



BOM Template for Success

How an Automated, Accurate, and Integrated Bill of Materials (BOM) Solution Improves a Manufacturer's Bottom Line



A photograph of a modern manufacturing plant. The scene is filled with various pieces of industrial machinery, including what appears to be a robotic arm in the background and several large, complex metal components in the foreground. The lighting is bright and even, highlighting the metallic surfaces and the organized layout of the factory floor. The overall impression is one of a high-tech, precision manufacturing environment.

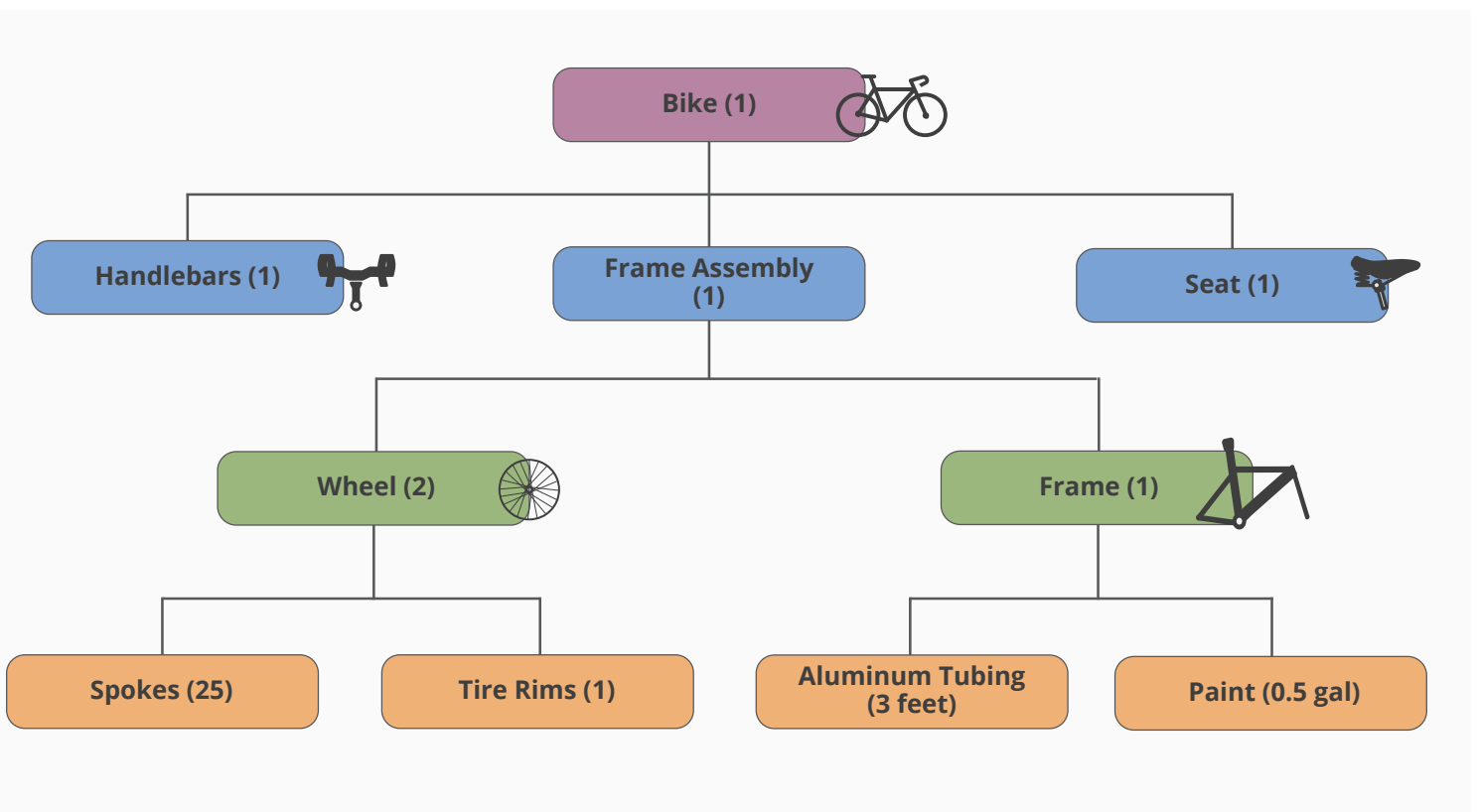
Introduction

The manufacturing world is too complex for disparate business systems. Manual data entry, software that doesn't integrate, data stored in spreadsheets, etc. are no longer sufficient for tracking manufacturing processes if you want to make intelligent real-time decisions.

