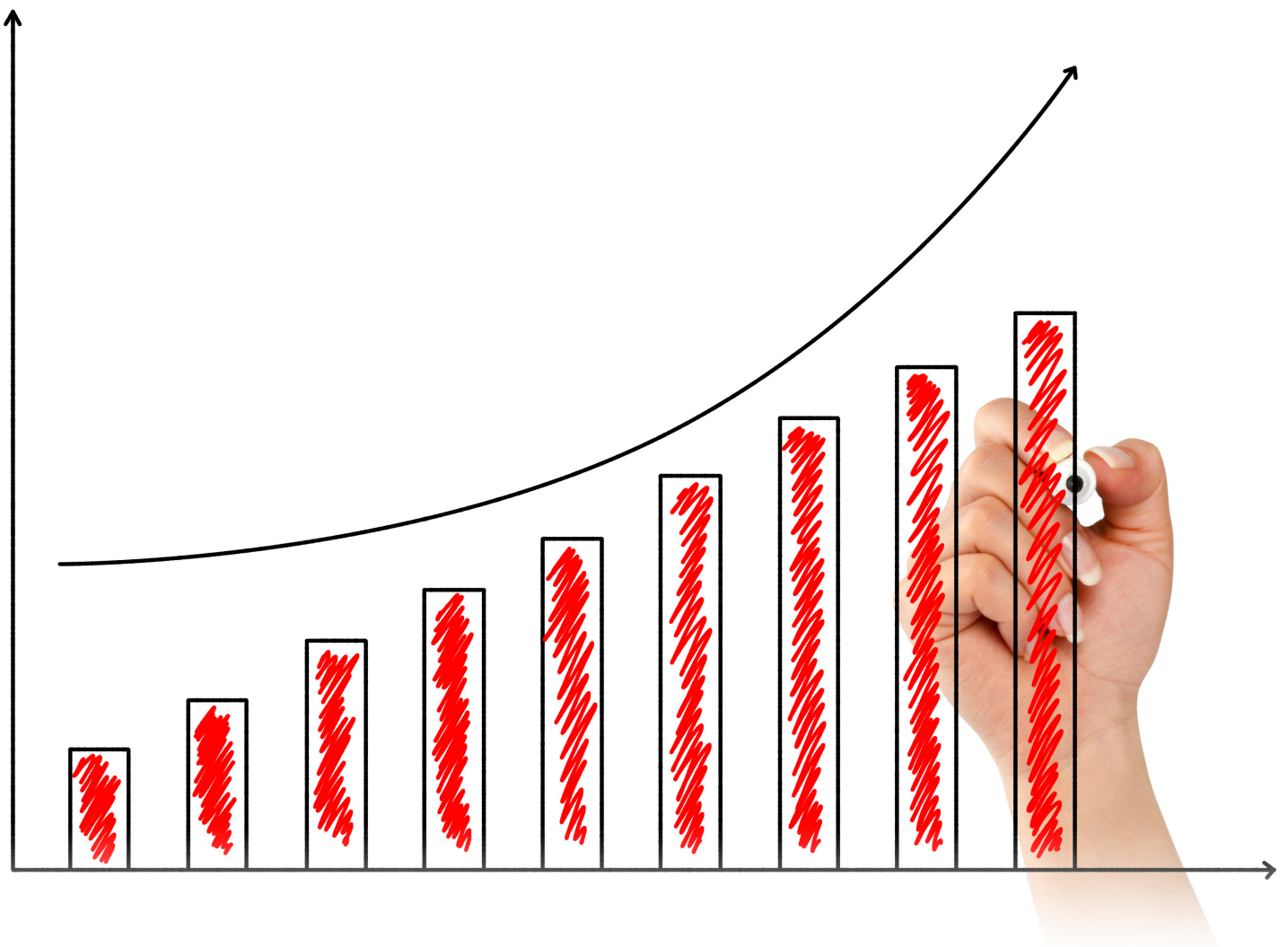


Making the Case: The ROI of Demand Management



Imagine the **possibilities**,
realize the **potential**.[®]

Richard recently took on a new role as a regional operations leader.

He contacted one of our principals about ways to ensure receiving a trustworthy demand signal to drive distribution center (DC) operations in the medical device company.

This request reminded one of the authors of a challenge that he had solved in the past. While working for a large consumer goods company, the demand planning function had initially been structured to optimize the demand plan for the factories. The accuracy of the plan nationally was quite good. When measured geographically at distribution centers, accuracy was a nightmare.

