RIVERLOGIC

STRENGTHENING THE S&OP

PROCESS WITH FINANCIALS AND WHAT-IF ANALYSES

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INTRODUCTION

Embedded financials are central to Sales and Operations Planning (S&OP) value; however, robust what-if analyses can unleash S&OP's maximum potential and deliver true Integrated Business Planning (IBP). What-if analyses allow users to evaluate alternative strategies and policies to maximize revenue, profit, and working capital performance. Additionally, they aid in evaluating risk and supply chain constraints, as well as meeting service level commitments.

In recent conversations, we've found that companies tend to be fairly clear in articulating their business needs. Surprisingly, S&OP managers have more difficulty than other key decision-makers articulating technical capabilities that meet business needs. In this paper, we provide a set of guiding principles for S&OP managers and their partners, to help them understand and implement best practices through what-if analyses, particularly as the relates to demand shaping, supply planning, financials, and risk.

Support for multi-dimensional analysis on a forward-looking basis is essential for maximizing value. Cross-functional analyses allow managers to approach planning from multiple business angles (e.g., demand, product, supply), including upside and risk scenarios. This helps in quantifying key trade-offs, as well as reaching a consensus on actions and policies to optimize future performance.

IN THIS PAPER WE WILL COVER:

Demand Shaping

Supply Planning

Financials and Risk

DEMAND SHAPING

Demand shaping includes analyses of pricing, promotions, and specific customer deals and serves to identify the impact of various shaping strategies on the business. This allows companies to maximize a combination of revenues, profits, and volumes.

FOR DEMAND SHAPING, A BEST-PRACTICE ANALYSIS SEQUENCE WOULD INCLUDE:

- A preliminary what-if analysis of the system, including factors like expected demand uplift, pricing, and any costs associated; examples of this include executing a trade promotion campaign or providing special deals for customers, which typically include a certain volume and pricing. This usually is done by editing a demand plan or through software that allows users to enter necessary variables.

- Once the scenario is entered, users recreate the plan considering system constraints. By optimizing the supply plan for profit and cost, users can compare multiple scenarios to discern the best possible outcome. This saves significant time and allows for more realistic evaluations than simulation-based strategies.

- The re-optimized plan establishes impacts on overall financial performance, including things such as product and campaign profitability. Users are able to see P&Ls according to business unit and product, as well as the impact of the campaign compared to a base plan.

- Root-cause analyses help determine the key performance drivers. For example, capacity availability may inhibit how well demands are met or force overtime and build-ahead (resulting in higher cost and lower campaign profitability). Additionally, users may find that their policies (such as working capital or inventory) drive higher out-of-stock situations.

- If scenarios are complex, users may enable the system to draw from multiple campaigns (full or partial), based on total profit impact; this reduces workload and leads to the best answer quickly. Sometimes, it is possible to fulfill a campaign up to the point where cost is augmented (such as in overtime and outsourcing), thus maximizing profitability.

- Finally, users should have access to opportunity values (the system-wide net impact of selling an additional unit of product or adding a unit of capacity). Opportunity values provide unique insights, which help users identify further opportunities while significantly reducing workload.

Ideally, IBP professionals working with various demandshaping scenarios will have access to optimization solutions, which increase planning synergy.

These solutions help users create a set of more optimal campaigns and should consider unit cost and profitability for casts produced in the S&OP process.

Demand-shaping analyses, embedded as part of the S&OP process, represent a very large upside. This is especially true for CPG and electronics manufacturers, who spend heavily on trade promotions (which focus largely on revenue and vo ume) without knowing the true impact of their campaigns.

By embedding decisions as part of S&OP, campaign planners can more realistically evaluate revenue and profit impact and make necessary adjustments to maximize the ROI.

