



Industry Forum

Business Excellence Through Inspired People

March 2013

The State of the Union: Advanced Manufacturing

The United States and China have recently been neck and neck in the race to be the largest manufacturing sector in the global economy. United Nations Conference on Trade and Development (UNCTAD) reported that in 2012 China had definitely overtaken the US.

At first sight manufacturing does not appear to be a major factor in the US economy accounting for approximately 10% of national output, about the same share as the UK - compared with other advanced diverse countries, such as Switzerland and Singapore, where the share of manufacturing in their economies is up to three times larger. Several recent studies have found that every dollar of extra manufacturing output in the US creates a further \$1.40 in other sectors suggesting that manufacturing is the driver behind at least quarter of current economic growth.



This helps explain why within the US a great deal of effort and interest is devoted to US manufacturing and its prospects. President Obama stressed his support and plans for manufacturing in the 2012 Presidential campaign and included a commitment to create a million more manufacturing jobs. At the start of his second term Obama took up this theme in his 2013 State of the Union speech as follows:

“Our first priority is making America a magnet for new jobs and manufacturing. After shedding jobs for more than 10 years, our manufacturers have added about 500,000 jobs over the past three. Caterpillar is bringing jobs back from Japan. Ford is bringing jobs back from Mexico. After locating plants in other countries like China, Intel is opening its most advanced plant right here at home. And this year, Apple will start making Macs in America again.

There are things we can do, right now, to accelerate this trend.....so tonight, I'm announcing the launch of three more of these manufacturing hubs, where businesses will partner with the Departments of Defense and Energy to turn regions left behind by globalisation into global centres of high-tech jobs. And I ask this Congress to help create a network of fifteen of these hubs and guarantee that the next revolution in manufacturing is Made in America.

If we want to make the best products, we also have to invest in the best ideas. Every dollar we invested to map the human genome returned \$140 to our economy. Today, our scientists are mapping the human brain to unlock the answers to Alzheimer's; developing drugs to regenerate damaged organs; devising new material to make batteries ten times more powerful. Now is not the time to gut these job-creating investments in science and innovation. Now is the time to reach a level of research and development not seen since the height of the Space Race. And today, no area holds more promise than our investments in American energy.”

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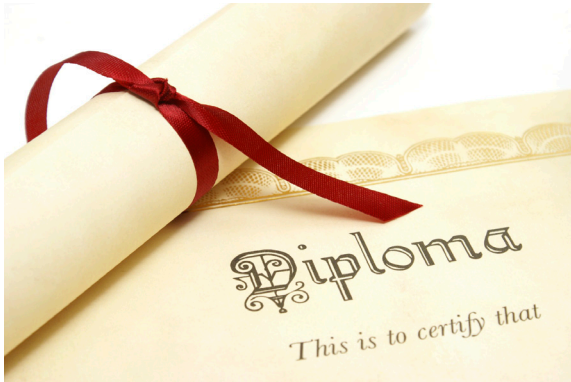
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Obama went on to cover the need for better links between schools and technical employment:

“And four years ago, we started Race to the Top - a competition that convinced almost every state to develop smarter curricula and higher standards, all for about 1 percent of what we spend on education each year. Tonight, I’m announcing a new challenge to redesign America’s high schools so they better equip graduates for the demands of a high-tech economy. And we’ll reward schools that develop new partnerships with colleges and employers, and create classes that focus on science, technology, engineering and math - the skills today’s employers are looking for to fill the

jobs that are there right now and will be there in the future.”

The governors of Ohio and Pennsylvania, both Republicans, are enthusiastic about Obama’s manufacturing plans. “We are seeing nothing less than the beginnings of a new Industrial Revolution,” Pennsylvania Governor Tom Corbett said in a statement on the National Additive Manufacturing Innovation Institute. The new technology, Corbett said, “means that manufacturing, something we once gave up for lost, is going to come back.” The head of Ohio’s Department of Development called it “the next generation of manufacturing methods.” Pennsylvania gave \$5 million and Ohio gave \$2 million to the project. In Illinois, Democratic Governor Pat Quinn has agreed that his state team up with the University of Illinois and the National Center for Supercomputing Applications to create an advanced manufacturing hub “where companies – big and small – come to learn and use the world’s most sophisticated tools and software,” he said in his State of the State address.

Part of the strength of US manufacturing has been the high level of centrally funded defence R&D. The Obama administration has made it clear that despite the military cutbacks planned, the fundamental defence industrial strategy will remain intact. The national goal is that the US will continue to sustain a rapid rate of military innovation based on a strong manufacturing sector to underpin its position as the most powerful nation in the world.

