

Integrated Business Planning and Its Role In Manufacturing Transformation





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Introduction

Frost & Sullivan recently conducted a virtual think tank with industry thought leaders in the business planning domain. The primary objective was to understand the critical issues they faced during their planning cycles and assess the strategic importance of an integrated business planning framework to achieve enterprise-wide transformation.

Every industry is facing tectonic shifts, driven by three key forces: digital, workforce dynamics and geopolitical realignment. The speed of business will continue to rapidly evolve, which is poised to drive creative destruction and expansion of traditional business models. Although change is constant and rapid, organizations are often functioning on aging infrastructure (systems, networks and solutions). This significantly constrains organizations from moving forward in transforming themselves into enterprises of the future. Further, rapid changes in customer buying behavior and product experiences put pressure on fragile business infrastructure that exists in many business environments. Simply stated, many are not ready to adapt and outpace change.

Manufacturing value networks are becoming incredibly complex as pricing pressures and cost of doing more with less place stress on operational leaders. Across large, mid-sized and small organizations, aligning supply and accurately predicting demand is a common challenge. Industry estimates suggest that manufacturing organizations typically overproduce by 20% to manage market volatility and demand spikes. However, this is done on an ad-hoc basis. Precise planning, quality management, reduced inventory holding costs, and responsive fulfillment to customer needs are some of the key emerging requirements demanded from agile enterprises of the future. Therefore, it is important to understand what organizations must do to better prepare for the future. To make better sense of the emerging complexities in the business environment, we commissioned a virtual think tank (VTT). The following industry thought leaders were in attendance to share their perspectives:

- Mitch Haynes, Senior Director, Supply, Planning and Operations, Juniper Networks
- Michelle Davis, Director, Integrated Business and Demand Planning, Juniper Networks
- John Anderson, S&OP Implementation Manager, GE
- John Barcus, Group VP, Manufacturing Industries and Advanced Technologies, Oracle

The VTT brought together diverse opinions from different manufacturing organizations:

- Juniper Networks develops networking and technology products in a high-volume, highly complex manufacturing environment. The demand swings in the market are evident, which mandates accurate forecasting and responsive plan execution in real time.
- GE, an industrial conglomerate, has many divisions. The representation for this VTT came from its turbine manufacturing business. These are large operations that source components from several global suppliers. Managing inventory and planning for demand fulfillment are some of the business-critical parameters.
- Oracle brought in the perspective of how it shifted from a server-centric business to cloud-based software, which played a big role in transforming its supply-chain planning and operations.



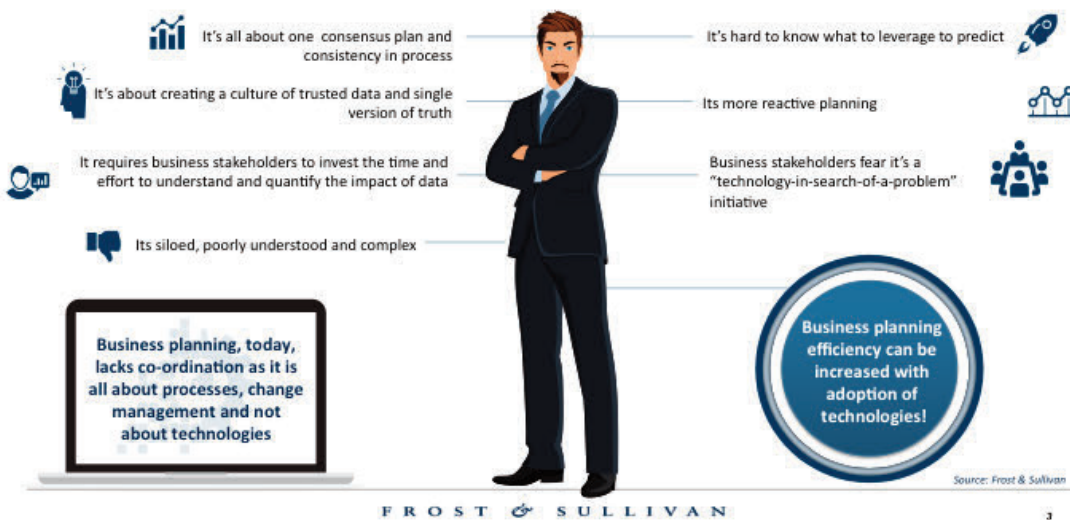
The thought leaders shared fresh ideas on what the industry should ideally do to shift from reactive planning to proactive and prescriptive approaches. Every participant mentioned the importance of technology in overcoming traditional challenges associated with business planning and execution. In the next section, we will analyze the critical issues faced by these organizations.