Equally frustrating for both Richard and the author: Business decision-makers did not share their concern about the criticality of reliable demand plans at the factories and DCs. In defense of the business leaders, no one had established the linkage between unreliable demand plans and business and financial performance.

As a result, the business leaders thought the current demand plan accuracy was good enough. They did not see the value of investing in improvements.

This paper shows how to evaluate and communicate the value of improving the credibility of the demand plan. Several templates are included to help in quantifying and documenting the return on investment.

In the authors' experiences, more trusted demand plans can have a significant return on investment. It starts by raising the expectations of the demand planning process. As the implications of demand plan accuracy become clear, the story begins to unfold on the potential return on investment from making improvements.



A Change of Mindset Is Needed

We have all heard the phrase, “all forecasts are wrong.” This lore, passed along from generation to generation of business leaders, is misleading. It is one reason many executives believe that their business is too unique and unpredictable to be forecasted.

In the authors’ view, business leaders should not accept forecast inaccuracies as a way of business life. This belief causes companies to “leave too much money on the table.”

No, nothing is perfect in life. Sales and marketing plans will not be 100 percent accurate. Nor will supply plans or financial plans. Striving to improve their accuracy inevitably drives companies to improve the execution of plans. When plans are well executed, companies are top performers in their industries.

Here’s the challenge for those who seek to improve the demand planning process: They must demonstrate the return on investment in concrete terms that directly relate to business performance.

This, too, can require a change in mindset. The onus is on the business managers to make a compelling case for change.

What Needs to Improve?

Creating the case for change – and investment – starts with determining what needs to improve. Many organizations believe that improved forecast accuracy alone is the goal of demand planning initiatives. They spend considerable time and effort on “getting the number right.”

In doing so, they fail to consider what data scientists know: That every statistically derived forecast has an upper and lower confidence range. In the realm of data scientists, forecasts are wrong only if actual demand falls outside the confidence range.

We also know that in the business realm, not everything in the future is controllable. That is why effective planning involves a combination of:

- Documenting those things that you know and can control
- Forecasting those things that you cannot control, and supporting the numbers and timing of demand projections with clearly documented assumptions

Focusing an improvement initiative solely on improving forecast accuracy is erroneous and shortsighted. By itself, improving forecast accuracy does not add value unless that value can be captured.



A better – and more truthful – approach captures the impact of demand planning on the health of the business. It involves a holistic understanding of:

- Why a demand plan is needed
- How the demand plan impacts the way other business functions perform
- How the demand plan drives decision making that impacts business performance

Take a moment to think about your company’s decision-making processes, using Template 1:

Template 1

Linking Demand Planning to Decision Making

Do you trust your demand plan today?	Yes	No	Don't Know
Can you rely on the demand plan to make decisions?			
Is the demand plan always high or always low compared to actual demand?			
Do you, or others, tend to override the demand plan?			
Does the timing of the demand planning process fit with other business planning activities?	Yes	No	Don't Know
Does your budgeting process feel like a fire drill?			
Are you constantly working around the demand planning process because issues simply can't afford to wait?			
Are you regularly being surprised by activities that are within the control of your company?	Yes	No	Don't Know
Are you the last to find out about changes to new product launches or sales promotions?			
Are you stuck in the detail, muscling through the data, and operating largely in Excel spreadsheets?	Yes	No	Don't Know
Are you manually planning at the lowest level of detail?			
Are you leveraging statistical forecasts, planning hierarchies, and disaggregation?			
Do you miss things because you don't have enough time to look through everything?			
Are your inventory turns or customer service levels below benchmarks or expectations?	Yes	No	Don't Know
Are you frequently expediting orders?			
Are you being fined for late deliveries?			
Do you have significant write-offs of excess and obsolete inventory?			
Do you know how much inventory you should have?			

Knowing that the goal is not simply to improve a lone key performance indicator, like forecast accuracy, is liberating. It causes business leaders to move beyond considering forecasting tools and system solutions as the “silver bullet” or cure-all. Their thought process shifts to how do they use the information from the demand plan to make better decisions about:

- Sales and marketing activities
- Supply plans
- Financial expectations
- Execution issues

Business leaders come to realize that “getting the forecast number right” is only 10 percent of the effort in planning. The other 90 percent of energy is expended demonstrating the credibility of the demand plan. It also involves communicating the demand projections in ways that are useful to the customers of the forecast (factories, distribution centers, and financial organizations all have different needs).

