Notes –Business Environment

Unit-4

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**UNIT -4**

**Natural and Technological Environment: Innovation**

**Natural Environment**

The analysis of the mega environment must also cover aspects like extent of endowment of natural resources in the country, ecology, climate, etc. These constitute the natural environment.

**Factor**

**(i) Natural Resources**

Business firms depend on natural resources. The extent to which the country/region under reference is endowed with these resources has an impact on the functioning of the firms. Raw material is one major part of these resources and firms are concerned with their availability; they need to know whether there will be a shortage in any of the critical raw material. They also need to know the trends governing their costs. Besides raw materials, they are also concerned about energy, its availability as well as cost. Escalations in energy cost are of particular concern to any business firm.

**(ii) Ecology**

Firms are also concerned with ecology. In modern times, all societies are very much concerned about ecology, especially about issues like environmental pollution, protection of wild life and ocean wealth. Governments are becoming active bargainers in environmental issues. Business firms will have to know the nature and dimensions of environmental regulations and to what extent these factors will affect their business prospects. They also need to know the role of environmental activists in the region.

**(iii) Climate**

Climate is another aspect of the natural environment that is of interest to a business firm. Firms with products whose demand depends on climate, and firms depending on climate-dependent raw materials will be particularly concerned with this factor. These firms have to study the climate in-depth and decide their production locations and marketing territories appropriately.

In the case of India, the country is rich in natural resources like iron, coal, rare minerals, ocean wealth, etc. The country also receives good rainfall and has a strong network of rivers. As regards climate, the tropical climate in the country generally favors agriculture and industry.

**Technology Environment**

Today, technology is a major force which industry and business have to reckon with. Technology leads practically all the forces that shape peopleâ€™s lives. For a business firm, technology affects not only its final products but also its raw materials, processes and operations as well as its customer segments. In the present times, rapid changes are taking place in the realm of technology. The IT industry is one example. Telecom is another.

**Factor**

**(i) Options available in technology**

The firm has to analyze carefully the overall technology environment and the technology options available in the given industry. The level of technology prevailing generally in the country is also a concern for the firm. It has to assess the relative merits and cost-effectiveness of alternative technologies. It has also to analyze technological changes taking place in its industry at the international level. In addition, it has to assess the scope of substitute products emanating from new technologies.

**(ii) Technology selection**

It is possible that several levels of technologies are floating at the same time in an industry. Firms have to scan the technology environment and select technologies that will be appropriate for the firm and the given product-market situation.

They have to forecast technological trends, assess current and emerging technologies, and develop the inputs for right technology choice. The policy of the government on technology import is also a concern in this regard. India is adopting a fairly liberal approach to technology import. It is also at the same time encouraging efforts of internal technology development by all sections of Industry by giving them tax rebates and concessions.

Indian government is very much encouraging the generation of power from natural resources like wind, tidal waves, hydro, solar. Organic wastes etc., by giving the entrepreneurs 100% loans with long term tax holiday.

**Innovation**

The process of translating an idea or invention into a good or service that creates value or for which customers will pay.

To be called an innovation, an idea must be replicable at an economical cost and must satisfy a specific need. Innovation involves deliberate application of information, imagination and initiative in deriving greater or different values from resources, and includes all processes by which new ideas are generated and converted into useful products. In business, innovation often results when ideas are applied by the company in order to further satisfy the needs and expectations of the customers.

Technological change cannot occur naturally or automatically because any change is neither easy nor natural in organizations. Decisions about technology and innovation are very strategic and need to be approached systematically.

Two generic strategies a company can use to position itself in the market are

 (i) Low cost leader ship

(ii) Differentiation strategy

With low cost leadership strategy, a firm can maintain competitive advantage because its products have a lower cost than its competitors. With a differentiation strategy a firm can gain advantage from having a unique product or service for which customers are willing to pay a premium price. Technological innovations can support either of these strategies by providing

 (i) Cost advantage through low-cost product designs and creating low-cost processes or methods to perform the needed operations.

(ii) Differentiation by unique products or services which increase buyer value and thus command premium prices.

In a social context, innovation helps create new methods for alliance creation, joint venturing, flexible work hours, and creation of buyers’ purchasing power. Innovations are divided into two broad categories:

(i) Evolutionary innovations (continuous or dynamic evolutionary innovation) that are brought about by many incremental advances in technology or processes and

(ii) Revolutionary innovations (also called discontinuous innovations) which are often disruptive and new.