Critical Issues

Business planning is complex due to significant challenges associated with its process inconsistencies and lack of one common data source. Exhibit I outlines some of the common issues experienced by customers.

Exhibit I: Challenges with Business Planning

Challenges: Business Planning is Siloed, Unclear and Complex



“Today, the most used tool for planning is Excels, but people don't realize the immense amount of hidden challenges in using that tool.”
– John Anderson
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Before we dive into the perspectives, let's examine the top four critical issues faced by planning functions within organizations. The critical issues outlined below, can be solved once the customer embraces a proven best-practice approach of Integrated Business Planning and Execution (IBPX). IBPX brings greater consistency to planning processes and drives integration and alignment across lines of business (LOBs). It is one single platform that helps customers solve a multitude of business planning and execution challenges by incorporating integrated end-to-end planning with operations execution by leveraging real-time monitoring, advanced analytics, and what-if analysis.



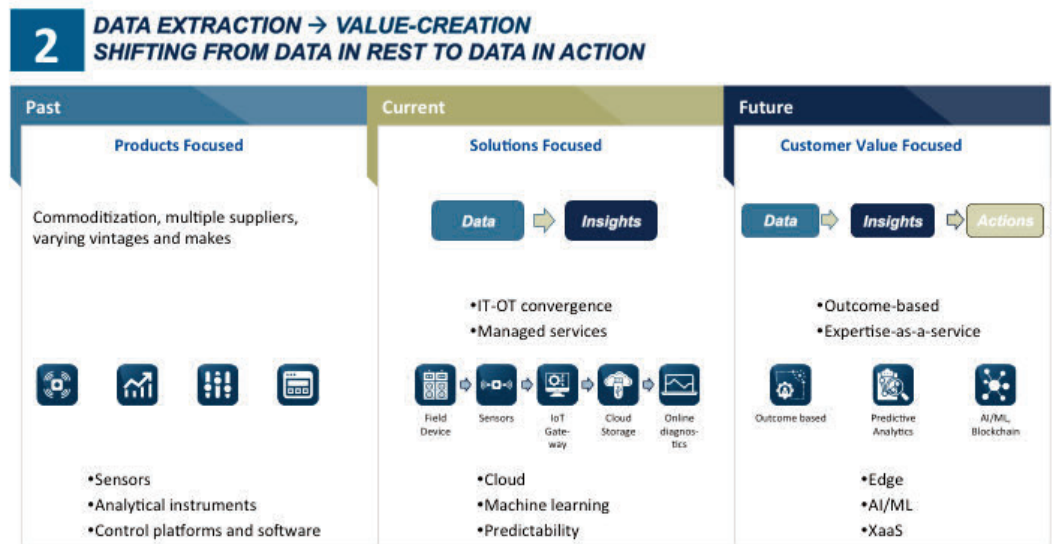
“What we are seeing in the market is that there's a continual transformation happening and companies must adapt. This is the challenge. As the market continually changes, companies must learn to adapt quickly, and the speed with which they adapt will make all the difference. The key is to know sooner, act faster, and adapt to change.”
 – **John Barcus**
 Vice President,
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Critical issue 1: Volume of data and the inability to make sense of it effectively

Thirty percent of an organization's data volume is generated from the enterprise layer. The remaining 70% is generated from its plant and value networks. A case in point, a refinery generates about 1 TB/day in raw data. Near-similar volumes of data are generated by other manufacturing industries. However, most of this data resides in siloes and is not often displayed together nor seen through a single pane of glass. Traditionally, companies have used complex Excel spreadsheets to manage demand planning, supplier quality, demand fulfillment, production execution and other functions. These were viable for small-scale operations, but in today's complex scenario, there is an inability to scale with this tool. The industry needs to move away from “status-quo” and embrace technology to drive effective decision making. Managing today's business with obsolete and unscalable tools further undermines business performance.