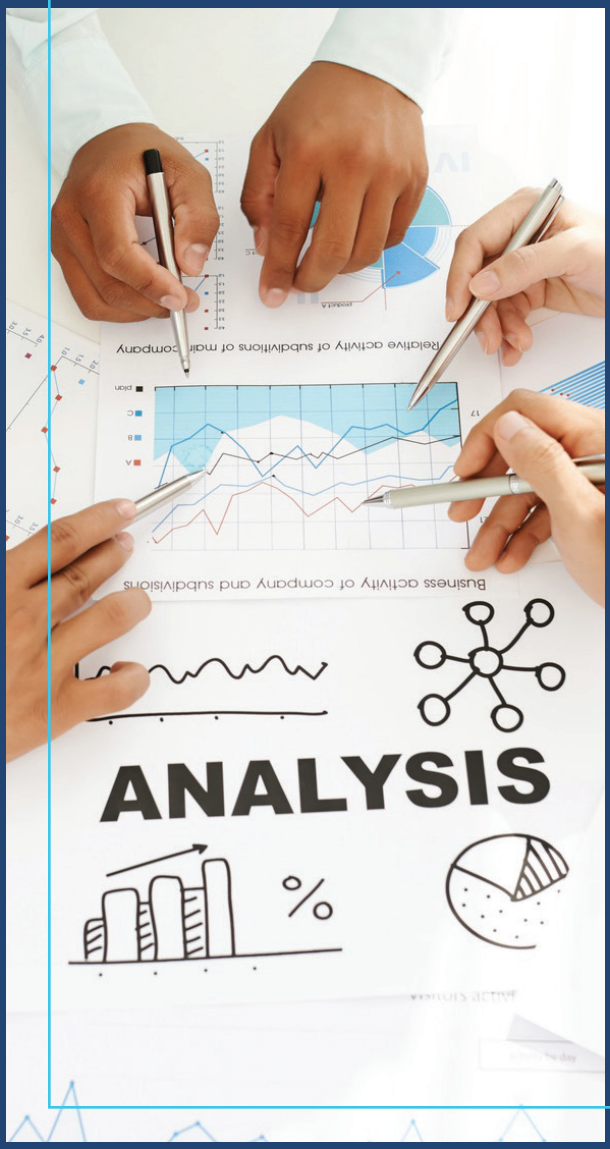
PRODUCT MIX

Product mix what-if evaluations consider different product mix strategies, such as assortment and SKU portfolio optimization, as well as go-to-market strategies. This helps users identify the optimal product mix at customer, regional, or national levels and create plans that maximize financial impact.

A BEST PRACTICE ANALYSIS SEQUENCE WOULD INCLUDE:

- Defining the what-if analysis. Simple analyses may include evaluating different product mix strategies for different retail channels, in different store types or regions, resulting in volume and price expectations associated with given combinations. A more complex scenario might also include new product introductions – which require deeper forecasting, especially at the manufacturing and supply chain levels – and/or SKU sunsets at the national level that force assortment adjustments.

- As scenarios potentially involve changing product mix at regional or national levels, optimizing supply plans (to maximum profit or minimum cost) to properly account for supply chain and business constraints is essential. Users must be able to analyze and compare multiple scenarios for the best possible outcome.



- The re-optimized plan establishes the impact on overall financial performance. Users should be able to see P&Ls by business unit, product, and major customer/store type and compare the impact of the scenario vs. the base plan. In addition, users should be able to see the impact of discrete moves, such as new product introductions or product rationalization.

  - For deeper insights on scenario outcomes, users may use root-cause analyses to determine key performance drivers. For example, users may want to see why a certain product yields a lower profit than expected. To do this, they may need to dive into detailed profitability forecasts that show revenue and cost by region, including line and labor costs. These costs also may vary across time.

  - Root-cause analyses may reveal different costs to serve users, particularly if logistics requirements sufficiently vary (such as they do under a rapid replenishment situation).

- In complex scenarios and with limited time, users may allow the system to select the optimal product mix (by customer, region, or other parameters), based on total profit impact. It is even possible to configure these scenarios so that some products are "must-haves" (such as circumstances in which decisions to carry products are forced), while others are open to choice by the system. This type of analysis often leads to definition and analysis of additional scenarios.

- With embedded analyses, product mix decisions can be made in-context, including more realistic revenue and profit impacts; this allows S&OP and category managers to make adjustments that maximize the performance of their product portfolios.

- Next generation assortment planning and optimization solutions simplify evaluations, as they find the optimal combination for a given customer, store type, and region. It is highly compatible with S&OP and IBP and offers a far improved set of incoming scenarios (based on constraint and cost).

As with demand shaping, users should have access to opportunity values by product—and perhaps even by customer. These values identify further opportunities while lowering workload.

SUPPLY PLANNING

Supply-side what-ifs include evaluation of different supply planning strategies, such as manufacturing, inventory, procurement, and logistics. Users alter constraints (such as safety stock policy and manufacturing run lengths), introduce new possibilities, and manipulate objective functions to create realistic supply scenarios. These help identify supply options that maximize revenue, profit, working capital, and customer service performance.

1. Understanding your base plan, which includes an integrated supply and financial considerations, highlights the key constraints impacting the supply plan. It should go beyond basic operational views to quantify financial impacts, such as in the form of lost revenues and profits. In addition, it should calculate opportunity value (the system-wide net marginal impact) of removing a unit or bottleneck. This analysis helps identify key opportunities for improving the supply plan.

2. Defining the what-if analysis is done by editing min-max constraints or through a scenario program that allows users to enter only the necessary variables. Typical analyses are targeted beyond the frozen period (which varies by industry and company) and include strategy, policy and planning-level considerations.