When the demand plans are considered credible by the rest of the enterprise, execution across the business improves. That is where a lot of value lies in improving the demand planning process. It also helps explain why technology solutions require a best practice process and well-trained people using the tools and systems to help create more accurate plans.

Quantifying the Financial Benefits of Improvement

Quantifying the financial benefits of improving the demand planning process involves evaluating how the demand plan impacts business performance. This evaluation requires data gathering and making calculations. But first, let’s consider the impacts of demand planning on the business.

We recommend starting simple. The simple approach allows building the story and making a compelling case for improvement. It also highlights the range of assumptions needed to create the business case, as not everything will be easily measurable. Additional detail needed to support the business case can be added later. (Sometimes less is more.)



The following template is a good place to start. Remembering the business objectives, document the decisions or activities that the demand plan impacts directly or indirectly. The impacts will be unique to your business, but some examples are included in Template 2.

Template 2

Documenting the Impact of the Demand Plan

Summarize the key business goals or strategies

Business Objectives
1
2
3

List the decisions and activities that the demand plan is impacting (directly or indirectly)

Decisions / Impact of the Demand Plan	Impact of the demand plan accuracy on the business Indicate + for positive and - for negative impact		
	Directly	Indirectly	Details on Impact
Procurement of material			
Manufacturing of finished goods			
Deployment of finished goods to distribution centers			
Investment in Sales and Marketing advertising and promotions			
Investment in product launches			
Positioning of repair parts and reverse logistics			
Financial commitments to investors			
Sizing of workforce			
Investment in capital equipment and strategic assets			
Establish joint business plans with supply chain partners			
Establish joint business plans with customers			

When evaluating the impact of demand plan accuracy, think broadly about the stakeholder needs and uses of the demand plan in your business. This thought process helps ascertain the range of positive and negative impacts that demand variations can have on decision-making.



Next, consider the implications of demand plan accuracy on decisions made by the various business functions. To assess impact, we should consider both the magnitude of error (accuracy) and direction (bias). Document the answers to these basic questions:

1. What is the implication of selling more than in the plan? (Overselling)
2. What is the implication of selling less than in the plan? (Underselling)

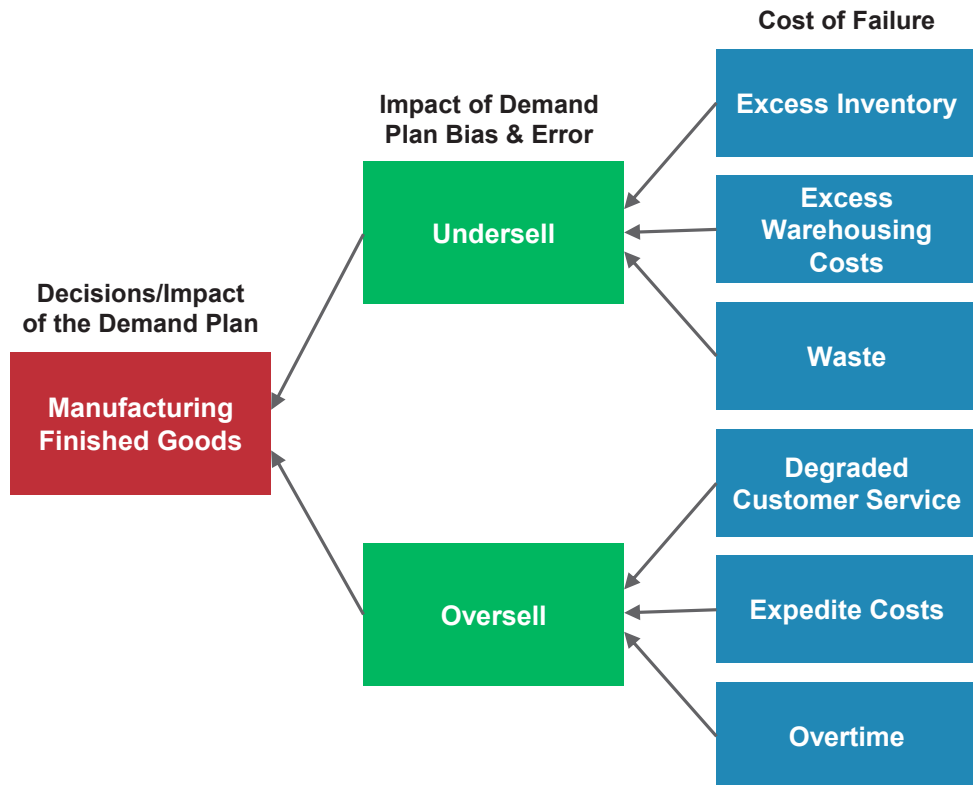
For example, let's look at a common activity – manufacturing of finished goods. The implication of selling below plan is excess inventory. Depending on the product, excess inventory may be strictly a working capital concern. It may also have profitability implications if the inventory has a short shelf-life or is expensive to store.