Innovation is synonymous with risk-taking and organizations that create revolutionary products or technologies take on the greatest risk because they create new markets.

Imitators take less risk because they will start with an innovator’s product and take a more effective approach. Examples are IBM with its PC against Apple Computer, Compaq with its cheaper PC’s against IBM, and Dell with its still-cheaper clones against Compaq.

**Technological Leadership and Followership**

**Technology Leadership**

Industry leaders are those companies which maintain their competitive positions through early development and application of new technologies. However technology leadership imposes costs and risks to the organizations which aspire for maintaining technological superiority or leadership.

**Advantage of Technology leadership**

(i) First-mover advantage

(ii) Little or no competition

(iii) Greater efficiency

(iv) Higher profit margins

(v) Sustainable advantage

(vi) Reputation for innovation

(vii) Establishment of entry barriers for competitors

(viii) Occupying of best market niches

(ix) Opportunities to learn

**Disadvantage of Technology leadership**

(i) Greater risks

(ii) Cost of technology development

(iii) Costs of market development and customer education

(iv) Infrastructure costs

(v) Costs of learning and eliminating defects

(vi) Possible cannibalization of existing products

**Technology followership**

Not all firms are equally prepared to be technology leaders, nor would leadership benefit each firm equally. Whether a firm chooses to be a technology leader or a follower depends on how the firm positions itself to compete, the benefits gained through the use of a technology and the characteristics of the firm.

Technology followership also can be used to support’ both low-cost and differentiation strategies. The follower firm can learn from the experiences of the leader firm and can avoid the costs and risks associated with technological leadership, thereby helping to establish a low cost position. Followership can also support differentiation. The follower can learn from the leader and can adapt the products to more closely fit buyer’s needs.

**Impact of Technology on Globalization**

Advancements in **technology** have considerably facilitated globalization. In fact technological progress has been one of the main forces driving globalization. Technological breakthroughs compel business enterprises to become global by increasing the economies of scale and the market size needed to break even.

**Technological** advancements reduce costs of transportation and communication across nations and thereby facilitate global sourcing of raw materials and other inputs. Patented technology encourages globalization as the firm owning the patent can exploit foreign markets without much competition.

**Information technology** has led to the emergence of the global village. For example, the World Wide Web has reduced the barriers of time and place in business dealings. Buyers and sellers can now make transactions at any time and any part of the globe. Technological change also affects investments.

Earlier, high**technology** production was limited to rich countries with high wages. Now technology is easily transferable to developing countries where high tech production can be combined with low wages. A large number of firms in advanced countries are now outsourcing labour intensive services from developing countries like India.

**Technology** has enabled globalization in almost every single facet. If you are interested in a great book on this there is one called “Connectography: Mapping the Future of Global Civilization”.

**Technology** is the vital force in the modern form of business globalization. Technology has revolutionized the global economy and has become critical competitive strategy. It has globalized the world, which drive all the countries to more ethical standards. This paper attempts to show how Technology revolution is sweeping the globe and the transition from manual to electronic delivery of services both in public and private sector leads to advancement of business community throughout the world.

Globalization has lead to new markets and information technology is one of the technologies fostered to the new market in this increasing competitive world. Technology has helped us in overcoming the major hurdles of globalization and international trade such as trade barrier, lack of common ethical standard, transportation cost and delay in information exchange, thereby changing the market place.

Technology has enabled the software experts to work collaboratively over the network with companies from around the world. The technological advancement has helped a lot in creation and growth of global market. Multinational Corporations (MNC) can be seen as a central actor in globalization. Markets have become global at a rapid pace, as indicated by several kinds of trade extended to foreign countries. The innovation in host country is often undertaken by MNC based in one country and due to the technological advancement MNC(s) have expanded to other countries by some kinds of FDI also facilitating the movement of research and development.

The researchers have analyzed that though the technology has globalized the business but economically well developed countries have been more benefited. While technology has created many opportunities for global networks of tasks it is important to look at the friction in the system to understand the limitations. The sources of friction are many and could bring the system to its knees. Companies and countries that want to thrive in this era of globalization will seek to mitigate the abuses, while dealing with the friction.

