

# Streamlining Order Management in Manufacturing - Overcoming Challenges for Seamless B2B and B2C Customer Experiences

Nilesh D. Kulkarni<sup>1</sup>, Saurav Bansal<sup>2</sup>

<sup>1</sup>Director, Application Architecture, Masterbrand Cabinets Inc.  
Email: [nkulkar\[at\]gmail.com](mailto:nkulkar[at]gmail.com)

<sup>2</sup>Application Architect, Masterbrand Cabinets Inc.  
Email: [Saurav.bansal.kbl\[at\]gmail.com](mailto:Saurav.bansal.kbl[at]gmail.com)

**Abstract:** *This paper presents a framework for designing an order processing platform in the manufacturing industry, particularly for companies with multiple Enterprise Resource Planning (ERP) systems. It highlights the challenges of managing order processes and systems, including ERP integration, in both B2B and B2C contexts. The paper outlines the necessary components for a robust order management system, addressing the complexities of different customer interfaces and order fulfillment methods. It proposes a solution involving an aggregator ERP system to manage interactions across various ERPs, ensuring seamless operations and effective management of complex ERP landscapes. This approach aims to provide a unified customer view and efficient order management across diverse ERP systems.*

**Keywords:** Order Management System, Manufacturing Industry, ERP Integrations, Order Fulfillment, Unified Customer View, Diverse ERP Systems, Complex ERP Landscape, Efficient Order Management

## 1. Introduction

Manufacturing company is an industrial branch which in its operations processes raw materials so that they become finish goods and then sell them to consumers. Heizer et al., explained that manufacturing comes from the word manufacturer which means processing raw materials by hand (manual) or by machine (automatically) to produce something [1].

The Enterprise Resource Planning (ERP) system is an enterprise information system designed to integrate and optimize the business processes and transactions in a corporation. The ERP is an industry - driven concept and systems, and is universally accepted by businesses and organizational industries as a practical solution to achieve an integrated enterprise information system solution [2].

An Order Management System, or OMS for short, is a system that is capable of managing all aspects of an order's lifecycle. For example, how do you see and manage orders that come in from multiple places like a commerce platform, mobile app, store point of sale or online marketplace? How about if you have merchandise in a warehouse, store and/or with drop - ship vendors? What system will your contact center use? How will you manage backorders? What system will process customer payment? An OMS can help with all of these issues [3].

Hendy Setiady in his research discusses web - based ordering and sales information system in this system there are several procedures for selling a product that has been integrated with web or web - based, in the website there are several many options such as catalog pages that contain several products that are ready to sell and there is a payment menu that is used by customer for transaction

processes of the items to be ordered, thus allowing the customer who orders the items to be increased because of this flexible, effective and efficient system [4].

For designing a robust order processing platform in manufacturing organization below criteria should be looked at [3].

- A collaborative platform that can automate myriad business processes.
- One - step document validation and reconciliation.
- Integration with ERP systems and other business applications.
- A web - based workflow that lives outside of the ERP and business systems.
- Support for such global initiatives as shared service centers.
- A process - focused approach and proven implementation methodology.

Distributed order management systems use rule - based procedures to determine how best to fulfill customer orders. The purpose of distributed order management application is to allow retailers and consumer products companies to maximize order fulfillment while balancing two - constraints the customer expects their order to be fulfilled on time and in full and company wishes to meet these order expectations but at the lowest possible cost of order fulfillment.

### a) B2B and B2C

B2B, or business - to - business, is based on the buying and selling of products and services from business to business. B2C, or Business - to - Consumer, is a business transaction activity in which business enterprises sells goods or services to consumers [5]. According to Antony [6] B2B commerce is a business with two business enterprises either

Volume 8 Issue 2, February 2019

[www.ijsr.net](http://www.ijsr.net)

Licensed Under Creative Commons Attribution CC BY

with manufacturers and wholesalers or with wholesalers and retailers. It is mainly related with buying and selling of various products and services using internet or private networks which are shared among various business partners. Companies or enterprises which involve in product design, procurement, production planning, transportation planning, and marketing come under the scope of B2B. As per the article Study Mode [7] B2B market is a more flexible, open, trustworthy, vastly available and scalable business environment. Basic understanding is required for the business activities involved in B2B activities Characteristics of B2B. The fig 1. and fig 2. shows the difference between B2B and B2C flow charts.