Conversely, the implication of selling above plan is likely to put pressure on customer service and increase expedite costs (e.g., overtime, premium transportation, etc.).

As the implications of demand plan accuracy become clear, the story begins to unfold on the potential return on investment from making improvements. Documenting the implications (Template 2) is also a first step in developing a set of sources from which to calculate the benefits of improved demand planning (Template 3). We call these sources the costs of failure.

Template 3

Cost of Failure



With the costs of failure outlined, a link or causal relationship can be established between the incidence of failure (how often we oversell or undersell) and the magnitude of the cost. Some links and costs will be easier to identify than others. In our experience, a well-constructed business case should clearly communicate the degree to which improvements can be confidently attributed to demand planning.

That said, some very clear and compelling linkages can usually be identified and quantified. Where there is uncertainty, clearly highlight the assumptions in both the written documentation and verbal presentations.

Here are a couple of suggestions on how to document assumptions when there is uncertainty about the benefits of improvement:

Assumptions on Excess Inventory

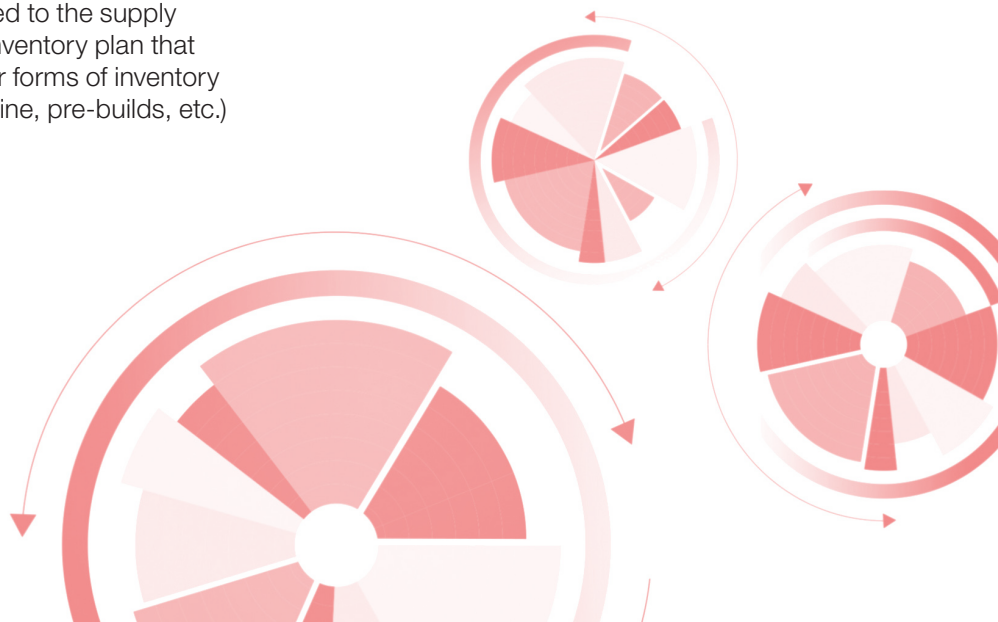
Inventory reduction is a commonly cited benefit of demand planning improvements. It is measurable and can be reliably linked to the accuracy of the demand plan. In many cases, the sizing of safety stock is directly tied to the variability of demand.

When citing the reduction of excess inventory as a benefit from improving the demand planning process, it is important to state a few critical assumptions. These assumptions may include:

- Safety stock levels must be re-sized as demand plan accuracy improves
- Reduction of safety stock assumes the status quo in terms of supply variability
- The demand plan must be appropriately linked to the supply plan through an inventory plan that considers all other forms of inventory (cycle stock, pipeline, pre-builds, etc.)

These assumptions highlight the fact that demand planning improvements are rarely achievable by the demand plan alone. Realization of improvements depends on the other business functions trusting the demand plan.

