



Universidad de
La Sabana

IMPLEMENTING S&OP PROCESS IN A MULTINATIONAL AUTOMOTIVE SUPPLIER

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Bachelor of Industrial Engineering
Universidad de los Andes, 2006

Submitted in fulfillment of the requirements of the degree of

Specialization in Logistics Management

at the

Universidad de la Sabana

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June 2011



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Abstract

The market dynamics that the manufacturing companies live during these days are extremely variable, the ability to reach the customers' requirements in the correct time with the correct product is what creates the advantage from the market competitors. Demand uncertainties increase as companies expand, which motivates to think in ways to coordinate the operations in order to be prepared for the changes in the demand, one way of overcoming these challenges is to implement a process called sales and operational planning (S&OP)

S&OP is a methodology that coordinates the operations inside the company and mainly synchronizes the requirements of the demand with the capacities of the supply, it is mainly a collaborative process that aligns the supply side of the organization with the demand side.

Proquinal S.A. is a company that is facing a difficulty of not being able to serve the customer as agreed in terms of delivering orders in the correct time and with the correct quantity as many other companies. This thesis focuses the design of the correct approach to implement the S&OP process taking into account the challenges of changing the company's culture.

Acknowledgements

I would like to thank Dr. Edgar Blanco from MIT for supporting and guiding me while working in this project. His help in the structure and development of ideas was very valuable in order to generate the correct approach of the thesis.

Second Mr. Jairo Guzman which helped me in the whole process by sharing his advice and supporting me during the program and the execution of the project.

Finally I would like to thank Proquinal for giving me all the tools and information available for the development of the project and all the people that helped and supported during this work.

Table of Contents

1	Introduction	6
1.1	Scope	6
1.2	Motivation.....	6
2	S&OP Case of Study at Proquinal S.A.....	7
2.1	The Company	7
2.2	Organizational Structure	9
2.2.1	Structure vs. Demand Requirements	10
2.3	Product.....	10
2.4	Current Demand processes at Proquinal	12
2.5	Supply Meetings.....	14
3	S&OP for a Manufacturing Company.....	16
3.1	A look back	16
3.2	S&OP for a Manufacturing Company: Pyosa S.A. de C.V	17
3.2.1	Methodology used	18
3.3	Implementation success factors	21
4	S&OP Implementation at Proquinal.....	22
4.1	Information Availability.....	22
4.2	Single S&OP process	25
4.3	Demand Meetings by company units	26
4.3.1	North America	27
4.3.2	Europe	27
4.3.3	Colombia and Latin America	28
4.4	Supply Meetings.....	29
4.5	Executive S&OP Meetings.....	30
4.6	Evaluation of the S&OP Process and Finance Aspects.....	31
4.7	Pilot implementation plan	32
4.7.1	Alternative proposal for the Pilot Implementation Plan	33
4.8	Challenges to the Implementation	34
5	Bibliography	35

List of Figures

Figure 1: Proquinal Supply Chain	8
Figure 2: Vinyl Applications.....	11
Figure 3: Factory Sales vs Branch Sales.....	23
Figure 4: Factory vs Branch	24
Figure 5: Demand meetings structure	29

List of Attachments

Attachment 1. Demand Meetings structure

Attachment 2. Thesis presentation

Attachment 3. Poster presentation

1 Introduction

1.1 Scope

This study of sales and operations planning is developed to support the current supply difficulties that the manufacturing companies are facing today. It will be focused on the operations of a vinyl coated manufacturer with headquarters in Bogotá, Proquinal S.A. The thesis aims to find a good and efficient method of implementing the S&OP process in a conservative and complex company, with different markets around the world including several commercializing branches owned by the same group. It will specify the characteristics that will make the implementation of the S&OP process successful and how a company like this manufacturer can take advantage of this methodology. The financial benefits for the expected results will be also examined

1.2 Motivation

According to Larry Lapide, demand management is the matching and supply over time, in real time and during planning. The requirements here are to find the appropriate tactics,

principals or methods in order to optimally match this supply and demand, finally with the main objective of increasing the order fulfillment and customer service.

S&OP is a methodology that coordinates the operations inside the company and mainly synchronizes the requirements of the demand with the capacities of the supply. Nowadays each time it is more difficult to be prepared for the market due to the high dynamics in the customers' needs, which is why the methodologies to find solutions for this have been getting more popular over time. According to "Demand Management: A Cross-Industry Analysis of Supply Demand Planning", Tan states that S&OP has gained importance over the past years due to three trends in the corporate world: increase in demand uncertainties and variations, increase in supply uncertainties and variations, and an increase in the cost of lost sales and over supply.¹ So being able to apply the S&OP correctly in a company will bring important tools that will help the to determine more effectively the correct projected sales and with that, the best way to prepare the operations so satisfy these sales levels.