Streamlining the process from data collection and data orchestration to analytics and execute actions to adapt based on the data collected is an important loop for organizations to close and subsequently achieve the desired efficiency levels. Frost & Sullivan calls this the Data Extraction to Value Creation Loop, shown in Exhibit 2 below.

Exhibit 2: Data Extraction → Value Creation Cycle



An aging workforce and inability to analyze millions of data points are steering customers to adopt cloud and analytics-based approaches. There's a strong need for better visibility and decision support tools to navigate the new, complex world.

Referring to advanced technologies such as artificial intelligence and machine learning, Mitch Haynes from Juniper networks summarizes the problem, “whether it's advanced analytics, artificial intelligence, machine learning, what are those things that best help us and what areas should we focus on the most? It is essentially, how do we make the best choices around inventory, and how do we augment decision making that was historically done by a planner

based on some gut feelings? How do we help them out with new and better data to help understand a pretty complex world that they need to be making decisions in?” – Mitch Haynes, Juniper Networks

On a similar note, John Anderson from GE mentioned that, “Today, the most used tool for planning is Excels, but people don’t realize the immense amount of hidden challenges in using that tool.”

Critical issue II: Need for higher customization in new products and hyper speed in fulfillment

Today’s manufacturing operations were not designed with customization in mind. As customer-driven economies become mainstream, the entire planning process and infrastructure need to change to better suit the new requirements. With technology refresh cycles happening every four years, customers are expecting newer products in rapid fashion. This is driving organizations to customize new products and shrink time to market for new launches. Further, the rapid customization puts acute pressure on planning cycles, as the traditional mode allows for mass production but not mass customization. Manufacturers are also engineering products-as-a-service business models to drive customer engagement, interactivity and longevity in customer lifecycle management. A case in point: A large European automobile manufacturer customizes the trims within the vehicle and customers are also able to make last minute changes to their vehicular selection of choice. On earlier occasions, customized vehicles had longer lead times, but the manufacturing flexibility available today allows many car manufacturers to deliver customized vehicles in the same time frame as mass produced vehicles.

Another automotive trend is to bundle the car leasing costs, insurance, and concierge services all into one payment. The ability to customize the experience for the customer, by providing a user-centric product experience, is where organizations are differentiating.

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Critical issue III: Siloed planning infrastructure and significant KPI disconnects between various operational functions

There are a phenomenal number of organization siloes that already exists due to historical operations. Converging these islands of information into one single data view is an important initiative organizations need to take in order to view their businesses holistically and better balance the risks and trade-offs. Further, multiple LOBs bring in data that is verified and measured (via KPIs) in different ways. These factors severely undermine planning function efficiency. To overcome the aforementioned challenges, there needs to be a coordination between LOBs, organizational functions, a single database and a single view of the plan across the organization. This is where solutions like Integrated Business Planning and Execution (IBPX) come into play. IBPX brings in consistency in planning processes and drives integration and alignment across



