**Handouts of Lecture 28 Professional Practices (IT)**

**Lecture Title: Work and Health**

**Automation and Employment**

Automation has been blamed for the loss of both manufacturing and white-collar jobs, as well as an increase in the length of the workweek for salaried employees.

**Lost manufacturing jobs**

Manufacturing employment peaked in the United States in 1979, with 19.4 million jobs. By 2011 manufacturing employment had dropped 40 percent, to 11.7 million, even though the population of the United States had increased 39 percent during the same time period. The percentage of American workers involved in manufacturing has dropped signiﬁcantly, from 35 percent in 1947 to 9 percent in 2011. Meanwhile, thanks to automation, manufacturing output in America continues to rise and has doubled since 1970. In other words, productivity has increased: fewer workers are making more products. For example, in 1977 it took 35 person-hours to manufacture an automobile in the United States. By 2008 the number of person-hours had dropped to 15.

**Lost white-collar jobs**

The effects of automation are felt in the ofﬁce, too. Email, voice mail, and high-speed copy machines eliminate secretarial and clerical positions. Even jobs requiring advanced degrees are vulnerable. Spreadsheets and other software packages reduce the need for accountants and bookkeepers [7]. Twenty years ago, a pharmacist in a small Canadian town would ﬁll about 8,000 prescriptions in a year. Today Merck-Medco runs a Web accessible pharmacy that uses robots to dispense 8,000 prescriptions an *hour*. In fact, the economic recovery of 1991–1996 was notable because of the large number of white-collar, middle-management jobs that were eliminated even as the economy grew. Unlike the recession of the early 1980s, most of the people whose jobs were eliminated in the 1990s had at least some college education. A large number of these jobs were occupied by people making more than $50,000. Only 35 percent of these higherpaid victims of downsizing were able to ﬁnd jobs that paid as well.

**Working harder, making less**

While inﬂation-adjusted household incomes were ﬂat between 1979 and 1994, the work- week got longer. Harvard economist Juliet Schor reports that between 1970 and 1990, the average American increased the number of hours spent at work per year by 163. That’s equal to an *extra month* at work every year.

Some believe longer work hours are a consequence of corporate downsizing, which is facilitated by the introduction of automation and information technology. When an organization sheds some of its workers, the work that needs to be done is divided among fewer employees. Hence there is a natural tendency for the number of hours worked to increase. In addition, the fact that people have been laid off is a strong incentive for those who remain to work harder so that they won’t be part of the next layoff.

Advances in information technology have also made it easier for people to bring work home. For example, many companies now provide their employees with laptop computers. At work, employees turn their laptop into a desktop system by plugging in a full-sized keyboard, mouse, and monitor. By bringing their laptop home, they have access to the various project ﬁles they need to continue working. Labor advocates Stanley Aronowitz, Dawn Esposito, and William DiFazio have written, “After nearly a century when homework was regarded as a wage-busting tool, computers have made it easier for employers to revive this practice. With pagers, cell phones, and laptop computers, all time becomes work time”.

**Automation and Job creation**

**Increased purchasing power**

Automation is a cost-saving measure: it is less expensive for a machine to perform a particular job than a human being. Because companies compete with each other, lower production costs result in lower prices for the consumer. The drop in the price of a product has two beneﬁcial effects. First, it increases the demand for the product. In order to produce more of the product, workers must be hired. Second, people who were already purchasing the product don’t have to pay as much for it. That gives them more money to spend on other things, increasing the demand for other products. This, too, results in job creation. Some people must be employed designing, creating, and servicing the automated devices themselves.

**Working less, making more**

Martin Carnoy disputes the notion that people are working longer hours now than they used to. “Workers today,” he writes, “work much less than those of a century ago, produce more, earn substantially more, and have access to a greater variety of jobs. Technology displaced workers but also contributed to much higher labor productivity and the production of new products, which helped create new jobs, economic growth, and higher incomes”.

**Effects of Increase in Productivity**

Productivity in the United States doubled between 1948 and 1990.

As a result, Americans in 1990 owned and consumed twice as much as in 1948 but had less free time in which to enjoy these things [10].

**Rise of Robots**

While automation has not yet shortened the workweek of the typical American, some experts maintain that most jobs will eventually be taken over by machines. In fact, roboticist Hans Moravec predicts that by 2050, robots will have replaced human workers not just in manufacturing jobs but in decision-making roles, too.