2 S&OP Case of Study at Proquinal S.A.

2.1 The Company

Proquinal Group is a company that produces and distributes vinyl fabrics for different applications in several markets around the world. It has 2 production plants with central warehouses for each one, these premises are located strategically, one in Bogota which is capable of producing all the existing items and supplies products for the local and global markets, this plant covers the 70% of the demand. The second plant which is smaller is located in Costa Rica and supplies exclusively the North American market; both plants are

¹ Tan P.K. (2006) Demand Management: A cross industry analysis of Supply-Demand planning, MIT Masters in engineering systems division

managed from Bogota. As a group, Proquinal has operations in 7 countries in order to supply all the customers around the world, including a network of distribution channels that allows reaching the final customers directly, the locations are around Colombia, North America and Europe.

Main supply chain

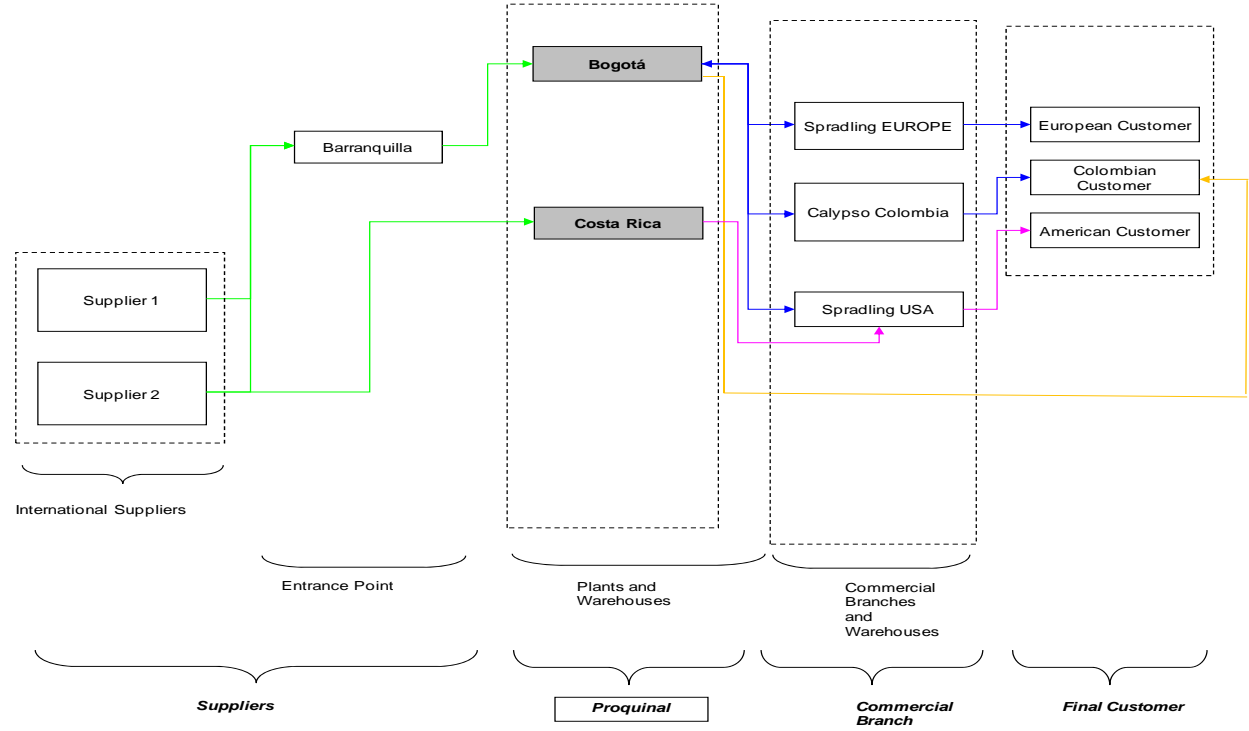


Figure 1: Proquinal Supply Chain

The company was founded in 1959 and as it has managed to survive for more than 50 years; still many of its processes haven't evolved according to the current market dynamics. Years ago it counted with a group of large and faithful clients that allowed taking the normal production lead time in order to deliver a normal purchase order, this happened mainly because the competition was not an issue to consider in this specific market.

The main difficulty that Proquinal faces today is the capability to serve the customer as agreed in terms of delivering orders in the correct time and with the correct quantity. Currently the competition in the plastic industry has become stronger and larger, specially having Asian industries that can offer a very low price in their product with good availability, and even though Proquinal has aimed its strategy in offering differentiated products as a competitive advantage, today the customers not only require good quality but they require them on time.

The regular production lead time for a standard order of a finished product is around 4 weeks plus the logistics lead time according to the location. In order to reduce this time the tactic has been to have inventory levels available for shipment at the warehouses for the references that present a regular demand.