Some believe that significant improvements can be made by simply eliminating bias and making the demand plan more trustworthy. While that is true, realizing the full value of the improvements is dependent upon other functions appropriately linking their plans to the demand plan. It also requires that safety stock levels are related to demand variability. When these connections are established, companies achieve significant improvements in working capital that are far more substantial than improving forecast accuracy alone.



Customer Service

When companies face customer service challenges, the spotlight is often focused on the demand plan. It is a common practice to code missed customer deliveries and failures in the system as “un-forecasted” orders. In our view, this is a superficial approach that makes it difficult to address the root cause of overselling the plan.

The first challenge is linking a financial impact to customer service. The financial impact does not show up as a line item on the Income Statement or Balance Sheet that can be easily measured.

Customer service challenges are an opportunity cost that some companies express as missed revenue and lost sales. Calculating this missed opportunity, in reality, is notoriously difficult. Here’s why:

- What percentage of missed deliveries is truly perishable?
- How much demand will stay pent up, and for how long?
- Will the demand shift to other products?
- Will consumers switch to a competitor’s product, resulting in the loss of a longtime loyal consumer?

Furthermore, consider the case where demand plan accuracy is improved and that previously lost revenue returns. Will the sales organization attribute the increase in revenue to better planning?

The above quandary is why assumptions must be communicated when documenting the potential return on investment. The assumptions should acknowledge that:

- True unconstrained demand follows an expected trajectory
- There will be no change in supply variability
- Improved customer service drives incremental sales volume

One useful technique is to look for correlations of the impact of demand plan inaccuracies on historical customer service. This correlation helps to validate the business case assumptions. While correlation does not mean causality, it can help to estimate how much benefit could result from reducing a certain amount of forecast error.

One author recalls his tenure in a consumer goods company. He and his team ran many calculations to correlate lost revenue with backorders caused by overselling the demand plan. The analysis found that the lost revenue was significantly higher than inventory carrying costs associated with excess inventory.

This revelation caused a mindset change. Business leaders had tended to focus on reducing operating costs and supply efficiencies. They paid little attention to the consumer and cost/revenue vs. service tradeoffs. Business leaders failed to remember that supply follows demand, not the reverse. Without demand, there is no need for supply.



A Structure for Quantifying the Costs/Benefits

The following Template 4 has proven useful in quantifying costs and benefits of improvement efforts. Following through on the examples of Templates 1, 2 and 3, Template 4 is used to calculate the cost of improvements versus the financial benefits those improvements generate when demand plan accuracy is increased.

Template 4 lays out the planned improvements in a straightforward manner. The example of improvements shows significant improvements in cash flow and operating profit with relatively conservative levers.

By adding the required investments in change management, process design, and tools and systems, Template 4 can be used to calculate the return on investment from the improvement initiative.

Template 4

GENERAL ASSUMPTIONS			
Revenue			\$100,000,000
Oversell (% of time)	35.0%		\$35,000,000
Undersell (% of time)	65.0%		\$65,000,000
Profit Margin	43.0%		\$43,000,000

OVERSELL - IMPACT	Current State	Impact Drivers	Financial Impact
Total sales	\$35,000,000		
Magnitude of overselling (size of the error)	27.00%	\$9,450,000	
Impact			
Lost sales	4.00%	\$378,000	
Lost gross profit			\$162,540
Lost companion sales	1.00%	\$94,500	
Lost gross profit of companion sales			\$40,635
Increase in production costs	2.00%		\$107,730
Increase in shipment costs	2.00%		\$168,000
Lost gross profit from overselling			\$478,905

UNDERSSELL - IMPACT	Current State	Impact Drivers	Financial Impact
Total sales	\$65,000,000		
Magnitude of underselling (size of the error)	27.00%	\$17,550,000	
Impact			
Wrong products produced	10.00%	\$1,755,000	
Discounted sales (% sold at discount)	5.00%	\$877,500	
Lost revenue due to discounting	25.00%		\$219,375
Transshipment costs	1.00%		\$175,500
Product costs	\$57,000,000		
Cost of disposing obsolete product (scrap)	0.75%		\$427,500
Investment cost (interest rate)	7.00%		
Inventory turns	5.1		
Inventory turns - Best in Class Benchmark	6.0		
Inventory Cost of Capital			\$117,353
Lost gross profit from underselling			\$939,728

COST/BENEFIT TOTALS	Year 1	Year 2	Year 3
Total impact of forecasting errors	\$1,418,633	\$1,631,428	\$1,876,142
Reduction in forecasting error	18.00%	23.00%	25.00%
Gross profit impact before improvement investment	\$255,354	\$375,228	\$469,036
Inventory Reduction (one time)	\$838,235	\$838,235	\$0
Total cost of improvements (change management, process design, systems)	\$275,000	\$75,000	\$0
Total net benefit	\$818,589	\$1,138,464	\$469,036

Documenting the Qualitative Benefits of Improvement

We often say that demand planning is both an art and a science. With a framework to quantify the benefits of improving the science, let's not forget about the art.

