Supply chain – Courtesy Logexsoft

Do you really know that the complex manufacturing industries without a proper ERP system, for the purpose of Inventory, Sales, and Accounts reconciliation will close their operations for 5 to 7 days in a month? This means 60 to 84 days in a year!

When we talk about the supply chain, the top of the mind is about the movement of goods. Being a manufacturing ERP domain person, I would think that it is all about

various transactions in software that will capture this movement of goods along with the value.
This involves teams from Sales, Product Design, Planning, Purchasing, Inventory Management, Production, Distribution, and Accounting. Many Supply chain processes will have a disconnect with Accounting. Unless every inventory transaction has a corresponding entry passed in the books of accounts, reflecting in the P&L and Balance sheet with the right value addition, we can not claim the supply chain is complete.

I only recall the famous words of Jack Welch. He said "Enterprise by itself is not complex. Only when the right people are cut from information it is made complex".

Taking a queue from these words of wisdom, one can easily infer that a right information system can mitigate considerable complexity out of the Supply chain.

I would like to take the example of the manufacturing industry's supply chain from a Software perspective.
Every Manufacturing Industry has these pivotal points around which the supply chain revolves.

- Customers
- Suppliers, Subcontractors, and Service providers
- Input Materials, Consumables, Packing materials, Spares, and others
- Output Products, Subassemblies / Intermediates, By-Products, Scrap
- Bill of Materials, Process & standard process cost
- Quality standards and specifications
- Financial bookings and Tax Configurations (COGS-based accounting)

The next complexity is the value addition at all stages. This cost component will decide the profitability, which is the primary purpose of the enterprise.

Customers:

Enquiry and Offer

Customers are the masters of any business. When a customer makes an enquiry for a product, the enterprise must be in a position to respond to them with the offer quickly. This turnaround time depends upon the readiness of the data like:

- Product with specification
- Present stock of the product (can we offer from stock or do we need to produce)
- Bill of Materials (Critical information from Design and R&D team)
- Process and process cost
- The purchase cost of the Input and packing materials materials
- Overheads and profit margins
- Preparation of cost sheet with the above data.
- Sending the offer to the customers back with the probable date of delivery.
- Offer to include all technical and commercial terms with Taxes.

Customer Order to Material Requirement Plan:
Once the enterprise receives the Order from the Customers, the next step is to plan for the material procurement before going for production. At this stage, the following data is required to compile the right quantity of procurement.

- Customer orders – Product-wise delivery dates
- Bill of materials-based Material Requirement Plan (MRP). MRP has to consider:
    - Allocation of Products from the available stock and to arrive at the planned quantity.
    - Calculate the MRP for the Plan quality. (Generation of Auto Purchase Indent)
    - Input and packing materials in stock on hand
    - Pending Purchase orders
    - Stock in Work-in-progress
    - Stock with subcontractors
    - Stock in Transit
    - Stock Under quality stage
    - Safety stock

Based on the above the Purchase Indent is generated for the procurement of fresh Input materials to fulfill the Customer orders.

Suppliers:

Purchase Indent to Input Stock:
In manufacturing industries, the Input materials cost will constitute 50-70% of the product cost. So the Purchasing function is very critical for the bottom line of the enterprise.
So the following transactions are done in a sequence:

- Enquiry to suppliers (registered vendors)
- Receipt of quotation
- Comparative statement
- Release of Purchase orders (Based Price and vendor rating) (Integrated with Purchase Indents)
- In the case of Imported material, this will have additional steps like Shipment, Bonding, and debonding, depending upon the stock policy.
- Receipt of Materials (GRN) (Integrated with Purchase Orders)
- Quality control acceptance (Some of the items can also be offered for statistical QC and test reports are to be generated)
- Move the inventory to Stock
- Purchase returns (to return the rejected materials to the suppliers)

Production and Sub Contracts:

Input stock to Output Product:
Here is where the actual manufacturing process begins. This involves In-house and external production. The Input inventory is moved to the Production as well as the Subcontractor location. The traceability of the inventory is very critical. The following are the transactions that are used by the industry for tracking these material movements:

- Batch Sheet or Route card
- Material Requisition (request for the material from Production to Warehouse)