2.2 Organizational Structure

The administrative structure of Proquinal is divided into specific management areas which handle all the corporate issues of the entire group, each one with a head manager under the directives of the president of the company

- Logistics Management
- Operations Management
- Corporate Affairs Management

- Corporate Services Management
- Human Resources Management

In the commercial view we have the following structure which is divided according to the geographic markets served:

- Latin American and Colombian direct customers Management
- Colombian Commercialization Channel Management
- European Commercialization Channel Management
- North American Commercialization Channel Management

2.2.1 Structure vs. Demand Requirements

Each of these divisions have their specific customers and demand, some share the same portfolio specially the first two, which serve the Colombian market, but still all the divisions may offer any of the products that belong to the Proquinal portfolio. The challenge here is to be able to supply all these requirements in an equivalent way, meaning that the supply capacity is considered and there aren't clear policies that help to determine which market has to be prioritized among the others when needed. This is why an official process has to be established in order to supply the customers demand in the way that the business plan is followed and the decisions taken aren't influenced by personal criteria or decision power but are focused on the best benefit for the company.

2.3 Product

Proquinal produces and commercializes rolls of coated fabric for many different usages and with a great diversity of properties. In order to target the strategies properly, the products have been divided into several different categories according to their market;

1) Transportation

2) Residential and Institutional

3) Construction and Agriculture Industry

4) Manufacture

5) Footwear and Leather Goods

6) Communications

Each of these categories has a wide variety of designs and colors according to their applications which make a large portfolio of more than 4.000 sku's. Most of the references require basic and general raw materials but others require special components that could have supply lead times of more than 60 days.

VINYL COATED FABRIC APPLICATIONS



Figure 2: Vinyl Applications

The challenge is to improve the level of customer satisfaction, specifically in terms of deliveries fulfillment and reducing the inventory levels that the company has been carrying during the years. The trends force to have multiple markets that generate a complex and variable supply, in the case of Proquinal, the majority of the portfolio corresponds to references Make to Order, which require a regular customer to generate a previous order and wait for the regular production lead time in order to have the finished products available for shipment. The problem is that the market is demanding shorter

lead times due to the current variable uncertainty of the final customer requirements and thinking in improving the production lead time would require a very large investment in infrastructure.

The other way to improve the delivery time is to have immediate availability backing up in the appropriate inventory levels; applying a Make to Order tactic. This gives us a clue of being able to apply the S&OP process with an accurate demand management.

2.4 Current Demand processes at Proquinal

Demand Planning for Strategic Customers in North America

The North American geography has the largest demand corresponding to the Transportation category. The customers that belong to this category are handled through Spradling International Inc. (Commercial branch of Proquinal in North America) by VMI agreements. Each week the costumers generate a rolling forecast for 4 months ahead for each of the references in their portfolio; this forecast is an approximation of their real future usage.

The limitation is that the analysis is not generated by both ends but only by the customer and it is sent to Proquinal with the objective of generating the replenishment productions accordingly and keeping the agreed inventory levels at Spradling International warehouses in USA. Sometimes the demand plan is discussed between the two parts in specific cases were the levels are out of the regular ranges.

The difficulty is presented when the forecast changes from one week to another and an increase in the supply is required, in these cases there isn't enough time to react and

usually extra costs have to be covered due to emergency productions and air shipments. As a summary, there isn't a real collaborative process where the creation of the demand doesn't take into account the real supply capacity.

Trimester Inventory revisions for the Latin American and Colombian market

For part of the local portfolio which corresponds to make to stock references, there are quarterly meetings with the operations and the logistics area (sporadically with sales for specific issues) with the objective of updating the inventory level parameters of the make to stock references according to a sales moving average from the past 3-6 months.

This process is based on periodical meetings integrated by: Demand planner, Customer Service Coordinator for Colombia (which represents the commercial view), Master Production Scheduler and sometimes by the Commercial Director for the Manufacture, Footwear and Leather goods categories. The topics that are discussed are:

- Current inventory vs. Target inventory
- Changes in the sales average: This will indicate if the group of current selected make to stock items needs to be modified
 - o If the sales average decreases enough the reference will no longer require inventory level
 - o If any other reference increases its sales average considerably, it will be selected as a make to stock item.
- The levels of inventory are determined by a policy of rotation of 2-4 months depending on commercial criteria. The restrictions of operations and raw materials are taken into account in an informal way for specific cases.

Make to Stock references management for North America

The North American branch offers its customers immediate delivery for a large number of references from its portfolio, this means that inventory levels are being held at the North American warehouse, following an inventory policy and an expected level of projected sales.

