Automation in the Workplace

Technological Advances Can Create Opportunities for Workers

Summary

There is no question that as technology continues to advance, companies will continue to modernize their workforces with technology that increases productivity without significant costs. The lingering question, however, is whether this modernization will replace workers or simply require a readjustment of jobs, as well as the creation of new opportunities.

Reasons for Automation

There are several reasons a company may choose robots or other technology to modernize its operation. The advancement of technology is rapid and more affordable. A robot named "Baxter" developed by the Massachusetts Institute of Technology (MIT) is versatile and can do multiple jobs at the same time, such as unpacking boxes with one arm, while packing boxes with the other arm. The cost is $22,000. Comparatively, cost of labor is much higher.

As the cost of labor continues to increase, the need for a cheaper alternative to maintain competitiveness does as well. Preying on this tension, the chief executive officer of a robotic company from Michigan published an article, "Robotic Automation Can Cut Costs," that highlights the use of robots by manufacturers in the United States to remain competitive internationally. The article points to the high costs of labor, health care, retirement, tort, tax, and environmental regulations that "weigh heavily on a company's bottom line." The CEO suggested that in order to create a level playing field with other countries that have lower-labor costs, "[w]e must implement state-of-the-art technologies including lean manufacturing, robots, and automation, and other quality-enhancing technology."

The article provides some statistics to support its analysis: "The productivity-enhancing technologies that we see today, such as plant floor automation, are having as much impact on the economy as the family technology that was implemented in the last century. In 1900, agricultural workers constituted more than 38% of US employment. Today, they represent about 2% of the work force; however, we produce more of the world's food than we have ever produced…A similar analogy can be drawn with the US steel industry. Over the last 20 years, the number of workers employed by the US steel industry dropped by 74% from 289,000 to 74,000. However, output increased by 36% from 75 million tons to 102 million tons during the same timeframe."

Impact of Automation on the Workforce

While automation can likely increase production and decrease cost for the company, what about the impact on workers? Automation will have an impact. The extent of the impact, however, is disputed among economists. An article that includes different viewpoints from several economists is "How Technology is Destroying Jobs," written by David Rotman and published in the *MIT Technology Review* on June 12, 2013.

One viewpoint provided in the article is that "the same technologies making many jobs safer, easier, and more productive [are] also reducing the demand for many types of human workers." Comparatively, Rotman also cites Lawrence Katz, a Harvard economist, who stated that there is no "historical pattern [that] shows these shifts leading to a net decrease in jobs over an extended period. . . 'People have always been able to create new jobs. People come up with new things to do.'" Katz expects the historical pattern will stay true with this era of technology, but did acknowledge the possibility it could be different.

An article by Rachael Stephens, "Robots at work: the economic effects of workplace automation," cited a study by George Graetz of Uppsala University and Guy Michaels of the London School of Economics that focused on the economic effects of industrial research from 1993 to 2007 in 17 countries, including the United States. Pertinent findings from this study are: 1) the use of robots in various industries led to an increase in productivity and wages, "in other words, each human worker was more productive and added more value to the economy than before the implementation of industrial robots"; and 2) robots had no effect on high-skilled workers and no "significant effect" on overall employment, although there was some evidence of crowding out for low-skilled and middle-skilled workers.

An article by McKinsey & Company, "Four Fundamentals of Workplace Automation," looked at approximately 2,000 individual work activities and assessed which different capabilities had the potential to be automated. The study found that 45% of work activities could be automated using existing technology and another 13% of activities could be automated if technology continues

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to progress as expected. The study also found that approximately 60% of occupations could have at least 30% or more of activities automated. Even approximately 20% of a CEO's duties can be automated.

A hybrid viewpoint agrees that automation will have an impact on the workforce, but not necessarily reduce jobs. In a *Forbes* article, "Does Workplace Automation Destroy Jobs or Create Unexpected Opportunities? An Optimist's View," Joe McKendrick indicates that the expansion of the type of occupations listed in the Bureau of Labor Statistics Standard Occupational Classification system and investment in STEM (science, technology, engineering and math) evidences the creation of new career choices due to automation. John Leonard, a professor of engineering at MIT, believes that technology will partner with workers instead of replacing them: "People and robots working together can happen much more quickly than robots simply replacing humans . . . [t]hat's not going to happen in my lifetime at a massive scale. The semiautonomous taxi will still have a driver."

Other examples of automation simply redefining the workforce, not eliminating it, include Kiva robots, data analysis, and ATMs. Kiva robots are utilized by Amazon to retrieve items for packaging and shipment to customers. While Kiva has largely taken over the duties of retrieving items, workers are still needed to package items and train robots to recognize objects. Robots also are being trained on how to analyze data and diagnose medical issues, which could help provide doctors with more time to address unusual or more serious health concerns. Sales organizations also can use automation to analyze and identify potential leads, allowing an individual more time to personally interact with customers. As noted in "Automation and Anxiety," economist James Bessen from the Boston School of Law University stated, "Rather than destroying jobs, automation redefines them, and in ways that reduce costs and boost demand." Bessen referenced the introduction of ATMs and how they redefined, rather than eliminated the jobs of bank tellers.

Legislative Activity

SB 103 (Committee on Budget and Fiscal Review)/AB 134 (Committee on Budget): This bill focused on funding of transportation projects in California, including upgrades at the ports. A significant provision in the bill stated that funds would be provided for "[p]rojects to enhance the capacity and efficiency of ports, except that funds available under this section shall not be allocated to a project that includes the purchase of fully automated cargo handling equipment. For the purposes of this paragraph, 'fully automated' means equipment that is remotely operated or remotely monitored, with or without the exercise of human intervention or control." Governor Edmund G. Brown Jr. signed this legislation, which precludes funding of projects that include automation.

CalChamber Position

The advancement of technology and its use in the workforce to increase productivity as well as efficiency is inevitable. However, it should not be viewed as negative or a threat to jobs. Rather, the use of technology should be utilized to complement existing jobs, as well as create new opportunities and careers for workers. Business and labor can partner together on this issue to integrate technology into the workplace, while retraining workers and developing their skills.

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