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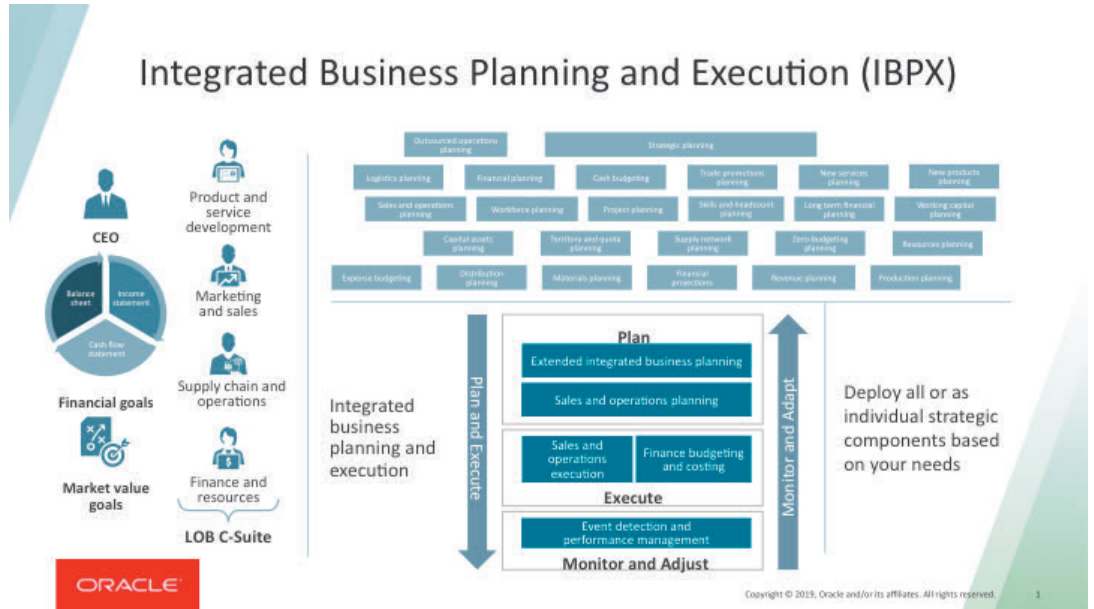
LOBs. Exhibit 3 provides an overview of the present-day challenges and the need for a solution like IBPX.

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– John Anderson, GE

Exhibit 3: Integrated Business Planning and Execution Solution (IBPX) – Breaking Silos, Driving Business Collaboration and Transformation

“In my mind, what drives the disconnects are really just a lack of cohesive goal setting.”

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“So, it comes back to what was said a bit earlier about trust, trusting that what we are seeing in the pipeline, or what we're seeing in the build-up or drawdown of inventory, is correct. That just takes the effort of the team to basically agree that all those B-to-B feeds that we're getting are giving us good information that we should stand by.”
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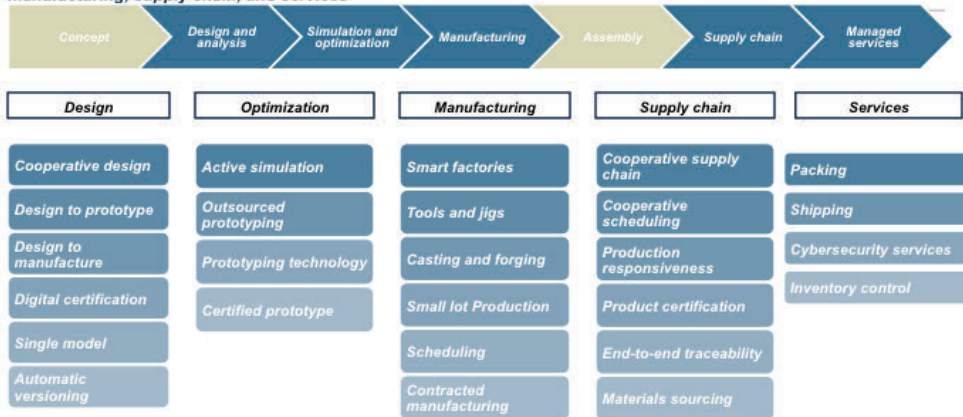
Critical issue IV: Building organization process execution with zero latency

The traditional manufacturing value chain is a linear process that lacks flexibility and has been a primary cause of lower business efficiencies. The lack of standardization in processes across the various manufacturing functions (materials planning, supply-chain planning, expense planning, resource planning, quality management, etc.) has led to delays in time to market for many organizations. Exhibit 4 shows the traditional manufacturing value chain.