Procedure:

- A moving monthly average using the historic sales of the past 6 months is obtained for each reference, the top 150 references are selected and catalogued as inventory references
- The objective levels of inventory flow around 3 to 5 months of rotation under the assumption that the future sales will performance similar to the history.
- The administration of the replenishment orders is generated from the purchase department of North America and the orders are sent to the plant as if it were a regular customer, no information of any changes in the usage is informed to the plant prior to the orders.

Make to Stock references management for Europe

90% of the portfolio sold in the European commercial branch is managed under the Make to Stock philosophy with inventory held at the European warehouse.

The same procedure as for the North American market is implemented for the inventory levels management but the administration is generated from the headquarters in Bogota.

2.5 Supply Meetings

In order to determine the raw material requirements and restrictions, there is a series of weekly meetings as an approach to a Sales and Operations Process, which are called the Raw Materials Meeting. Each week the members from the supply, operations and logistics areas take into account all the requirements by SKU level and identify the raw materials availability according to the production program and materials explosion for the next 4 weeks, which is obtained from the already placed orders by the customers and the average usages. This brings a large challenge to the purchasing department because if there is a change in the demand level, the reaction time is too short and current raw materials lead times are considerable.

One of the important limitations of these meetings is that the future demand is not analyzed; the analysis is generated assuming that the demand will perform as an average and the fore coming changes are not communicated to the group at the moment they are known, this information is only revealed by the materials explosion mentioned before, from the orders that have already been placed.

The topics that are discussed in these meetings are:

- Generation of raw materials explosion
- Critic raw materials that will not cover the current requirements
 - o Expected arrival dates and priorities
- Supply follow up of the materials in normal status
- Plant utilization rate and restrictions

The results of the meetings are corrective actions for the critic raw materials supply and an availability status for the scheduled orders.

3 S&OP for a Manufacturing Company

S&OP is a decision making process that makes certain that tactical plans in every business area are in line with the overall view of the company's business plan. The overall result of the S&OP process is that a single operating plan is created that identifies the allocation of company resources, including time, money and employees.

3.1 A look back

Sales and Operations planning², the management process that addresses volume, actually evolved from methodologies mostly oriented to managing mix. Back in 1950's and 1960's, some leading manufacturing companies developed a new method for managing inventories and making scheduling decisions. This method, material requirements planning (MRP) was then, as it is now, about managing mix – calculating requirements and need dates for manufactured and purchase items.

But MRP's early adopters soon realized that trying to effectively manage the supply mix in absence of demand visibility didn't really work very well. It needed better integrations with the source of demand – real customer orders, forecasted future sales and distribution requirements.

And as MRP evolved, it became something more than just a manufacturing system – now linking to strategic and tactical planning in the areas of sales, marketing, new product development, supplier development, resource planning, financial and capital planning and human resources. It had grown into management tools and manufacturing resource planning (MRPII) – a company-wide, cross-functional resource planning process – that addressed both volume and mix.

That part of MRPII that looked at the volume was originally called "Production Planning", since it tended to focus more on the supply resource side. But companies came to realize

² Sales and Operations Planning – Best practices, John Dougherty and Christopher Gray 2006

that volume could not be well managed without equal attention being paid to demand. The name of “sales and operations planning - S&OP” was proposed by Dick Ling in 1987, this name change was immediately and widely accepted, since it much better described what made the process successful.

All the companies already do some sales and operations planning to run their production but the benefits of the process are gained in the moment their actual process is being formalized and integrated along the company. This involves a periodically review process by top management and all functional areas of the company. Its ultimate goal is to always keep the detailed sales, manufacturing, purchasing and capacity planning systems in synchronization with the latest high level plans of management (the business plan).

3.2 S&OP for a Manufacturing Company: Pyosa S.A. de C.V

As a success case, the process at a similar company as Proquinal is described: Pyosa S.A. de C.V³ located in Monterrey, Mexico, is one of the country’s largest domestically owned companies, is the leading manufacturer of organic pigments in Mexico, produced from internally developed technology. The Colors division also produces dyestuffs.

The pigments market demands high quality, but is driven by low prices. It is increasingly affected by competition from Asia, regulated in the use of certain of its products and hindered by worldwide shortages of certain raw materials

Pyosa has 9 markets that are attended directly and by distribution centers, its customers are located in Mexico, USA and South America, most of its references are selected as make to order and the majority is produced in house in three plants located in Monterrey with a normal production lead time of 15 to 30 days. The competition comes from the

³ Sales and Operations Planning – Best practices, John Dougherty and Christopher Gray 2006

United States, Argentina and Asia (especially China with low cost products and with 45 to 60 days of lead time)

Advantages achieved

As the president quotes: “With S&OP process we get to speak the same language and use the same numbers between all departments, helping us to make decisions more intelligently and effectively”

S&OP is the main monthly mechanism to:

- Manage sales, revenue, production and inventory
- Identify cash requirements and communicate them to corporate management
- Compare the performance to budget and make the appropriate adjustments in the individual functional and business unit portions of the budget.

