University of Gondar
Institute of Technology

# Chapter - 3

International Technology Transfer and Multinational Enterprises

# Outline

- What is Technology Transfer?
- Definition of Technology Transfer and commercialization
- Barriers to Technology Transfer
- Factors contributing to the Success of High Technology based Enterprises
- Drive for acquiring new technology
- Protection of intellectual property

# What is Technology Transfer?

- Technology transfer is the process of sharing of Skills, knowledge, technologies, methods of manufacturing, samples of manufacturing and facilities among governments and other institutions to ensure that scientific and technological developments are accessible to a wider range of users who can then further develop and exploit the technology into new products, processes, applications, materials or services.

- ✓ The flow of ***know-how, experience and equipment among different stakeholders*** such as governments, private sector entities , financial institutions, NGOs and research institutions.
- ✓ The **nmercialization** : managing or exploit certain skill transfer of new technology from universities and research institutions to parties wledge, material or equipment in a way designed capable of commercialization. nake profit

- But there are more locations of transfer.
  - Transfer can be between Public Universities or Government Research Institutes and private industry
- between the research and development (R&D) departments and the other departments of a single business
- between various entities or branches of a business group
- in a franchising operation from the franchisor to the franchisee
- between international organisations and national organisations
- between industrialised economies and developing economies And so on

# Ways “Technology” is Transferred

- Consulting
- Graduating students (“moving heads”)
- Faculty moving on (“moving heads”)
- Collaborative research
- Patenting and licensing
- Service and outreach (“extension”)

# Barriers to Technology Transfer

- **Lack of access to information** on new technologies and innovations.
- **Inadequate institutional infrastructure, management and marketing human skills.**
- **Organizational rigidities** within the firms themselves.
- **Limited access to finances**.
- **Regulatory constraints.**

- **Inefficient research & design institutes and disconnection** from needs of industry.
- **Inadequate human resources** and mechanisms for their upgrading.
- **Lack of resources, knowledge** and capabilities within policy institutions.
- **Low efficacy** of government support schemes.

## Factors contributing to the Success of High Technology based Enterprises

The main catalytic factors for the success of high technology based enterprises are :

1. national policies
2. research and development institutions
3. technological entrepreneur development
4. innovative finance support systems & protecting intellectual property

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5. science and technology parks

6. promoting and developing strategic business alliances and networking

7. standardization, quality control and marketing.

# Technology Transfer Methods

The choice of a technology transfer method should be based on:

- ✓ technology analysis
- ✓ future strategy of cooperation with a company's supplier
- ✓ investment resources and technical capacities of the company to implement the technology.

- ➢ When choosing a transfer method, it is necessary to understand that the more complex is the technology, the closer should be the connections between the buyer and the supplier

- Technology transfer doesn’t end with equipment delivery. In itself, equipment doesn’t generate new competences.
- The real changes in the company’s work can be introduced by transfer of knowledge, skills, and intellectual property rights.
- Let’s try to consider main technology transfer methods, their strengths and weaknesses:

# 1. Licensing

- Licensing is an agreement under which the owner of a patent, trademark or other intellectual property gives permission to another company to use the technology developed by him (her), in a certain area during a certain period of time

- There are two main types of licenses:

  1) one which grants an exclusive right to use the technology;

  2) another with non-exclusive right, which implies that the patent user may transfer the right to use the technology to other companies in the same area.

- Additionally, the licensing agreement could include a sublicensing clause which permits the licensee to grant to someone else the right to use the technology.
- The advantage of buying a license/patent is that it has lower costs, compared with other technology transfer methods.
- However, the purchase of a license requires sufficient knowledge, experience, relevant expertise and manufacturing base for further in-house technology implementation.

## 2. Support Contract

- According to this agreement, the technology owner participates in the technology implementation, providing technical support at each stage of the transfer, as well as providing personnel training.
- The involvement of technology developer in the technology transfer process ensures a closer cooperation between two parties which favors a complete transfer of all knowledge and skills related to the technology.

