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Report Prompt:

Describe the cause and effects of using robots in the workplace.

Text 1: The Historical Background of Machines in Business

Human progress and technology are interlinked; this has been seen throughout history. For example, during the Industrial Revolution (from around 1760 to 1830), machines replaced simple human jobs and helped humans with more difficult tasks. Before this time, manufactured goods were usually made by hand with individual skilled workers creating each part of the item with simple tools. After each component was crafted, they would be brought together to complete the final product. With the start of the Industrial Revolution, machines began to perform work that once required human hands. Skilled craftsmen were no longer needed to create specific parts of a product; machines now did this. All that was needed for factories was an unskilled work force and standardized equipment to produce large numbers of identical parts at a low cost, within a short amount of time. For example, by 1883, the Singer Manufacturing Company sold over 500,000 sewing machine cheaply.

The assembly line has long been considered one of the greatest innovations of the 20th century. It shaped the industrial world so strongly that businesses that did not adopt the practice soon became extinct. Ransom Olds created and patented the assembly line in 1901. Switching to this process allowed his car manufacturing company to increase output by 500 percent in one year. The Oldsmobile brand then had the ability to create a vehicle with a low price, simple assembly and stylish features. Their car was the first to be produced in large quantities. Olds' assembly line method was the first to be used in the automotive industry and served as the model for which Henry Ford created his own.

Henry Ford improved upon the assembly line concept by using the moving platforms of a conveyor system. In this system, the frame of the vehicle was towed by a rope that moved it from station to station in order to allow workers to assemble each part. Using this method, one Model T car could be produced every ninety minutes.

Throughout the 1950s and 1960s, engineers around the world experimented with robotics as a means of industrial development. General Motors installed its own robotic arm to assist in the assembly line in 1961. In 1969, Stanford engineer Victor Scheinman created the Stanford Arm, a 6-axis robot that could move and assemble parts in a continuous repeated pattern. This invention expanded robot use in ways that continue to be applied in modern assembly.

Source: Brinkley, D. (2003). *Wheels for the world: Henry Ford, his company, and a century of progress, 1903-2003*. Viking Press.

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Text 2: Robots Help in the Medical Field

Not enough staff in hospitals

The medical field is one area in which the use of robots is on the rise. With an increase in the proportion of elderly people in many industrialized nations, most hospitals find that they do not have enough staff to care for their needs. This has caused them to start using robots in some areas.

Offering support services

What are the benefits of hospitals using robots? Robots are being used to support the elderly, the disabled, and those who are sick. Robots can be used to lessen the strain on healthcare services while combatting loneliness in elderly people. They can assist medical staff during surgery and check-ups, which reduces costs and errors while increasing efficiency and speed. At UCSF Medical Center in the US, robots are being used to deliver meals and medicine; this also enables staff to spend more time on the social aspects of their job.

Enabling the disabled

Robots can also help people with certain disabilities by helping to improve their mobility and offer them a voice. Assistive technologies, such as the Intel communicative system used by scientist Stephen Hawking, can assist people who are normally unable to communicate on their own. Without these types of technologies, some people would not be able to move or communicate with the outside world.

Performing key medical tasks – for better or for worse

Surgeons are already using robots to assist with surgery. Currently, the surgeon remains in control of the machine, but as these machines improve, it will be possible for the robot to be fully in charge. In the future, robots could achieve all care that takes place at hospitals. Some doctors are concerned about this as they feel it will de-humanize the medical field and make it feel less compassionate. In addition to this, people may not trust machines to make a diagnosis, give out medications, and carry out surgery, especially at first.

Source: CNET. (2015). *Robots roam hallways of SF's newest hospital, lending a helping hand*. Retrieved from <https://www.cnet.com/news/robots-give-a-helping-hand-in-san-franciscos-newest-hospital/>

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Text 3: Problems with Using Robots

Companies need robots

The percentage of highly educated individuals is on the rise, and many countries are facing shortages of lower-skilled workers. Robots are being utilized more and more to fill this gap.

Job loss

Unfortunately, using robots is not always a positive. For example using robots causes job losses for those working in lower-skilled fields. To keep up with demand, these people will need to retrain to gain marketable skills, or they may remain unemployed. Accountants, factory workers, and office clerks are just a few of the many jobs that are at risk now and in the near future because of the use of robots.

