S&OP DESIGN AND IMPLEMENTATION FOR A HIGH-END JEWELRY RETAILER

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ABSTRACT

The prevalence of Sales and Operations Planning (S&OP) is expanding rapidly as an increasing number of companies begin to recognize the far-reaching benefits of a process centered on cross-functional collaboration and ensuring a balance between supply and demand. While the basic framework of S&OP is relatively consistent across many businesses — demand planning, supply planning, preliminary review, and executive review — there is no one-size-fits-all design that will optimize the performance of every product, in every business, and in every industry.

This thesis will explore the failed implementation of S&OP at a specific high-end jewelry retailer, whose unique structure, emphasis on new product introductions, prioritization of aesthetics over operational efficiency, and lack of employee engagement, call for a specialized S&OP process. This dissertation will begin by addressing current best practices in S&OP as well as an overview of the company in scope and the high-end jewelry industry. An analysis will follow that outlines the root causes behind the unsuccessful adoption of S&OP at the retailer in scope and strategies to combat these setbacks. Finally, recommendations and a step-by-step S&OP process tailored to the needs of the retailer will be presented to ensure successful implementation and fruition of the benefits S&OP provides.
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Chapter 1
Introduction

Sales and Operations Planning (S&OP) is becoming increasingly recognized as a vital component in the planning process of any successful supply chain. The ultimate goal of S&OP is to produce an accurate and forward-looking production plan that is approved by upper management. The process enforces collaboration among groups in the end-to-end supply chain — Procurement, Manufacturing, Planning, Marketing, Sales, and Finance — to ensure a balance between commercial and logistics objectives. S&OP is typically made up of monthly meetings where these departments discuss any imbalances in supply and demand and opportunities to mitigate risk. S&OP is most commonly utilized in well-established manufacturers who have access to historical demand data and the power to leverage strategies that will directly benefit the supply chain.

While the overarching concept and process of S&OP may seem simple and fundamental across the industry, successful execution of S&OP continues to be a rarity; it is estimated that only eleven percent of companies have successfully implemented a cohesive S&OP process (Cecere). Furthermore, little research has been conducted regarding best S&OP practices in retailers whose business is largely made up of new products with no demand histories. There is also added complexity in the S&OP process when the aesthetic appeal of products and brand differentiation are prioritized over factors that promote a lean supply chain.

This thesis serves as a case study for a specific high-end jewelry company whose large portfolio of new products, strong emphasis on the artistic appeal of its jewelry, complex structure, and lack of employee resonance, have made implementation of S&OP a challenging endeavor. The first section of this dissertation will serve as an overview of current S&OP best practices, pertinence of the process to the
industry, and the challenges the retailer in scope faces. An analysis will then be conducted on the current S&OP process of the retailer, the reasons for its unsuccessful implementation, and strategies to mitigate these barriers. Finally, a proposal will be presented that includes a recommended step-by-step S&OP process, performance metrics, and plan for education tailored to the needs of the retailer.
Chapter 2

Background

Sales and Operations Planning (S&OP) is becoming increasingly prevalent in the modern supply chain industry. The process calls for collaboration between all departments that touch a product or service to ensure all functions are on the same wavelength when forecasting supply and demand. The primary goal of S&OP is to create a single production plan through a series of meetings that typically include Procurement, Manufacturing, Planning, Marketing, Sales, and Finance. During these meetings, participants discuss strategies to balance supply and demand by adjusting available capacity. The cross-functional and collaborative environment that S&OP creates breaks down silos, allowing for enhanced transparency and an increased ability to produce an optimal production plan that aligns with overarching business goals.

The S&OP process is encompassed of a series of meetings and/or working sessions where participants discuss and attempt to resolve potential issues associated with inventory, production capabilities, supply, customer service, capacity, and distribution in a twelve to sixteen-month planning horizon (“Successful Sales and Operations Planning”). The transparency that results from the integration of functions across the supply chain is the main driver of S&OP’s value. For example, rather than finding out that there are supply and capacity constraints after implementing a promotion for a specific product, a successful S&OP process encourages communication that allows both the upstream and downstream supply chain to align on one forecast and set of objectives in advance. Open lines of communication and a series of monthly meetings allow Procurement and Manufacturing to alert Marketing of any projected supply or capacity shortages and advise when a promotion cannot be supported. Similarly, Sales or Planning can alert Procurement and Manufacturing of future spikes in demand, so the necessary capacity
and supply of materials can be prepared ahead of time. Furthermore, Finance would be able to determine if there are enough funds to support the plan at hand. This type of collaboration and future-oriented mindset promotes a proactive rather than reactive approach, which brings much benefit to the supply chain. Thomas F. Wallace, Distinguished Fellow at the Ohio State University’s Center for Excellence in Manufacturing Management, states in his book, \textit{Sales & Operations Planning – The How-To Handbook}, “S&OP links the company’s Strategic Plans and Business Plan to its detailed processes….Used properly, S&OP enables the company’s managers to view the business holistically and gives them a window into the future” (Wallace, \textit{The How-To Handbook 7}).

A successful S&OP process has been known to enhance performance dramatically while reducing operating costs. In a study conducted by The Hackett Group in 2013, companies who have implemented an S&OP process saw a seventy percent increase in forecast accuracy, a fifty-four percent increase in complete order fill rates, as well as a fifty-two percent increase in inventory turnover. Other benefits include reduced material costs, better capacity utilization, increased promotions effectiveness, as well as better-supported new product launches (Prokopets).


While there are many variations of the S&OP process, many follow a common overarching framework that typically includes demand planning, supply planning, an integrated working session to discuss potential imbalances in supply and demand, and finally an Executive S&OP Meeting. The process outlined below is a brief summary of what Tom Wallace conveys as best practices in his book. Wallace has extensive experience successfully implementing S&OP in a variety of companies and is highly regarded in the industry. Best practices established by Voluntary Interindustry Commerce Solutions (VICS) are also incorporated below.
2.1.1. Step 1 – Data Gathering

The first step in a successful S&OP process is to gather data on the previous month’s actual versus projected sales, inventories, and production. Most companies already construct reports to share this information internally, and it is typically available for review at the end of each month. Previous months’ data should be included in these reports as well in order to easily identify trends and opportunities for improvement. This data should be gathered and reported at a product mix or product family level, as forecasts for individual SKUs add too much complexity (Wallace, *The How-To Handbook* 58-59).

<table>
<thead>
<tr>
<th>Process</th>
<th>Deliverable(s)</th>
<th>Parties Involved</th>
</tr>
</thead>
</table>
| • Update actuals vs. forecasted reports with inventory, sales, customer service, and production information  
• Verify that previous production plan is on track | • Comprehensive actual vs. projected report including previous months’ data | • Information Systems |


2.1.2. Step 2 – Demand Planning

The demand planning stage calls for the creation of a sales forecast for the next fifteen+ months to be established in the first several days of each new month. These projections are based on statistical forecasts that take into consideration the history of demand or factors such as new product launches, new customers, economic conditions, etc. Any assumptions made should be documented to provide a justification for the numbers established, which allows the forecast to be easily challenged or supported as it moves through the different layers of the S&OP process. New Product Development should be actively
engaged, as they will serve as a valuable resource in establishing accurate forecasts when there are no previous histories of demand. Upper management should also review the forecast at this stage to identify any red flags early on. Other persons Wallace recommends become involved in this process include managers in Demand Planning, Sales, Supply Chain, Accounting, and Customer Service. A formal meeting is not necessary, but is usually conducted in larger companies (Wallace, *The How-To Handbook* 60-64).

### Table 2 - Demand Planning

<table>
<thead>
<tr>
<th>Process</th>
<th>Deliverable(s)</th>
<th>Parties Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Alter sales forecast with new products, new customers, economic conditions, promotion plans, price changes, etc. in mind</td>
<td>- Ideally a 15+ month sales forecast&lt;br&gt;- Documented assumptions and justifications for projections</td>
<td>- Demand Manager&lt;br&gt;- Product Manager&lt;br&gt;- Forecast Analyst&lt;br&gt;- Sales Manager&lt;br&gt;- Salesperson&lt;br&gt;- S&amp;OP Process Owner&lt;br&gt;- Customer Service Manager&lt;br&gt;- Sales Administration Manager&lt;br&gt;- Accounting Manager&lt;br&gt;- New Products Coordinator&lt;br&gt;- Supply Chain Manager</td>
</tr>
<tr>
<td>- Analyze previous forecast errors and make necessary adjustments to current forecast</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


#### 2.1.3 Step 3 – Supply Planning

The primary focus of the Supply Planning phase is creating an adjusted operations plan based on changes in projected sales or inventories. A variation of a Rough-Cut-Capacity plan and a list of projected issues associated with balancing supply and demand are outputs of this step. Factors such as new products, capacity of suppliers, and financial implications should be considered. Similar to the Demand
Planning phase, some companies choose to have a formal meeting where managers in Accounting, Purchasing, New Product Development, Distribution, Materials, and Manufacturing are involved. Any decisions that cannot be resolved or require approval from upper management should be condensed and passed on to the next step, the Pre-S&OP Meeting (Wallace, *The How-To Handbook* 64-65).

<table>
<thead>
<tr>
<th>Table 3 - Supply Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process</strong></td>
</tr>
</tbody>
</table>
| • Create an adjusted operations plan based on the sales plan; take into consideration new products, the capacity of suppliers, inventory, transportation resources, financial resources, etc. | • Rough-Cut-Capacity plan or operations plan based on complexity of production  
• Projected imbalances in supply and demand | • Plant Manger  
• Accounting Manager  
• Master Scheduler  
• Production Control Manager  
• Purchasing Manager  
• S&OP Process Owner  
• Materials Manager  
• New Products Coordinator  
• Distribution Manager |


### 2.1.4. Step 4 – The Pre-S&OP Meeting

The Pre-S&OP Meeting serves as the last filter to resolve imbalances in supply and demand before any outstanding problems make their way to the Executive S&OP Meeting. Ideally, a set of recommendations and potential strategies to combat issues that arise – such as adding an additional production line, calling for more shifts, etc. – should be established in this meeting in order to facilitate efficient discussion and decision-making at the executive level. Participants at this meeting must approve or alter the sales plan or operations plan created for each product family in previous steps, taking potential inconsistencies in supply and demand into consideration. If an issue is identified between supply and demand for a specific product family, either the sales plan or operations plan must be adjusted. If a single
solution cannot be agreed upon, several potential courses of action should be brainstormed with sufficient detail for upper management to make informed decisions in the proceeding meeting. However, as many issues as possible should be resolved at this meeting, so the executive meeting is comprised of less deliberating and more approving of action plans. A check should also be conducted on the forecasted financial performance of the company based on the plans to ensure alignment with overall business goals. Finally, an agenda for the Executive S&OP Meeting should be established. Usually all parties involved in the previous Demand Planning and Supply Planning Meetings are present (Wallace, The How-To Handbook 65-67).