# 3. Joint Venture

- A joint venture is an agreement concluded between two or more companies in order to execute a particular business.
- The joint venture implies mutual assets, management, risks, profit sharing, co-production, services and marketing.
- Benefits from a joint venture in case of technology transfer are the following:
  - ✓ long-term cooperation between the parties
  - ✓ motivation of all participants in the successful transfer
  - ✓ lower costs than if the companies have been working separately

# 4. Franchising

- Franchising is an agreement where one company grants to another the right to use its trademark and business model.
- The buyer of the franchise starts manufacturing and selling the goods according to the seller's specification.
- Normally, the company owner of a trademark also shares its experience in operating and managing the franchised product/technology

- The main advantage of franchising is the fact that the company gets an already-made brand. With the franchised product, the company acquires a proven business model, knowledge in management and marketing.
- The disadvantages are the company's dependence on the technology owner.
- In most cases, the company has to purchase raw materials, equipment and other products from specific vendors.
- It must follow internal rules and procedures of the technology owner.
- Generally, the company cannot bring the product to other markets as well as sale the franchise.
- In addition, the decline of the franchise owner reputation could have an impact on the company that has bought its franchise.

## 5. Strategic Alliance

- A strategic alliance agreement is usually concluded between two or more big companies in order to use specific skills of each of them in the development of new innovative technologies
- Strategic alliance could be in form of joint laboratories, research programs, production and promotion of a new product.
- Typically mutual efforts of different partners give better results than an independent development of a new technology.
- During joint operations, each company can get the needed experience in new areas and in different forms of management

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- The major weakness of strategic alliances is the complexity in managing companies with different cultures.
- There will be at least two teams of managers with different approaches.
- The companies may have different goals and strategies in further business development of the new technology.

# 6. Equipment Acquisition

- Is a simple and one of the most common methods of technology transfer.
- The main disadvantage of this method is the fact that the company limits itself to mere technical knowledge incorporated in the equipment and does not get any new competences in the management and production.
- Moreover, equipment available on the market does not give unique privilege to the buyer, as this equipment may be purchased by any other competitor.

# 7. Direct Foreign Investments

- Is one of the main methods of technology transfer at the state level.
- Generally, a foreign company invests in developing countries in order to create a new market, remove export barriers and get an access to cheap labor.
- In this case, a developing country gets all the benefits of technology transfer, particularly the development of its own research environment.
- Besides, it is a way to create new jobs and raise taxes

- However, to attract foreign investors, the developing country's government, generally, has to make some concessions in its policy.
- As we can see in practice, without these concessions large international corporations are not motivated in long term investments in developing countries

- **Cost:**

Technology can cut costs in many ways: reducing material, labor or distribution costs. Example: material costs can be reduced by replacing lower cost material or by reducing the material required to make a product.

- **Speed of delivery:**

The key competitive priority may be the speed of delivery, as measured by lead time required to deliver a product. Example, Automated guidance vehicle(AGV), Electronic Data Interchange(EDI)

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- **Quality**:

  Technologies help to improve the quality and reduce the production costs.

- **Flexibility and customization**:

The global market place of 1990s is characterized by short product lifecycles, increased product variety, and extensive customization. To retain and increase market share in such competitive environment, firms have to be more flexible in their operations.

Increased production volume

Higher living standards

# PROTECTION OF INTELLECTUAL PROPERTY

# Protection of Intellectual Property

**General Definition**

Intellectual property (IP) rights are

- the legally recognized exclusive rights to creations of the mind. Under this law, owners are granted certain exclusive rights to a variety of intangible assets.
- The Process by which the private value of the creative outputs of research are protected.
- The results of research or other creative work that can be protected by law
- Is any ***product of human intellect (mental power or brain) that is intangible but has value in the marketplace.***
- It is called "***intellectual***" property because it is the ***product of human imagination, creativity, and inventiveness.***

# Types of Intellectual Property Rights

Common types of intellectual property rights include

- Patents
- Copyrights
- Trademark
- trade secre



# Patents

- A patent is a grant from the federal government conferring the rights to **exclude others** from making, selling, or using an **invention** for the term of the patent.
- A patent is ***only allow you to exclude others from practicing it*** but it does not provide freedom to operate to the patent owner unless he provides a license.

