

Ethical Balance

Should an organization adopt the rules and practices of the host country fully and face dangers and other serious consequences or adopt strictly their own country's standards and practices in the host country?

There is a saying, "When in Rome do as Romans do". Can this be applied in the case of MNCs? This is called *ethical relativism*. The actions of corporation and individuals that are accepted by law, custom and other values of a society can be morally right in that society. It is morally false, if it is illogical. It means, the corporation (and the engineers) functioning in other countries must understand their law, customs, and beliefs and act in line with those prevailing in that country. This will lead to disaster if the country is a developing one where the safety standards are given a go-bye. Laws and conventions are not morally self-sustaining. In a overpopulated country, the loss of human lives may not physically affect them, but the tragedy cast shadow for over decades, as it happened in Bhopal in 1984. This will be criticized from the points of view of human rights, public welfare, and respect to people.

ENVIRONMENTAL ETHICS

Environmental ethics is the study of (a) moral issues concerning the environment, and (b) moral perspectives, beliefs, or attitudes concerning those issues.

Engineers in the past are known for their negligence of environment, in their activities. It has become important now that engineers design eco-friendly tools, machines, sustainable products, processes, and projects. These are essential now to (a) ensure protection (safety) of environment (b) prevent the degradation of environment, and (c) slow down the exploitation of the natural resources, so that the future generation can survive.

The American Society of Civil Engineers (ASCE) code of ethics, has specifically requires that "engineers shall hold paramount the safety, health, and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of professional duties" The term *sustainable development* emphasizes on the investment, orientation of technology, development and functioning of organizations to meet the present needs of people and at the same time ensuring the future generations to meet their needs

Disasters

1. *Plastic Waste Disposal*

In our country, several crores of plastic bottles are used as containers for water and oil, and plastic bags are used to pack different materials ranging from vegetables to gold ornaments. Hardly any of these are recycled. They end up in gutters, roadsides, and agricultural fields. In all these destinations, they created havoc. The worse still is the burning of plastic materials in streets and camphor along with plastic cover in temples, since they release toxic fumes and threaten seriously the air quality. Cities and local administration have to act on this, collect and arrange for recycling through industries.

2. *e-Waste Disposal*

The parts of computers and electronic devices which have served its useful life present a major environmental issue for all the developing countries including India. This scrap contains highly toxic elements such as lead, cadmium, and mercury.

Even the radioactive waste will lose 89% of its toxicity after 200 years, by which time it will be no more toxic than some natural minerals in the ground. It will lose 99% of its remaining toxicity over the next 30,000 years. The toxic chemical agents such as mercury, arsenic, and cadmium retain toxicity undiminished for ever.

But these scraps are illegally imported by unscrupulous agencies to salvage some commercially- valuable inputs. Instead of spending and managing on the scrap, unethical organizations sell them to countries such as India. This is strictly in violation of the Basel Convention of the United Nations Environment Program, which has banned the movement of hazardous waste. A recent report of the British Environment Agency,¹³ has revealed that the discarded computers, television sets, refrigerators, mobile phones, and electrical equipments have been dispatched to India and Pakistan in large quantity, for ultimate disposal in environmentally-unacceptable ways and at great risk to the health of the labour. Even in the West, the electronic junk has been posing problems. Strong regulation including (a) pressure on industries to set up disassembling facilities, (b) ban on disposal in landfill sites, (c) legislation for recycling requirements for these junk and (d) policy incentives for eco-friendly design are essential for our country.

Indian Government expressed its concern through a technical guide on environmental management for IT Industry in December, 2004. It is yet to ratify the ban on movement of hazardous waste according to the Basel Convention. A foreign news agency exposed a few years back, the existence of a thriving e-waste disposal hub in a suburb of New Delhi, operating in appallingly dangerous conditions

1. Industrial Waste Disposal

There has been a lot of complaints through the media, on (a) against the Sterlite Copper Smelting Plant in Thuthukkudi (1997) against its pollution, and (b) when Indian companies imported the discarded French Warship *Clemenceau* for disposal, the poisonous *asbestos* compounds were expected to pollute the atmosphere besides exposing the labor to a great risk, during the disposal. The government did not act immediately. Fortunately for Indians, the French Government intervened and withdrew the ship, and the serious threat was averted!

2. Depletion of Ozone Layer

The *ozone* layer protects the entire planet from the ill-effects of ultraviolet radiation and is vital for all living organisms in this world. But it is eaten away by the Chloro-fluorocarbons (CFC) such as *freon* emanating from the refrigerators, air conditioners, and aerosol can spray. This has caused also skin cancer to sun-bathers in the Western countries. Further NO and NO₂ gases were also found to react with the ozone. Apart from engineers, the organizations, laws of the country and local administration and market mechanisms are required to take up concerted efforts to protect the environment.

