is done until problems occur or the competitor introduces an innovation). Many industry leaders see new product development as an ongoing process (referred to as *continuous development*) in which the entire organization is always looking for opportunities.

**Production and Product Concept**

1. **The Production Concept**

The production concept is one of the oldest concepts in business. The production concept holds that consumers will favor these products that are widely available and low in cost. Managers of production-oriented organization concentrate on achieving high production efficiency and wide distribution.

The assumption that consumers are primarily interested in product availability and low price holds in at least two situations. The first is where the demand for a product exceeds supply, as in many developing countries. Here consumers are more interested in obtaining the product, and supplies will concentrate on finding ways to increase production.

The second situation is where the product’s cost is high and has to be decreased to expand the market.

1. **The Product Concept**

Other business is guided by the product concept. The product concept holds that consumers will favor those products that offer the most quality, performance or innovative features. Managers in product oriented organization focus their energy on making superior products and improving them over time.

Under the concept, mangers assume that buyers admire will made products and can appraise product quality and performance. Product-oriented companies often design their products with little or no customer input. They trust that their engineers will know how to design or improve the product.

1. **Goods and Services**

A product is anything that can be offered to a market for attention, acquisition, use, or consumption that might satisfy a want or need. It includes physical objects, services, persons, places, organizations and ideas.

Goods are physical objects. They are tangible and can be seen, touched, tested or felt, even before actual purchase. Services are anything or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything. As can be seen goods and services are different.

In many instances, services compete in the market place with goods that offer broadly similar benefits. For instance, buying a service may be an alternative to doing it yourself. Similarly, using a rental service is often an alternative to owing a good.

**Generic Differences between Goods and Services**

Seven generic differences tend to distinguish services from goods. These are:

1. **Nature of the product**- Leonard Berry describes a good as "an object, a device, and a thing" in contrast to a service which is "a deed, a performance, an effort." Although services often include tangible actions - such as sitting in an airline seat, eating a meal, or getting damaged equipment repaired - the service performance itself is basically an intangible. Like all performances, services are time bound and experiential, even though they may have lasting consequences.
2. **Customer involvement in production-** Performing a service involve assembling and delivering the output of a mix of physical facilities and mental or physical labor. Often customers are actively involved in helping to create the service products - either by serving themselves or by cooperating with service personnel in settings such as hair salons, hotels, colleges or hospitals.
3. **People as part of the product*-*** In high-contact services, customers not only come into contact with service personnel, they may also rub shoulders with other customers. The difference between two service businesses often lies in the quality of employees who deliver the service. Similarly, the type of customers who patronize a particular service business helps to define the nature of the service experience. As such, people become part of the product in many services.
4. **Quality control problems**- Manufactured goods can be checked for conformity with quality standards long before they reach the customer. But when services are consumed as they are produced, final "assembly" must take place under real-time conditions. As a result, mistakes and shortcomings are harder to control. Further variability is introduced by the presence of service personnel and other customers.
5. **None inventories for services-** Because a service is a deed or performance rather than a tangible item that the customer keeps, it cannot be inventoried.
6. ***Importance of the time factor*-** Many services are delivered in real time. Customers have to be present to receive service from organizations like: airlines, hospitals, haircutters, restaurants, and many other similar organizations. There are limits as to how long customers are willing to be kept waiting for service to be provided; further, that service must be delivered quickly so that customers do not spend longer receiving service than appears reasonable to them.
7. **Different distribution channels-** Unlike manufacturing firms, which require physical distribution channels for moving goods from factory to customers, service businesses either use electronic channels (as in broadcasting or electronic funds transfer) or else combine the service factory, retail outlet, and point of consumption into one.

Services possess four inherent characteristics not found in goods: intangibility, perish ability, inseparable and variability. These characteristics create unique challenges for services. To attract new customers and to keep current customers coming back, service firms must find ways to meet these challenges.

1. **Intangibility-** It refers to the lack of tangible assets that can be seen, touched, smelled, heard, or tested prior to purchase. Business-to-Business Example: A professional janitor service will have to rely on what the janitor service tells them about the services to be performed.
2. **Perish ability-** It means inability of a service to be inventoried or stored. Services cannot be inventoried, except for the equipment and supplies necessary for their performance.
3. **Inseparability-** Inseparability is the simultaneous production and consumption of services. Getting medical services involves a doctor or a dentist performing an examination or procedure while the customer is present. Because the service must be performed and/or consumed at the same time, the quality of the service is highly dependent on the ability of the service provider and the quality of interaction between the service provider and the customer.
4. **Variability-** Because they depend on who provides them and when and where they are provided, services are highly variable. Variability refers to the sporadic or random levels of service quality customers receive when they patronize a service. Variability is primarily caused by the human element, although machines may malfunction causing a variation in the service.

**4.3. Product Protection**

Most entrepreneurs will not be inventors, but all of them are concerned with protecting their idea. When those ideas relate to new products, unusual processes, unique designs, or biological innovations such as new plants, understanding patent law becomes paramount. When entrepreneurs want to protect unusual brand names or establish ownership of intellectual property, then understanding trademarks and copyrights is vital.

Entrepreneurship has several dimensions and an entrepreneur is expected to know them thoroughly. One such dimension is a legal dimension. Thus conforming to legal requirements will be the first thing to start an enterprise. Any enterprise (i.e., sole proprietorship, partnership or Joint Stock Company) has to be run within the legal framework doing business according to commercial law, labor law, etc. of the country. Therefore, an entrepreneur should be aware of such governmental legislation. Moreover, it is important if entrepreneurs have well fledged information about the characteristics, advantages and disadvantages of the different types of business organization.

**4.3.1. Patent**

A patent is a grant of property right by the government to an inventor. Anything that is patentable must be new and useful

 What can be patented?

* Process: - New method of manufacturing or new technological procedures that can be validated as unique.
* Machine: - Products, instruments, machines and other physical objects that have proved useful and unique.
* Manufacturers: - Refers to physical items that have been fabricated through new combinations of materials or technical applications.
* Composition of Matter: - relates to chemical compounds, medicines... that do not exist in nature in an uncultivated state.

There are different types of patents granted.

A utility patent is granted for new products, processes, machines, methods, of manufacturing, and compositions of matter. This category excludes most botanical creations related to plant and agricultural use. The utility patent is the most common patent sought by inventors. Similar patents can be filed in more than 80 countries, and there are joint utility patent protection rights that can be obtained for international regions such as the European Economic Community (EEC).

Design patents are granted for any new or original ornamental design for an article of manufacture. A design patent protects the appearance of the article, not the article itself. An inventor could easily register both a utility patent and a design patent, but the design patent has a limited life. Entrepreneurs can select the period of time for protection in order to commercialize designs and to realize the benefits of their ingenuity. The benefit of a design patent is that the ornamental nature of the patent may be a distinguishing feature that allows an individual to have exclusive use of visual imagery, thus enhancing sales or creating brand identification.

Plant Patents: In botanical terms, any new variety of plant that has been asexually reproduced can be granted a plant patent. The new plant must not exist in nature or in an uncultivated state. Therefore, new plants, mutants, hybrids, and seedlings may be patented, provided the inventor can satisfy the patent office that the new plant did not evolve from nature.

**4.3.2. Trade Mark**

Trademark, any word or symbol used by manufacturers or sellers to identify their goods and distinguish them from the goods of others. Trademarks help consumers to identify goods they have used and enjoyed in the past. Trademarks also allow consumers to avoid goods and services that they dislike.

**4.3.3. Copyright**

Copyright: branch of law granting authors the exclusive privilege to reproduce, distribute, perform, or display their creative works.