Exhibit 4: Linear Manufacturing Value Chain that Exists Today

Manufacturing Value Chain

Largest opportunities over the next 10 years: design, simulation and optimization, manufacturing, supply chain, and services



Source: Frost & Sullivan

FROST & SULLIVAN

To achieve zero latency, organizations need to inculcate the ability to detect events before they occur, understand the potential impact of the event and subsequently make changes to the processes so that the foreseen event can be avoided. This requires careful orchestration and “what-if” analysis to be done in real time. We are not there yet, but the market offers innovative advanced analytics (AI-based) solutions to help customers reach this future state of operations.

“The ability to get these groups digitally connected, self-correct many of the issues because the exceptions just show up and everyone now has the opportunity to manage and interact from the same information.” – John Barcus, Oracle

“Most people don't have an integrated way of planning to go through that to make sure that those key relationships actually work out, and it's just not one department, second department, third and fourth department to meet their goal of making their numbers through their plan, which is really a disconnected plan. So, if you have a disconnect in planning upfront, your results are just going to be all over the place because everybody is planning independently and not unified across the board.” – John Anderson, GE



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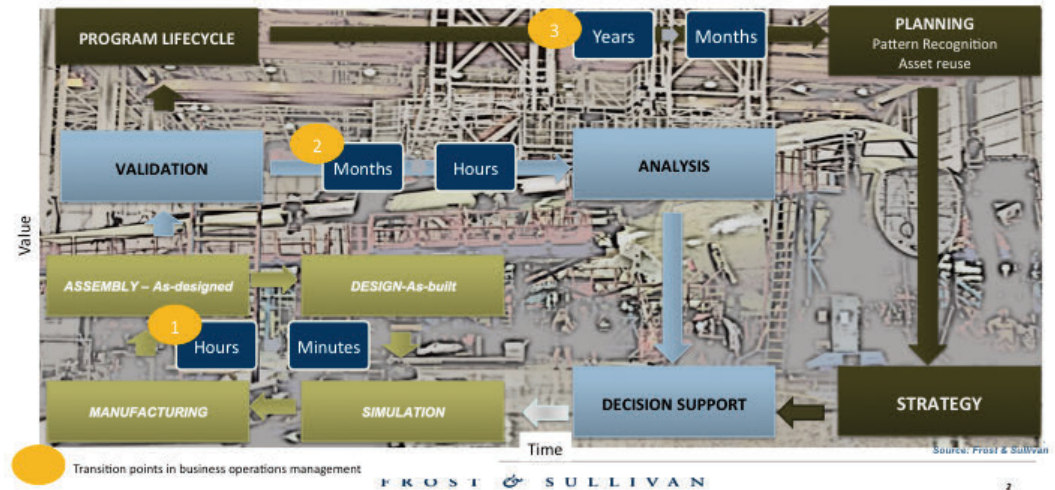
A Virtual Think Tank Executive Summary



Exhibit 5 provides a snapshot view of how organizations should evolve the planning function for the future.

Major Areas of Industry Transformation

Points of transition: design, QA/compliance, lifecycle management



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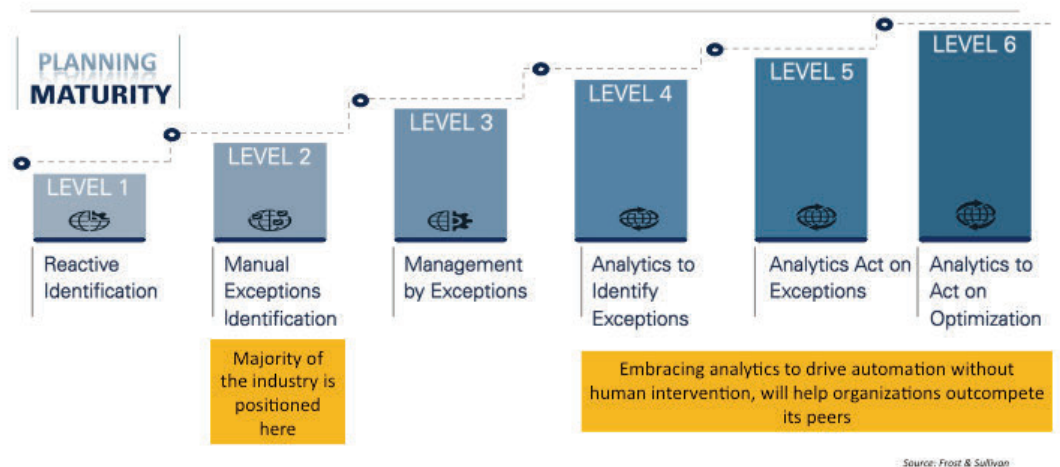
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The Imperative for Integrated Business Planning (IBP)

