How to explode BOM (and not a bomb) in your organisation?

THE INTRODUCTION:
The following companies approached us to ensure their material consumption costs benchmarked that of the industry:

- India's leading exporter, manufacturer and supplier of auto components - alternator, starter motor to OEM customers.
- Subsidiary of one of the world's leading manufacturers of welding and corrosion protection material with a global outreach in around 25 countries.

THE PROBLEM:
The companies in question extensively assessed whether the proportion of own material consumption to total revenue was greater or less than the industry standards. It was revealed that the material to revenue ratio of the companies in question was higher than that of their peers. However, as a result, their gross margins were also significantly less relative to others.

THE SOLUTION:
The companies sought to investigate the reasons alongside validating the existing bill of materials (BOMs) [1] for the entire product range.
Following are the salient benefits of designing/ creating accurate BOMs:

1. Offer a custom-made shopping list to the manufacturers, with the option to scale it up and down based on the company's budgets.
2. Lay the foundation for effective inventory management; the manufacturers can ensure that the stock is ordered only when required, thereby avoiding high inventory holding costs.
3. Develop effective Material Requirement Planning (MRP) strategies – to enable quick decisions on whether to procure material outside or source it through in-house capacity.

THE RESULTS:
After rigorous deliberations and continuous collaboration with the clients for over one and half months, our Chandra Wadhwa & Co. team implemented a comprehensive approach for BOM validation, which offered operational insights to the management for efficient decision making.

The methodology followed was as under:

- **Sample Selection:** 80/20 rule of the Pareto principle was adopted, and major products (The top 20% constituted 75% of the total revenue) were selected as samples for BOM validation.
- **Shop floor Testing:** From the selected samples, BOMs were tested by observing the production process physically and ensuring that the actual process material consumption aligns with standard consumption as per BOM.
- **Quantitative Reconciliation:** Quantitative reconciliation between standard vs actual material consumption [2].
- **BOM Quantity Variances:** Quantity variances were observed during shop floor testing, and quantitative reconciliation was noted. These variances were extrapolated to ascertain the cost impact on each product.
- **Validation Impact:** Product-wise summaries were prepared to evaluate the impact on cost and quantity. Along with this, a list of redundant/ non-functional BOMs was prepared and eventually marked out for deletion in ERP. A list of non-moving/ slow-moving stock (NMS/ SMS) was mapped against individual BOM items to recalibrate BOMs (if required).

After comprehensive scrutiny of the products/ processes involved, the following observations were highlighted to the Board:

- Process wastages (like scrap, material obsolescence, etc.) were not incorporated in standard BOMs.
- Indirect materials, i.e. consumables (like solder wire, tapes, varnishing oil, etc.), were shown as being fully consumed in standard BOM. However, in actuality, these were consumed in lesser quantities.
- Some BOM items were calculated based on a particular unit of measurement (UOM) but were consumed in another unit of measurement (UOM). Appropriate conversion factors had to be applied in the ERP system for accurate presentation.
- 30-40% of the BOMs were to be recalibrated. Post recalibration, the material procurements were reassessed and curbed effectively. As a result, operational wastages were also capped efficiently. Consequently, the standards were closer to actuals, and material costs were reduced ~ (7-8) % of the total material consumption cost.

The central learning from the assignment was that the focus and priority of the management towards material consumption and bill of materials increased the accountability of the critical stakeholders' departments [3] involved in the BOM designing and updating processes.

FOOTNOTES:

1. ^ *Understanding Bill of Material (BOM) in depth* ***A bill of materials (BOM) is a comprehensive list of parts, items, assemblies, subassemblies, intermediate assemblies, and other materials required to create a product, as well as instructions for gathering and using the materials needed.***

2. ^ ***Actual Material Consumption = Material Opening Stock + Quantity Purchased – Material Closing Stock (against production orders) Standard Material Consumption = Product BOM recipe X FG***

quantity produced.

3. ***^ The key stakeholders' departments involved in BOM designing and updating processes include the following:***
    1. ***Management Information System (MIS) and Cost Accounting***
    2. ***Financial, Planning and Analysis (FP&A)***
    3. ***Research and Development (R&D)***
    4. ***Production, Planning and Control (PPC)***
    5. ***Contracts and Procurement (C&P)***

FREQUENTLY ASKED QUESTIONS:

Q. What is BOM?

A. BOM stands for Bill of Materials. It is a document that lists all the components and materials required to manufacture a product, along with their quantities and specifications.

Q. What is the process of exploding BOM?

A. Exploding BOM refers to the process of breaking down the BOM into its individual components and sub-components to understand the complete manufacturing process. This involves identifying the hierarchy of components and determining the quantities of each component required to manufacture the final product.

Q. Why is exploding BOM important for organisations?

A. Exploding BOM is important for organisations because it helps them:

- Understand the complete manufacturing process and the requirements for each component.
- Identify potential bottlenecks and inefficiencies in the manufacturing process.
- Estimate the cost of manufacturing and pricing the final product.
- Plan for inventory management and procurement of raw materials.
- Improve production planning and scheduling.

Q. What are the challenges in exploding BOM?

A. Some of the challenges in exploding BOM include:

- Complex BOM structures with multiple levels of components and sub-components.
- Incomplete or inaccurate BOM data can lead to incorrect estimates and planning.
- Limited visibility into the manufacturing process, especially for outsourced components or sub-assemblies.
- Difficulty in managing changes and revisions to the BOM.

Q. How can organisations overcome the challenges of exploding BOM?

A. Organizations can overcome the challenges of exploding BOM by:

- Using software tools and systems to manage BOM data and explode BOM structures.
- Ensuring that BOM data is complete and accurate and validating it through regular audits.
- Collaborating with suppliers and partners to gain visibility into the manufacturing process for outsourced components.
- Establishing transparent processes for managing changes and revisions to the BOM.

Q. What are the benefits of exploding BOM for organisations?

A. Exploding BOM can benefit organisations in the following ways:

- Improved visibility into the manufacturing process and better planning and scheduling.
- More accurate cost estimates and pricing of the final product.
- Better inventory management and procurement of raw materials.
- Enhanced quality control and reduced waste.
- Increased efficiency and productivity in the manufacturing process.