- Issues (Based on the above request the Input materials are issued to production. This transaction will reduce the inventory in the warehouse and increase the same in the work-in_progress)
- Returnable delivery challan (In case of WIP being moved to the subcontractor's location, this transaction will be used)
- GRN for RDC (this transaction is used to bring back the material from the subcontractor's location back to WIP)
- Production Slip (once the production is fully completed this transaction is created. This will reduce the input WIP inventory as well as update the Warehouse Sub Assy / Intermediate or the output product.
- Products that require a quality check can pass through the QC to capture the data and generate a test report.
- Costing: Considering the materials consumed and adding the process cost the cost of the output product value is automatically updated. This helps the enterprise to arrive at the profit per Invoice.

Quality Control:

Quality control is an important function that sits right in the middle of the supply chain. The following are transactions that will pass through QC. Test reports analysis will indicate the variations in the materials that will help in taking corrective action proactively.

- Goods Receipt note from suppliers (bought out items) – before going to stock
- Goods receipt note from Subcontractors (processed items) – before going to stock
- Production Slip

Packing, Despatch / Distribution:

As the output product is ready, the Sales will confirm with the customers for the commercial clearance and apply for the road permit (if necessary) and arrange for the transport, later instructing the distribution team for necessary packing to keep the Product ready for despatch. The following transactions are created.

- Packing Slip

- Tax Invoice (Integrated with Sale Orders)
- Sale Returns (to receive returned materials by the customers)

COGS based Accounting:

In COGS based accounting the Purchases and all inventories including WIP, Sub Assy/ FG will all be under Assets. Only when the revenues are booked, the corresponding COGM (RM + direct conversion cost) is transfered to the expenditure automatically.

So, *Every inventory movement has to have a corresponding auto-entry in the books of accounts with actual transaction costs in order to get the financial figures in tandem with the supply chain as well as to see the profitability in real-time* for each of the sales transactions. The transactions are as follows:

- Auto Purchase Voucher – Integrated with PO, GRN and Supplier's Invoice
- Auto Sales Voucher – Integrated with Sale Order and Tax Invoice
- Auto COGS JV – Generated after Sales Voucher on Cost of Goods.
- Auto Debit note – Purchase returns
- Auto Credit note – Sales Returns
- Auto JVs for Cost of Goods – Material Issues to Production, Production returns to stock, Stock adjustments, Sale ReturnDirect Production issues.
- Help generating margin per Invoice

The Accounting team has to go through a make-over to understand these accounting methods to facilitate the real-time data to the enterprise. The added advantage of COGS based accounting is this. *The P&L and Balance sheet can be checked at any date of the month without a need to pass any inventory entries.*
These data dynamics will get more complex in the event of the following eventualities.

- Usage of alternate material in the event of a shortage of specific input items.
- Customer orders getting canceled or rescheduled
- Rescheduling of orders due to production breakdowns

Tight integration of these transactions is very crucial to provide the right visibility of the movement of materials in order to take proactive steps to make alternative plans.

Auditing:

Auditors are an important part of this digital transformation. Progressive auditors will think a good ERP system will be a great tool on the growth of the company. So they have come out of their comfort zone to support the auditing on the ERP system. They have to help the companies to migrate to the new ERP system within 3 months of parallel run. Extended parallel run beyond 3 months of accounting software and ERP system will prove detrimental for the success of the ERP system.

GST has been a game-changer for India. This demands lots of transparency in accounting practices. The books of accounts are almost closed on a monthly basis. Also, recently the Govt of India is insisting that enterprises use software with Audit Trail. So it is very important for the Auditors also to advise the manufacturing industries to upgrade to an end-to-end ERP system to meet the business and statutory needs of the enterprise.

Conclusion:

Imagine the plight of the manufacturing industries using XL sheets and Manual documents to handle their complex supply Chain data! They will be in a mess. Speed and accuracy of data are the essences of the complex manufacturing's supply chain. So, a tightly integrated IT system is a must for the professionals in the value chain of the supply chain to discharge their duties without waiting for manual data from individuals.

Enterprise is just as smart as the right IT system that they use! Obviously, this is not an easy job. This is pretty much similar to a higher education (PG) for an individual. A good and well-implemented ERP will help reduce monthly closures within 1 day as against 5-7 days with disconnected systems.