# Categories of patentable subject mater

1) ***Process:*** a method or series of steps for producing a product

2) ***Original design of Machine& product:*** an operable apparatus comprising a combination of elements

3) ***Improvements*** on machine &products

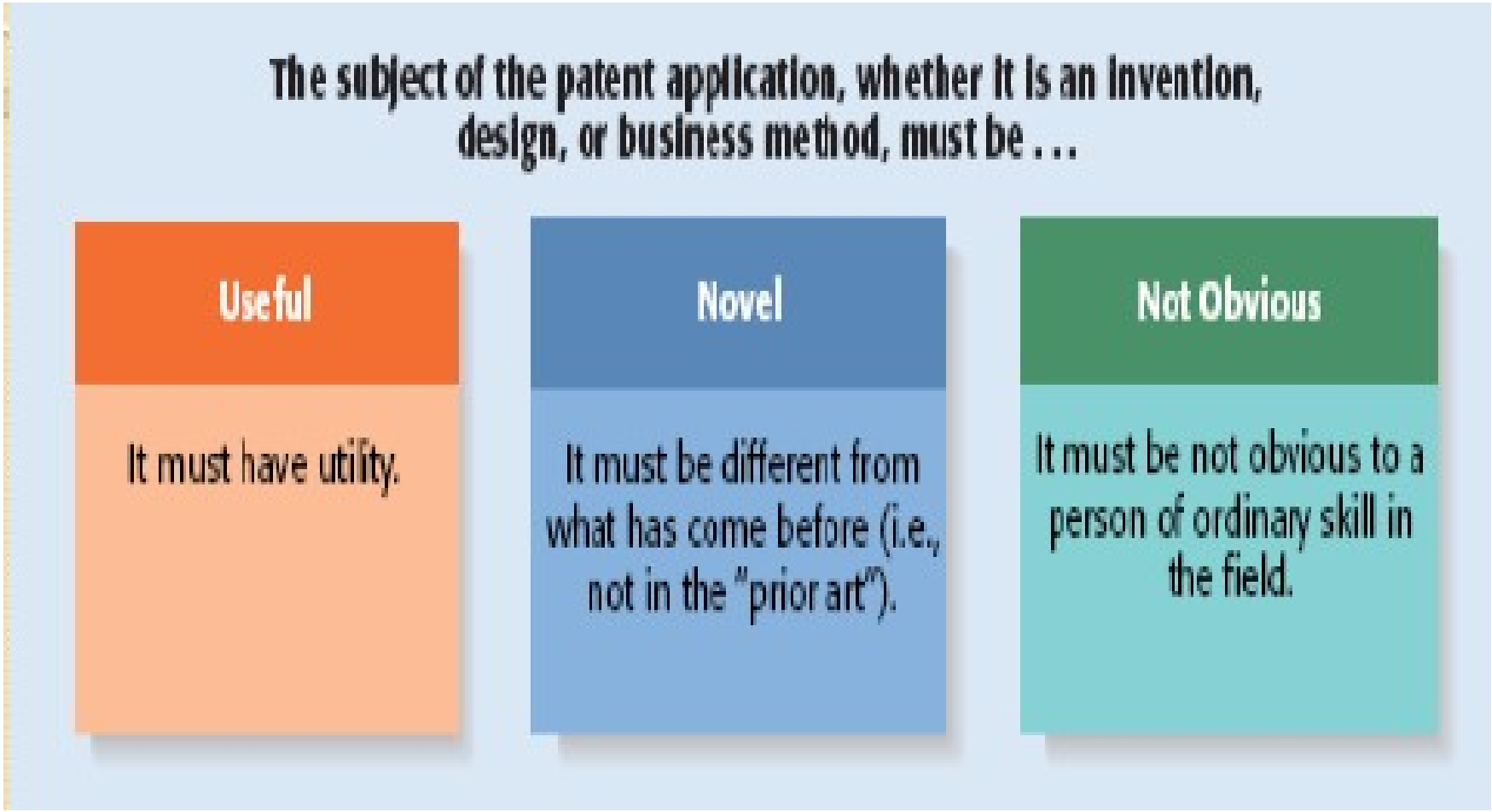
4) ***Composition of matter:*** a new product or mixture of ingredients