   - Strategic and policy analyses guide planning and short-term operational decisions. These include manufacturing strategy (e.g., sourcing, MTS/MTO), inventory policy (e.g., safety stock, cycle stock), procurement decisions (e.g., single/multi-sourcing), and logistics policy (e.g., distribution, customer service). Users may include capital expense allocation scenarios as part of their strategic S&OP analyses.

   - At the planning level, users evaluate the impact of altering more tactical constraints. These include build-ahead, over-time, manufacturing run length, changes to maintenance schedule, special deals on procurement, and many other impact levels.

3. Recreating the plan considering all the constraints in the system and optimizing the supply plan to get a realistic impact evaluation helps users. This helps users analyze and compare multiple scenarios under the best possible outcome.

4 The optimized plan establishes the impacts on operational and financial performance and enables users to see P&Ls by business unit, product, facility/asset type, and function. In addition, users should be able to compare the impact of the scenario to the base plan at the same level of detail.

5 Systems behave as a whole in a non-linear way, which often will result in counter-intuitive findings. Root-cause analyses help determine the key drivers of performance. Users may want to see why a certain strategy or policy change yields a different outcome than expected. To do this, they may need to dive into operational plan reports that detail cost forecasts (akin to Activity Based Costing, but on a forward-looking basis). Accessing such reports, which combine operational and financial information, is critical to understanding the impact of a given what-if scenario.

6 A final evaluation of a scenario must include opportunity values by product and by asset. Opportunity values deliver additional upside potential and quantify the value of removing certain constraints. This enables users to identify new what-if scenarios to evaluate.

As outlined, demand shaping, product mix, and supply-side what-if analyses can provide significant benefits to the S&OP process. The key requirement for capturing this upside is the ability to conduct multi-dimensional analyses on a forward-looking basis, evaluating the effect that various strategies, policies, and tactics have on business plans.

Through IBP, revenue and budget goals are validated against a bottom-up operating plan, which is consistent with financial goals. Decision-makers can alter tactical and strategic plans to optimize the balance between financial performance, customer service, and risk.

FINANCIAL AND RISK MANAGEMENT

Financial and risk management is the practice of identifying potential negative impacts on business before they happen and developing mitigating strategies to curb or lessen their affects on the overall business performance.

FINANCIAL AND RISK MANAGEMENT CONCERNS ANALYSES OF INPUT COSTS, SUCH AS:

- Raw materials, fuel, and outsourced labor
- Demand (e.g., assessing the impact of winning or losing bids in chemicals or pharmaceuticals and situations in which production needs to start before the winner is known)
- Unexpected supply chain interruptions
- Interest rates
- Currency
- Various other factors that might affect performance

The objective of risk and financial analysis is to identify the impact of potential unplanned events and use this information to test the resiliency of current strategies under different situations. Potential outcomes include strategy refinement and development of contingency plans, should some events occur. In addition, leading indicators can be used to flag potential situations sooner and alert the organization to increase response readiness. A best practice analysis sequence would include:

1. Evaluating the base integrated Supply & Financial Plan, including assumptions that went into creating the plan, and comparing this information against history. Preparing a list of top variables with the highest impact and most risk. It's required that financials be embedded at a granular level, as this is not possible in a typical supply planning system.

2. Using the system to run automated sensitivity analyses, such as by configuring plus/minus percentage points in relation to the base plan, through scenario wizards or easy-to-access datasets. With many variables, it may take a few minutes to configure all the sensitivity analyses required.

3 Each run presents an optimized plan that establishes overall financial impact, product profitability, and operational plans. Users can compare the impact of each run side by side, easily identifying the variable that changed and its financial/operational impact. If the analysis has been configured properly, users should be able to see very quickly where the biggest risks lie.

4 Once the analysis series is entered, the system will recreate the plan multiple times, each time considering all constraints involved. By optimizing the supply plan in context of the potential changes in cost, demand, or supply chain capacity, users can compare multiple scenarios to determine the best possible outcome. This allows more realistic and quicker analysis than simulation solutions. For example, if you configured sensitivity analyses for three variables, each plus/minus 20%, you have six scenarios to evaluate; if you used simulation, you would have to make many assumptions on what to do about stranded volumes, lower demand, where to buy product, how much inventory to build, etc., resulting in tens of thousands of runs versus six.

5 Root-cause analyses can then be used for greater insights. For example, the system may choose to move production to another facility to take advantage of raw material or transportation cost differentials. These cases can form the basis for contingency planning.

6 At this point, users from different functions review the impact of the financial and risk sensitivity analyses. Oftentimes, there is no need for additional evaluation; in some situations, however, users will want to evaluate refinements to the current plan or go deeper into drawing contingency plans.