While difficult to measure, many qualitative benefits can accrue. Template 5 shows some of the most commonly reported qualitative benefits.

Template 5

Qualitative Benefits

Rate importance on a scale of 1 (low) to 5 (high)

Benefit	Importance
Collaboration between Demand Planning group and the commercial side of the business	
Communication of the plan to the Supply and Finance organizations	
Trusted advisor to executive organizations	
Relationships with customers	
Cooperation in aligning the demand, supply, and finance plans over the short-, mid-, and long-term	
Credibility with the Board and Wall Street	

Making a Compelling Case

The information documented in the four templates become the framework for making a solid business case on the ROI of investing in improvements. Following are the common elements of a business case:

- Identify the business objectives and any gaps in achieving the objectives that could be at least partially remedied by improving demand plan performance
- Document the impact that the demand plan has on decision making throughout the business
- Calculate and document the cost of failure
- Identify the gaps in people proficiency, process, analytics, and systems that contribute to deficiencies in demand plan performance (see 4 Considerations for Improvement)
- Draw a link between financial impacts and improvements in planning to quantify the “size of the prize,” or return on investment
- Highlight the qualitative benefits of improvement

With the above framework in place, the last step is to consolidate the business case for decision making.



Four Considerations for Improvement

Improvements to a Demand Management process generally address the following four areas. The areas are interdependent. A lapse in one area can impact the effectiveness of the other three areas.

People

Analytical tools do not create, align, and execute plans. People do. Executives tend to forget that analytics do not make business decisions, although they do reveal key insights and highlight possible business challenges or opportunities. Top-rate demand planning teams help convey the thinking that underpins business goals and objectives, rather than pushing a number or someone's biased opinion. The right caliber Demand Managers are armed with solid business acumen and act as trusted advisors. They foster collaboration across the organization. Their primary focus is not only on an accurate and valid plan. They also are concerned with how the latest plan compares to stated business objectives.

Analytics

Statistical forecasting has been well-established support for demand planning for decades. Use of the output of analytics tools has lagged behind, however. The length of time it takes for the demand planners and analysts to incorporate rapid changes or short-term spikes in demand remains a challenge for most companies. Basic time series methods, like exponential smoothing, can only forecast demand patterns associated with trend and seasonality. This limitation makes it very difficult to shape future demand.

To incorporate planning assumptions and drivers that go beyond simple trend and seasonality requires more advanced predictive analytics methods. These demand drivers include price, sales promotions, in-store merchandising, store distribution, advertising, epidemiological data, regional economic information, and more. Advanced predictive methods help to identify the cause and effect relationship of these drivers to demand. These methods not only help to create a more accurate demand plan, but also help to make better business decisions.

Process

An effective Demand Planning process depends on a repeatable monthly cadence that answers the questions:

1. How well are we doing at developing and executing our plan?
2. What has changed, and what have we learned since last month?
3. What does that mean for our business, our goals, and our strategies?
4. What decisions or actions do we need to take today and in the future?

The Demand Planning process should consistently drive to the “what,” “so what,” and “now what” with regard to sales, marketing, and product plans and activities. Communication of this information should utilize impactful visuals that create effective storytelling and understanding required for discussion and decisions.

Tools/Technology

Tools and technology in support of demand management are rapidly advancing – and improving the user experience. These advancements are needed to help companies better plan and compete in the digital economy. As companies adapt their processes and data management for the digital economy, they are seeking cloud-based, open-source technology with strong data processing and analytical functionality. These capabilities are becoming more important as live streaming of information becomes more prominent in the industry.

Digitalization helps supply chain partners respond faster, more intelligently, and better connected with customers and consumers. These three factors of convergence are driving the advancement of tools and technology:

1. Powerful, more affordable computing power,
2. Abundance of data and,
3. Availability of analytics and algorithms to make sense of the data

These developments bring us back to the importance of people being highly proficient in the process, analytics, and tools and technology.