IBP assists in aligning financial and operational goals on one common platform and helps organization functions meet corporate objectives. The objectives may sound simple, but the true reality of where many are is far from this ideal state. Frost & Sullivan put together a six-level business planning maturity model that is aimed at helping customers understand their relative maturity in the process. Exhibit 6 provides an overview of the business planning maturity model.

Exhibit 6: Six-level Business Planning Maturity Model

Business Planning Maturity Model



As shown in the model above, a significant portion of manufacturers are in level 2 today. Silos in organizations today restrain enterprises from achieving a single version of the truth. It would take two to three years for the industry to move into management by exception, as customers need to shift from silos to creating one trusted data source across LOBs; this would be Level 3. From this stage, we predict pioneers may leapfrog peers by adapting advanced analytics to not only identify but also act on exceptions. Further, using advanced analytics, such as Artificial Intelligence (AI), customers may also be able to drive process optimization and bring the processes back to desired efficiency levels. The ability to leverage AI to action insights and recommendations from the volume of enterprise data gathered will set organizations apart in the future. This should be the future aspirations of organizations. Consider an organization with a complex supply chain. In case of a disruptive event, without integrated analytics, the organization would have to react to the situation. However, if it had embraced analytics, the solution would have pre-empted the situation, analyzed “what-if” scenarios and driven alternate supplier selection while ultimately helping the organization achieve its corporate goals. This picture of the future is a near reality in many aerospace, electronics manufacturing organizations, which have massively complex and interconnected supply chains.

The potential of using advanced analytics in business planning is immense. It could be used in areas like safe tracking of food, pharmaceuticals, etc. The cloud is also a strong foundation to run a scalable solution for the enterprise. The cloud will:

- Allow single-window view of data and shared processes.
- Drive orchestration of plans by LOB aggregation.
- Create role-based and function-based diagnostic dashboards so that everyone has a single version of the truth.
- Provide real-time analysis of what-if analysis and massively orchestrated scenario planning.

The combination of Big Data, cloud and advanced analytics will help reduce deployment costs and improve operational flexibility. Also, cloud is one of the fastest ways to scale with standardized processes.

“People knowing that there is a common source of data and that you don't spend time trying to reconcile small differences in numbers, and who pulled what data, and when, and where, just working from that common [source] takes you several steps forward. So, to me, that's one of the huge benefits of the tool.” – Mitch Haynes, Juniper Networks

“Pivoting between a financial view, a sales view, a manufacturing operations view all based on that same quarter data set can be very powerful for people, and seeing what different trade-offs in one area versus the other might drive.” – John Anderson, GE

The planning portfolio of solutions used today is complex and many organizations prefer not to take risks due to the efforts required to overhaul the portfolio. However, they are not realizing the disadvantages caused by this complex collection of solutions – planning inefficiencies that are being experienced across the business. Customers need to consistently invest in software as a service (SaaS) and platform as a service (PaaS) to stay relevant in the



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industry and have an agile infrastructure. While the market is awash with several solution providers offering point solutions, it makes better economic sense to work with a solution provider that has deep industry knowledge, a comprehensive integrated solution, and a strong track record. As organizations embark on transforming their planning functions, it is important to reduce risk and work with proven solution providers in the market.