Table 4 - Pre-S&OP Meeting

<table>
<thead>
<tr>
<th>Process</th>
<th>Deliverable(s)</th>
<th>Parties Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Approve/disapprove sales forecast and operations forecast for each product family</td>
<td>• Final sales and operations plan</td>
<td>• Demand Manager</td>
</tr>
<tr>
<td>• Discuss potential solutions to imbalances in supply and demand</td>
<td>• Potential solutions to outstanding supply and demand imbalances</td>
<td>• Forecast Analyst</td>
</tr>
<tr>
<td>• Ensure plans support business KPI’s</td>
<td>• Agenda for Executive S&amp;OP Meeting</td>
<td>• Plant Manager</td>
</tr>
<tr>
<td>• Ensure plans align with overarching business goals and financial plans</td>
<td></td>
<td>• Controller</td>
</tr>
</tbody>
</table>


2.1.5. Step 5 – Executive S&OP Meeting

Ideally, the final phase in the S&OP process should not be too time consuming, as the series of meetings leading up the Executive S&OP Meeting have legitimized the sales and operations plans,
eliminated the majority of potential roadblocks, and provided information and proposed resolution plans on any outstanding decisions. Attendees should address and resolve remaining issues, accept or amend the recommendations generated in previous meetings, and approve any necessary expenditures in order to balance supply and demand. Similar to previous steps, decisions should be made with customer service performance, new product launches, etc. in mind. Before finalizing the sales and operations plans, participants should ensure the plans align with the overarching Business Plan and make any necessary adjustments to meet these objectives. In general, the Vice Presidents of Marketing, Sales, Operations, Product Development, Finance, Logistics, and Human Resources should attend, along with the Chief Operating Officer. At the end of the meeting, time should be dedicated to reflect on the entire S&OP process and offer suggestions for improvement moving forward (Wallace, *The How-To Handbook* 68-69).

**Table 5 - Executive S&OP Meeting**

<table>
<thead>
<tr>
<th>Process</th>
<th>Deliverable(s)</th>
<th>Parties Involved</th>
</tr>
</thead>
</table>
| • Review spreadsheets with updated sales, production, customer service level, and inventory data | • Sales and operations plans with balanced supply and demand  
• Solutions to outstanding issues  
• Plans for continuous S&OP process improvement | • President (COO)  
• VP’s of:  
  o Sales  
  o Marketing  
  o Operations  
  o Product Development  
  o Finance  
  o Logistics  
  o Human Resources  
• S&OP Process Owner |
| • Address remaining issues regarding inadequate supply | • Approve/disapprove suggested solutions  
• Approve necessary expenditures  
• Ensure plan aligns with overarching Business Plan | |


The S&OP process owner should be present at each stage to facilitate discussion and ensure all action items are met. Wallace also emphasizes the importance of examining the current S&OP process and identifying any opportunities for improvement. Adequate records of all decisions made should be
kept in order to promote retroactive reviews on effective and ineffective strategies. Continuous upper management support and engagement is also vital in order to establish the necessity of S&OP. Refer to Figure 1 for an overview of Tom Wallace’s S&OP Process.

Figure 1 - Tom Wallace's S&OP Process

![The 5-Step Executive S&OP Process](image)


2.2. High-End Jewelry Industry Overview

Beginning in 2014, the high-end jewelry industry has experienced a steady decline in performance. Over eight hundred jewelry retailers closed in the United States and Canada from 2014 to 2015, representing a three percent decrease overall. Although the number of jewelry retailers entering the
market continues to increase rapidly, the number of closures is severely outpacing the number of entries. The declining market is most likely attributed to retiring baby boomers as well as this generations’ lack of technological aptitude (Graff). Online shopping continues to increase exponentially and baby boomers, who had been a large consumer of fine jewelry in the past, are not following suit in the transition of brick-and-mortar to click-and-mortar retail.

Economic trends and evolving consumer tastes have also played a factor in the shrinking fine jewelry industry. In addition to a decrease in disposable income following the 2008 recession, the Census has determined that the median earning for young adults ages 18-34 are at an all-time low, which may explain a decline in gift and engagement ring purchases. Millennials are also placing more emphasis on sentimental value as opposed to the economic prestige of products, and are increasingly giving family heirlooms as engagement rings instead of turning to expensive jewelry. Young adults are also more apt to spend their money on technology and travel rather than luxury jewelry (Shah).

Fortunately, for the company in scope, branded high-end jewelry is projected to increase in popularity. According to a report conducted by McKinsey & Company in 2014, branded jewelry makes up only twenty percent of the fine jewelry market at present, but is projected to make up thirty to forty percent of the market by 2020. Additionally, many women are no longer waiting to receive expensive pieces as gifts during Valentine’s Day, the holiday season, and anniversaries, but are becoming increasingly inclined to purchase gifts for themselves throughout the year (Sherman). This shift in consumer behavior may influence the already volatile demand of the industry and initiate planning and production changes in jewelry manufacturers.

The high-end jeweler in scope faces competition from other branded, fine jewelry retailers such as Tiffany & Co. and Kering Hollan N.V. While these retailers typically rely on their iconic, classic pieces, Tiffany & Co. has recently been placing more emphasis on new product development. After experiencing a twelve percent decrease in stock prices in 2014, Tiffany launched several new lines of high-end trendy jewelry that helped boost sales significantly in 2015 (Rupp). Tiffany’s focus towards
new, fashionable pieces may be a prelude to an industry shift away from previously timeless products to innovative, trendy designs.

2.3. Overview of Business in Scope

The subject of this thesis is a high-end jewelry company that was founded by two American designers in 1980. The privately held company has seen great success over the years, and its luxury pieces can be found in most major high-end retailers in the United States, such as Saks Fifth Avenue, Bloomingdale’s, and Nordstrom. In addition to providing its merchandise to retailers, the company has also established forty of its own retail stores across the country and has plans to increase this number rapidly, as unit sales increased by thirty percent from 2014 to 2015. The retailer prides itself in its unique and aesthetically complex jewelry designs. They have also seen a rapid increase in traffic to its e-commerce site. Their current product portfolio is made up of approximately 2,700 styles and includes bracelets, necklaces, earrings, watches, and rings that are typically made out of silver, gold, diamonds, gemstones, leather, and various metals. The retail price of their products range from several hundred to several thousand dollars each.

2.3.1. Planning and Production

Each piece of jewelry is manufactured in one of three ways: (1) Approximately seventy to eighty percent of pieces are purchased as finished product from third-party vendors who are responsible for both procuring materials and assembling the product. In some cases, the company will direct the vendors to use specific suppliers. (2) The company buys components and formulates kits to be passed off to external manufacturers for assembly. This method is utilized for twenty to thirty percent of pieces. (3) All remaining products are produced through a hybrid process where the company controls one commodity,
such as rubies or diamonds, and then sends these components to manufacturers for final assembly. The company also has one small internal shop where they create only the most complex and precious pieces themselves.

The high-end jewelry company’s current product portfolio is divided into three categories – Core, New, and Foundation – based on style and order volume. Core products make up fifty percent of their product portfolio and represent about 700 relatively static styles. These pieces are produced through a Make-to-Forecast process with designated delivery dates established upon order receipt. The company currently plans for these products on a continuous basis. New assortments expected to sell at high volumes make up thirty-five percent of their portfolio. These products are Made-to-Order, take twelve months on average to produce, and are promised for delivery within two days after a customer places an order. The final classification is known as Foundation assortments, which represents new products sold at lower volumes. These products take anywhere from six to sixteen weeks to produce with a ten-week delivery window.

The combination of lengthy lead times and a planning schedule influenced by the seasonality of the industry makes accurate forecasting and on-time delivery a challenging endeavor. As is customary in the high-end jewelry industry, a large portion of revenue is obtained through the “March Market,” where vendors sell their pieces to department stores and other retailers at tradeshows. The company in scope brings samples of New pieces to advertise at the tradeshows, but these samples are merely prototypes; plans for mass production of these samples are usually not established at this point in time. As a result, the retailer will often accept orders of 1,000+ for a particular piece without knowing with certainty if production can be sufficiently and efficiently supported. Furthermore, the high-end jeweler will often begin ordering components for new designs prior to March, but customers will often make special requests for alterations requiring different stones and materials at tradeshows, which results in obsolete inventory. “March Market” orders are expected to be fulfilled in five months, in time for the holiday season; however, delivery and production are often delayed and costly due to last-minute planning,
unexpected alterations, and expedited shipments. In addition to the “March Market,” the company will receive orders in June for New products with a promised September delivery, and they will also accept orders in September that are expected to be filled by the following March. These orders are also very difficult to forecast, as both the styles and order quantities are unknown.

Table 6 – Timing of Major Markets

<table>
<thead>
<tr>
<th>Actions/Expectations of Customers</th>
<th>March Market</th>
<th>Vegas Market</th>
<th>September Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order Placed</td>
<td>March</td>
<td>June</td>
<td>September</td>
</tr>
<tr>
<td>Expected Delivery</td>
<td>July - September</td>
<td>September – October or QI following year</td>
<td>QI following year</td>
</tr>
</tbody>
</table>

Furthermore, the focus on the aesthetic appeal of the products adds increased complexity to their end-to-end supply chain. One of the primary drivers of the company’s overall strategy is the stringent brand identity and assortment planning process. The owners, who also serve as the main jewelry designers, are very particular about the artistry of their pieces and will often go to great measures to ensure the overall designs of the jewelry meet their standards. This mindset often entails changing the design of a product even after precious stones and metals have been ordered. Obsolete inventory, long lead times, and late deliveries are sacrifices often made to ensure that brand identity is maintained.

2.3.2. Structure

This company has made major improvement to its structure over the past ten years. One of the most notable enhancements was their implementation of distinct functions with assigned responsibilities. The company had previously operated without specific roles; anyone within their group had the ability to address any task or inquiry regardless of nature. Production would simply produce as orders were
received. Furthermore, products were not broken up into product families (otherwise known as assortments), and as a result, accurate planning was almost an impossible task. With no working sales plan, legitimate production plans could not be produced, which led to inefficient inventory and delivery practices. As a result, there were no meaningful records that could be utilized as a foundation for future production and sales planning. The company was essentially trapped in a cycle of disorganization and inaccuracies that made creating effective sales and operations plans extremely difficult.

2.3.3. Current S&OP Process

Today the high-end jeweler has twelve groups, including Sales, Merchandising, Marketing, Advertising, New Product Development, Production, Finance, Planning, Sourcing, Procurement, Operations, and Engineering. Products are categorized into different assortments by Merchandizing and planned for accordingly. Although the newfound division of labor increased efficiency, there is little to no collaboration, and each group operates in a silo. Several years ago, the company attempted to combat this issue and hired a consulting firm to implement an S&OP process to encourage cross-functionality and transparency; however, only the Demand Planning and Production teams seemed to grasp the concept. When a new Chief Operating Officer, who also did not comprehend the value behind S&OP, entered the company, the new process’ lack of success only escalated.

To this day, the twelve departments continue to operate in silos and there is no actively practiced, formal S&OP process. The current process is as follows: (1) Merchandising classifies each assortment as New, Core, or Foundation and establishes exit plans for retired merchandise. Marketing and Sales also develop a six-month advertising calendar. (2) Sales develops a six-month sales plan for Old and New assortments. This plan is typically altered four times per year. (3) Production creates a Demand Plan based on inventory levels for Core products and manages the production of orders for New and Foundation pieces as they come in. (4) Production compares the demand plan against the capacity plan
and establishes a production plan. Although this process loosely mirrors Tom Wallace’s framework, the essential pre-meetings, cross-functional discussions, and working sessions leading up to the final Executive S&OP Meeting do not occur. Each department essentially operates as its own entity and simply passes on its deliverable to the next group. There is no formalized calendar, no pre-established meeting agendas, and no discussion regarding strategies to mitigate the risk of future imbalances in supply and demand, thus promoting a reactive rather than proactive mindset. Their current employees also lack education on the vitality of S&OP, and upper management support of the process and drive for continuous improvement can be improved. See Figure 2 for an overview of the current process.

