

## LECTURE SESSION 11

### TECHNOLOGY AND DEVELOPMENT

#### Lecture Outline

- 11.1 Introduction
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- 11.4 Automation and its impact on the contemporary world
- 11.5 Development of automatic control
- 11.6 Features of automation
- 11.7 Automation tools
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#### 11.1 Introduction

Welcome to lecture eleven in development studies and ethics. In this lecture, we shall explain the concept of technology describe automation and its impact on the contemporary world, appreciate the use of machines and finally describe automated tools used in production of goods and services



#### 11.2 Learning Outcomes

At the end of this lecture, you should be able to:

- i. Explain the role of technology in sustainable development
- ii. Describe automation and its impact on the contemporary world
- iii. Appreciate the development of automatic controls
- iv. Describe features of automation
- v. Illustrate automation tools

### 11.3 Role of Technology in sustainable development

Let us start our discussion by asking ourselves this question.



**In text Question 1: What are some of the changes that can be used to distinguish ancient and modern life?**

Discussion of international development often centers on the need to promote the use of new technologies. In this respect, technology is too often seen as a magic bullet to solve the problems of development. If there are hungry people, we need genetically modified foods to feed them. If there are people who lack access to clean water, we need improved water technologies like desalination or improvements in water pumps. If there are illiterate people, we need affordable computers. The list goes on and on.

But the emphasis on technological innovation to address the challenges of development ignores the social dynamics of the process itself. This is perhaps clearest in efforts to address hunger, as a recent post by Oxfam's Duncan Green points out. While developing new technologies to increase agricultural output in the global south could certainly represent one component of a strategy to address global hunger, we cannot assume that technological improvements necessarily address social challenges. The Nobel Prize winning economist Amartya Sen in the 1970s articulated an entitlement theory of hunger. Using a comparative analysis of food production and hunger in famine zones around the world, Sen observed that hunger did not necessarily result from a lack of food. Often, famines occurred in areas where food production had actually increased in recent years. Rather, Sen argued that famine results when people cannot access the food that is produced. This subtle shift revolutionized our understanding of famines and hunger, but unfortunately did not fundamentally shift our policy strategy for dealing with them.

Technology can be most broadly defined as the entities, both material and immaterial, created by the application of mental and physical effort in order to achieve some value. In this usage, technology refers to tools and machines that may be used to solve real-world problems. It is a far-reaching term that may include simple tools, such as a [crowbar](#) or wooden [spoon](#), or more complex machines, such as a [space station](#) or [particle accelerator](#). Tools and machines need not be material; virtual technology, such as [computer software](#) and [business methods](#), fall under this definition of technology

**Take Note**

With the development of technology man produced things which helped them at every stage and make them more techno friendly. Computerization and automation are some of the major development in the field of technology

Having looked at the role of technology in sustainable Development we shall now turn our attention to discuss Automation and its impact on the contemporary world , .

**11.4 Automation and its impact on the contemporary world****Activity**

Identify businesses that employ machines in their day to day activities.

With the development of technology man produced things which helped them at every stage and make them more techno friendly. Computerization and automation are some of the major development in the field of technology. Automation is said to be a revolution in technology. It has widespread impact all over the world. Automation means automatic control of manufacture of products through successive stages and use of automatic equipments to save mental and manual

labour. It is complementary to the industrialization and urbanization and it grows slowly with passage of time. In industries the growth of automation is most remarkable, it fosters the growth of good's production at cheaper and less capital outlay. Even the development in military can be traced due to high level of automation. The perfect application of automation always results in maximizing profit. Automation concept and uses was first propagated by engineers of the Ford motor company in United States to explain their method of working work pieces between successive machines. But with passage of time automation spread all over world taking over both physical and mental labour by operating through self-actual devices.

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### **11.5 The development of automatic control**

Automation initial development can be traced back in year 1080 with the invention of pressure cooker based on principle of pressure control mechanism. During 18th century various automatic regulators were applied from household stuffs to large industrial factories, James watt in 1788 helped in controlling the speed of steam engine. Further in 20th and 21st century automation was at peak affecting each economy and each country. It regulated the most advanced phase of

industrialization, presented transition of the world economy from industrial jobs to service jobs, for example-Automated letter machine have made the cash transaction more effective and faster.