Typically, at this point the required investments to address gaps can be reliably quantified (investments in change management, process design, training, tools, and analytic capabilities). The ability to quantify benefits may vary, however. Some benefits will be more easily measurable and attributable than others.

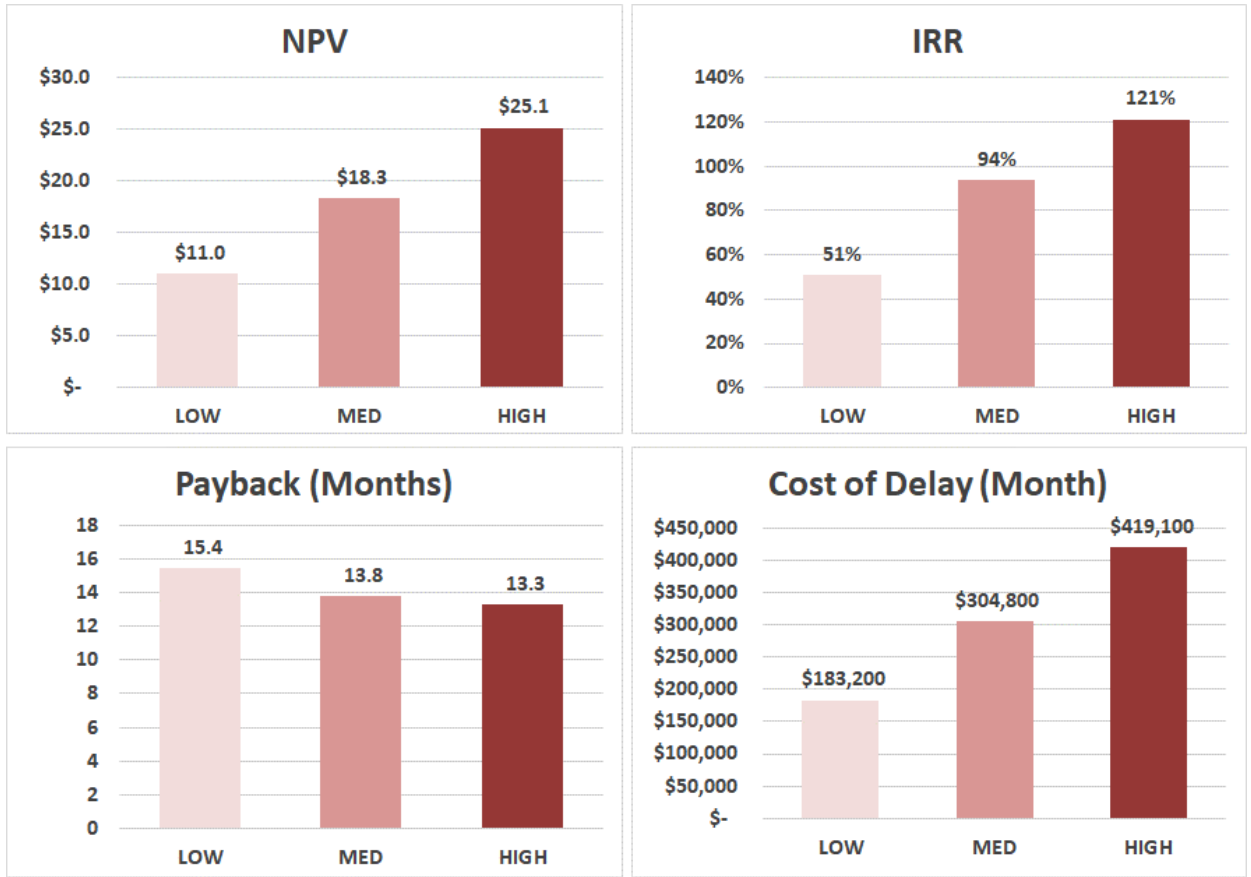
This is where developing a strong case requires judgment and an appreciation of the perspective of the decision-makers. Much like in demand planning itself, there is uncertainty and a range of possible outcomes that should be divulged in the business case.

