Modern Mass Customization – Rule 3: Honor the Order, Abandon the BOM

by Jordan Reynolds

As a follow-up to the post, Free to Choose: Mass Customization for Modern Manufacturers, here is the third rule to live by for modern mass customizers.

Most mainstream Product Lifecycle Management (PLM) systems in the marketplace today are designed with a mass production model in mind. These systems offer sophisticated functionality that allows engineers to formulate Bills of Material (BOMs) and define product structure during design stages. Designs are released and pushed to production systems for manufacturing, but the PLM system remains the single source of truth for end-product design information. This is perfectly appropriate in most cases, considering that most discrete manufacturers today operate under a mass production model. However, the role of the PLM system as a tool for the formulation and management of BOMs is largely at odds with mass customization strategy. Companies that strive to offer highly personalized products should minimize engineering’s involvement in the order fulfillment process, and this includes the formation of BOMs on a per-order basis.

Companies transitioning to a mass customization model should rethink the product lifecycle, rethink the role of the PLM system, and be willing to abandon the status quo. The relevance of the BOM greatly diminishes as a company transitions to a 'to-order' product offering. For mass customizers, a Bill of Materials, or more appropriately, a Bill of Modules, is a transient artifact. It is entirely possible that a given BOM may only be built a single time, and for a single order. Mass customizers should shift their perspective of the BOM from the identity of the product, to the technical details of the order. The identity of the product then becomes the governing logic that permits a range of configuration possibilities.

As the purpose of the BOM changes, so changes the purpose of PLM and the systems that support it. Rather than originating in PLM, BOM details originate with the order itself, ideally using a customer-facing product configuration system. As long as the order and corresponding BOM are compatible with the business rules that govern configurations, these details can be passed on directly to production systems for manufacturing (ERP, MRP, MES) without making a pit stop at PLM. PLM thus transitions from a tool for managing the lifecycle of a BOM, to a tool for managing the lifecycle of modular components that are used by the configurator. Rather than a 'release to manufacturing,' the product lifecycle ends with a 'release to sales,' whereby newly approved product components are added to the product configurator's portfolio. This reduction of engineering efforts from the order fulfillment process is key to reducing design cycle times, reducing operation costs, and enabling a highly efficient method for providing highly customized products.

More Rules for Modern Mass Customizers

Modern Mass Customization – Rule 1: Modularize your People, Processes and Products
Modern Mass Customization – Rule 2: Follow the Rules
Modern Mass Customization – Rule 4: Look Your Customer in the Eyes
Modern Mass Customization – Rule 5: Brace for Change

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