

Going the IT way

Tapan Rayaguru talk about how manufacturing industry would benefit from information technology

Why we need to use IT in manufacturing?

We need to use IT in manufacturing in order to

- Maintain and excel in price competitiveness
- Maintain our competitive advantage
- Meet customer deadlines that are getting shorter
- Aid faster decision making
- Plan product lifecycles
- Drive innovation
- Increase supply chain efficiency.

How is IT helpful?

Information technology tools can convert system data to user-defined formats, providing insight into overall manufacturing process. They also provide visibility of information and process flow; and provide data integrity right across the enterprise. IT is helpful because it enables the following

- Better communication with external customers, since precise and sufficient information is available
- Better communication with internal stakeholders, since precise and sufficient information is available
- Better decision-making due to better communication
- Better alignment of internal information processes
- Provides visibility across the overall manufacturing process
- Better forecasting due to better visibility
- Streamlining of operational processes, which leads to increases

in both efficiency and productivity

- Reducing waste and thereby offering cost advantages
- Increasing supply chain efficiency
- Responsiveness to business uncertainties whether related to material supply, procurements, demand, or labour.

Areas where IT can be utilised: (Current status)

- Networking with the customers, suppliers, and within organisation

IT tools provide greater insight into customer requirements and behaviour. IT tools can generate precise sales forecasts, and thus enable better requirement forecasts to be placed on suppliers. By deploying IT tools, organisations can provide much-needed networking with sub-contractors, suppliers, and customers, thus extending the value chain outside the organisation.

- Automation of various departments and tasks

Any department, which is characterised by a lack of information, cannot work effectively. For example, if customers cannot get a picture of lead times and dispatch dates of their order, it will lead to distrust. It may also cause either unnecessary overtime or under time, either of which lead to reduced profitability or credibility. Thus sales automation functionality provides the required clarity in information related to inventory, manufacturing, and supply chain systems.

Similarly, automation of other departments such as human resource management, purchasing, materials, production lines, and warehousing increases efficiency. Process automation leads to efficiency, reduces cycle time, and improves productivity.

- Increased supply chain efficiency

IT enables customers' collaboration, as accurate and collaborative tools are available for deployment. Customer communication is seamless, and therefore, faster and accurate responses to business changes and uncertainties are possible. IT tools related to procurement are not only aimed for areas of routine and operational improvements, cost reduction or inventory elimination, but also have a major influence on strategy and decision-making.

- Inventory management
- Since IT tools enable better visibility of enterprise and processes, inventory management becomes more efficient. This reduces lead times, improves picking efficiencies, and reduces waste.

- Faster new product launches, reduced planning cycle time

IT tools help in reducing product management cycle times from initial conception to end product release. IT can provide accurate information at the planning stage. It aids in long-term planning. IT heavily reduces new product development and product launch time schedules.

■ Manufacturing management

Since IT tools help make visible and real time information available, they help in flexible planning. IT can be used in reduction of disruptions, and to provide faster responses to changes at the shop floor or outside it, since all processes are controlled from centralised locations. In case of rescheduling, responses would be faster, resulting in improved efficiency in usage of resources resulting in higher productivity.

■ Manufacturing planning

Newer generation of planning and scheduling tools, which consider factors such as resources, materials, vendors, deliverables, and capacity, are also being used. These technologies can be applied during overall process flow and can aid in a variety of activities from short-term plant-floor scheduling to strategic planning of supply chains or even in re-planning, or for evaluating alternative production scenarios. The planning systems perform master-production scheduling, material resources planning, capacity planning, or shop scheduling. These processes use IT for execution.

■ Product quality assurance and control

IT tools help capture complete information about defects and thus help perform proper root cause analysis. Causal analysis is easier to perform, and IT tools prevent product defects from occurring again.

■ Education and training

IT greatly helps in institutionalisation of best practices and further proliferation of acquired knowledge.

■ Managing manufacturing execution

Manufacturing produces various matrices related to efficiency and productivity. These matrices take

care of machine downtime, idling time, energy consumption, and other factors to determine how efficiently resources are being used. This gives feedback on material planning, realistic machine planning, dependent set up, operator capability, and so on after carefully analysing the data.

Future of IT in manufacturing (Large and mid sized)

Manufacturing companies used to deploy non-integral disparate systems – different for finance, HR, inventory management, manufacturing planning, shop floor scheduling, and so on. The problems with these were that these systems

- Were poorly integrated
- Had differing levels of interface
- Were non-aligned to each other
- Lacked centralised control and quality.

Some small and mid sized customers are still using these legacy systems. The newer MRP and ERP systems take a more holistic and integrated view. Using this system has solved some of the problem listed above. But the negative ROI for this system remained a problem. Gradually, manufacturing companies learned to use these ERP systems effectively, and even returns were better. These systems work on the plug-and-play model, so you use and deploy the module you want to use.

These systems work on the concept of lean and flexible manufacturing and incorporate subsystems such as sales order processing, finance, stock control, inventory management, and production planning and scheduling. The issues and probable resolutions while transforming non-integral disparate systems to integrated systems include

■ Either the degree of automation is low, or it is not customised or configurable

■ Whether making a full transformation to new ERP system, or simply enhancing existing IT systems, manufacturers must involve all stakeholders and define the right objectives

■ Some of the people are well versed in existing systems, and feel threatened if you change existing systems. This results in inertia for change.

■ Lack of IT strategy

IT strategy should be part of the overall business strategy. There should be one who is responsible for its definition and implementation. Better to have senior executives in the board whose one of the goals is to have proper implementation of IT. Also, worth mentioning are the 'manufacturing intelligence' applications coming from various vendors. By using devices to investigate and report key machinery characteristics like run rate, and time and duration of stoppage, down time of machine, production usage top management will know what is happening at shop floor. This real-time information helps to increase the overall effectiveness. This information is available for analysis for further improvement. Some of these tools are windows interfacing and easier to plug in various tools and machines. Computer aided manufacturing (CAM) involves use of programming in manufacturing and helps in precision engineering. The trend is to move from disparate systems to integrated systems and from there, to intelligent systems. ■

The author is an AVP Business Development, Globallogic