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## U.S. Manufacturing and the Skills Crisis

*A recent survey suggests 600,000 jobs are unfilled because employers can't find the right workers.*

By THOMAS A. HEMPHILL AND MARK J. PERRY

Following 12 straight years of declines, U.S. manufacturers added 109,000 workers to their payrolls in 2010 and another 237,000 in 2011. And in January of this year, the number of manufacturing jobs increased by 50,000.

Yet this vibrant sector is being held back—and not by imports. Instead there is a serious labor shortage. In an October 2011 survey of American manufacturers conducted by Deloitte Consulting LLP, respondents reported that 5% of their jobs remained unfilled simply because they could not find workers with the right skills.

That 5% vacancy rate meant that an astounding 600,000 jobs were left unfilled during a period when national unemployment was above 9%.

According to 74% of these manufacturers, work-force shortages or skills deficiencies in production positions such as machinists, craft workers and technicians were keeping them from expanding operations or improving productivity.

A majority of U.S. manufacturing jobs used to involve manual tasks such as basic assembly. But today's industrial workplace has evolved toward a technology-driven factory floor that increasingly emphasizes highly skilled workers.

As Ed Hughes, president and CEO of Gateway Community and Technical College in Kentucky, accurately described the trend, "In the 1980s, U.S. manufacturing was "80% brawn and 20% brains," but now it's "10% brawn and 90% brains." This new trend, widely known as "advanced manufacturing," leans heavily on computation and software, sensing, networking and automation, and the use of emerging capabilities from the physical and biological sciences.

Faced with the shortage of skilled workers, manufacturers have begun joining with high schools, trade schools, community colleges and universities to train men and women with the right skill sets. In-house apprenticeship programs, a staple of the past, have largely disappeared, according to Dr. Peter Cappelli, director of the Wharton School's Center for Human Resources. They're too costly and time-consuming. Instead, he notes, companies are seeking out "just-in-time" employees who are already technically trained and ready to hit the ground running.

As one solution, the National Association of Manufacturers (NAM) has endorsed a national Manufacturing Skills Certification System developed and administered by the Manufacturing Institute, a nonprofit affiliated with NAM that



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operates as part think tank and part solutions center. Seventeen states have national philanthropic funding for deploying the Manufacturing Skills Certification System, and 18 states have grass-roots efforts and strategic partnerships advocating deployment.

In June 2011, President Obama announced a national goal of credentialing 500,000 community-college students with skill certifications aligned to American manufacturers' hiring needs, citing the Manufacturing Skills Certification System as a model.

The Manufacturing Institute has so far developed credentials for advanced manufacturing in Production, Machining & Metalworking, Welding, Technology & Engineering, Automation, Die Casting, Fabrication, Fluid Power, and Distribution & Logistics. It's also developing new certification programs in Aviation & Aerospace, Bioscience and Energy.

Recently, the Manufacturing Institute piloted a "Right Skills Now" accelerated program with the private, nonprofit Dunwoody College of Technology and South Central Community and Technology College, both in Minnesota. It focuses on career training in critical machining skills in a 24-week training period.

There's a great need for more such programs around the country.

The private-sector driven Manufacturing Skills Certification System, embracing private-public partnerships with community colleges and trade schools, offers a relatively inexpensive path to meet the human capital demands of U.S. advanced manufacturers.

Output in manufacturing expanded by 4% in 2011, more than twice the 1.7% overall growth rate of the U.S. economy. For manufacturers to continue this remarkable expansion, it's critical that our shortage of skilled workers be addressed.

We cannot afford to let this economic opportunity slip away.

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