**Transfer of Technology, Time Lags in Technology Introduction**

**Technology Transfer,** also called transfer of technology (TOT), is the process of transferring (disseminating) technology from the places and in groups of its origination to wider distribution among more people and places. It occurs along various axes: among universities, from universities to businesses, from large businesses to smaller ones, from governments to businesses, across borders, both formally and informally, and both openly and surreptitiously. Often it occurs by concerted effort to share skills, knowledge, technologies, methods of manufacturing, samples of manufacturing, and facilities among governments or universities 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. It is closely related to (and may arguably be considered a subset of) knowledge transfer. Horizontal transfer is the movement of technologies from one area to another. At present transfer of technology (TOT) is primarily horizontal. Vertical transfer occurs when technologies are moved from applied research centers to research and development departments.

Whereas technology transfer can involve the dissemination of highly complex technology from capital-intensive origins to low-capital recipients (and can involve aspects of dependency and fragility of systems), it also can involve appropriate technology, not necessarily high-tech or expensive, that is better disseminated, yielding robustness and independence of systems.

**Time Lags in Technology Introduction**

There has been considerable time lag between countries in respect of introduction or absorption of technologies.

* In India the TV arrived very late. Although the color TV had become quite common in advanced countries. Even when the TV arrived and the telecast started, initially there was only black and white telecast.
* Even the cable TV came to India only by about the beginning of 1990s. The late introduction and slow expansion (even today) affected not only TV business but also the advertising industry and product promotion.
* The time lags in introduction of technologies may even result in some products not being able to reap the market.
* Another e.g., the electronic typewriter had become known to Indians before it could penetrate the market. It could not achieve the growth because of the advent of the computer.
* Because of this time lag in the advent of latest technology in India, many advance countries have considered us as a market for their obsolete technology. we even import second hand plant and machinery which is outdated machinery for the developed countries.
* Advancement in the technology of food processing, packaging and preservation, transportation etc have facilitated product improvement and marketability of the product.
* In the USA, it is researched that nearly 90% of the households are using microwave for preparing their evening meal and the latest microwaves will take hardly 15 minutes for preparing evening meal. In terms of packaging there is a tremendous move to microwave containers which offers the consumers the option of using the package as both the cooking and serving vessel.

**Status of Technology in India; Management of Technology**

In the recent years, rising income inequality and jobless growth have been subjects of discussion and debate. A February 2018 New World Wealth report  claimed that India is the second-most ‘unequal’ country in the world, with millionaires controlling 54% of the wealth. In Japan, the most equal country, millionaires control only 22% of national wealth.

A closer look suggests that in India, gross fixed capital formation is falling. Growth in capital formation has fallen from a high of 17.5% during 2004-2008 to a lowly 4.3% during 2014-2016. A part of the fall in the value of investment has to do with lower input costs. Technology has ensured that inputs come at a cheaper price.

India accounts for about 10% of all expenditure on research and development in Asia and the number of scientific publications grew by 45% over the five years to 2007.[citation needed] However, according to former Indian science and technology minister Kapil Sibal, India is lagging in science and technology compared to developed countries. India has only 140 researchers per 1,000,000 population, compared to 4,651 in the United States. India invested US$3.7 billion in science and technology in 2002–2003. For comparison, China invested about four times more than India, while the United States invested approximately 75 times more than India on science and technology. The highest-ranked Indian university for engineering and technology in 2014 was the Indian Institute of Technology Bombay at number 16; natural science ranks lower.

In 2017, India became an associate member of European Organization for Nuclear Research.

**Technology Management**

Technology management is a set of management disciplines that allows organizations to manage their technological fundamentals to create competitive advantage. Typical concepts used in technology management are:

* Technology strategy (a logic or role of technology in organization),
* Technology forecasting (identification of possible relevant technologies for the organization, possibly through technology scouting),
* Technology roadmap (mapping technologies to business and market needs), and
* Technology project portfolio (a set of projects under development) and technology portfolio (a set of technologies in use).

The role of the technology management function in an organization is to understand the value of certain technology for the organization. Continuous development of technology is valuable as long as there is a value for the customer and therefore the technology management function in an organization should be able to argue when to invest on technology development and when to withdraw

While India has increased its output of scientific papers fourfold between 2000 and 2015 overtaking Russia and France in absolute number of papers per year, that rate has been exceeded by China and Brazil; Indian papers generate fewer cites than average, and relative to its population it has few scientists.