Enterprise technology for manufacturers has improved dramatically since the 1960s. But one thing hasn't changed – an accurate bill of materials (BOM) remains critical to manufacturers. Equally important is having the right technology to automate and integrate BOMs with your business management solution.

What is a Bill of Materials and Why is It Important?

A bill of materials (BOM), also known as product structures, is a list of the raw materials, sub-assemblies, intermediate assemblies, sub-components, and the associated quantities needed to manufacture a product. The lowest level of BOM includes the components and raw materials a business purchases. The next level includes sub-assemblies or additional components purchased by the company. The final level is the completed assembly of the end product. Depending on your industry, you might also refer to these components as 'ingredients.' The chart illustrates the hierarchy of a BOM for a bicycle.



What Information Does a BOM Contain?

The more complex a business's product and manufacturing processes are, the more information you might see on a BOM. At a minimum, however, a business needs:

Parent Item

The item created from the BOM – in this case, a bike.

Component or Assembly

The part number or description of the item.

Quantity

The quantity of the components required to build the parent item.

Scrap Factor/Yields

The amount of the component item lost during the manufacturing process (i.e., waste). This is necessary to plan the components you'll need because you must account for what's unusable or wasted during the assembly process. The scrap factor might also correlate with the manufacturing process or machine used to produce the sub-assembly.

Routing Operation

Especially for manufacturers involved in longer manufacturing cycles, you can tie the steps in the manufacturing process where they're required. This is critical for a production schedule because it allows you to tie materials to routing steps.

Phantom Flag

For manufactured sub-assemblies, this determines whether the sub-assembly is built independently or with the parent assembly.

A manufacturer might assemble some sub-assemblies for a product and store them in inventory for future use. However, some components only exist as sub-assemblies to build a product and are created only in the assembly – you would never see those sub-assemblies in inventory.

By-Product

Items produced because of manufacturing that aren't the parent assembly. These are not necessary scrap but rather new items or co-products created from the manufacturing components. This affects your knowledge of your stock levels from the manufacturing process.



Uses for an Accurate BOM

As a product moves through the manufacturing process, different employees have different responsibilities related to handling the BOM. Each employee manages the BOM information based on the function they carry out as it relates to the end product.

Here's a summary of how various departments might use the BOM.



Production

In manufacturing, the BOM tells employees which materials are needed for a production order. A BOM also affects your finances, from calculating the cost of an assembly to material movement costs.



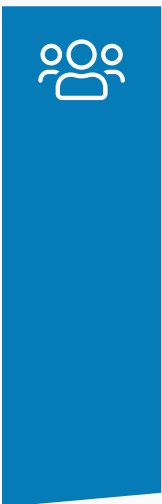
Purchasing

A BOM can answer planning questions, such as what's needed now and what you can buy over time. A BOM also breaks down your material planning from sub-assemblies. In the bicycle example, your purchasing department needs to know how many spokes to purchase for a wheel, that there are two tires per bike, and how many bikes you expect to sell.



Sales

BOMs are equally important for sales when looking at the cost of production and considering things like margins, logistics, and delivery. Most manufacturing BOMs also include packaging materials, such as cartons, paper labels, or bubble wrap, and literature, including instructions.



Services

The manufacturing world was once driven by profit on product sales. Now, it's profiting on products' 'after-sales services.' Warranties, service contracts, and repairs are gradually becoming more profitable revenue streams for manufacturers.

A BOM may create repair kits that are a subset of the original manufacturing BOM. If, for example, you're going to change a gear set or perform other maintenance on the bicycle, your repair kit might be a subset of the original manufacturing BOM.

Without a BOM, you don't know how products were designed, manufactured, and delivered, which makes it difficult to carry out after-sales services. But because BOMs touch many aspects of a business, it's possible for multiple departments to reference, copy, and modify a BOM to suit their needs. This affects accuracy, which leads to the next question: "Why is an accurate BOM important for manufacturers?"

Why is an Accurate BOM Critical for Manufacturers?

In fast-growth organizations, data silos can exist. When purchasing uses a BOM to export data to a Microsoft Excel spreadsheet, accuracy is compromised. Multiple BOMs for the same product means different versions of the truth.

Each manufacturer has unique production processes, and production relies on your BOM. An accurate, well-managed BOM can increase sales revenue through faster product releases and lower product costs. A poorly managed BOM can lead to a higher cost of goods sold or loss of revenue due to many factors, including:

Lost Productivity

Multiple systems of record reconciling data from one system to the next will reduce productivity. If you have the wrong quantities in your BOM, you'll either buy excess material or not enough. Or, if you have the wrong items on the BOM and discover you're missing a vital component, production can grind to a halt.