Despite more and more customers requiring 24 hours lead time, customer service rose from 80 to 92% in 2004 and the inventories would be twice as high. In financial matters, profitability and ROI have increased significantly with the careful use of S&OP to optimally allocate scarce capital to the appropriate products and customers.

Benefits for the company’s internal processes have been observed:

- Improved communications between all business areas and functions
- Fewer surprises and a more effective ability to cope with the change
- An established “plan to battle” for the future, understood and followed by all, and with many critical issues solved before the meetings
- S&OP works well in a low margin, competitive chemical industry

3.2.1 Methodology used

In this section the methodology of implementation of the process at Pyosa S.A. de C.V. is going to be described by the three process stages

Demand Planning Stage:

- Statistical projection from previous two years
- Adjusted by salesman based on visits to clients
- Done by customer family and major items for twelve months out
- Adjusted by sales management monthly
- Monthly meeting attended by:
 - o Sales people who have issues and input from their customers
 - o Demand managers from both Pigments and Dyestuffs
 - o Sales Assistant
 - o Sales Manager
 - o Director of Sales
 - o Master Scheduler

Supply Planning Stage:

- The monthly production plan and thirteen week master schedule is adjusted based on the new forecast:
 - o The capacity of key manufacturing resources
 - o Availability of key raw materials
 - o Production performance capability as monitored in a weekly KPI review meeting
- New master schedule is exploded through the material requirements planning program
 - o Validated in a one hour meeting with the master scheduler, the purchasing manager and the buyers, who review the detailed output of MRP planning for every supplier in every item, with roughly 25% of the items requiring some change to the master schedule.
- Purchasing and production work to the new schedule
- Monthly meeting is attended by:
 - o Master Scheduler

- Material Planners
- Purchasing Manager
- Buyers
- Plant Manager
- Area Manufacturing Managers

Executive Meeting Stage:

The second Friday of each month a 1.5 hour meeting is scheduled; the meetings dates are set a year in advance with reminders sent out one week prior to the meeting.

The meeting is attended by the president, Treasurer, Vice president of Finance, Directors of each business unit, Sales Managers, Demand Managers, Master Scheduler, Vice President of Operations, Plant Manager, Purchasing Manager and Two Buyers.

The topics that are discussed are:

- Reviews overall sales and production performance
- Gets into detail only on:
 - Supply and demand exceptions or problems
 - Customer issues
 - Production or capacity problems
- Approves and decides on questions involving allocation of
 - Cash
 - Critical capacity
 - Scarce material resources
 - Capital
- Forwards critical cross functional issues such as new products, to the bimonthly Board of Directors

3.3 Implementation success factors

In order to decrease the risks that come when a changing process is implemented in a company, here are a series of keys suggested by companies that have had success in the implementation of the S&OP process:⁴

- Education of all functions
- Top management leadership
- Process design by a cross functional team
- Demand planning collaborations with the key customers is vital
- Accurate data presented
- Sometimes, decision making can be moved to lower levels in the organization
- Even if an initial implementation of S&OP yields disappointing results, re-engineering the process based on the proven success factors can lead to significant operating improvements
- If leadership understands and embraces S&OP, it applies to any environment, including privately owned and operated businesses, large or small
- Metrics need to be understood, accepted and governed on a regular frequency

Participants have to be empowered to make decisions during the meetings and the process then has to lead to an official consensus. Finally the process has to be measured periodically so it can be improved through learning over time, the most important indicator in this matter is usually the forecast accuracy and orders fulfillment rate.

Companies acquire software packages to support their periodic planning but sometimes do not synchronize their process and people first, thinking that only the software can generate the change, so the important factor is to adjust first the S&OP so expectations of benefits can be achieved; meet customer demands at the highest levels, while at the same time, maintaining reduced inventories and minimized supply chain operating costs.

⁴ Sales and Operations Planning – Best practices, John Dougherty and Christopher Gray 2006

4 S&OP Implementation at Proquinal

4.1 Information Availability

INFORMATION INTEGRATION PROJECTS

Proquinal Group historic sales information for demand planning

To be able to initiate with a good approximation to the real demand of the customers, accurate historic information is required in order to run statistical processes for the baseline forecast. Due to the different geographic units that make up the Proquinal group, the information about sales is divided into different data bases and locations; this makes the analysis very difficult in matters of being able to visualize the sales from the group to the final customers and not the sales between the companies of the group.

The historical information used today to generate the forecasts is mainly the sales that the plant generates to the direct customers and the commercial branches. This last one doesn't really reflect the customer requirements because in most of the cases inventory is held at the branches warehouses.