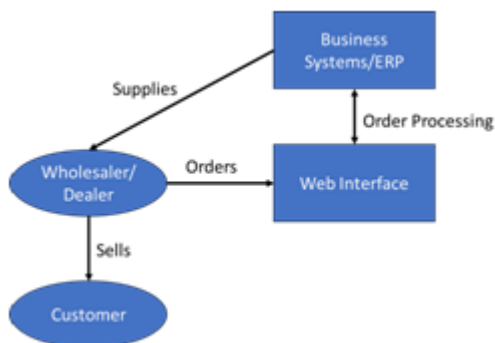


Figure 1: B2B flow

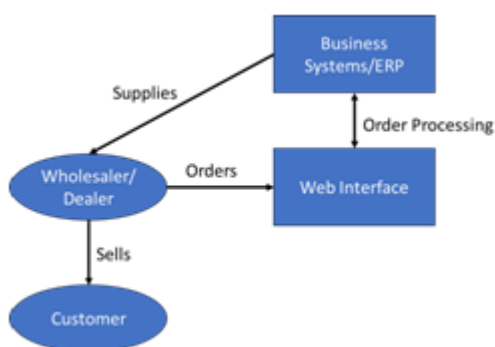


Figure 2: B2C flow

## 2. Problem Statement

In the manufacturing industry, one of the most common challenges lies in the realm of order management processes and the numerous systems associated with them, including ERP systems. These manufacturing companies aspire to provide their end customers, whether B2B or B2C, with a seamless ordering experience by abstracting away the complexities of their internal systems.

To achieve these objectives for B2C customers, several key challenges emerge.

- 1) The user interface provided to B2C customers must be simple and intuitive.
- 2) B2C customers should access a unified interface for ordering or checking order status without being exposed to the intricate ERP data specific to the brand being sold.
- 3) Allowing the ordering of multiple products supplied by various brands on a single platform is essential.

Simultaneously, achieving B2B objectives introduces additional challenges:

- 1) B2B customer ordering interfaces should enable quick and efficient ordering.
- 2) B2B customers should have the capability to store quotes, signifying them as proposals or negotiations, before finalizing an order [8].
- 3) Providing multiple methods for order creation, such as web - based interfaces, order form uploads, and Electronic Data Interchange (EDI), is crucial.
- 4) B2B customers may possess different customer account numbers within each ERP, along with various pricing discounts based on the brand. Ensuring that these discounts are correctly applied based on both the brand and the associated customer account number is essential.

Fig.3. illustrates the complex network of interactions between B2B and B2C ordering platforms and the multiple ERP systems, depicting the intricate challenges faced in this landscape.

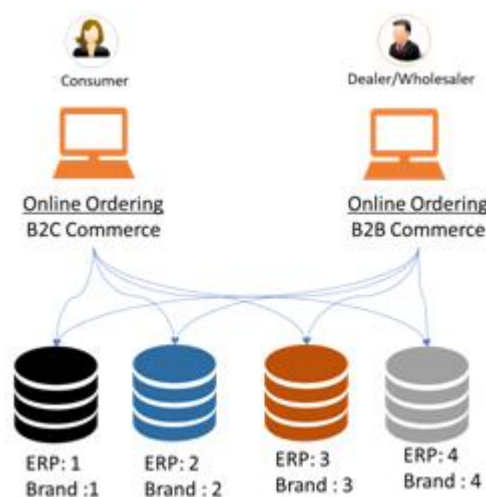


Figure 3: B2B & B2C complex interaction network

## 3. Business Process Components

- Data Inputs: The place (online) where orders are taken, the source of inventory that will be utilized for determining the fulfillment location, if/how returned orders will be processed, and what order fulfillment cost data will be utilized for fulfillment decision making.
- Ordering Processes: The various processes that are involved to accept the order, accept payment, fulfill the order, invoice the order and management of the returns or change orders
- Fulfillment Process: These are the backed ERP based process to plan, produce, label, logistics planning to finally inventory management.
- Finance Process: These processes deal with the receiving the payment in the bank, reconciliation of the payment based on the payment mode, applying any deductions based on the discounts of the B2C customer or credit for the B2B customers and finally refunds management and processing. The fig 4. Shows the various business process components.



Figure 4: Business process components

#### 4. Process dataflow

System design is executed through various methods, including the utilization of data flows and context diagrams. Data flow diagrams, in particular, serve as the initial step in the system design process. The first stage involves creating a flowchart for the ordering process of goods or products, as well as outlining procedures for payment and shipping, with a specific focus on catering to both B2B and B2C customers.

A critical aspect of this design is to isolate and exclude the underlying ERP dependencies and their potential impacts on the process flow. The ordering procedure, as illustrated in fig5. embodies this approach.

- 1) Both B2B (Wholesaler, Retailer, Dealer, Drop Shipper) and B2C customers initiate orders through a dedicated digital ordering platform tailored to their specific needs.
- 2) After the order submission, the digital ordering platform generates a purchase order within the central - facing ERP system, a process facilitated by DI 850.
- 3) The payment received by the central - facing ERP is applied within that ERP, and the corresponding Accounts Receivable (AR) record is generated in the fulfillment ERP system, which is specific to the brand.
- 4) The customer's order within the ERP system is then linked to eCommerce part or product numbers using cross - references. This step minimizes the complexity of upfront product coding in the online digital system.
- 5) Subsequently, a sales order is generated based on the brand, and this sales order is transmitted to the respective ERPs responsible for fulfilling the order.
- 6) The brand - specific ERP systems either forward the order to manufacturing for production planning or send it to the warehouse for load scheduling and shipping.
- 7) The final step involves updating the Available to Promise (ATP) inventory status in the respective ERP systems, with product - specific inventory information being relayed back to the digital web platform to display product availability.
- 8) Shipping information from the respective ERP systems is consolidated and sent back to the central - facing ERP, which then relays this information to the digital front - end platform responsible for showing order statuses and updates.