Here's an approach for establishing a common understanding of the range of outcomes and how to address uncertainties:

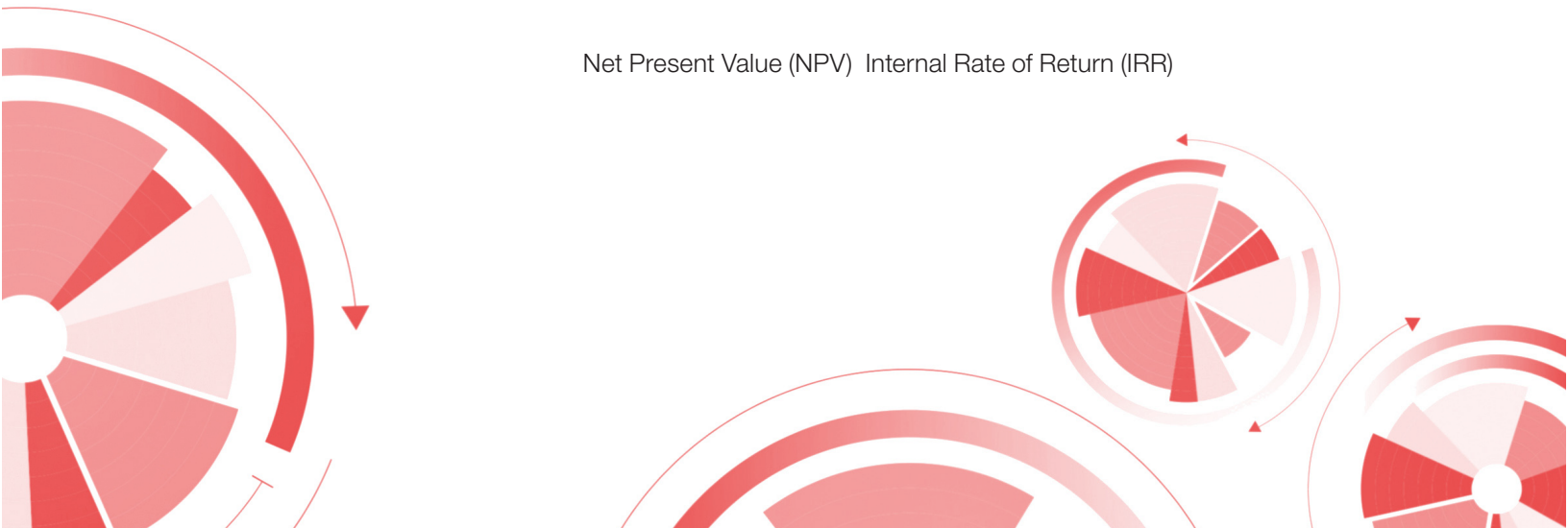
- Establish a low/mid/high case for benefits and clearly identify the assumptions that drive each of the scenarios.
- Invite discussion and drive consensus on those assumptions.
- Establish ownership, including the respective business leader's commitment to take the required actions when the business case is approved.
- Identify risks that could impact key assumptions. Outline how the risks will be tracked and actions will be taken to mitigate.
- Outline simple measures (ideally leading indicators) to assess whether the benefits are being realized.
- Prioritize the implementation to minimize risk and maximize early gains. Consider segmenting the business and doing a phased implementation with the highest ROI segment being the first to implement.



In the example below, several key measures pertaining to an improvement initiative are outlined with a range of outcomes (low/medium/high) to provide a range of results. Calculating the cost of delay is an effective way to drive decision-making. As we said at the start of this paper, ignoring poor demand plan performance can leave a significant amount of “money on the table.”



Net Present Value (NPV) Internal Rate of Return (IRR)



Don't Wait. Get Started on Calculating the Value of Improvement

Developing a solid business case for improving demand planning is helpful in several ways. At a minimum, it is useful for financial planning and budgeting. More importantly, it stimulates stakeholders to understand the business levers that demand planning impacts.

Understanding the value of an effective demand planning process is also enlightening to decision-makers. They learn how decisions are linked (or not linked) to the demand plan today – and the impact of that linkage on business and financial performance. They realize how low expectations for demand planning causes the entire business to struggle to profitably serve customers.

The need to improve demand plan performance is not just something to whine about. It becomes a business imperative.

Authors



Greg Spira
Oliver Wight
Principal



Todd Ferguson
Oliver Wight
Principal



Charlie Chase
SAS, Retail/CPG
Global Practice

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Oliver Wight Americas

P.O. Box 368, 292 Main Street
New London, NH 03257, US

T: +(800) 258-3862

E: info@oliverwight.com

<https://www.oliverwight-americas.com/>

Oliver Wight Asia/Pacific

118/3 Male Street, Brighton
Victoria 3186, Australia

Oliver Wight EAME LLP

The Willows, The Steadings Business Centre
Maisemore, Gloucester, GL2 8EY

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realize the **potential**.®