- For example, a typical evaluation might include querying the system to determine potential inventory capacity if the working capital policy were relaxed. This requires understanding that inventory can be an effective buffer against unplanned supply chain downtime or even increases in raw material cost. Of course, there is always upside risk, such as when sales runs a trade promotion campaign that is wildly successful from a revenue perspective but puts the organization in a demand bind, thus incurring additional cost. These and many more what-if analyses are incredibly valuable assets.

7 Users can flag leading and lagging performance indicators, which help identify when deviations from plan are meaningful enough. These can come from both sensitivity analyses and opportunity values, which alert users of marginal product profitability and capacity time. Contingency plans can be stored in the system, attached to the indicators, in case the organization needs to react.

Ideally, integrated business planners should be able to integrate their system with budgeting and financial planning/analysis. This increases planning synergy by:

- Providing significantly more accurate profitability numbers
- Highlighting the top risk drivers
- Directly communicating gross/net revenues, COGS, and logistics budget P&Ls under different scenarios

The result is improved efficiency and, most importantly, knowledge on when and how to react to unplanned events – leading to stronger performance and organizational agility.

CASE STUDY

Conducting business as Beaulieu of America, the Beaulieu Group is the largest carpet producer in America and the third-largest carpet manufacturer in the world. Its brands include Bliss by BeaulieuTM, Coronet®, and Hollytex® Commercial Solutions, as well as Beaulieu Property Management Solutions for the multi-family housing industry. Through its dealers, Beaulieu of America distributes carpets to home improvement chains and commercial contractors.

Beaulieu Group sought to better understand the financial impact of its operational decisions. They had difficulty understanding the true impact of changing demand conditions and input prices, as the fully-allocated costing methodology assumed a linear relationship between demand and profitability.

- As forecasts varied, the organization assumed a linear response to supply. They were making decisions based on historical rates, engineering studies, production, and capacity utilization.
- Some products were petroleum-based and others were not; as a result, petroleum price volatility did not uniformly affect products. The standard costing methodology did not take this into account within the timeframe required to adjust prices, product mix, and inventory.

These challenges were accentuated by a complex product portfolio, comprised of thousands of SKUs and an intricate supply chain (made up of 7-15 product levels, which could be manufactured internally and externally). This made it difficult for Beaulieu Group to predict what business was optimal and which customers would be the most profitable to serve going forward.

To overcome these challenges, Beaulieu Group implemented an Integrated Business Planning solution with what-if capabilities. With IBP, the organization is now able to identify critical areas with upside opportunities, as well as plans short of targets; the root causes underlying variance; and course correction actions that can be taken to bridge the gaps between target and plan. Through holistic impact and optimization analysis, IBP helps Beaulieu Group ensure that all actions are targeted and balanced.

THROUGH THE IBP SOLUTION, BEAULIEU GROUP HAS REALIZED THE FOLLOWING BENEFITS:

- Increased cross-funcational abilities, improved buy-in for profit maximizing, and constrained enterprise plan, which all teams could execute
- Gained robust modeling, simulation, and analysis capabilities, which accelerate process improvement
- Improved ability to monitor performance against forecasts and key performance indicators (KPIs) on a real-time basis
- Expanded ability to identify and shape most profitable products and customers, through targeted offerings and marketing campaigns
- Secured ability to create a full-fledged, forward-looking financial plan on a weekly basis
- 6x return on total investment achieved in the first year

CONCLUSION

Organizational success today is driven by high complexities, short product life cycles, and immense pressure to perform. Managers have to make increasingly difficult decisions in less time – decisions which require strong business acumen.

The objective of Integrated Business Planning technology (with what-if analysis capabilities) is to improve business decision-making as part of the S&OP process. Innovative companies, which have deployed IBP technology described throughout this paper, have realized the following benefits:

- **UP TO 1% OF REVENUE IN ADDITIONAL OPERATING PROFITS**
- **WORKING CAPITAL REDUCTIONS OF 15-25%**
- **SIGNIFICANT RISK REDUCTION**

About River Logic

River Logic has been a global innovator in prescriptive analytics (optimization) since 2000. Its platform — designed for business users — enables enterprise-wide optimization, collaborative planning, and performance management, all delivered through a revolutionary user experience. By understanding how to best utilize cross functional resources and manage trade-offs, companies make more impactful decisions.

River Logic goes to market primarily through partner organizations like PwC, Deloitte, Accenture, and Microsoft, helping them develop high-value applications that monetize their IP. Recent clients include Unilever, Boral, Philip Morris International, Boise Cascade, McKee Foods, and the Russian Post. Typical client value-add ranges from 10% in cost reduction to profit improvements equal to 2-5% of annual sales. River Logic strives to help every customer achieve at least 10X return on investment, but it is common for customers to see even higher returns.

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