Figure 2 - Current S&OP Process of Retailer in Scope

1. Merchandising classifies products into three categories (Core, New, and Foundation) and establishes exit plans for old assortments
   - Sales and Marketing establishes marketing/advertising calendar

2. Sales formulates twelve-month fiscal sales plan
   - Plan is adjusted four times per year based on current performance and history

3. Planning creates a Demand Plan based on inventory levels for Core products
   - Planning manages orders for New and Foundation products as they come in

4. Production compares Capacity Plan against Demand Plan and formulates Production Plan

2.3.4. Not a Typical Retailer

While the company in scope considers itself a retailer, the extent of its business is technically three-fold. In addition to selling jewelry in its own retail and online stores, the company takes on the role
of a manufacturer by producing some of its pieces internally as well as engaging in the production process of its external manufacturers. Furthermore, the company can be considered a wholesaler, as a large part of its business is based on its sales to large department stores such as Bloomingdales and Saks Fifth Avenue. Table 1, below, summarizes the high-end jewelry company’s current roles in comparison to a well-known manufacturer and wholesaler to illustrate its three roles.

### Table 7 - Wholesaler and Manufacturer Comparison

<table>
<thead>
<tr>
<th>Role</th>
<th>High-End Jewelry “Retailer” in Scope</th>
<th>Procter &amp; Gamble (Manufacturer)</th>
<th>McLane Company (Wholesaler)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>• Utilizes internal and external manufacturing to produce its own products</td>
<td>• Utilizes internal and external manufacturing to produce its own products</td>
<td>• Does not manufacture its own products</td>
</tr>
<tr>
<td>Sourcing</td>
<td>• Buys raw components from suppliers, directs vendors to use specific suppliers, or gives vendor entire sourcing responsibility</td>
<td>• Buys raw components from suppliers, directs vendors to use specific suppliers, or gives vendor entire sourcing responsibility</td>
<td>• Buys finished goods from manufacturers; no engagement in raw component sourcing unless raw components are considered finished goods</td>
</tr>
</tbody>
</table>
| Selling       | • Sells directly to consumers using physical and online stores  
• Sells products to retailers in large quantities | • Sells products to retailers in moderate quantities | • Sells products to retailers in large quantities |

### 2.3.5. Implications of Current S&OP Process

This high-end jewelry company is subject to many common supply chain issues because of their inefficient and informal S&OP processes. Inventory continues to be the main driver behind many of their setbacks; due to last-minute design alterations and volatile demand, millions of dollars are lost in excess
components and finished goods that are simply donated if they cannot be melted and recycled. Some finished products are sold to outlet stores at a discount, but this method is typically utilized as a last resort. Additionally, there is not sufficient space to store large quantities of inventory, and it is difficult to plan and build safety stock for New products with unknown demand and last-minute alterations.

Capacity also continues to constrain production, especially for Make-to-Order items. Because demand is unpredictable for New products, it is close to impossible to create a Rough-Cut-Capacity plan for New pieces, and there are no guarantees that their suppliers and manufacturers will be able to support every order that comes in, especially with aggressive delivery windows. These problems are only escalating as the high-end jeweler continues to grow. In 2014, the company experienced forty percent more sales than originally anticipated and was unable to fulfill the increase in demand due to its vendors’ inability to support the unanticipated influx of orders. Late deliveries and inefficient manufacturing and sourcing practices are additional obstacles the retailer faces. Had an effective S&OP process been implemented and catered to the company’s needs years ago, these issues may not have been as severe.

2.4. Gap in Research

While best practices in S&OP are fairly standard and widespread, there is a lack of research concerning the implementation of S&OP in a company with a complex product portfolio and business model. The retailer in scope has three distinct product classifications, two of which consist of new assortments. When products with no demand histories influence fifty percent of a company’s business, there is no standard practice in formulating an accurate demand plan. The widely accepted S&OP framework, which only calls for consideration of potential new product launches, is not optimized for forecasting a portfolio heavily influenced by new product introductions, especially when demand for those products is affected by seasonality and consumer taste. Additionally, there are no S&OP best practices in place for industries whose focus on aesthetic appeal leads to leniency in last-minute product
alterations. Furthermore, the high-end jewelry company in scope is unique, as it wears three hats: a manufacturer, retailer, and wholesaler. S&OP has not been extensively explored in this type of hybrid environment, and may call for an approach that actively involves external partners in the supply chain. Finally, the retailer in scope is facing challenges typical to many companies implementing S&OP: difficulty managing inventory, properly allocating orders among suppliers, and trouble obtaining support from employees.

Ideally, by exploring these challenges and the successful strategies of other companies, an optimized S&OP process can be created and tailored to this high-end jewelry company’s specific needs as a means of improving their overall performance.
Chapter 3

Analysis of Retailer’s Present Challenges in Relation to S&OP

It is not difficult to determine the ineffectiveness of the high-end jewelry retailer's present S&OP process and the excess inventory, suboptimal customer service, and lack of engagement associated with their current practices; however, identifying the root causes that have prompted such implications and developing solutions to decrease the severity of these impacts is a more challenging endeavor. This section serves as an in-depth analysis of the jeweler’s current business challenges in relation to S&OP; strategies and best practices outlined in this section will be incorporated into a customized S&OP process that will aim to enhance performance and prevent similar issues in the future.

3.1. S&OP and New Products

The importance of taking into consideration new product launches in S&OP is common knowledge. In a “Best of the Best S&OP” conference, Douglas Kent, former SVP at Avnet, outlines, “…S&OP and New Product Planning activities are inextricably linked. So much so, that you cannot have one without the other” (Kerivan). While the pertinence of considering new product introductions is obvious, the word “consider” has not been explicitly defined in the context of designing an effective S&OP process. What specific strategies and process modifications can be implemented to mitigate the risks associated with the unpredictable demand of new products at the retailer in scope?
3.1.1. A Split S&OP Process

As stated earlier, the business in scope divides its jewelry into three classifications, two of which – New and Foundation – are encompassed entirely of new products and represent fifty percent of the product portfolio. A myriad of new products translates into a need to continuously source and procure new materials from new suppliers, establish new manufacturing processes and capabilities, and develop new strategies to adequately forecast demand. Conversely, the remaining fifty percent, the Core category, does not typically see new assortments, which means planning, sourcing, and manufacturing practices associated with these pieces are established and fairly static. Because a large portion of the retailer’s product portfolio is dedicated to new products that require additional resources and complexity, it may be beneficial to develop an S&OP process made up of two separate channels: one optimized for Core pieces, and the other for New and Foundation pieces.

Process Diagnostics and Control (PDC), a company that assists in process improvement and control equipment for semiconductor manufacturing, adopted an S&OP process that took this type of approach and was met with great success. Forty percent of PDC’s product portfolio is made up of new products, which require extra attention due to factors such as planning and distribution challenges, increased financial risk, and phasing out retired products. Additionally, Product Management is more heavily engaged in new product introductions than sustaining products, and upper management typically becomes involved earlier in the process for new products to ensure strategic alignment with business goals.

Because of the added complexities associated with new products, PDC’s current S&OP process consists of two concurrent channels; one establishes a production plan for new products, and the other for sustaining products. Once the plans are established, the two branches of the S&OP process converge for the equivalent of a Supply Planning Meeting to determine if sufficient capacity exists to support the aggregation of the two plans. A finalized combined production plan is the deliverable of this process, and
after implementing this approach, PDC saw a fifteen to twenty percent decrease in manufacturing cycle times for sustaining products, over a twenty percent decrease in manufacturing cycle times for new products, and over a fifty percent reduction in excess and obsolete inventory (Wallace, *Beyond the Basics* 51-57). Refer to Figure 3 for an overview of PDC’s S&OP approach.

**Figure 3 - PDC’s Split S&OP Process**


The high-end jewelry retailer in scope may experience similar success if they diversify their S&OP process by new and existing products. Developing manufacturing processes, identifying suppliers, and formulating accurate forecasts are undoubtedly very different and more time-consuming processes for
New and Foundation pieces than Core pieces. Unlike Core products, the retailer will often advertise its New pieces at tradeshows and commit to orders without having developed concrete production plans. Furthermore, statistical analyses cannot be utilized to establish forecasts for New products, as there are no previous demand histories, and the changing tastes of consumers and retailers are close to unpredictable. Ultimately, it may behoove the retailer to adopt a strategy that separates the demand and supply planning processes within S&OP for new and sustaining products and periodically aggregates the plans to ensure alignment with sales goals and capacity constraints. This approach may provide for a more efficient and accurate S&OP process, as each channel is specialized for its respective product type.

3.1.2. New Product Sales Planning

In addition to differentiating the S&OP process based on new and sustaining products, it is often beneficial to practice a continuous forecasting process for items with volatile demands and no sales histories. At present, the retailer in scope frequently revisits forecasts for its Core pieces, but typically only alters the twelve-month sales plan for New products four times per year, as they tend to manage orders for New products as they come in. This strategy promotes a reactive rather than proactive approach and increases the likelihood of stockouts and a need for high levels of inventory to buffer inaccurate demand projections. Establishing an overarching twelve-month sales plan for New and Foundation products and revisiting this forecast every several weeks to make alterations based on actual sales data may be a more effective forecasting approach for the retailer.

Revlon is an example of a company who was able to reap the benefits of shortening its forecasting cycle time for products with volatile demand. Prior to redefining their planning approach, the cosmetics manufacturer planned production with a three-month horizon. Due to the unpredictable demand of cosmetics, these forecasts tended to become outdated in a couple of weeks, which led to heightened levels of safety stock, over or under-production, and expedited shipments. Revlon’s new forecasting
strategy involves creating a new forecast every week based on updated sales data, which promotes more accurate demand projections and production schedules, as well as decreased inventories (Don 53-59). If the retailer in scope were to revisit its forecast for New and Foundation products more often and update its demand projections with recent sales data, they may be able to decrease their level of excess inventory and long lead times.

3.2. Supply Planning Strategies

As described earlier, the high-end jewelry retailer in scope faces frequent stockouts and falls victim to long lead times; these issues could be attributed to the lack of a formalized Supply Planning stage in their current S&OP process. If the retailer were to implement formalized processes in this step to assist in strategic decision-making associated with inventory, supplier, and capacity management, they may be able to improve their overall performance.

3.2.1. Inventory Management

While the retailer’s inventory planning for Core products is fairly efficient – six to eight weeks of inventory kept on hand to support a two-day delivery window upon store order – there are opportunities to utilize S&OP to strategically plan inventory and reduce lead times for New and Foundation assortments. At present, inventory is built from July to September for specific Foundation products in preparation for sizable demand during the holiday months. Building inventory for Foundation items is slightly more attractive than building inventory for New products, as the smaller volume of orders for these pieces decreases the need for high levels of inventory, which translates into a lower risk of obsolete inventory. The jewelry retailer currently builds almost no inventory in advance for New assortments, as
the combination of high volumes and unknown demand associated with these pieces creates the potential for substantial obsolescence costs.