Here is an example of the sales generated during year 2010 to the American market in units, reflecting the differences between the sales from the factory to the commercial branch (were the inventory is kept at the owned warehouse) and the sales from the commercial branch to the final customer:

The differences generated month by month fluctuate in a significant matter; looking at figure 3 this means that all the forecasts that are generated with the information in column 1 are not going to be reflecting the real demand from the customers, which is the main objective.

	Sales from Factory to Branch	Sales from Branch to Customer	Difference
January	656,319	552,708	16%
February	493,160	589,613	-20%
March	751,901	780,222	-4%
April	1,187,705	764,700	36%
May	794,824	782,228	2%
June	946,214	763,739	19%
July	523,153	810,732	-55%
August	722,847	994,318	-38%
September	784,618	920,080	-17%
October	722,940	780,465	-8%
November	557,478	819,639	-47%
December	444,211	703,302	-58%

Figure 3: Factory Sales vs Branch Sales

In figure 4 it can be seen that the first part of the year the orders for the factory are higher than the actual sales to the customer, but then in the second half of the year the sales to the customers are larger than the order to the factory, which reflects that there is a there is replenishment stage and later the inventory is used.

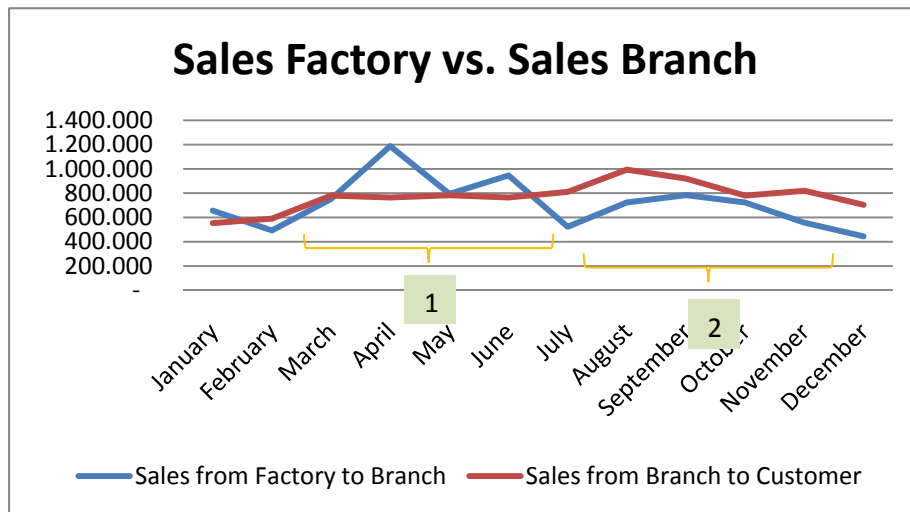


Figure 4: Factory vs Branch

An Information Integration project is being launched in order to be able to visualize all the sales that the Proquinal group generates to the final customers in the entire world in one unified database. The objective of this integration is to facilitate the access to the sales information and be able to use it as an accurate source for the baseline forecast generation.

Inventory information in all locations

In order to determine the global production quantities for inventory replenishment orders it is necessary to be able to visualize the inventory along all the supply chain, including all the warehouses around the world and the material in transit between each warehouse. As the different warehouses have independent information systems, today it takes a considerable amount of time to integrate the information from all the databases. This project will allow us to extract the inventory information from all the locations in an

automated way so the production planning can be generated globally, having the correct level at each location.

4.2 Single S&OP process⁵

The way a global S&OP process is broken up as a direct impact on how well the process works. According to a consultant from Oliver Wight the most important aspect to look at when deciding how to separate an S&OP process is the supply and demand characteristics of the products the company sells. The demand characteristics that must be considered include whether or not the company is divided into regions throughout the world, and secondly the number of products. The supply characteristics are resources the company uses to produce its products.

There can be suggested four types of scenarios that would determine the division of the S&OP process;

- Single World Source: One manufacturing facility that supplies product to the entire world. Demand information is gathered for each of the regions and rolled up unto one number for the supply review, this information is collected from each of the sales and marketing departments in the different regions, in this case one single S&OP process is generated.
- Multiple Regional Sources: Multiple supply sources that are dedicated to specific areas. Dedicated facilities means that the plant only produces product for that region or set of regions it is intended to serve. In this case an S&OP is run for each

⁵ Honstain C. (2007). Sales and Operations Planning in Global Business. Thesis in Master of Engineering in Logistics MIT

of the regions. Demand data is collected from each of the regions and communicated back to the process that supports it respective region.