Employee stress

In the future, the usage of more robots in the workplace could cause a great deal of employee stress. Not only do employees risk being replaced by robots, but robots also have the capacity to track their movements, causing depression and a sense of alienation amongst workers.

Moral absence

Another issue is that robots do not have the ability to make moral judgments. These have to be programmed into them, but can cause difficulties. A robot could make a decision on your behalf that you feel is ethically wrong. In warfare, armed drones are on the increase, replacing human pilots. Many experts believe that the use of drones makes it easier for people to kill without being hindered by their conscience because the drone is actually carrying out the killing.

Source: Wallach, W., & Allen, C. (2008). *Moral machines: Teaching robots right from wrong*. Oxford University Press.

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Text 4: Positive and Negative Effects of Robots

The UBR-1 improves efficiency

Today, robotics is reaching a completely new level of sophistication. Companies like Rethink Robotics are working to develop manufacturing robots that can work next to humans. A company called Unbounded Robotics recently launched a robot called UBR-1, which can do human-scale tasks and offers advanced software and hardware. These are just two examples of modern-day robots that are helping companies to improve efficiency and increase productivity.

Work without mistakes

There are many jobs that humans can do, but robots can do even better. Humans can weave cotton cloth with great effort, but automated looms make perfect cloth very quickly and cheaply. Autopilot can fly a 787 jet on its own, cutting out the need for a human pilot who could fall asleep or make a fatal error. These types of technologies are on the increase all of the time.

Completing impossible tasks

There are also jobs that humans cannot do, but robots can. For example, without automation, we could not make a single computer chip—a job that requires degrees of precision, control, and attention that humans do not have. Likewise, no human can quickly search through all the web pages in the world to find specific, detailed information; every time you click on the search button, you are employing a robot to do something that humans are unable to do alone.

Human job loss

Robots today are far more intelligent, and are expected to replace humans completely in a wider range of mid-skilled jobs in the future. With population growth and more robots starting to replace humans on a larger scale, society will initially face higher unemployment. In fact, Oxford University researchers have estimated that robots could replace 47 percent of U.S. jobs within the next two decades. If even half that number is closer to reality, workers are going to go through a difficult time.

Benefits for workers

There are some benefits to robots performing certain types of work, especially in more physically demanding duties. If robots can perform these difficult tasks, it will allow humans to focus more on intellectual tasks. It will also allow older people to continue working when their physical deterioration limits their ability to carry out certain functions. With the assistance of robots, we will be able to do things we never imagined doing 100 years ago.

Source: Frey, C. B., & Osborne, M. A. (2017). The future of employment: how susceptible are jobs to computerisation?. *Technological Forecasting and Social Change*, 114, 254-280.

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Text 5: Reasons to Use Robots in the Workplace

It may be difficult to believe, but before the end of this century, robots will likely replace 70 percent of today's occupations. Robot replacement is sure to affect all jobs, from manual labor to more skilled work.

Financial benefits

There are many reasons for this, but one of the main reasons is financial. The cost of buying and operating a robot is typically lower than paying a yearly salary to a human worker. A robot can work 24 hours a day, and it does not take sick leave, vacation time, or need health insurance and other expensive benefits. For example, Baxter – a one meter tall industrial robot – costs \$22,000 and can operate at about \$3 an hour, which is much cheaper than the cost of employing a human worker for the same job. It is inexpensive enough that even small businesses can afford to buy one to help carry out tasks. The designer of Baxter, Rodney Brooks, says, "Right now we think of manufacturing as happening in China. But as robots are used more and more, factories can be built close to home and costs will go down." In other words, since robots are cheaper than human labor, goods can be manufactured closer to home as we will not rely on inexpensive labor overseas any longer. This will cut out the cost of importing goods from countries like China. So, robots help companies save money in many ways.

Increased productivity

Robots are also able to carry out jobs 24 hours a day without getting tired or injured. For example, they can lift heavy weights throughout the entire day, and in the future they will be able to retrieve boxes, sort them, and load them onto trucks without ever stopping. They will also be able to pick fruits and vegetables on farms, clean offices and schools, and drive trucks on long journeys. Because they can carry out tasks without rest, productivity will increase while the cost of operations will decrease.

Source: Pierce, A. (2013). Baxter the Unconventional Robot. *Tech Directions*, 72(7), 8.