

Old-economy sectors are now tech, too: US study

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Forget about old economy and new economy. Everything is now part of the tech economy, a prominent US research panel said Monday.

New technologies ranging from cloud computing to data analytics are transforming virtually all industries, including old-economy sectors like [manufacturing](#), said the report by the National Academy of Engineering.

Manufacturing can no longer be considered separate from the system of technological innovation used in new economy sectors, said the report by the NAE, part of the National Academy of Sciences, a research organization created by Congress.

"Technological developments, reengineered operations, and economic forces are changing the way products and services are conceived, designed, made, distributed, and supported," it said.

"Developments in data collection and analytics, digital manufacturing, and crowd-sourcing have opened up a wealth of possibilities for companies and entrepreneurs to better understand customer needs and desires, optimize design and production processes, discover new market opportunities, and acquire new investment funds."

The pharmaceutical sector, the report said, is being affected by apps and services to help people take their medicine on schedule.

The automotive industry, meanwhile, is changing with new software and

services ranging from entertainment and apps to vehicle maintenance monitoring.

Adapting the workforce

For some US companies, this new paradigm has led to moving some manufacturing operations back onshore to better integrate research and new product development, the report said.

The nature of jobs is changing as well, the researchers said, with repetitive manual jobs consisting of repetitive tasks "largely disappearing," according to the report.

"Factory work in the United States is shifting to favor specialty skills in areas such as robotics-controlled maintenance, advanced composites, and radio-frequency identification of parts."

At Boeing's factory in the state of Washington, for example, workers control high-tech machines that use indoor GPS and laser-positioning systems to assemble components of the 787 aircraft.

The report said some estimates indicate almost 50 percent of US jobs are at risk for "disruption" by technological change.

It noted that an automobile manufacturing plant can now be run by one-third as many people as in 1965, even with huge improvements in the quality and sophistication of products.

US manufacturing employment dropped from 19 million in 1980 to 11.5 million in 2010, according to government statistics.

But the study said there is a "mismatch" of the skills available by many workers and those needed: many high-paying jobs require engineering

and computer programming, and not enough people are acquiring these skills.

The new environment requires companies to adapt with new emphasis on technology research, along with better training for employees. Government programs and [higher education](#) need to change as well, the report noted.

"Advancing skills and creating skilled jobs are the best bet to aid the workforce that has been left behind by changes in manufacturing and the broader economy," said Nicholas Donofrio, a former IBM executive and chair of the committee that conducted the study.

"Access to higher education and training, including certification programs and flexible pathways to degrees, is especially important for lower-skilled workers, who are most affected by the changes."

The [report](#) also recommended that Congress establish incentives for businesses to invest in education programs, and that immigration policy should be reformed to attract and retain more people with technology skills, especially those educated in the United States.

In addition to Donofrio, the study panel included current and former executives of companies including General Motors, Genentech, Palm, DEKA Research and Northrop Grumman, as well as university researchers and a labor representative.

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