- **Dedicated Regional Source:** One plant exists in each of the regions and is completely dedicated to that region. An S&OP process is run for each of the regions and run by a general manager or division president.
- **Multiple Shared Sourcing:** Many plants are located around the world and each can serve many or all of the regions in the world. There is control at both regional level and the corporate level. In this case each region with a supply resource should run its own S&OP meetings. Once each regional S&OP meeting has been completed, there should be an executive meeting that summarizes each of the regional meetings and communicates the financial impact to the executive team.

For Proquinal

In the case of Proquinal Group, even though the demand is sourced by two plants, both of them are managed from the headquarters in Bogota and both of them manufacture the same kind of products. This indicates that it is appropriate to implement one single S&OP process taking into account that the stage of obtaining the demand requirements for each region has to be independent and after that consolidated in one single global Demand Plan.

4.3 Demand Meetings by company units

According to the sales performance and specific processes applied, the demand management for Proquinal has to be approached according to the markets served, which are divided into three main units:

- North America
- Europe
- Colombia and Latin America

Each of these are managed in different ways and have different sales strategies, which is why an individual initial S&OP approach (Demand view) for each market is appropriate to apply. Sales and marketing members are independent from each market and analysis has to be generated in different levels of detail from one market to another. The objective is to generate an unconstrained demand plan for each market which will be integrated into one single plan and be able to analyze in the next meeting for the Supply stage.

4.3.1 North America

This market has two types of customers; the Strategic large where shipments are generated directly from Proquinal to the customer and mainly their selling unit is per container (called Container Customers). The second type is the customers served locally by Spradling International Inc., using inventory that is held at warehouses distributed in North America (called Warehouse Customers)

4.3.2 Europe

All European customers are served by our commercialization channel located at Spain (Eurospadling) and Germany (Spradling GMBH) using inventory located at owned warehouses as well.

4.3.3 Colombia and Latin America

In this market we have two types of customers; the ones served by our local commercialization branch distributed along different cities in Colombia and the ones served directly by Proquinal, which can be located in Colombia or in a country in Latin America. The Latin American and Colombian market in most of the cases share the same portfolio, so even though they are very different markets it is feasible to consolidate requirements in one single type of meeting.

The structure of the demand meetings in the beginning is planned as follows:

Market	North America	Europe	Colombia and Latin America
Meetings			
Fequency	First week of each month		
Members	USA General Manager, USA Commercial Manager, USA Customer Service Manager, USA Purchase Manager, Sales Representatives if required and the Demand Planner	European Commercial Manager, Spain Commercial Director, Germany Commercial Director, Sales Representatives if required and the Demand Planner.	Latin American and Colombian Commercial Manager, Latin American Commercial Director, Colombian Commercial Branch Director, Sales Representatives if required and the Demand Planner.
Length	1 hour	1 hour	1 hour
Comunication way	Phone conference	Phone conference	Live meeting
Indicators Review			

Forecast Accuracy	References with the largest MAPE largest are needed to be analyzed and the historic information can be modified if spikes are detected and can be assigned to specific events (the idea is to avoid including events that are not going to be repeated in the future which may affect the forecast)
	Performance of the specific commercial or marketing plans applied to the demand plan is monitored against the real sales. The plans are modified if the performance is not as expected.
Demand Planning	
Important points	1 year rolling baseline forecast is presented by the Demand Planner by SKU level. The next two months are frozen (due to the 2 months regular delivery lead time) and the 10 next are variable according the updated statistical forecast
	Modifications form the commercial view are applied to the baseline numbers
	An unconstrained demand is obtained from the meeting

Figure 5: Demand meetings structure

4.4 Supply Meetings

The initial input for these meetings is the unconstrained demand that is going to be built during the first week of each month. The products are going to be grouped into families according to their principal raw materials and operations requirements, so then by having this view the restrictions can be identified:

- The meetings will be scheduled in the second week of each month
- Members: Master Production Scheduler, Materials Planner, Purchasing Director, Logistics Assistant and Demand Planner

According to the demand plan requirements, the topics that will be discussed in this 1.5 hour meeting are the following:

- Installed plant capacity and usage
- Raw materials availability

- Logistic conditions
- Special requirements for new product launches
- Scenarios generations: This will be generated in cases where known factors are going to affect the normal production conditions, so then different operation procedures will have to be applied and supply capacity may be modified

The objective of these meetings is to obtain an official constrained demand plan which will be communicated to the commercial force

4.5 Executive S&OP Meetings

The executive meetings were first thought as an independent new group including the managers of Proquinal, this idea was communicated to the monthly Proquinal Presidential Committee and the proposal that came out was that the executive S&OP meeting would be part of the monthly Presidential Committee. As indicated in some texts, it is best to have an exclusive meeting to discuss this topic, but the advantage of having it as part of an already established group meeting with all the managers and the president is that the discipline of the meeting is already adopted and the assistance rate of the members would be very high since it is an official established compromise.