While there is justified logic behind this approach, the retailer currently lacks a formalized process to determine which products are truly optimal for buffer inventory creation or level-loading. For example, when the retailer receives sporadic replenishment requests and online orders for New or Foundation products, a lack of on-hand inventory and small quantity orders increases lead times as well as manufacturing and transportation costs, especially if that item is not in sync with their current production schedule. A ten-week lead time is typical for unanticipated New or Foundation orders, which is a stark contrast from Core products’ guaranteed two-day delivery. Refer to Table 7 for complete details on the current inventory, demand, and lead times for the retailer’s three product categories.
Table 8 - Supply and Demand Information by Product Category

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Production Lead Time</th>
<th>Heaviest Demand/Production Months*</th>
<th>Avg. Inventory Held</th>
<th>Avg. Delivery from Store Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
<td>6 weeks to 4 months</td>
<td>• Receive bulk orders in July-August to be delivered in October &lt;br&gt;• Highest demand September-November &lt;br&gt;• Also receive stable weekly orders</td>
<td>• 6 to 8 weeks  &lt;br&gt;• Build inventory after March</td>
<td>2 days</td>
</tr>
<tr>
<td>New</td>
<td>12 months</td>
<td>• Receive orders in March &lt;br&gt;• Produce in July-August to be delivered by September-October &lt;br&gt;• Highest demand November-December &lt;br&gt;• Also receive sporadic orders</td>
<td>• Very limited inventory for a few select items</td>
<td>2.5 months</td>
</tr>
<tr>
<td>Foundation</td>
<td>6 weeks to 4 months</td>
<td>• Orders received in March &lt;br&gt;• Orders expected to be delivered by October &lt;br&gt;• Highest demand November-December &lt;br&gt;• Also receive small, sporadic orders</td>
<td>• Build inventory July-September &lt;br&gt;• Inventory varies by product (small quantities)</td>
<td>2.5 months</td>
</tr>
</tbody>
</table>

Note. Retailer in scope also receives weekly replenishment orders for all types of products from its own retail stores, major customers, and e-commerce orders. This table also does not include information on June and September Markets.

In order to combat these issues and optimize the usage of the retailer’s limited capacity for inventory, a formal scoring system should be implemented at each Supply Planning Meeting that assists the retailer in identifying when it is appropriate to take strategic inventory risks on certain products. A study conducted in the Master of Engineering and Logistics Department at the Massachusetts Institute of Technology concluded that it is beneficial to classify products based on two factors when developing strategies to mitigate the risk of imbalanced supply and demand: (1) overall importance to the business,
and (2) forecastability. When assessing business importance, each product is classified as A, B, or C-level, with A-level representing the products with the highest business value. Five factors determine each product’s importance:

- Revenue and margin contribution
- Stage in product life cycle
- Lead time
- Growth potential
- Product type

After determining an item’s value to the business and identifying its level of forecastability (low or high), one can refer to the matrix in Figure 4 to pinpoint the associated optimal risk mitigation strategies (Daniels and Kenny). For example, Core products of the retailer in scope would most likely be classified as A-level items, as they make up fifty percent of the product portfolio, bring in a large portion of the business’ revenue, and are at a stage of their lifestyle where demand is consistent and significant. Core pieces are relatively easy to forecast due to accessibility to previous demand histories, so these products would fall into the upper-right cell of the matrix. According to the best practices indicated in the cell, the retailer in scope should continue to exercise its strategy of building inventory for Core products in advance, as the probability for obsolescence is quite low.
Conversely, New assortments would most likely fall into the middle cell of the first column of the matrix; although New products encompass thirty percent of the product portfolio, most revenue is garnered from Core pieces, so New products may be deemed slightly less significant to the bottom line and be considered B-level. Furthermore, it is difficult to forecast New products with no information on past product performance, which translates into low forecastability. Therefore, in order to avoid high obsolescence risk, it would behoove the retailer to keep a smaller amount of inventory on hand at all times to serve as a buffer against unknown demand, rather than pre-building a substantial amount of inventory in advance based on a potentially inaccurate forecast.

Foundation products are similar to New products, as they do not have any previous sales data and are difficult to forecast; however, these items make up only twenty percent of the product portfolio and
sell at lower volumes. Relative to Core and New pieces, Foundation items could potentially bring less value to the retailer and be classified as C-level items. While the matrix suggests maintaining a small amount of inventory to serve as a buffer for these pieces, it may be strategic to prioritize inventory generation for New products over Foundation products, as New pieces will most likely bring more value to the bottom line (Daniels and Kenny).

Utilizing the matrix in Figure 4, it would be quite simple for the retailer in scope to quickly determine the most effective inventory management approaches for each of its three overarching product categories; however, it is important that the matrix is applied to individual assortments during the S&OP cycle to identify which items within each product category are best suited for level-loading or safety stock creation. For example, it may be more worthwhile to hold safety stock for a New assortment with higher forecasted demand and higher revenue potential rather than for a New assortment with a smaller margin and elusive future performance. Furthermore, even if it is determined that an assortment has low forecastability – which would ordinarily prompt the creation of buffer inventory to combat potential shortages – there may be reasons that the company would instead be willing to take an additional risk and build inventory in advance for the majority of the assortment’s forecasted demand. Therefore, in addition to utilizing the classification system associated with the matrix in Figure 4, the high-end jewelry retailer should consider the following factors when making inventory decisions at the assortment-level:

- Market insight from external partners
- Availability of supply
- The volatility of previous sales data (if available)
- Level of risk associated with potential obsolete inventory versus the potential benefits of keeping inventory on-hand

Considering different scenarios (e.g. the implications to the bottom line if a certain item stocks out, or impacts if suppliers do not possess adequate capacity in the coming months to support sporadic,
unpredicted orders of a certain item) may also help facilitate the decision-making process. If the retailer in scope were to implement these classification and analytical strategies when determining if and how to build inventory for specific items during the Supply Planning phase, they could potentially reduce lead times, take advantage of quantity discounts due to fewer small orders from suppliers, and ensure a balance between supply and demand.

3.2.2. Capacity and Production Planning

At present, the Production Planning phase of the retailer in scope consists of Production independently creating a production plan that mirrors the demand plan as closely as possible; there is no formalized procedure that involves a collaborative relationship between Production and other departments to brainstorm resolutions to potential shortages in supply. For example, strategic discussions regarding when to prioritize production for certain products throughout the year, or when it would be tactical to rely on buffer inventory for specific products to free capacity for other pieces, are absent from the high-end jewelry retailer’s current S&OP process. As a result of the lack of communication and routine procedure, the retailer is subject to capacity constraints, shortages in supply, and lost sales.

While the current production schedule of each product category varies slightly, in general, the retailer in scope produces the majority of its Core, New, and Foundation pieces from July to August to fulfill its highest levels of demand from September through December. Refer to Table 7 for more information associated with the demand and production schedule for each product category. This trend in production is primarily influenced by an influx of New and Foundation orders during the March Market, bulk orders for Core pieces during the summer months, and the tendency to avoid production too far in advance from demand realization. Because the retailer is consolidating the majority of its annual production over the course of just several months, capacity constraints often cause conflict over the concurrent production of Core and New items. While the retailer strategically places more emphasis on
Core pieces, New product production is compensated, and the retailer incurs costs associated with lost New product sales.

To combat the issue of capacity constraints and New product shortages, it is essential that Demand Planning work with Production to decide which products would in fact be more advantageous to prioritize, as well as if and when it would be beneficial to dedicate production time solely to New assortments. These discussions should occur each month to ensure the plan is consistently updated and optimized based on current sell-through data and inventory levels. The retailer should also plan for a multitude of scenarios, such as establishing contingency plans if a product does not sell as well as anticipated, or if there are disruptions in supply. By considering potential “What-If” occurrences in advance, the retailer will have optimized back-up plans readily available, providing for a proactive rather than reactive approach when crises occur.

In addition to establishing an efficient production calendar and practicing continuous scenario planning, maintaining strong supplier relationships is a crucial aspect of the Supply Planning phase in S&OP. Because the retailer’s product line consists of almost as many pieces with unknown or volatile demand as those with stable demand, it is vital that the retailer provides an adequate mix of product orders to each supplier that will allow the suppliers to maintain a steady level of production. It may be beneficial to ensure each supplier receives a certain percentage of orders for Core products, as these products generally have consistent demand, are often ordered in bulk quantities, and call for existing manufacturing processes — factors that will save suppliers both time and money. Orders for New products, on the other hand, have more volatile demand, require more frequent and smaller replenishment orders, and often require new manufacturing processes and materials, which pose additional challenges and costs to suppliers.

When making decisions regarding which supplier will produce which products, the retailer my benefit from a formal vendor classification system that assists in the prioritization of its supplier relationships and identification of their optimal utilization. The matrix in Figure 5 is a framework that
classifies vendors based on two factors: (1) alignment to the business model, and (2) the costs associated with exiting the vendor. Each supplier is then divided into one of four categories:

- **Emerging (Strong Alignment/Low Cost to Exit):** Emerging vendors are primarily concerned with establishing a strategic partnership with a business by helping to develop unique, innovative solutions and providing a competitive advantage. Because this type of vendor aims to enhance the capability of a business, long-term relationship establishment should be a priority. The company in scope may benefit from relying on these vendors to develop innovative manufacturing techniques for New products, but should be sure to provide these vendors with enough Core orders to ensure a constant stream of production and a mutually beneficial relationship.

- **Strategic (Strong Alignment/High Cost to Exit):** Strategic suppliers are very much aligned with business values, and often support a large portion of a business’ spend. Ending a relationship with these vendors is usually not an attractive option, as they have a comprehensive understanding of a business’ requirements and may provide services that facilitate production and communication (e.g. utilization of enterprise software). The retailer in scope may look to dedicate much of its Core production to these vendors, as their reliability and understanding of product requirements indicate their ability to support orders that bring in significant revenue.

- **Tactical (Weak Alignment, Low Cost to Exit):** Tactical vendors provide common capabilities and usually do not support a large portion of a business’ spend. They have low alignment to business objectives, and because they do not offer a unique service, it is relatively easy to move to an alternative supplier. These suppliers can generally only compete with other suppliers in manufacturing speed and pricing, so the retailer in scope may consider using these suppliers primarily for replenishment purposes to ensure quick and cost efficient delivery. When awarding suppliers with bulk orders that require simple, established manufacturing processes, Tactical vendors should not be prioritized, as their relationship is not as valued.
• **Legacy Vendors (Weak Alignment/High Cost to Exit):** Legacy vendors tend to support unique requirements of a business, but their commitments to other customers or objectives inhibit their level of service or interest in maintaining a strong relationship. Because it is difficult to identify an alternative supplier for Legacy vendors, it is vital to ensure that they stay interested in serving as a supplier. Depending on the vitality of these vendors’ unique capabilities, the retailer in scope should ensure these vendors receive high volume orders that are not challenging to manufacture in order to maintain the relationship (Chalkley).

![Figure 5 - Vendor Prioritization Matrix](image)


3.2.3. Adapting to the Nature of the Industry

Given the industry’s focus on aesthetic appeal and brand image, the retailer in scope has been very lenient in its product design process. In order to uphold its jewelry designers’ visions, last-minute
alteration requests from designers for New or Foundation pieces are honored, even after major department stores place orders. As a result, any original gemstones, diamonds, metals, etc. that were already ordered are deemed obsolete and donated. While this approach maintains the integrity of the retailer’s brand, it is very costly and further increases their already extensive lead times.

Ideally, a deadline for product alterations or a limit associated with the number and significance of the requests should be implemented such that changes to product designs are not made after materials are ordered or production is initiated. However, if the designers and upper management consider these restrictions unfeasible, then excess capacity should be accounted for in the Supply Planning phase.

Utilizing historical information on the number and significance of product changes, as well as when these changes tend to occur throughout the year, the retailer should dedicate capacity and time in its capacity plan and production schedule to accommodate these last-minute requests.

