The Role of Manufacturing in Economic Development

BY LUIGI DE BERNARDINI | TUE JUL 21 2015

During the last 20 years, globalization has drastically changed the manufacturing world. No longer bound by geography, many companies moved their production elsewhere solely based on the reduction in labor costs. As a result, more-developed countries lost their manufacturing industry, and with it a significant share of jobs. Today, this trend is slowly reversing, due in part to the increase in the labor costs in many emerging economies, as well as to a revisiting of the factors which originally led to relocation. The role of manufacturing in economic development is becoming key again.

About 15 years ago I worked on the implementation of a client's first production management system. I was forced to use roundabout expressions to avoid using the term MES. The client did not have the slightest idea what it meant. Given that he already had some difficulties managing production processes manually, the idea to entrust the management of production to an IT solution really frightened him. So great was the difficulty to

understand and accept the term MES, that the client coined an interesting acronym: MES = *meglio esserne senza*, or, in English, *better without it*.

Today, times have changed and attitudes in industry are much different. The term MES has become customary to identify the set of solutions used in industrial IT, replicated and implemented in ways that support production management and execution.

> In a recent book, *Make it in America*, Andrew Liveris, chairman and CEO of the Dow Chemical Company, supports with passion the role that manufacturing production plays in the health of an economy. He says that today, more so than during any past period, production is vital and that the manufacturing industry can create jobs, economic health and growth at a level such that the services industry will never be able to do. In essence, he's saying that not all industries are created equal.

Howevever, the current macro-economic scenario is deeply different than it was 15 years ago. Businesses must now strategically pursue a series of changes, both from an organizational productivity point of view as well as

from a technological support point of view. The game is now be played on the basis of agility, responsiveness and innovation, with the fundamental support of technology and people skills. Workers who are prepared and informed will be at the center of the businesses of the future. They will provide the level of flexibility needed to meet the increasing demand for customized products.

It is in this significant mutation that even MES systems themselves are changing with respect to those seen 15 years ago. And this is why MESA introduced the term MOM in the second half of the last decade, embracing in it also the management of processes that regulate and coordinate the operations. The broader spectrum of operation goes beyond the technical execution of production and turns greater attention to organizational aspects.

In addition to this, there is a profound technological transformation that is affecting the industry. This is, in part, a reaction to the needs of users as well as a result of the development of both traditional production elements and organizational production process managed by MES/MOM.

Today, terms like the Internet of Things, Big Data, cloud, mobility and analytics are commonly used, although not always with the correct meaning, to identify the big trends of technological evolution. Given the many misunderstandings surrounding these terms, it is wise to keep the following in mind to help make sense of it all:

- Internet of Things — Things that can communicate their status, needs and problems using smart sensors and that transmit this information over the Internet through wired or wireless networks;
  The manufacturing industry can create jobs, economic health and growth at a level such that the services industry will never be able to do. All industries are not created equal.
- BIg Data — Large volumes of highly variable data types, needing to be processed at high speeds with innovative and economic systems and being capable of producing information to support decision-making;
- Cloud— Centralized and scalable IT structures, made available as needed without the burden to establish and maintain the infrastructure;
- Mobility — Information available anywhere, regardless of the device used; and
- Analytics — Statistical models or mathematical algorithms applied to the available data to create information otherwise not immediately available. This is useful to predict scenarios and support manual decision-making or implement automated decision-making

These trends respond to the organization's need to update production operations and, at the same time, determine the direction in which the technological evolution heads. Each of them represents a technological element integral and sometimes essential for today's MES/MOM systems. These technologies form a unique system—pervasive and flexible— that are able to manage and coordinate the whole manufacturing supply chain efficiently and competitively.

As manufacturing becomes increasingly digital, MES/MOM helps focuses digital support for people in the organization who are increasingly the key element of the manufacturing company.

Luigi De Bernardini is chief executive officer of Autoware, a CSIA certified member based in Vicenza – Italy, and member of MESA EMEA Board member at large at MESA International

Published on Automation World – Jul. 20th 2015