

US Manufacturing, Materials and Operations- Sharing some History

In the early 70's manufacturing in the US was mostly vertically integrated. This meant making printed circuit boards from scratch, stuffing components on the board, doing testing, and burn in was not uncommon. If the equipment being built required additional items like optics that was also fabricated from raw material to usable sub assemble. Sheet metal was formed from raw stock, and finished in-house. Fabricating bases for analytical equipment was done with castings that where machined and finished in house. Electronic harnesses were also made in-house. The subassemblies would come together for final assemble and testing. There was some outsourcing for certain operations that required special equipment that could not be justified for in-house manufacturing, such as deep hole drilling. Shop Floor Control (SFC) was a major effort to coordinate all the in-house manufacturing activities.

In the 70's Material Requirement Planning (MRP) systems were created in-house and required and extensive IT staff and specialists that operated the computers usually main frames. Materials/Operation people had to be trained to use these systems.

The organization consisted of planners, buyers, production control, purchasing and the appropriate management to control these activities.

A few developments impacted this set up. First outsourcing took place domestically. This released resources such as expensive capital equipment and expensive overhead needed to maintain and run equipment. Domestic Contract Manufacturers had the cost advantage of consolidating material purchases from many firms. They also had the advantage of fuller utilization of equipment. The overhead was less expensive and did not include the higher benefits that were offered by the in house manufacturers.

A few developments made these changes possible, such as canned material requirement planning systems, personal computers, software - Microsoft , the world wide web (internet).

As companies converted from mostly vertical to mostly horizontal organizations, material/operations organizations had to change. The primary task when all manufacturing was done in house production was controlled using work orders authorizing production to gather required materials and processing them into finished product. First came the buyer/planner concept where the planner was also placing purchase orders. The skill set had to change to include UCC- uniform commercial code, contract law, negotiation and review of supplier quality.

Change continues, the globalization of manufacturing has had a very prodigious impact on the material/operations management organization. The need to understand other cultures, logistics, import/export requirements. Once again the skill sets need to be updated and honed to the job opportunities that exist. A lot of concepts have been developed, such as lean, Just in Time (JIT), Six Sigma, Total Quality, Kaizen, Poka Yoke, and others, All of these techniques properly applied increase the organization's productivity.

With some thoughts of my perspective on US manufacturing, I think learning and adapting to change is a lifelong effort. As Benjamin Franklin once said, "Death and taxes" is something that one can count on. I would amend that to include change.

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