Furthermore, the retailer may consider postponement as a viable strategy to combat obsolete finished goods and raw material inventories. If product alteration requests from the retailer’s jewelry designers and major customers are typically associated with specific details, such as the color of a stone or components separate from an item’s base design, materials to satisfy these customized requests should be ordered only after these preferences are known. In other words, the basic framework of a bracelet or necklace can be produced ahead of time based on anticipated forecasts, and then become stored as module inventory. Once customers request a certain color stone, or once jewelry designers agree on a finalized design, materials that are more specific can be ordered to complete the work-in-process items. Because customization would occur only after specific product preferences are known, this strategy would help combat costs associated with excess and obsolete inventory. Furthermore, postponement would help reduce lead times, especially for New and Foundation pieces, due to the availability of semi-finished goods.
3.4. Integrated Business Planning for an Atypical Retailer

As outlined in Chapter 2, the retailer in scope also wears the hat of a wholesaler and manufacturer by supplying its pieces in large quantities to major department stores such as Bloomingdale’s, Saks Fifth Avenue, and Nordstrom. At the same time, the retailer is also the customer of external manufacturers who produce the majority of its pieces. With a multitude of external parties involved in their business model, the retailer should consider adopting components of a Collaborative Planning, Forecasting, and Replenishment (CPFR) model to ensure the highest level of efficiency and visibility in their S&OP strategy. While S&OP is an internal process that aligns operational and commercial objectives, CPFR involves collaboration with external partners to plan and fulfill customer demand. Figure 6 depicts the CPFR process; the outer circle represents the workings of a manufacturer in regards to strategy planning, demand planning, supply planning, execution, and analysis, while the inner circle shows these practices from a retailer’s perspective. Ideally, CPFR allows a retailer and manufacturer to collaborate at each stage in this process to ensure utmost efficiency and visibility. More specifically, CPFR has the ability to link the S&OP processes of a retailer and manufacturer during the Demand and Supply Planning phases, as outlined in Figure 6 below. This type of collaboration is often referred to as Integrated Business Planning (IBP). In 2008, Lowe’s and Whirlpool developed an Integrated Business Planning model that linked the Sales and Demand Planning stages of their S&OP processes. After implementing this model, both companies were able to extend their forecasting horizon, increase their sales by twelve percent, and decrease their inventory costs by five percent. The retailer in scope should consider developing an IBP process as of means of enhancing forecast accuracy and production planning, as well as promoting future visibility (“Linking CPFR”).
3.4.1. IBP as a Manufacturer/Wholesaler

When the business in scope is wearing the hat of a manufacturer and wholesaler that supplies product to major department stores, collaboration with these external partners during the Sales Planning and Demand Planning phases of S&OP is critical in maintaining a future-oriented mindset. By obtaining information from major customers in advance regarding trends in the industry, the styles they will be seeking at upcoming tradeshows, and the volumes they will require to support their sales goals, the high-
end jeweler will be able to more accurately predict demand and prioritize its supply planning efforts for items expected to sell at higher volumes. Increasing collaboration between the jeweler and its customers will also allow for increased transparency of future advertising plans and promotions, which provides for forecasts that are more accurate. Additionally, acquiring consumer insights early on can help combat the retailer’s reactive approach at tradeshows, where major department stores will place orders, but also request specific and often significant alterations to jewelry designs. With consumer insights from its customers ahead of time, the jeweler can anticipate their requests and implement necessary preparations in advance of tradeshows, rather than inventing the manufacturing process from scratch and initiating the process of sourcing new materials after committing to an order.

Furthermore, increasing visibility to inventory levels between the business in scope and its major customers is crucial during the Supply Planning phase of S&OP. Motorola implemented a CPFR process with its key retailers and saw great success. Weekly meetings were held to discuss replenishment, sell-through data, inventory levels, and outstanding open orders. By initiating this collaborative relationship, Motorola transitioned from an “order-taker” to a “replenishment specialist” and significantly decreased its levels of buffer inventory. If the high-end jeweler in scope adopts a similar process, replenishment and product phase-in/phase-out strategies can be optimized (Cederlund, Kohli, Sherer, and Yao 28-35).

Ultimately, as a result of adapting a CPFR approach, the retailer would be able to obtain consumer insights in advance, enhance demand and production forecasts, and increase transparency to inventory levels; such collaboration would provide the forward-visibility to proactively combat the company’s history of late deliveries and excess inventory.

### 3.4.2. IBP as a Retailer

Similarly, when the company in scope is wearing the hat of a retailer that depends on external manufacturers to supply its product, collaboration with suppliers during S&OP is important to ensure
there is a mutual understanding of each other’s current and target inventory levels. Having this visibility would increase the retailer’s understanding of optimal product exit strategies, as well as its suppliers’ available capacity, ability to hold safety stock, and ability to support strategies such as product postponement. Additionally, communication regarding capacity to hold inventory and projected forecasts will promote longer, more cost efficient production runs rather than forcing suppliers to support unanticipated replenishment orders. Furthermore, because the retailer depends on its suppliers to procure materials for seventy percent of its assortments, it is vital that the retailer obtains information on whether or not it is feasible for suppliers to obtain the necessary raw components for New and Foundation pieces. Incorporating these discussions into a formal S&OP process will allow for a more effective and strategic Supply Planning phase.

3.5. Culture - Breaking Down Silos

Even with strategies in place that tailor an S&OP process to the products and structure of the high-end jewelry retailer in scope, in order to permeate a culture that allows for the successful adoption of S&OP, formalized measures must be put in place that eliminate silos and measure both individual and organizational success to. The primary purpose of S&OP is to act as a mechanism to break down organizational barriers; the variety of attendees present at each meeting in the S&OP process, drive to achieve balance in operational and commercial objectives, and continuous checks to ensure alignment with overarching business goals, promote an atmosphere of cross-functional collaboration crucial to the process’ success. The retailer acknowledges that its business environment is currently operating in distinct silos, which has hindered the formation of an effective S&OP process. Their current lack of transparency, communication, and formalized inter-department meetings has made balancing supply and demand and accurate production planning close to impossible. Fortunately, there are several strategies to combat silos and create a culture of cohesion.
The first and perhaps the simplest change the high-end retailer must enforce is implementing formal meetings with set dates, attendees, and agendas. At present, the retailer is loosely following a variation of an S&OP process, but a lack of formality has promoted a lack of follow through and collaboration. While the basic deliverables of an S&OP process are being created — a sales plan, demand plan, capacity plan, and production plan — each department produces its report and simply passes it on to the next department without any discussion or strategic resolution of potential problems. Such behavior promotes a reactive environment that introduces inefficiencies such as Marketing and Sales executing a promotion that cannot be adequately supported by available supply. Developing routine, mandatory meetings with representatives from a variety of departments and established action items will bridge gaps in communication and ensure appropriate execution of the S&OP process.

Competing objectives between departments also promote silos in a business environment and represent the most common barrier to successful S&OP implementation (Cecere). Dr. Robert A. Novack, Associate Professor of Business Logistics at Penn State University, and Dr. Thomas S. Davis, retired divisional V.P. of Logistics at Becton Dickinson, have outlined a strategy involving the implementation of overarching metrics to encourage collaboration and strategic alignment across business units. When considering inventory and SKUs, Marketing favors higher levels of inventory and a greater number of SKUs to promote sales, Manufacturing strives for higher levels of inventory and fewer SKUs to ensure adequate supply and efficient production, and Finance favors lower levels of inventory and a smaller number of SKUs to keep costs low. Therefore, it is crucial to encourage employees to make decisions that may have a temporary negative impact on a certain department, but will benefit the entire business in the long run. For example, Finance will be more willing to comply with Marketing’s request to increase inventory if doing so will help reach a business’ sales targets. In order to promote the type of environment in which various departments understand the need for collaboration and tradeoffs, a common scorecard should be created that contains metrics influenced by all departments (Novack and Davis 10-17).

Measuring the overall performance of a business and holding each department accountable to these goals
will encourage communication between departments, break down the barriers silos create, and provide for a more effective S&OP process.
Chapter 4

Implementation: Proposed Step-by-Step Process, Performance Metrics, and Education

Chapter 3 served as an analysis of the current challenges the retailer in scope faces in its current S&OP process. In order to mitigate the implications of these challenges, the previous sections presented research and strategies that involved:

- Incorporating new products into S&OP
- Best practices in inventory management
- Effective supply and production management
- Adapting to the nature of the high-end jewelry industry
- Implementing Integrated Business Planning
- Breaking down organizational silos

This section will incorporate the concepts outlined above as well as the industry best practices portrayed in Chapter 2 to establish a detailed step-by-step S&OP model, specifically tailored to the jewelry retailer in scope. Meeting agendas, recommended attendees, key responsibilities, timing, performance metrics, and a plan for S&OP education, will be presented. Ideally, this formal, customized S&OP framework will resonate well with employees and help combat the retailer’s myriad of on-going challenges.

Before outlining the specific responsibilities and attendees associated with each step, it is important to take note of the high-level skeleton of the proposed S&OP framework summarized in Figure 7. As suggested in Section 3.1.1, this S&OP process incorporates two concurrent channels — one for Core products and one for New and Foundation products — due to the different planning and manufacturing requirements associated with each product category. The proposed process also takes into
consideration when it may be necessary to revisit a step to adjust either the sales or demand plan to align with business goals or unresolved capacity constraints. The dashed arrows indicate this backwards process flow. It is also important to discern the action items located in the circles in Figure 7; these steps require involvement of external parties (suppliers/manufacturers and customers), which mirrors the Integrated Business Planning approach explained in Section 3.4. The recommended timing of meetings and pre-meetings is based off an S&OP calendar developed by APICS, but was adapted to the design and requirements of the proposed process (S&OP Step by Step).

Furthermore, to facilitate meetings and ensure follow-through, the S&OP Process Owner should be involved in the Sales & Demand Planning Meeting, Supply Planning Meeting, Pre-S&OP Meeting, and Executive S&OP Meeting. While this person’s duties are not explicitly explained in the process descriptions to follow, it should be implied that he or she remains actively engaged at all times, assists in leading discussions, and ensures all action items are completed. It is crucial to assign an S&OP Process Owner that holds higher authority, such as a manager or vice president. Ideally, the S&OP Process Owner should have experience in Supply Chain, Operations, Finance, Marketing, and Sales, have a knack for solving issues, and possess a clear long-term vision of employee engagement in the S&OP process (7 Steps). The retailer’s current Vice President of Operations possesses all of these qualifications, and is therefore the recommended candidate for the role of S&OP Process Owner.
Figure 7 – Proposed S&OP Process

**INFORMATION GATHERING**

- Core Assortments Day 2
  - Utilize statistical analysis to develop initial unconstrained sales plans

**SALES & DEMAND PLANNING**

- Core Assortments Days 8-13
  - Pre-Meetings with suppliers: Discuss component/capacity availability

**SUPPLY PLANNING**

- Day 14
  - Share supplier inventory levels, component availability, and manufacturing capabilities
  - Create a Rough-Cut Capacity Plan for all products
  - Determine how to allocate orders among suppliers
  - Determine which assortments require inventory buffers or level-loading
  - Create a production plan

**PRE-S&OP MEETING**

- Day 18
  - Approve/disapprove and make revisions to demand plans and production schedules
  - Approve/disapprove inventory decisions
  - Identify imbalances in demand and supply
  - Discuss potential solutions to imbalances
  - Document outstanding issues
  - Ensure plans align with business goals and KPI’s
  - Form agenda for Executive S&OP Meeting

**EXECUTIVE S&OP MEETING**

- Day 20
  - Approve/disapprove solutions to imbalances in supply and demand and necessary expenditures
  - Develop solutions to outstanding issues
  - Ensure production schedule aligns with overarching business goals
  - Ensure KPI’s are met
  - Implement plans for continuous S&OP improvement
4.1. Step 1 – Information Gathering

This preparatory stage should occur on the first day of each month, or as soon as updated sales, inventory, production, and customer service level data become available. Because this stage essentially involves generating the pre-work and condensing the key information that will be utilized as the basis for discussion at the Sales and Demand Planning Meeting, a formal meeting during this phase may not be necessary. The parties involved in the execution of this step should include:

- Sales
- Marketing
- Planning
- Merchandising

Sales and Planning should first update internal spreadsheets with the following information by month:

- Actual sales
- Orders
- Inventory levels
- Production
- Customer backlogs for Make-to-Order assortments
- Finished goods inventory for Make-to-Stock assortments
- Module inventory for Finish-to-Order (postponed) assortments
- Customer service levels

Spreadsheets should include this information for the previous three months and the following twelve months, and display a clear comparison of actual versus forecasted data. This information should be divided by product category in preparation for the category-specific S&OP process proposed, and information should be recorded at the assortment-level rather than SKU-level to promote simplicity. Tom
Wallace also outlined the importance of tracking different types of inventory for different manufacturing approaches. Finished goods inventory targets should be monitored for Make-to-Stock items, module inventory levels should be tracked for Finish-to-Order (i.e. postponed) pieces, and customer backlogs should be recorded for Make-to-Order items. Continuously assessing and acting on these metrics will help keep lead times low, allow for more strategic demand and supply planning, and promote higher customer satisfaction (Wallace, *The How-To Handbook* 55).