**Features and Impact of Technology**

**Technology** has important effects on business operations. No matter the size of your enterprise, technology has both tangible and intangible benefits that will help you make money and produce the results your customers demand. Technological infrastructure affects the culture, efficiency and relationships of a business. It also affects the security of confidential information and trade advantages.

**Features of Technology**

**(i) COMMUNICATION WITH CUSTOMERS**

First and foremost, technology affects a firm’s ability to communicate with customers. In today’s busy business environment, it is necessary for employees to interact with clients quickly and clearly. Websites allow customers to find answers to their questions after hours. Fast shipment options allow businesses to move products over a large geographic area. When customers use technology to interact with a business, the business benefits because better communication creates a stronger public image.

**(ii) EFFICIENCY OF OPERATIONS**

Technology also helps a business understand its cash flow needs and preserve precious resources such as time and physical space. Warehouse inventory technologies let business owners understand how best to manage the storage costs of holding a product. With proper technology in place, executives can save time and money by holding meetings over the Internet instead of at corporate headquarters.

**(iii) BUSINESS CULTURE AND CLASS RELATIONS**

Technology creates a team dynamic within a business because employees at different locations have better interactions. If factory managers can communicate with shipment coordinators at a different location, tensions and distrust are less likely to evolve. Cliques and social tensions can become a nightmare for a business; technology often helps workers put their different backgrounds aside.

**(iv) SECURITY**

Most businesses of the modern era are subject to security threats and vandalism. Technology can be used to protect financial data, confidential executive decisions and other proprietary information that leads to competitive advantages. Simply put, technology helps businesses keep their ideas away from their competition. By having computers with passwords, a business can ensure none of its forthcoming projects will be copied by the competition.

**(v) RESEARCH CAPACITY**

A business that has the technological capacity to research new opportunities will stay a step ahead of its competition. For a business to survive, it must grow and acquire new opportunities. The Internet allows a business to virtually travel into new markets without the cost of an executive jet or the risks of creating a factory abroad.

**Impact of Technology on a Business Environment**

**(i) Impact on Human Resources**

Experts have long predicted technology will someday replace many of the jobs done by humans. However, history has shown that as jobs become obsolete, new opportunities open up. Today’s students are encouraged to prepare for technology-based jobs like data analysis and computer programming, whereas four decades ago they would have been steered toward an education for an administrative or a sales position. Technology has also transformed hiring, with the internet allowing workers to complete their duties from home or another remote location. This has the added benefit of giving businesses access to a global talent pool that allows them to hire specialized, experienced workers at affordable rates.

**(ii) Impact on Customer Outreach**

Thanks to social media and the internet, reaching consumers is easier than ever. Using a do-it-yourself website tool and various social platforms, even the newest small business can post content that helps interested customers find them. Instead of paying third parties for advertising in print or electronic media, today’s businesses are in charge of their own customer outreach. The result is a reduced cost that levels the playing field between large corporations and startups.

**(iii) Impact on Operating Costs**

Another area where the technological environment has evened things out is the overhead associated with running a business. Companies sell their items online, which means they don’t need a brick-and-mortar storefront. The cost of starting a new business has dropped dramatically in recent years, since founders can now launch a venture from home as a side gig. There’s no need to travel to land new clients, because researching and reaching out to potential customers can all be done online. And, instead of hiring a bookkeeper or an assistant, entrepreneurs find that software handles all of the early-stage functions they need.

**(iv) Impact on Security**

One area where the impact of technology on business has brought both positives and negatives is security. Having so much information on internet-connected servers means it’s susceptible to theft. Data breaches can be devastating to a new business without the resources to handle it, with the average incident costing small businesses about $36,000. Businesses now need to put significant effort into securing their networks and all connected devices, which often means paying a monthly fee for top-tier cloud hosting and software to keep equipment safe. This has also opened up opportunities for tech specialists in the cyber security arena, where experts are in high demand.

**(v) The Day to Day Impact on Business**

Today’s technology has completely changed some businesses as well as creating entire business niches that never even existed before. Business owners run their companies from laptops, tablets and smartphones, never even considering opening a brick-and-mortar presence.

The daily environment in existing businesses has changed immensely, too. Office workers often spend part of their week working remotely from home or on the road. Business meetings no longer mean driving long distances as teleconferencing means getting everyone together online. Many offices are now paperless, keeping all their documents in the cloud, while others use online chat technology to keep teams in constant communication.