Another major advantage enjoyed by US manufacturing is its geopolitical position. Amongst developed countries Canada, according to Deloitte’s 2013 Study, ranks as third in manufacturing competitiveness behind the US and Germany. Canada’s manufacturing is located along the US’s northern border and effectively forms a single manufacturing zone with the US. Similarly along the southern border there is a substantial export oriented Mexican manufacturing sector with a high growth rate and lower labour rates. In South America Brazil is already ranked at eighth in global manufacturing competitiveness and in the next five years has been assessed as having



the potential to rise to third position globally. In effect there is a continental sized cluster of manufacturing competitiveness in the Americas.

US policy makers are nonetheless very aware of the threats to their competitive position as a manufacturing location in the next five years such as high labour, corporate tax, and unemployment rates and potentially sluggish GDP growth. Like many countries in the battle for global manufacturing competitiveness the US is in a race to expand its advanced manufacturing sector. In particular the US has devoted effort to clarifying the skills dimension.

Working together the Manufacturing Institute, the National Council for Advanced Manufacturing and the Society of Manufacturing Engineers have produced a comprehensive competency model for advanced manufacturing. This starts with personal effectiveness competencies – interpersonal skills, integrity, professionalisation, initiative, dependability & reliability and willingness to learn.

The next level is academic competencies which include communication, listening & speaking, critical analysis & thinking and active learning. Above that are workplace competencies such as teamwork, adaptability, problem solving, workplace computer applications and an appreciation of business fundamentals.



At the management level there is an additional formidable set of requirements which include delegation, entrepreneurship, supporting others, motivating and inspiring, developing and mentoring, clarifying roles and objectives, managing conflict and teambuilding plus developing an organisational vision. All of this suggests that in the US vision of advanced manufacturing the full battery of soft skills will be harnessed to the country's unparalleled technical resources. Leveraging the US's distinctive culture in this way will undoubtedly be a major asset in the battle for overall global competitiveness with India, China, Brazil and Germany.

How does the situation in the UK compare?

The UK Technology Strategy Board has published an impressive set of High Value Added Manufacturing Competencies. But the US published their model first and so far have done better at publicising and promoting it. The UK's network of Catapult Centres is probably more developed than the US Manufacturing Innovation Institutes but not as well established as the substantial and successful network of Fraunhofer Institutes in Germany. At the end of February 2013 the UK announced four new research centres to develop new ways of manufacturing in the fields of electronics, laser use in production processes, medical devices and food production via a £45 million package of investments. The new Centres, which will begin work later in the year, will involve academics from 15 universities across the UK and over 60 project partners from industry.





At Industry Forum we recognise the importance of changing people as well as changing processes. Our current Organisational Development model has four key areas which employ structured approaches to identify the current situation; define the target condition and close the gap between the two.

- **Effective Organisation Structures**

Ensuring all parts of the company are arranged to efficiently manage daily activities and deploy policies to successfully achieve customer, business and employee requirements.

- **Policy Deployment**

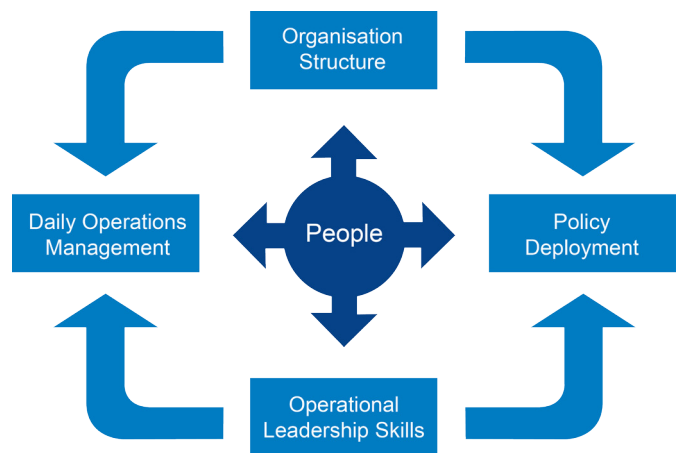
A framework for planning, implementing and reviewing the changes required to move an organisation towards its vision.

- **Daily Operations Management**

A suite of techniques to achieve the customer's requirements with real time identification, escalation and resolution of any deviation from departmental plans.

- **Operational Leadership Skills**

A modular programme tailored to meet individual needs at all levels of the management team across the business. This programme is suitable for Plant Leaders, Functional Managers, Operations Managers, Supervisors and Team Leaders.



Further information on the Organisational Development model can be found on the Industry Forum website at www.industryforum.co.uk

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