Next, Sales and Merchandising should review the product portfolio to ensure Core, New, and Foundation classifications are up-to-date based on new product introductions as well as expected and actual sell-through data. Merchandising and Planning should also exchange information regarding current inventory levels with suppliers and customers, and establish optimal product exit plans for old assortments (Wallace, *The How-To Handbook* 58-59).

Refer to Table 9 for a summary of action items and the associated discussion leaders for the proposed Information Gathering phase. The term “discussion leaders” will be utilized in the remainder of these work instructions to emphasize the notion that although these parties are primarily responsible for performing and speaking to their designated action items, collaboration is encouraged, and any participant can offer his or her insights at any time.

Table 9 - Proposed Step 1: Information Gathering

<table>
<thead>
<tr>
<th>Classification</th>
<th>Action Items</th>
<th>Discussion Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Work</td>
<td>Update internal spreadsheets with actual sales, inventory, production, and customer service levels by month at the assortment level</td>
<td>Planning, Sales</td>
</tr>
<tr>
<td>Pre-Work</td>
<td>Review and approve product classifications</td>
<td>Merchandising, Sales</td>
</tr>
<tr>
<td>Pre-Work</td>
<td>Collaborate with external partners to establish exit plans for retiring assortments</td>
<td>Merchandising, Planning</td>
</tr>
</tbody>
</table>
4.2. Step 2 – Sales and Demand Planning

The Sales and Demand Planning Meeting should occur within the first seven days of each month, after the Information Gathering phase is complete. The following parties are vital to the successful execution of this meeting:

- Merchandising
- Sales
- Product Development/Engineering
- Production
- Planning
- Finance
- Operations
- Procurement
- S&OP Process Owner

The proposed S&OP process splits into two branches during days two through six of each month, one for Core assortments and one for New and Foundation assortments. Sales, Marketing, Merchandising, and Product Development/Engineering should conduct pre-meetings with major customers and managers at internal retail stores to gain valuable insights regarding New and Foundation pieces. As explained in Section 3.3, it is beneficial to shorten the forecasting cycle time of products with no previous sales histories to promote more accurate and up-to-date sales predictions. The retailer in scope should transition from updating its sales forecast for New and Foundation products from four times per year to each month, or on a continuous basis as they have been for Core pieces. This monthly forecasting process also aligns well with the recommended monthly meetings with customers and internal retailers. During these pre-meetings, the following items should be addressed:

- What styles or pieces customers are looking to buy at upcoming tradeshows
- Insights stores have obtained from consumers regarding upcoming trends
- The projected sales plans of customers and internal stores

This information should be utilized to better predict how New and Foundation assortments will perform, allow sales/promotion plans to be aligned in the end-to-end supply chain, and provide advanced visibility to potential order volumes; these factors promote more accurate sales forecasting. Consumer insights can also be utilized to predict the design alterations customers will request at tradeshows, which will facilitate supply planning later in the S&OP process.

Concurrently, Sales should utilize statistical analyses to establish a preliminary sales plan for Core assortments based on previous sales histories. Predicting demand for established items is less complex, so this action item can most likely be completed by day two. Sales and Marketing can then establish sales/promotions calendars for all three categories.

When the formal Sales and Demand Planning Meeting is initiated on day seven, the first action item should consist of Sales and Planning presenting the updated spreadsheets from the Information Gathering phase to ensure everyone is aware of sales by assortment and current imbalances in supply and demand. Additionally, Sales should share any price updates and future new customers, and Merchandising should announce any changes to assortment classifications and any new product introductions.

Production, Planning, Product Development/Engineering, Operations, and Procurement should then provide initial input regarding the feasibility of obtaining the manufacturing and material resources necessary to support the launch of any New assortments. Inquires such as the ones listed below should be addressed:

- Is it feasible to obtain the required materials for these products?
- Are there any red flags in regards to potential supplier capacity constraints?
- Will it be difficult to identify a supplier with the capabilities to manufacture these pieces?
Finance should also provide high-level feedback on the sufficiency of financial resources available to support the production of these items. Discussion surrounding these questions should not be extensive; identifying supply issues with New and Foundation assortments in this stage is only meant to eliminate completely unfeasible assortments. If it is determined that an assortment is most likely not financially or operationally feasible to the business at that moment in time, it is best that the assortment be archived to avoid wasting time and effort incorporating these pieces into subsequent S&OP stages.

Next, Merchandising, Sales, Marketing, and Product Development/Engineering should share the insights they obtained from customers regarding industry trends, anticipated advertising and promotions (at both internal and external stores), and consumer buying behavior with explanations as to how these factors influenced the initial sales plans for New and Foundation assortments. All parties should revise the plan based on this information, along with projected economic conditions, anticipated advertising/promotions, future price changes, new customers, previous forecasting errors etc. The initial Core sales plan can be reviewed and adjusted based on these factors as well.

The sales plans for Core and New/Foundation assortments should be integrated into one sales plan to support comprehensive capacity planning in the Supply Planning Meeting. If the combined sales plans do not align with overarching business goals, the plans should be revisited, which may involve further conversation with customers and internal retailers as indicated by the dotted lines in Figure 7. Dollars should also be converted into units to convert the sales plan into a demand plan, as parties in subsequent meetings typically talk in units. It is important that the demand forecast is unconstrained; it should reflect what the retailer presumes it can sell if capacity were not an issue. Capacity constraints will be accounted for in the Supply Planning Meeting (Wallace, The How-To Handbook 60-64).

The final deliverable of this stage is a finalized twelve-month demand plan that incorporates inputs from all parties, as well as documentation of any assumptions made to ensure transparency moving forward. Refer to Table 10 for a summary of the proposed Sales and Demand Planning stage.
Table 10 - Proposed Step 2: Sales and Demand Planning

<table>
<thead>
<tr>
<th>Classification</th>
<th>Action Items</th>
<th>Discussion Leaders</th>
</tr>
</thead>
</table>
| **Pre-Work** *(Separate meetings with customers and internal retailers to discuss New and Foundation assortments)* | • Collaborate with major customers to determine styles they will be seeking at upcoming trade shows for New and Foundation pieces to better estimate demand  
• Obtain key consumer insights from customers/internal retailers to incorporate into demand plan  
• Inquire about customers’ projected sales and future promotions  
• Align sales/promotions calendar with that of customers and internal retailers | • Merchandising  
• Sales  
• Marketing  
• Product Development/Engineering |
| **Pre-Work** *(Separate step for Core assortments)*                            | • Create sales plan for Core assortments based on statistical analyses and previous demand histories  
• Create sales/promotions calendar | • Sales  
• Marketing |
| **Meeting Agenda**                                                            | • Share updated spreadsheets to ensure everyone understands the current performance of assortments  
• Announce any price updates or new customers | • Sales  
• Planning |
| **Meeting Agenda**                                                            | • Announce any updates to assortment classifications as well as new pieces | • Merchandising |
| **Meeting Agenda**                                                            | • Provide a financial update regarding economic conditions or budget alterations | • Finance |
| **Meeting Agenda**                                                            | • Provide initial input on operational feasibility of introducing the New/Foundation assortments | • Operations  
• Production  
• Product Development/Engineering  
• Planning  
• S&OP Process Owner |
| **Meeting Agenda**                                                            | • Provide initial input on the financial feasibility of introducing New assortments | • Finance |
| **Meeting Agenda**                                                            | • Provide initial input on the availability of supply to support New/Foundation assortments | • Procurement |
| **Meeting Agenda**                                                            | • Present insights from customers regarding industry fashion trends and consumer buying behavior  
• Share advertising/promotions calendar | • Merchandising  
• Sales  
• Marketing  
• Product Development/Engineering  
• S&OP Process Owner |
4.3. Step 3 – Supply Planning

The deliverables form the Demand Planning stage should be transferred to the attendees of the Supply Planning Phase in advance of the formal meeting. This meeting should ideally occur around day fourteen of each month to ensure parties have adequate time to garner key insights from suppliers and analyze potential capacity constraints based on the demand plan. Below is a list of recommended participants:

- Production
- Planning
- Product Development/Engineering
- Finance
- Procurement
- Sourcing
- Operations
- S&OP Process Owner
In order to promote a more efficient and effective Supply Planning Meeting, pre-meetings should be held to routinely discuss raw component availability, current and future inventory and capacity levels, as well as inventory targets with suppliers. Not only will these discussions allow the company in scope to better formulate a capacity plan and gauge the suppliers’ capabilities in supporting initiatives such as postponement, but also demonstrate the retailer’s desire to collaborate and assist suppliers in optimizing their processes as well.

These meetings should be split between Core and New/Foundation assortments similar to the pre-meetings in the Sales & Demand Planning Meeting, as supplier capabilities for New and Foundation assortments require extra assessment. As explained in Chapter 3, New and Foundation assortments make up fifty percent of the product portfolio, and the retailer will often commit to orders of these pieces without determining whether or not suppliers have the capability or access to materials to support the manufacturing of these novel designs. Because New and Foundation pieces make up a substantial portion of the retailer’s SKUs and require additional effort to ensure efficient and timely supply, discussions with suppliers should become a routine separate branch in the S&OP process. In addition to Planning, Production, Sourcing, and Procurement, Product Development/Engineering should participate in the New and Foundation assortment pre-meetings to provide insight on manufacturing processes.

The formal Supply Planning Meeting should begin with parties presenting insights gained through their pre-work. Utilizing information regarding available capacity, component supply, and current inventory levels, coupled with the demand plan formed in the previous meeting, a Rough-Cut-Capacity Plan should be created and translated into a twelve-month production schedule. Financial and transportation resources should be considered as well. Extra capacity should also be allocated throughout the twelve-month plan to accommodate the last-minute design alterations the retailer often must honor.

To ensure orders are being allocated in a manner that promotes strong supplier relationships and efficient and quality manufacturing, the Vendor Prioritization Matrix in Figure 5 of Chapter 3 should be utilized. Sourcing, Procurement, Finance, and Product Development/Engineering possess the knowledge
and expertise to lead discussion regarding sourcing strategies. Furthermore, Planning, Finance, and Production should initiate conversation utilizing the Product Classification Matrix in Figure 4 of Chapter 3 as a framework to identify which assortments require inventory buffering or level-loading. Along with classifying the assortments based on their value to the business and level of forecastability, it may also be beneficial to discuss the following factors during the meeting when deciding how to best manage inventory:

- Market insight from external partners
- Future availability of supply
- The volatility of previous sales data (if available)
- Level of risk associated with potential obsolete inventory versus the potential benefits of keeping inventory on-hand

If it is determined that the demand plan for specific assortments needs to be altered to align with capacity constraints, proposed changes should be transferred back to the appropriate parties of the Sales & Demand Planning Meeting. Participants of the Sales & Demand Planning Meeting will need to align on changing the sales/demand plans to match capacity constraints, or take another step backward and work with customers and internal stores to alter their sales and promotions plans. Refer to the dashed lines in Figure 7 for a visual of this reverse process flow.