3. Global Warming

Over the past 30 years, the Earth has warmed by 0.6 °C. Over the last 100 years, it has warmed by 0.8 °C. It is likely to push up temperature by 3 °C by 2100, according to NASA's studies. The U.S. administration has accepted the reality of global climate change, which has been associated with stronger hurricanes, severe droughts, intense heat waves and the melting of polar ice. Greenhouse gases, notably carbon dioxide emitted by motor vehicles and coal-fired power plants, trap heat like the glass walls of a greenhouse, cause the Earth to warm up. Delegates from the six countries — Australia, China, India, Japan, South Korea and US met in California in April 2006 for the first working session of the Asia- Pacific Partnership on Clean Development and Climate. These six countries account for about half of the world's emissions of climate-heating greenhouse gases. Only one of the six, Japan, is committed to reducing greenhouse gas emissions by at least 5.2 per cent below 1990 levels by 2012 under the Kyoto Agreement.

About 190 nations met in Germany in the middle of May 2006 and tried to bridge vast policy gaps between the United States and its main allies over how to combat climate change amid growing evidence that the world is warming that could wreak havoc by stoking more droughts, heat waves, floods, more powerful storms and raise global sea levels by almost a meter by 2100

COMPUTER ETHICS

Computer ethics is defined as (a) study and analysis of nature and social impact of computer technology,

(b) formulation and justification of policies, for ethical use of computers. This subject has become relevant to the professionals such as designers of computers, programmers, system analysts, system managers, and operators. The use of computers have raised a host of moral concerns such as free speech, privacy, intellectual property right, and physical as well as mental harm. There appears to be no conceptual framework available on ethics, to study and understand and resolve the problems in computer technology.

Types of Issues

Different types of problems are found in computer ethics.

1. **Computer as the Instrument of Unethical Acts**

(a) The usage of computer replaces the job positions. This has been overcome to a large extent by readjusting work assignments, and training everyone on computer applications such as word processing, editing, and graphics.

(b) Breaking privacy. Information or data of the individuals accessed or erased or the ownership changed.

(c) Defraud a bank or a client, by accessing and withdrawing money from other's bank account.

2. **Computer as the Object of Unethical Act**

The data are accessed and deleted or changed.

(a) *Hacking*: The software is stolen or information is accessed from other computers. This may cause financial loss to the business or violation of privacy rights of the individuals or business. In case of defense information being hacked, this may endanger the security of the nation.

(b) *Spreading virus*: Through mail or otherwise, other computers are accessed and the files are erased or contents changed altogether. „Trojan horses“ are implanted to distort the messages and files beyond recovery. This again causes financial loss or mental torture to the individuals. Some hackers feel that they have justified their right of free information or they do it for fun. However, these acts are certainly unethical.

3. **Problems Related to the Autonomous Nature of Computer**

(a) *Security risk*: Recently the Tokyo Stock Exchange faced a major embarrassment. A seemingly casual mistake by a junior trader of a large security house led to huge losses including that of reputation. The order through the exchange's trading system was to sell one share for 600,000 *Yen*. Instead the trader keyed in a sale order for 600,000 shares at the rate of one *Yen* each. Naturally the shares on offer at the ridiculously low price were lapped up. And only a few buyers agreed to reverse the deal! The loss to the securities firm was said to be huge, running into several hundred thousands. More important to note, such an obvious mistake could not be corrected by some of the advanced technology available. For advanced countries like Japan who have imbibed the latest technology, this would be a new kind of learning experience.¹²

(b) *Loss of human lives*: Risk and loss of human lives lost by computer, in the operational control of military weapons. There is a dangerous instability in automated defense system. An unexpected error in the software or hardware or a conflict during interfacing between the two, may trigger a serious attack and cause irreparable human loss before the error is traced. The Chinese embassy was bombed by U.S. military in Iraq a few years back, but enquiries revealed that the building was shown in a previous map as the building where insurgents stayed.

(c) In flexible manufacturing systems, the autonomous computer is beneficial in obtaining continuous monitoring and automatic control.

Computers In Workplace

The ethical problems initiated by computers in the workplace are:

Elimination of routine and manual jobs. This leads to unemployment, but the creation of skilled and IT-enabled service jobs are more advantageous for the people. Initially this may require some upgradation of their skills and knowledge, but a formal training will set this problem right. For example, in place of a typist, we have a programmer or an accountant.

Health and safety: The ill-effects due to electromagnetic radiation, especially on women and pregnant employees, mental stress, wrist problem known as *Carpel Tunnel Syndrome*, and backpain due to poor ergonomic seating designs, and eye strain due to poor lighting and flickers in the display and long exposure, have been reported worldwide. Over a period of long exposure, these are expected to affect the health and safety of the people.