Data Errors

Errors in the components listed on the BOM will lead to scrap because of excess inventory, or a need to rework the manufactured item.

Product Quality Issues

Inaccurate part information or the incorrect revision of components on the BOM can cause product quality issues or further delay the process.

Longer Time to Market

Without an accurate BOM, it will take longer to manufacture your product, which will lead to customer satisfaction issues when you can't keep your order fulfillment promise.

The Evolution of Enterprise Technology for Manufacturers

Manufacturers want to run lean and adapt quickly to remain competitive, which led to IBM's computer system for managing BOMs in the '60s and, later, spreadsheets. While these systems enabled manufacturers to increase efficiencies, however, they had challenges, including the need for manually sharing data between systems. This meant the systems containing a business's inventory data weren't automatically linked to the systems that produced the BOMs.

Growing businesses still encounter data silos caused by disconnected business management systems. It's often because those businesses build their backends ad hoc, as it's difficult for small companies to predict future IT needs. However, disconnected systems lead to miscommunication, inaccurate materials requirements, production bottlenecks, and gaps in your manufacturing process. Luckily, technology can now solve these challenges.

Integrated BOM and Business Management Software


In the modern, connected world, businesses integrate BOMs directly with their business management solution via a link. Connecting your BOM with an automatic and seamless link to another system is critical, as it prevents discrepancies in BOMs as they move between systems.

For smaller businesses without an integrated business management solution, a BOM may be compiled in a spreadsheet or perhaps a computer-aided design (CAD) application. Once the BOM is moved to the next step of manufacturing, the manual transfer of data may introduce further errors. That's because the engineering BOM is typically a list of the components required to engineer a product, while a manufacturing BOM includes a list of the components required to build a product.

BOMs also require packaging, quality inspection, and identification labels, which aren't part of engineering a product but are necessary to ship the product to customers. Each of these things adds costs to track and requires inventory knowledge.

The shop floor communicating with the product lifecycle management (PLM) environment is another consideration. Nonconformance and product quality must be reported to the engineers, who may be responsible for revising and improving the product. Without a connected feedback loop, product iteration becomes more difficult.

As you can see, a BOM touches many departments, each with their own specific informational requirements, each juncture introducing the potential for errors to be introduced to the BOM. Connecting your systems so there's one BOM leads to more accurate and higher-quality BOM materials.



How Does Enterprise Software for Manufacturers Result in Accurate BOMs?

Enterprise resource planning (ERP) is built on the robust foundation of manufacturing systems that have been developed, improved, expanded, and modernized to integrate other business functions. ERP breaks down data silos by centralizing a business database.

For businesses with paper-based processes, ERP can digitize information. When records are digital, barriers between silos are decreased, and the exchange of standardized information about inventory, customers, and accounting becomes accessible in real time. Eliminating data duplication means there is one version of the truth with BOM.

An integrated system ensures that as a BOM moves through the organization, it's accurate and lacks data entry errors. Each licensed user can access the ERP software, whether it's installed on a PC in your office or deployed in the cloud and accessed through a web browser.



A Single BOM; a Single Version of the Truth with ERP for Manufacturers.

ERP is a type of business management software. ERP enables manufacturers to connect the core functions of their business, including accounting, finance, supply chain management, and BOM creation. With a connected system, manufacturers can seamlessly share information across departments. From employees in production to the owner of the company, ERP software provides enhanced visibility into all aspects of your operation.

Because an ERP system stores all its information in a single database, only one record of data exists, offering a single version of the truth. BOMs, however, require more than a single record, so you need an ERP solution with advanced real-time reporting that allows you to control user rights and offer BOM reporting views that display only the information employees need.

For example, although quantities are essential for a shop floor employee, they may not need to see the BOM costs. The purchasing department might see the entire BOM, whereas accounting might be limited to the financial aspect. To have a single BOM with a single version of the truth, you need an ERP solution that enables you to filter information without manually recreating, duplicating, or otherwise altering the BOM.

For More Information on ERP for Manufacturers.

Integrating manufacturing processes and data in a single ERP system eliminates disconnected spreadsheets, duplicate data entry, costs, and errors and ensures a single version of the truth with the BOM. To learn more about ERP for manufacturers, contact a qualified Vision33 ERP consultant in your area.

About Vision33, IT Professional Services Partner.

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Vision33's SAP solutions provide scalable and integrated ERP technology. With Vision33's help, their customers connect their business processes, from finance and expense reporting to procurement and inventory, to transform their operations and manage their subsidiary operations more efficiently. Vision33's dedicated customer support program, the world-class Vision33 TOTAL Care support program, ensures businesses have the tools they need to leverage their technology investment.



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