Any remaining current or projected issues in balancing supply and demand should be documented to pass on to the participants of the Pre-S&OP Meeting. Other written deliverables of this step include a twelve-month Rough-Cut-Capacity Plan, a production schedule based off this plan, and inventory management decisions. All parties should ensure this information is filtered up to their respective department heads prior to the Pre-S&OP Meeting (Wallace, *The How-To Handbook* 64-65). Refer to Table 11 for an overview of the Supply Planning stage.
Table 11 - Proposed Step 3: Supply Planning

<table>
<thead>
<tr>
<th>Classification</th>
<th>Action Items</th>
<th>Discussion Leaders</th>
</tr>
</thead>
</table>
| Pre-Work (Separate meetings for New and Foundation assortments) | • Assess supplier capabilities for New/Foundation assortments  
• Obtain information from suppliers regarding current inventory levels/targets and 12-month capacity projections  
• Inquire with suppliers regarding raw component availability | • Planning  
• Production  
• Product Development/Engineering  
• Sourcing  
• Procurement |
| Pre-Work (Separate meetings for Core assortments)    | • Obtain information from suppliers regarding current inventory levels/targets and 12-month capacity projections  
• Inquire with suppliers regarding raw component availability | • Planning  
• Production  
• Sourcing  
• Procurement |
| Meeting Agenda                                       | • Present pre-work regarding supplier inventory levels, component availability, and manufacturing capabilities | • Planning  
• Production  
• Sourcing  
• Procurement  
• Product Development/Engineering |
| Meeting Agenda                                       | • Create a Rough-Cut Capacity Plan by assortment for Core, New, and Foundation items based off the demand plan (take into consideration current inventory levels, capacity of suppliers, financial resources, and projected new product introductions)  
• Propose changes to demand plans to better align with capacity constraints – send changes backward to Demand Planning participants if necessary  
• Extra capacity should be allocated for last-minute design alterations  
• Ensure plans align with overarching business goals and KPI’s | • All parties:  
• Production  
• Planning  
• Product Development/Engineering  
• Finance  
• Procurement  
• Sourcing  
• Operations  
• S&OP Process Owner |
| Meeting Agenda                                       | • Determine how to allocate orders among suppliers utilizing the Vendor Prioritization Matrix (Fig. 5 Chap. 3) | • Sourcing  
• Procurement  
• Finance  
• Product Development/Engineering  
• S&OP Process Owner |
<table>
<thead>
<tr>
<th>Meeting Agenda</th>
<th>Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Determine which assortments require level-loading or buffer inventory utilizing the Product Classification Matrix (Fig. 4, Chap. 3)</td>
<td>• 12-month Rough-Cut-Capacity Plan and associated production schedule</td>
</tr>
<tr>
<td>• Planning</td>
<td>• Documented inventory building/buffering decisions</td>
</tr>
<tr>
<td>• Finance</td>
<td>• Documented current and projected issues in balancing supply and demand</td>
</tr>
<tr>
<td>• Production</td>
<td>• S&amp;OP Process Owner</td>
</tr>
<tr>
<td>• S&amp;OP Process Owner</td>
<td></td>
</tr>
</tbody>
</table>

4.4. Step 4 – Pre-S&OP Meeting

As outlined in Tom Wallace’s S&OP approach in Chapter 2, the Pre-S&OP Meeting should serve as a working session to resolve as many imbalances in supply and demand before the Executive S&OP meeting. Due to the challenging nature of outstanding decisions at this point in the S&OP process, the department heads of the following functions should be in attendance as well as the S&OP Process Owner:

- Production
- Finance
- Planning
- Product Development/Engineering
- Procurement
- Merchandising
- Sourcing
- Operations
- S&OP Process Owner

Prior to the meeting, all parties should review the demand and production schedule for each assortment as well as plans for inventory building/buffering, to ensure each department head has the ability to clarify the reasoning behind established decisions prior to the meeting. The Pre-S&OP Meeting should commence around day sixteen of each month to allot time for management to review the
production schedules, as well as provide time for participants from the Demand or Supply Planning Meetings to make any adjustments to plans in order to resolve initial imbalances in supply and demand.

The first action item of the Pre-S&OP Meeting is approval or disapproval of the demand plan, production schedule, and inventory decisions along with making the associated revisions. All attendees should then participate in a forward-thinking discussion centered on future problem recognition and risk mitigation. Capacity constraints and shortages of supply should be identified in both the short and long-term, especially for potentially high-risk assortments (i.e. New and Foundation). “What-If” scenarios and contingency plans should also be formulated to ensure efficient recovery of issues that may surface within twelve months. It is vital that participants develop resolutions to as many discrepancies as possible, keeping in mind the volatile nature of the high-end jewelry industry and their typical production calendar. Potential solutions may involve:

- Implementing postponement (Refer to Section 3.2.3)
- Re-allocating production to lower-capacity months (Refer to Section 3.2.2)
- Implementing deadlines for design changes or allocating excess capacity (Refer to Section 3.2.3)
- Building additional inventory (Refer to Section 3.4.1)
- Adding additional manufacturing lines
- Calling for overtime

All parties should indicate if such measures are operationally and financially feasible, and ensure that all plans align with business goals and KPI’s. Any outstanding issues should be documented and escalated to the Executive S&OP Meeting. Finally, a comprehensive agenda for the Executive S&OP Meeting should be created and sent to upper management after the Pre-S&OP Meeting (Wallace, *The How-To Handbook* 65-67).
Deliverables from this phase include a revised production schedule for Core, New, and Foundation items, a revised inventory management plan, documented resolutions to demand and supply imbalances, and documented outstanding issues. Refer to Table 12 for a summary of the Pre-S&OP Meeting.

### Table 12 - Proposed Step 4: Pre-S&OP Meeting

<table>
<thead>
<tr>
<th>Classification</th>
<th>Action Items</th>
<th>Discussion Leaders</th>
</tr>
</thead>
</table>
| **Pre-Work**   | • Preliminary review of demand and production schedules for each assortment  
                 • Preliminary review of inventory building/buffering decisions  
                 • Preliminary review of outstanding issues | • All parties – Heads of:  
                 • Production  
                 • Finance  
                 • Planning  
                 • Product Development/Eng.  
                 • Procurement  
                 • Merchandising  
                 • Sourcing  
                 • Operations  
                 • S&OP Process Owner |
| **Meeting Agenda** | • Approve/disapprove the demand and production schedules for each assortment and make any necessary revisions  
                          • Approve/disapprove inventory building/buffering decisions and make any necessary revisions  
                          • Identify current/future capacity/supply constraints  
                          • Discuss potential solutions for projected imbalances in supply and demand  
                          • Document outstanding issues to be escalated to Executive S&OP Meeting  
                          • Review KPI’s  
                          • Formulate agenda for Executive S&OP Meeting | • All parties |
| **Deliverables** | • Revised production schedules for New, Core, and Foundation assortments  
                          • Revised inventory building/buffering decisions  
                          • Documented solutions to resolved issues in balancing supply and demand  
                          • Documented outstanding issues in balancing supply and demand |
4.5. Step 5 – Executive S&OP Meeting

The Executive S&OP Meeting should occur soon after the Pre-S&OP Meeting, ideally by day eighteen. The duration of this meeting should be the shortest compared to preceding meetings.

Recommended participants include:

- Chief Operating Officer
- Department Heads of:
  - Merchandising
  - Finance
  - Marketing
  - Sales
  - Engineering/Production
  - Operations
- S&OP Process Owner

Before the commencement of the meeting, attendees should review the outstanding issues passed on from the Pre-S&OP Meeting, and brainstorm potential solutions to promote an even more efficient Executive meeting. During the meeting, participants should review the spreadsheets with updated sales, inventory, customer service level, and production data, so they are aware of current business performance. They should then approve or disapprove solutions fostered at the previous meeting to balance supply and demand, and discuss solutions to outstanding issues. It is pertinent that attendees approve the expenditures to resolve these issues, and ensure all plans align with business goals and KPI’s. An S&OP debrief should conclude the meeting, including an assessment of the previous month’s process and suggestions for continuous S&OP improvement.

The deliverables of this final phase include approved solutions and expenditures to outstanding imbalances in supply and demand, a finalized production schedule, and suggestions for continuous S&OP improvement.
improvement (Wallace, *The How-To Handbook* 68-69). Refer to Table 13 for a summary of the Executive S&OP Meeting.

**Table 13 - Proposed Step 5: Executive S&OP Meeting**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Action Items</th>
<th>Discussion Leaders</th>
</tr>
</thead>
</table>
| **Pre-Work**       | • Review outstanding demand/supply issues and brainstorm potential solutions  
                     • Review proposed solutions from Pre-S&OP Meeting                                                                                               | • All parties:  
                     • Chief Operating Officer  
                     • All Executive Committee Members  
                     • Department Heads of:  
                     • Merchandising  
                     • Finance  
                     • Marketing  
                     • Sales  
                     • Engineering/Production  
                     • Operations  
                     • S&OP Process Owner |
| **Meeting Agenda** | • Review spreadsheets with updated sales, inventory, customer service level, and production data  
                     • Approve/disapprove solutions to imbalances in supply and demand, including necessary expenditures  
                     • Address and develop solutions to any outstanding issues  
                     • Ensure production schedule align with overarching business goals  
                     • Review KPI’s  
                     • Assess current S&OP process and plans for continuous improvement                                                                 | • All parties |
| **Deliverables**   | • Approved solutions and expenditures for all issues regarding imbalances in supply and demand  
                     • Finalized production schedule  
                     • Plan for continuous S&OP improvement                                                                                                            |                                                                                                           |

**4.6. Measuring Performance**

To facilitate discussion at each meeting and to keep track of performance, phase-level metrics should be addressed at every step in the S&OP process. Furthermore, as stressed in Section 3.5.2, it is
important to implement organizational-level metrics to encourage the elimination of silos and to ensure every function understands the tradeoffs vital to excelling as an organization. The company in scope may find it beneficial to create a scorecard with the metrics below to utilize as a tool for continuous S&OP process improvement. Table 14 outlines Deloitte Consulting’s recommended S&OP phase-level metrics. These KPI’s should be reviewed before the conclusion of each meeting in the proposed S&OP process.

