

Unit 6 Technological Environment

Concept: **Technology** is the making, modification, usage, and knowledge of tools, machines, techniques, crafts, systems, methods of organization, in order to solve a problem, improve a pre-existing solution to a problem, achieve a goal or perform a specific function. It can also refer to the collection of such tools, machinery, modifications, arrangements and procedures.

“Technological Environment means the development in the field of technology which affects business by new inventions of productions and other improvements in techniques to perform the business work. “

Those technological factors which impact the business operation is called technological environment.

Types of Technology:

Technology can be classified in several ways. For example, blueprints, machinery, equipment and other capital goods are sometimes referred to as **hard technology** while **soft technology** includes management know-how, finance, marketing and administrative techniques. When a relatively primitive (traditional) technology is used in the production process, the technology is usually referred to as labour-intensive. A highly advanced technology, on the other hand, is generally termed capital-intensive.

Components of Technological Environment:

- a. **Level of Technology:** a. Labour based Technology b. Capital based technology
- b. **Pace of Technological Changes:** Technological changes influences organization in the following ways.
 - It can make existing industries obsolete.
 - It can rejuvenate (revitalize) the existing industries through product improvement or cost reduction.
 - It can create entirely new industries.
 - It can increase government regulation.
- c. **Technological Transfer:** Technology transfer implies technology imported from technologically advanced foreign countries. Technology transfer can be through:

- Globalization (MNCs)
 - Projects (Turnkey Projects:- ready for immediate use or operation)
 - Trade(sale of equipment by the manufacturer)
 - Training assistance (Bilateral and multilateral donors provide technical assistance)
- d. **Research and Development (R & D):** R & D is the essence of innovation.
- Customer expect new products of superior quality which are safe, comfortable and environment friendly.

Relationship between business and technology

Technology is the backbone of running any successful business in the modern society. The kind of business setup we have today requires an entrepreneur to take note of the ever evolving technology and keep pace. Many business men would be sincerely surprised at the degree of impact modern technology can make in their business.

Impact of technology in business:

a. **Positive Effects:**

- Productivity
- Competitive advantage
- Innovation
- Increase in profit
- Customer value

b. **Negative Effects:**

- Capital Burden : Huge investment
- Threat of quick replacement
- Increase in cost: regular maintenance
- Need of skilled manpower.

Human Factor and Technology

Human Factors (Ergonomics): Human factors are the study of how humans behave physically and psychologically in relation to particular environments, products, or services. In other words, Human Factor is the scientific application of knowledge with the aim of making products, system, services and environments safe, efficient and easy to use.

Ergonomics is the science of the design of equipment, especially so as to reduce operator fatigue (tiredness), discomfort and injury.

Effective implementation of technology is totally depending on the human factor. Their knowledge, skills, and abilities determine the technology effectiveness and efficiency. Technology must address natural (physical and mental) abilities and ensures success and safety. It should add the value in human operation. There must be a close match between technology and human factors for enhancing effectiveness.

Science and Technology Policy 2005

Science and Technology policy was adopted by Nepal in 1989 for the overall development of scientific creativity. The amended S & T policy 2005 gave priority on;

- To use science and technology as a powerful means to increase production and productivity of the country.
- To create an environment for the maximum utilization of knowledge and skill of science and technology available in regional and international arena by promoting mutual cooperation with the bilateral, multilateral, regional and international organizations.
- To promote participation of private sector in the development of science and technology.
- To develop and mobilize skilled human resources.
- To extend the development of technology to the rural levels.
- To create a conducive environment to maintain high morale of the scientist and technologists and minimize the brain drain.
- To integrate university level teaching with research in science and technology.
- Embrace the concept of sustainable development, natural resource management and environmental protection in formulation and implementation of science and technology projects.
- Provide quality education in science and technology from primary education level.

Strategies formulated to address technology policy are as follows:

- Ensuring maximum utilization of available resources.
- Developing and adopting appropriate technology through the mobilization of private sector.
- Developing of a mechanism to conduct research and development activities.
- Contributing in the social-economic development of people through the development of knowledge and skills in the science and technology sector.
- Encouraging universities, concerned institutions and individuals in scientific researches.

Information Technology Policy -2009

Information Technology (IT) policy aims to build a knowledge based society and industries.

Major policies under IT policy 2009 are:

- To declare information technology sectors a prioritized sector.
- To follow a single-door system for the development of information technology.
- To create conducive (favorable) environment that will attract investment in the private sector, keeping in view the private sector's role in the development of information technology.
- To provide internet facilities to all Village Development committees of the country in phases.
- To render assistance to educational institutions and encourage native and foreign training as a necessity of fulfilling the requirement of qualified manpower in various fields pertaining to information technology.
- To prioritize research and development of information technology.
- To computerize the records of each governmental office and build websites for them for the flow of information.
- To increase the use of computers in the private sector.

- To develop physical and virtual information technology park in various places with the private sector's participation for the development of information technology.
- To use information technology to promote e-commerce, e-education, e-health, among others, and to transfer technology in rural areas.
- To establish National Information Technology Centre.
- To establish a national level fund by mobilizing the resources obtained from Nepal Government, donor agencies, and private sectors so as to contribute to research and development of information technology and other activities pertaining to it.
- To establish venture capital funds with the joint participation of public and private sectors.
- To include computer education in the curriculum from the school level and broaden its scope.
- To establish Nepal in the global market through the use of information technology.
- To draft necessary laws that provides legal sanctions to the use of information technology.