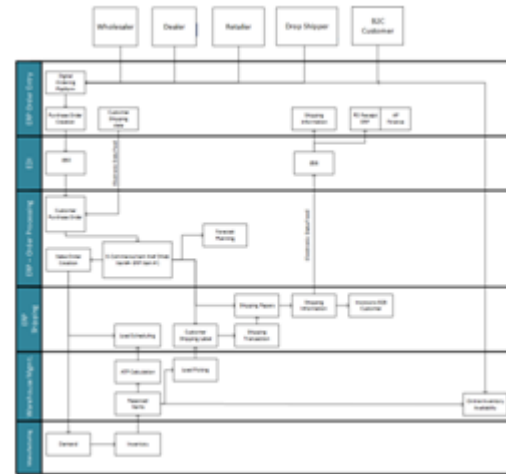


Figure 5: B2B & B2C Process flow

#### 5. Architectural Framework

Fig.6 of the architectural framework illustrates the consolidation of order data inputs within the Digital Ordering Platform and the aggregation of ordering processes. The aggregator ERP takes on the crucial role of orchestrating orders, ensuring that order details such as products, quantities, customer account numbers, and discounts are captured by this central ERP system.

Additionally, the aggregator ERP system handles order modifications and payment processing information. It also receives inventory information from multiple ERPs, storing it at the aggregator ERP level for accessibility within the Digital Ordering Platform. Fulfillment processes, including shipping, handling, labeling, production planning, third - party logistics (3PL), warehousing, and inventory management, are managed independently within individual ERPs. The shipping information is then transmitted to the aggregator ERP to provide order status updates, supporting the ordering processes.

For B2B customers, customer account numbers are maintained within individual brand - specific ERPs but are aggregated within the aggregator ERP system. In some cases, the use of Customer Data Hub (CDH) solutions may be beneficial to prevent customer duplications.

The ultimate source of truth for product, pricing, and promotional or discount information resides at the individual ERP level but is transmitted to the aggregator ERP for display on the digital platform. In the case of B2C customers, a master B2B account is managed within each individual ERP, and all B2C customer orders are associated with this master B2B account number to streamline payment reconciliation processes.



Figure 6: Consolidated architectural approach

## 6. Conclusion

In the manufacturing industry, particularly for companies selling multiple brands as a result of numerous acquisitions, a common issue arises - the presence of multiple Enterprise Resource Planning (ERP) systems. These manufacturing giants serve both B2B and B2C customers under multiple brand identities, leading to the proliferation of duplicate systems, notably ERPs. This situation poses a significant challenge when it comes to providing a unified view of B2B customers and, more importantly, ensuring seamless order management across these multiple ERPs.

To address this challenge, a potential solution is to implement an aggregator ERP system that interfaces directly with the customers. This aggregator ERP takes on the responsibility of managing the intricacies of individual ERPs by interacting with each of them and facilitating data translations.

This paper discusses the proposed approach and technical framework for tackling this issue. The first step involves identifying the existing order management processes, establishing a common process, and pinpointing any variations. Subsequently, the aggregator ERP is designed to handle end - user interactions, including data inputs and ordering processes, while individual ERPs remain responsible for fulfillment and financial processes. This clear separation of process domains ensures seamless operations and effective management of the complex ERP landscape.

## References

- [1] Liu X G, Jin Y and Xi J T, 2006, "Development of a Web - based tele - manufacturing service system for rapid prototyping" *Journal of Manufacturing Technology Management* 17 (3) 303 - 314
- [2] R. Addo - Tenkorang and P. Helo, "Enterprise Resource Planning (ERP): A Review Literature Report", WCECS 2011, World Congress on Engineering and Computer Science 2011 Vol II
- [3] George Kokoris, "What is an OMS and Why Do I Need One?", George Kokoris, *Supply Chain* 24/7, 28 June 2018. [Online]. Available: "https://www.supplychain247.com/article/what\_is\_an\_oms\_and\_why\_do\_i\_need\_one"

- [4] Setiady H, 2013, "Sistem Informasi Pemesanan Dan Penjualan Berbasis Web Pada Dewi Florist", STMIK MDP
- [5] Dr. M. Josan (Dec 2018), "B2B vs. B2C: A Comparative Analysis", E ISSN 2348 -1269
- [6] Antony, D. L. (2003). Implications of B2B marketplace to supply chain development. *The TQM Magazine*.15 (3), 173 - 179
- [7] Study Mode (2007), "B2B vs. B2C Supply Chain. " [Online]. Available: "http://www.studymode.com/essays/B2B - Vs - B2C - Supply - Chain - 104280.html"
- [8] M. Kephart, "What Is Quote - to - Order (Q2O) ?", Oct 2016, https://www.altavi.com/post/what-is-quote-to-order-q2o.