5) ***Article of manufacture:*** an object, a manufactured object

## Types of patents

1. Utility patent: covers a new process or protects the functions of a product.
2. Design patent: covers the appearance of a product and everything that is inseparable

# Three Basic Requirements for Obtaining a Patent



# Trademarks

A trademark is any word, name, phrase, symbol, device, or a combination there of used to **identify** and **distinguish those products or services of a company from others**(primary purpose of trademark) and identify the source or origin of products or services

**Trademark:** ***a brand or part of a brand that has been given legal protection so that the owner has exclusive rights to its use.*** After companies identify their trademark, they entail a term "™" or

**Trade Nam** ess organizatio



# Illustration of the Multifaceted Nature of Trademark Protection




Name is trademarked

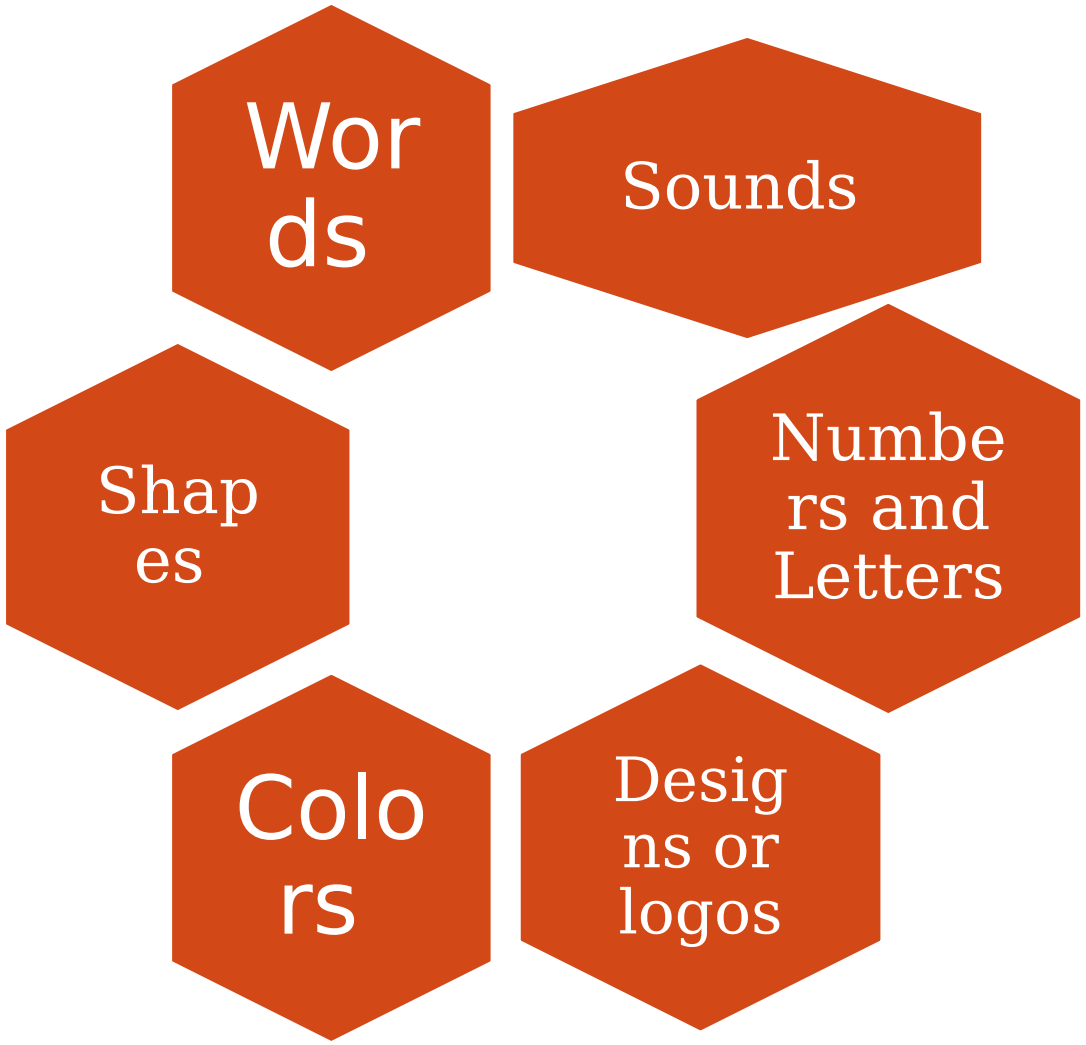
Symbol is trademarked

Slogan is trademarked

# Types of marks

| Type of mark | Types of Marks Covered |
|---|---|
| Trademark | Any word, name, symbol, or device used to identify and distinguish one company's goods from another:<br>Examples: *Dell, Nokia, Oracle, 3M, Palapa Azul, Flavorx* |
| Service mark | Similar to trademarks; are used to identify the services or intangible activities of a business, rather than a business's physical products.<br>Examples: *Amazon.com, Orbitz, eBay, Overstock.com, Pandora* |

# What is Protected Under Trademark Law?



## Copyrights (duration for creator's life +50 years)

- © A copyright is a form of intellectual property protection that grants to the creator or owner of a work of authorship (author, composer, designer, or artist) the legal right to determine how the work is used and to obtain the economic benefits from the work.
- © In other words it establishes a person's right to an **original** work of authorship.

# Copyright

It exclude others from the **following acts** on original work:

- © Reproducing/duplicating it
- © Modifying it( creating a derivative work)
- © Publishing
- © Distributing it to the public
- © selling
- © Publicly performing the work
- © Publicly displaying the work

***It gives the right to use images or sounds in its***

# What is Protected By a Copyright?

- Literary works
- Computer software
- Pantomimes and choreographic works
- Musical compositions &
- Video Dramatic works Pictorial, graphic, and sculptural works

# Obtaining a Copyright

- Copyright law protects any work of authorship the moment it assumes a tangible form. The following steps can be taken, however, to enhance copyright protection.

1) Copyright protection can be enhanced by attaching the copyright notice, the notice consists of 3 elements:
    - ✓ Copyright symbol ©
    - ✓ The year the work was published
    - ✓ The copyright owner's name

2) Further protection can be obtained by registering

# Trade Secrets

- A trade secret is any formula, pattern, physical device, idea, process, or other information that is **not generally known to the public** which provides the owner of the information with a competitive advantage in the marketplace.
- The owner has a responsibility to keep the secret confidentially.
- Trade secrets include marketing plans, **product formulas**, financial forecasts, employee rosters, logs of sales calls, and similar types of proprietary information.

# What Qualifies For Trade Secret Protection?

- Not all information qualifies for trade secret protection.
  - In general, information that is known to the public or that competitors can discover through legal means doesn't qualify for trade secret protection.
- The strongest case for trade secret protection is information that is characterized by the following:
  - ✓ Is ***not known outside the company.***
  - ✓ Is ***known inside the company on a "need-to-know"*** basis only.
  - ✓ Is ***safeguarded by stringent efforts*** to keep the information secret.

# End of Chapter Three
# Thank You!!!