Following this proposal this monthly meeting will be scheduled on the third week of each month including all the managers of the company

The topics that will be discussed are:

- KPIs evaluation:
 - o Orders fulfillment rate
 - o Forecast accuracy
 - o Current inventory levels vs. Target inventory levels

- Decision process for the issues that weren't solved in the supply meeting
- Changes in the production capacity and schedule

4.6 Evaluation of the S&OP Process and Finance Aspects

Sales and Operations planning is a process that helps companies meet their goals and make money. A regular, usually annual, evaluation of the process is necessary to make sure the process is working correctly. According to T.F. Wallace the best approach is to use a balanced scorecard, where two aspects can be analyzed; metrics traced directly to the results of the meetings and metrics that measure the effectiveness of the meetings.

Metrics from the company's performance results:

- Forecast accuracy
- Inventory turns
- Line item fill rate
- Outside factors:
 - o New product introduction (forecast accuracy)

Metrics from the effectiveness of the meetings:

- Attendance of the correct people
- Ownership of the forecast
- Business strategy alignment in the meetings
- Regular meeting schedule
- Length of the forecast horizon

According to Oliver Wight to measure the business, there are 5 metrics that have to be monitored:

- Sales Revenue: attainment of the business plan
- Operating profit: attainment of the business plan and as a benchmark against industry standards
- Return on Net Assets: ratio of operating profit to net trading assets as attainment of the business plan and as a benchmark against industry standards
- Cash: operating cash flow attainment of the business plan
- Customer (OTIF) to Request: on time in full against request is measured against a standard established in the business strategy

These metrics are the core measurements in an S&OP plan along with the other business specific metrics. These metrics should be within 99.5% of the plan.

In an ideal case, a global company looks at the forecast for the following fiscal year and then sets the financial goals and business plan based on those numbers, this business plan is based mainly on the forecast from the S&OP process, but this rarely happens this way. What usually happens is that the finance group develops the business plan in the beginning of the year, and then the rest of the company struggles to meet the goals set by the finance group.

4.7 Pilot implementation plan

The proposal is to initiate the S&OP process implementation with a preliminary group of top references out of the Colombian and Latin American market. The reasons of selecting this unit are based on the following points:

- As the local commercializing channel is more accessible, the information (POS) and knowledge from the distribution channel of the final customer is available, so it can be used as an important input in order to determine the real customer future demand.

- Meetings can be conducted easily due to the sales people are locally available
- Reaction for the local market can be faster comparing it to the export markets due to the shorter lead time, so in any case emergency deliveries are required during the learning of the process, the customer can be served faster.

The S&OP process is going to be developed completely for these references, obtaining information about:

- Roles and responsibilities for the meetings in each stage
- Detailed agenda
- Test the determined meetings frequency
- Determining the indicators appropriate to measure the success of the process
- Selecting a method to quantify the financial benefits out of the results

After results are being observed and according to the performance during a period of time, the knowledge acquired will be replicated for the remaining portfolio of this unit and after that to the rest of the units.

4.7.1 Alternative proposal for the Pilot Implementation Plan

The main objective of generating a pilot plan with one family is to generate politics that can be replicated for the other families of the company. Since the sales at Proquinal are not divided only by product families but by geographic markets, then each market may have its own meeting parameters and procedures. A new proposal came out so that the knowledge could be obtained not only for one product family but for each geographic market:

The idea is to select a group of references (for example a category that is sold in the 4 markets) so that after the process has been tested, conclusions and policies can be

obtained for the 4 different markets and then replicated for the rest of the product families in each market

4.8 Challenges to the Implementation

Changes in the internal processes of the company are necessary to obtain better results but the real changes happen when they are learned by the people, changing the regular culture of the company. During the implementation of the S&OP process several difficulties have to be addressed in matters of having managers and directors changing their way of doing their sales and the way of communicating to the rest of the company:

- Demand, supply and on time communications about changes

People from the sales department need to have always in mind that in order reach the established goals then there has to be available product to deliver, so each time there are changes in the regular demand, such as increases or decreases in future sales these have to be immediately communicated to the supply area, and in case there are unavoidable restrictions then these sales have to be taken out of the plans. The big difference of having to work this way is that every operation has to be communicated to the rest of the company but always keeping in mind that will be visible in the fulfillment rates.

- Deal with indicators

Being measured for the forecasts generated each month brings a higher responsibility for the demand team members, people have to be committed to sell what they forecast and on the other hand to produce what they plan. As well, this way of working generates more stress and pressure for each person, which generates most of the times evasive reactions. The important factor is to always keep in mind that knowing that if all the members of the company are committed to accomplish a single value then results are going to be improved most likely.

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