### Table 14 - Phase-Level S&OP Metrics by Deloitte Consulting

<table>
<thead>
<tr>
<th>S&amp;OP Step</th>
<th>Deloitte Consulting’s Recommended Metrics</th>
</tr>
</thead>
</table>
| Sales & Demand Planning Meeting | o Forecast accuracy  
                                      o Forecast bias  
                                      o Stock availability  
                                      o Forecast volatility  
                                      o Forecast vs. financial plan  
                                      o New product launch KPI |
| Supply Planning Meeting       | o Inventory in days and dollars  
                                      o Target customer order backlogs, target module inventory, target finished goods inventory  
                                      o Stock availability  
                                      o Schedule attainment  
                                      o Capacity utilization  
                                      o Overall equipment effectiveness  
                                      o Operating plan vs. financial plan |
| Pre-S&OP Meeting              | o Forecast accuracy  
                                      o Stock availability  
                                      o Inventory in days and dollars  
                                      o Schedule attainment  
                                      o Operating plan vs. financial plan  
                                      o New product launch KPI |
| Executive S&OP Meeting        | o Forecast accuracy  
                                      o Stock availability  
                                      o Inventory in days and dollars  
                                      o Schedule attainment  
                                      o New Product Launch KPI  
                                      o Operating plan vs. financial plan  
                                      o Obsolescence KPI |

Target customer order backlogs, module inventory, and finished goods inventory were also added as metrics in the Supply Planning phase in Table 14 as recommended by Tom Wallace. When implementing overarching metrics to unify functions at the company in scope, the Supply Chain Operations Reference (SCOR) Model can be utilized. The SCOR Model encompasses key metrics in the end-to-end supply chain that cover five attributes: Reliability, Responsiveness, Agility, Costs, and Asset Management (SCOR Framework). The following metrics are derived from the SCOR Model according to APICS and Supply Chain Council 2011, and can be incorporated into a high-level scorecard reviewed by upper management during the Executive S&OP Meeting (Cengage Learning):

- Perfect order fulfillment
- Delivery cycle time
- Order fulfillment cycle time
- Upside supply chain flexibility
- Upside supply chain adaptability
- Downside supply chain adaptability
- Cost to deliver
- Finished goods inventory days of supply
- Order management costs
- Overall value at risk
- Total cost to serve
- Cash-to-cash cycle time
- Return on supply chain fixed assets
- Return on working capital

Upper management should share the updated scorecard with all parties involved in the S&OP process each month and hold everyone accountable in meeting these business objectives. Additionally, a centralized location should be created that houses the deliverables and scorecards of each S&OP meeting; if this data is accessible to all relevant parties at any time, the sense of ownership, transparency, and visibility to progression will promote follow-through within the S&OP process.
4.7. The Importance of Leadership Engagement

Even with sound practices in place, a set calendar, action items, and performance metrics, it is impossible for an organization to garner the benefits of any process without proper execution by the people and a consensual understanding of a procedure’s vitality. Hugh Williams, Managing Director of Hughenden Consulting, outlines that seventy percent of any successful operation is dependent upon the influence, decisions, and relationships of people within an organization, while only the remaining twenty and ten percent are attributed to process and technology respectively (Williams 16-21). One of the main drivers behind the jewelry retailer’s failed S&OP implementation in the past is a lack of employee resonance.

One of the most crucial elements and second most common barrier in ensuring a successful launch of S&OP is upper management engagement (Cecere). If higher level executives make an effort to communicate the benefits that S&OP will have on the entire organization and make a conscious effort to lead by example, employees are likely to be more receptive and view the process as a valuable investment of additional time rather than added busy work haphazardly passed down from superiors. When Revlon was implementing strategies to combat forecasting errors and high levels of inventory, they understood that their people served as their most valuable tool. In addition to altering their forecasting strategy, Revlon was implementing other substantial changes: they worked to develop a system to capture more sales data, implemented a process to calculate forecast error by SKU, and began tracking inventory positions at the SKU-level. Because Revlon knew they were initiating new processes and increasing the responsibilities of employees, most emphasis was placed on ensuring personnel were engaged and aligned with the rationale behind the changes. Leadership was key in communicating the importance of these transitions to employees; upper level executives were consistently involved throughout the process to stress the significance of the new procedures, and vice presidents from a variety of functions participated often to outline the importance of collaboration and cross-functionality. Due to continuous upper
management involvement throughout the transition and creation of a culture centered on change, Revlon successfully transformed many of their processes and improved their performance (Don 53-59).

It is vital that the retailer in scope adopt a similar strategy centered on leadership engagement and leading by example to create a culture that will facilitate the successful launch of their S&OP process. Leadership must also express passion for the benefits of S&OP and maintain a positive attitude, not only to ensure activities are properly carried out, but also to create a culture that values and welcomes change (7 Steps). If the high-end jewelry retailer in scope ensures their leadership team remains actively involved both during and after the implementation of S&OP and appoints someone in authority to serve as a process owner, they are likely to amend their current culture and take full advantage of the benefits S&OP offers.

4.8. S&OP Education

Before implementing S&OP, it is vital to properly educate employees on the importance and requirements of the process. Due to the vitality of upper management engagement and passion for the process, the S&OP Process Owner should first conduct an information session on S&OP for upper management, summarizing the step-by-step S&OP process and potential benefits. To further perpetuate S&OP resonation among management, it is important to highlight how S&OP possesses the potential to overcome current business challenges, and how the new approach is a substantial improvement from current practices (Wallace, *The How-To Handbook* 81-82). The proposed S&OP in this dissertation was specifically designed to combat the present obstacles of the high-end jewelry retailer in scope; the following hard and soft benefits of the proposed process should be addressed when explaining how S&OP can mitigate the retailer’s current challenges:

- Effectively planning demand and supply for a product portfolio dominated by new products
• Combating volatile demand of New and Foundation assortments with effective inventory management
• Reducing obsolete inventory with enhanced forecast accuracy
• Anticipating and accounting for last-minute design alterations in capacity plans
• Strategically allocating orders among suppliers
• Breaking down current organizational silos
• Encouraging engagement of external parties to enhance forecast accuracy and supply planning
• Ensuring employee engagement and accountability due to a formal meeting calendar, meeting agendas, and assigned responsibilities
• Increasing forward-visibility and contingency planning to promote a proactive rather than reactive mindset

After upper management understands the value of S&OP, a series of educational sessions should occur for all parties that are going to be involved in the process. Bob Stahl, a colleague of Tom Wallace and President of R.A. Stahl Company, has designed a step-by-step S&OP education schedule to be conducted by the S&OP Process Owner. His recommendations are summarized below:

**First Session (half-day):** Discussion should include what S&OP is, how it differs from current practices, its benefits, and how it is implemented. All parties that are going to be involved in the process, including upper management, should attend (Wallace, *The How-To Handbook* 82-83). In the past, employees seem to lack an understanding of the purpose behind S&OP and therefore lack the motivation to exert the time and resources necessary to carry out the process. It is important that direct and indirect impacts on each department are outlined to justify process changes or additional labor asked of each employee. Figure 8 outlines just some of the key benefits of S&OP implementation and how each department is positively
impacted. The advantages associated with each department shown below are not mutually exclusive; the diagram is meant to represent the most substantial impacts of S&OP on each function and demonstrate the notion that all benefits are interrelated and enhance overall business performance.

Figure 8 – Interrelated Benefits of S&OP


Second Session (half-day): This session should outline how S&OP will be implemented to apply to the retailer. All parties other than upper management should be present (Wallace, The How-To Handbook 83-84). It may be useful to run through the overall framework of the proposed plan, so participants understand how it is tailored to the needs of the retailer.
Third Session (half-day): The step-by-step details of the S&OP process, including action items, responsibilities, timing, resources required, and critical paths, should be presented. Despite the fact that a detailed process has already been created and proposed in this dissertation, it is important to garner the input of employees and adjust the process based on their insights. All parties involved in the process, excluding upper management, should attend.

After educating the organization, it is best to begin implementation within ninety days (Wallace, *The How-To Handbook* 84). The retailer in scope should initiate a phased implementation of S&OP before incorporating all assortments. Piloting the process with Core assortments may be the optimal starting point due to the decreased complexity of planning supply and demand for mature products. With the proper education and leadership involvement, the full S&OP process should be fully implemented within one year. The process should not run perfectly at first, but gradually increase in efficiency and effectiveness over time as employees become more apt to the process and adjustments are made to continuously improve the framework.
Chapter 5

Summary of Key Points and Concluding Remarks

Ultimately, if the company in scope were to adopt the proposed S&OP process, they would be able to successfully combat the many challenges associated with the nature of the high-end jewelry industry, the structure of their company, and the pitfalls of their current S&OP strategy:

- By implementing a dual channel approach based on product maturity during the early stages of S&OP, the proper resources can be dedicated to plan a portfolio that has just as many new products as mature products.

- Incorporating an Integrated Business Planning strategy during the Demand and Supply Planning phases will allow for increased transparency and alignment with external partners, and enhance the company in scope’s performance as a retailer, manufacturer, and wholesaler.

- External collaboration with customers will provide advanced visibility to consumer trends and styles desired at tradeshows, which promotes proactive planning in an industry primarily focused on aesthetics and allows the company in scope to honor last-minute design alterations. Increased forecast accuracy will also reduce obsolete inventory.
- A formal product classification matrix will assist in inventory planning, allowing for optimal capacity usage and increased responsiveness for previously Make-to-Order items.

- A supplier classification matrix will allow for more strategic order allocation among suppliers and promote stronger supplier relationships.

- The implementation of contingency planning and consideration of “What-If” scenarios will promote a proactive rather than reactive mindset.

- A formal meeting structure with clear action items and responsibilities will encourage follow-through and clarity.

- Phase and organization-level scorecards will promote accountability, visibility to progress, and the bridging of organizational silos.

- Leadership engagement and support will underscore the importance of S&OP and allow for continuous S&OP process improvement.

- Proper S&OP education will increase employees’ comprehension and passion for the process.

If the company in scope were to adopt most, if not all of the recommendations set forth in this dissertation, they would be able to realize the many benefits S&OP offers, such as enhanced forecast accuracy, improved customer service, smoother product launches, reduced costs, and increased efficiency in the end-to-end supply chain. Although it may take several months to a year to fully educate employees and implement the proposed process, well-executed S&OP has
the potential to dramatically improve the high-end jewelry retailer’s performance, and allow it to maintain a competitive advantage as it expands in the near future and in years to come.
BIBLIOGRAPHY


Cengage Learning - Supply Chain Council 2011, 2013. PPT.


Rupp, Lindsey. "Tiffany Surges as New Products Push Profit Above Estimates."


EDUCATION

Schreyer Honors College at The Pennsylvania State University
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B.S. Supply Chain Management; Two-Piece in Marketing
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PROFESSIONAL EXPERIENCE

Procter & Gamble
Cincinnati, OH
External Supply Solutions Global Operations Intern
May 2015 - Aug 2015
- Conducted loss analyses for three contract manufacturing sites; identified savings opportunities in excess of $1.88M and supply chain time reduction opportunities equal to 12% of total lead time
- Led three-day loss analysis event at contract manufacturing site and sparked discussion for future time/cost savings
- Standardized the Operations scorecard to assess capability, productivity, and reliability of 46 contract manufacturers
- Developed best approach for data population by mapping ownership and data sources for 63 performance metrics
- Embedded links and/or provided instructions to automatically populate 1/3 of metrics

Johnson & Johnson Consumer Companies
Skillman, NJ
Strategic Sourcing Chemicals Co-Op
Jun 2014 - Jan 2015
- Created cost savings ideation tracker by consolidating 270+ ideas for cost saving initiatives ideas to streamline implementation
- Increased recognition and resolution of data discrepancies between J&J and external manufacturer by 75% by managing data discrepancy tracker and leading team-to-site communications
- Improved supplier rebate tracking process to enhance traceability and visibility
- Identified trends and sources of overstated inflation for 600+ materials by analyzing data from pricing and inventory reports

AWARDS/RECOGNITIONS

- MIT Supply Chain Excellence Award – Honorable Mention (Spring 2016)
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- Traffic Club of Pittsburgh Scholarship Recipient (Spring 2015)
- GEICO Achievement Award Recipient (Summer 2015)
- Deloitte Case Competition – Second Runner-Up (Spring 2014)