Electronic Transaction Act-2007

The Electronic Transaction Act-2007 (ETA) was enacted to create a predictable legal environment for E-commerce. This act makes legal provisions for authentication and regulation for the recognition, true-ship, integrity and reliability of creation, production, processing, storage, and communication and dissemination system of electronic records by making reliable and secured to the transactions carried out by means of electronic data interchange and other means of electronic communication. The act makes provisions for controlling of unauthorized use or illegally changes in any electronic record.

In this Act:

- **Electronic** means created, recorded, transmitted or stored in digital or other intangible form by electronic, magnetic or optical means or by any other means.

- **Electronic Agent** means a computer program or other electronic means used to initiate activity.
- **Electronic Signature** means electronic form of signature by a person in electronic records.

ETA-2007 addresses the following issues:

- It clearly defines the rights and obligations of the transacting parties and addresses the legal aspects of electronic contracts including digital signature for authentication and non-rejection.
- It has a provision of electronic signature for all government departments and legal bodies and can publish documents in electronic form as well as accept the document from other parties in electronic form without changing their respective acts. In addition, it also allows public bodies to issue permits and licenses electronically.
- ETA specifies that network service provider will not be subject to criminal or civil liability for third party material, in relation to which they are merely the host. However legally restricted content may subject to crime.
- Under ETA, there is a provision of appointment of Controller and certifying authority for enabling and regulating the process of licensing, recognition of foreign certification authorities (CA) etc. Besides, The Controller may, as per the necessity, appoint an Auditor in each year on contract to audit the performance of the Certifying Authority.

Present Level of Technology adopted by Nepalese Business

The level of Technology in Nepalese business can be examined from the view point of traditional and modern technology:

1. **Level of Traditional Technology:** Nepal is rich in many traditional technologies. We have good technical know-how in following areas:
 - **Metallurgy:** The sound knowledge of metallurgy of Nepalese craftsmen is reflected in images and status of bronze, copper, gold and silver found in many temples and stupas.
 - **Pottery:** The knowledge about manipulation and combination of different clays is still used to shape objects through traditional potter's wheel.

- Architecture and construction: The architecture and civil engineering technology blended with art and culture is manifested in temples, pagodas, stupas and palaces.
- Textile manufacturing: Nepal has own technology especially in processing raw materials, spinning and weaving. Handmade Nepalese carpets are world famous.
- Paper manufacture: Nepali papers are well known for its durability and softness. Printed Nepali paper products are the important item for export from Nepal.
- Food Technology: The traditional food technology of brewing homemade beverages, preserving meats, fruits and vegetables, preparation of dry-food is still prevalent.
- Agriculture and irrigation: Several mechanical devices for agriculture and irrigation are still being used in Nepal. Kol, Pannighatta, Dhiki, Jaatoo are the marvels of traditional technology.

2. **Level of Modern Technology:** After liberalization of the Nepalese economy, the use of modern technology in business is rising. The current state of modern technology in business is indicated by following scenario:

Industrial application:

- Telecommunication and internet providers are using satellite –based technologies.
- Sophisticated technology is increasing in hydro-power industry and health related services.
- Solar power is increasingly being used as new technology.
- In agro-based industries, biotechnology and tissue culture technology is used.
- Computer technology is used for teaching purpose.
- Automated and assembly line technology are being used in private manufacturing industries.

3. **Education and Training:**

- There are more than 3 dozens colleges under Tribhuvan University, Purbanchan University and Pokhara University is providing higher technical

education. Besides, Center for Technical Education and Vocational Training (CTEVT) is also providing short-term and long-term skill based education.

4. **Research and Development:**

- Research is dominated by universities and government research agencies.
- Less relation with industrial sector.
- Mostly organizations are depended on imported technology.
- Little awareness on importance of RD.
- However, agriculture sector, such as Fishery, Cultivation, Irrigation etc are using new and improved technology in accessible areas.
- Government is also promoting new technology development on agriculture, other industries by providing the facilities of tax credit on imported technology, training and development programs, credit availability etc.

5. **Transfer of Technology:**

- FDI, joint ventures, turnkey projects, licensing, contract manufacturing and franchising are the means of technology transfer. The scale of operation, the nature of production process, the relative cost of labor and the cost of adopting the technology determines the technology transfer rate.
- In recent years, FDI of multinational companies from China, India, USA, South Korea etc. have transferred modern technology in Nepal. E.g. Unilever, Ncell, Tuborg, Foreign Joint-venture banks, KFC etc. are using and facilitating transfer of technology in Nepal,
- Among the countries that have established foreign investment industries in Nepal, China ranks first (695) while India is at the second place (588), United States of America third, (250), South Korea fourth (216), and Japan at fifth place (194).
- Gradual increase in the number of foreign investment industries licensed for operation, and employment generated from these industries have given positive indication of their role in the overall industrial development. (Data source Economic survey 2014/15).

eduNPAL•info

A Guide to eduRealm in NEPAL