The *Encyclopedia of Computer Science* deﬁnes **artiﬁcial intelligence (AI)** as “a ﬁeld of computer science and engineering concerned with the computational understanding of what is commonly called intelligent behavior, and with the creation of artifacts that exhibit such behavior”.

A minivan equipped with a video camera and a portable workstation drove from Pittsburgh, Pennsylvania, to San Diego, California, in 1995. The computer was in control of the steering wheel 98.2 percent of the time. (A human operator controlled the minivan’s gas pedal and brakes, maintaining an average speed of about 60 miles per hour.)

The IBM supercomputer called Deep Blue defeated world chess champion Gary Kasparov in a six-game match in 1997.

In 2000 Japanese automaker Honda created ASIMO, the ﬁrst humanoid robot (android) capable of ascending and descending stairs. Two years later, engineers gave ASIMO the ability to interpret and respond to human gestures and postures. Some believe Japan is a hotbed of robotic research because its population is declining and becoming more elderly, and the Japanese seem to lack the cultural fears of robots that grip many Westerners.

Swedish appliance giant Electrolux introduced Trilobite, the world’s ﬁrst domestic robotic ﬂoor vacuum cleaner, in 2001.

**Workplace changes**

**Organizational Changes**

Information technology has inﬂuenced the way manufacturing and service companies organize themselves. A typical early use of computers was to automate a back-ofﬁce function, such as payroll. Using computers in this way required a company to make no changes in its organization. Later, companies began using computers inside manufacturing units. Computers enabled companies to customize products and provide better service to their customers. This use of computers delegated more responsibility to the line workers, and it encouraged a decentralization of sales and support functions, reducing a company’s bureaucracy. Information technology within corporations reached a third stage with the creation of computer networks linking different parts of the business. For example, integrating cash registers with inventory systems has allowed companies to order replacements automatically.

Today many companies have adopted **supply chain automation.** A computer at company A is linked to a computer at company B.The computers are responsible for ordering the widgets, eliminating the need for themiddlemen. Automating the paperwork activities associated with purchasing suppliescan reduce the number of people who produce purchase orders and invoices, pay bills,process checks, and so on. The likely effect of information technology on organizations

will be an increased demand in some job categories, while the demand in other categories will drop.

**Telework**

Another workplace change brought about through information technology is the rise of telework. **Telework** (also called telecommuting) refers to an arrangement where employees spend a signiﬁcant portion of their workday at a distance from the employer or a traditional place of work According to the Consumer Electronics Association, 37 percent of workers in the United States telework at least one day a month. One kind of telework is working out of a home ofﬁce. Another example of telework is someone who commutes to a telecenter rather than the company’s site. Telecenters provide employees from different ﬁrms the ability to connect to their company’s computers. A third example of telework are salespersons who have no ofﬁces, instead transacting all of their business from their cars using cell phones and laptop computers.

**Advantages of telework**

The rapid growth in the number of teleworkers is evidence there are signiﬁcant beneﬁts associated with telework. Here are some of the most frequently cited advantages of telework.

*Telework increases productivity.*

A variety of studies have shown teleworkers have 10 to 43 percent more productivity than on-site workers.

 *Telework reduces absenteeism.*

Teleworkers are less likely to miss work than someone coming into the ofﬁce.

*Telework improves morale.*

Employees who are teleworking have more freedom. It is easier for them to schedule their work around their personal schedules. If they are working at home, they can dress more casually.

*A company can recruit and retain more top employees.*

For example, a company that allows telework can recruit employees who otherwise would not be interested in the job because they are unable or unwilling to be within commuting distance of the main ofﬁce. Telework allows companies to retain employees (such as mothers of young children) who would quit otherwise.

*Telework saves overhead.*

With some of its workers away from the ofﬁce, a company doesn’t have to invest as much of its resources in ofﬁce space.

 *Telework improves the resilience of a company.*

Because not all the employees are in one place, the company is less likely to be harmed by a natural disaster or a terrorist attack.

*Telework is good for the environment.*

Teleworkers do not take part in the daily commute, which saves energy and reduces pollution.

 *Employees may save money by teleworking.*

They may not have to purchase as much business attire, and they may be able to avoid paying child care expenses.

***Reference:***

***Lecture topic: Work and Health***

***Gao, Y. (2012). Ethics for the Information Age by Michael J. Quinn. World Libraries, 20(1).***