### **11.6 Features of automation**

The various features of automation prevalent in both developing and developed countries are as follows-

1. **Use of machine**-Automation always associated with the high and technical uses of machines at large level so as to increase the production. It lays emphasis on moving towards mechanical system from labour oriented concept. Mechanization is the core process of every automation development in any country, it promoted systematic usage and build up of machine which further led to setup of factories and enhanced the production. Automation promotes computerized mechanisms which include various motion control, robots, conveyors, sensors and actuator usages.
2. **Technology compatible**-Automation always promoted technology compatibility in the organization which focuses at increasing the production and enhancing the overall production of the economy. Its compatibility with technology fosters the production process and induces innovation in both product and service of the concerned departments or industries. It relies completely on circulation and adaptability to new emerging demands of consumer and industry and to provide the same with more and more technologies.
3. **Replace human labour**-Automation always resulted in replacement of human labour. The only thing which attain maximum profit to company is the ratio of increase in output to raising unemployment in any organization. More output and less unemployment result to maximum profit. It focuses to design and produce the machines which are capable to perform certain tasks which was previously performed by human being and now would perform by machine at large level to increase production, so automation always replaces human forces in any industry.

## 11.7 Automation tools

Automated manufacture emerged from the intimate relationship of such economic forces and technical innovations such as the division of labour, power transfer, mechanization of the factory and the development of transfer machines and feedback system. There are some automation tools that have been used by any organization in one or the other ways. The various automation tools are as follows-

- ANN-Artificial neural network.
- BPM-Bonita open solution.
- DCS-Distributed controlled system.
- HMI-Human machine interface.
- SCADA-Supervisory control and data acquisition.
- PLC-Programmable logic controller.
- PAC-Programmable automatic controller.

## 11.8 Advantages of automation

Automation is known as the revolution in the technology having enormous positive impact all over the world. The various advantages of automation are as follows-

1. **Increase in production**-Automation foremost objective is to increase the production. It fosters the growth of production in any organization. It lay emphasis on mechanizing the whole organization and induces faster production on large scale enhancing the setup of factory.
2. **Economy improvement**-Automation promotes economy improvement. It lay emphasis on more and more increase in production consequently led to overall development of economy by contribution more amount to GDP of any Nation. With help of division of labour and technology-oriented machine and devices it generates more production as compared to products produced by human labour in same time. So more production leads to more income and consequently promotes overall economy.

3. **Reduce operation time**-Automation make work effective and even done in less time as compared to the work done by human labour. Hence it induces reduction in operation time of any production. Any work done by humans in same time is less produces than that produced by the machines, the rate of production per unit is much more than that produced by human without including the effort and intervention of humans
4. **Improved quality**-Automation benchmark is improved quality, after increase in production its second most important target is to maintain and achieve improvement in quality of the product. By machine mechanism product produced tested and retested regarding its quality.
5. **Enhanced communication**-Automation have reduced the gap and distance associated with communication and enhanced the communication system all over. Automation development such as automatic telephone switching is significant example of automation excellence in the field of communication. It provided new dynamics to the scope of communication.

### 11.9 Disadvantages of automation

Automation have many advantages but it has not been isolated from being associated with many disadvantages. The various disadvantages of automation are as follows-

1. **Security threat**-Automation lacks the effective security system with it. It is not capable to solve the various security threats emerging out and so it is one of the major drawbacks.
2. **Unemployment**-Automation always replaces human labour and consequently most of the time it is associated with growing unemployment of those replaced labours. Many organizations turned into automated based industry because it helps to increase production at much faster and effective way. So, organizations have less vacancy except few major ones leading to unemployment.
3. **Cut throat competition**-Automation leads to cut throat competition, it lays emphasis on quality of the product which consequently generates the competitive environment. And

in this race to win the first position there is enormous conflict in employee-employee relation, employee-boss relation and in industry to industry conflict.

### **1.6 Summary**

We have come to the end of lecture eleven. Rechnology can be most broadly defined as the entities, both material and immaterial, created by the application of mental and physical effort in order to achieve some value. In this usage, technology refers to tools and machines that may be used to solve real-world problems .

In summary, the lecture aimed at understanding automation and its impact on the contemporary world, the development of automatic control, features of automation, automation tools, advantages of automation and disadvantages of automation

### **1.7 Review Activity**

- i. Explain the terms development and underdevelopment.
- ii. Discuss the factors that influence development in your county
- iii. Explain how the three core values contribute to development of an economy .





### **1.8 References and Further Reading**

1. Desai, V. & Potter, R. (2014). *The Companion to Development Studies*. (3rd Ed.). London: Routledge. ISBN-13:978-1444167245.
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3. Spear, J. & Williams, P. D. (2012). *Security and Development in Global Politics: A critical Comparison*. Washington, DC: Georgetown University Press. ISBN-13: 978-1589018860