Customer Outcomes

IBP has the potential to transform organizational planning processes. The main outcomes experienced by customers include:

- Reduced inventory costs.
- Responsive customer service and demand fulfillment.
- Integration and alignment of people across functions, LOBs, and third-party organizations.
- Soft pegging capabilities linked to more resources to focus on value.
- Improvement in leveraging working capital.
- Shorter time to market for customized new products.
- Improved accuracy between demand planning and fulfillment.

“For us, the benefit has come that we've been able to reduce our inventory costs fairly substantially. At the same time, we've been able to improve our version of the customer service metric; we look at the lead time attainment. We've been able to raise that about 10%.”
– Mitch Haynes, Juniper Networks

“It just seems like the area that, consistently, companies get the most benefit from is being able to implement an enhanced sales and operation plan, or IBPX solutions. In so doing, they almost always see a reduction in inventory, better fill rates, improvement in leveraging working capital, better margins, shorter cycle times, improved accuracy. It's almost always a direct result of enhancing their IBP process.” – John Barcus, Oracle

IBP also brings about the following outcomes for an organization:

- Shift from reactive to proactive and prescriptive planning operations.
- Ability to sense demand and generate a supply plan that assures profitability.
- Strikes an alignment between operational plan and financial objectives.
- Drives stakeholder collaboration and awareness.
- Creates a single version of the truth on a single pane of glass.
- Optimizes the performance of supply-chain networks.

These are important process characteristics that aim to remove the guesswork out of the equation and allow operational/planning personnel to leverage data-driven decision making.

Aspirations for the Future

In summary, these were the big-ticket issues mentioned most often by the virtual think tank panelists:

- Lack of integration and alignment, between the various facets of business planning and execution
- Inconsistencies in data availability and lack of alignment between LOBs
- Need for improved visibility and transparency across the supply chain
- Siloed, complex planning infrastructure
- Lack of standardized processes

As a new generation of workers enters mainstream operations, it comes with an expectation of smarter systems and applications. As outlined earlier, AI would help customers leapfrog the competition by astutely converting volumes of data into insights and subsequently outcomes.

“I think what you're going to see is that you're going to be sharing a lot more data than you typically ever have in the past, right? So, whether it's forward with your customer base or back with your supply base, I think the ability to share real-time information updates to the key kind of pieces of the interaction between organizations.”

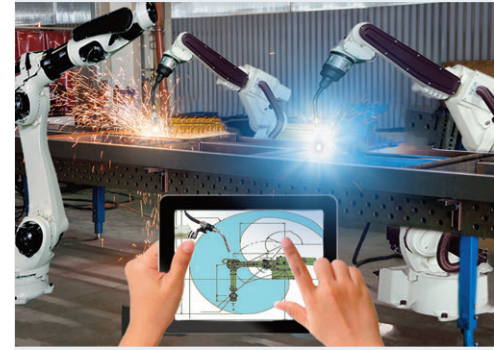
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Using IBP, an organization's data silos should be integrated to help achieve superior visibility and access to the interesting outcomes that lie within these data sets. The next generation of IBP architectures must scale to reach every person and organization relevant to the plan and enable speed and processing capabilities that can be scaled across multi-sites. Today, planning often occurs site to site and there is weak or zero integration between different sites of the same organization. There is tremendous synergy that organizations can achieve by driving a connected view of planning, manufacturing operations and demand fulfillment functions. A critical aspect of future IBP architectures is seamless planning execution integration. For example, if IBP was deployed across a manufacturing entity that owns 100 plants, it could better optimize on supplier costs, intelligently route production targets based on plant capacity utilization, reduce time to market, minimize quality issues, etc. It can essentially help organizations out-compete, out-thwart and out-innovate their peers by bringing in synergies in execution functions across the enterprise.

This type of organizational execution has never been fully realized before. Adding to this capability is the ability to predict events and subsequently take prescriptive actions. IBP solutions should detect future performance issues before it is too late to correct how the plan is executed.

This is one of the clear aspirations of Integrated Business Planning and Execution, to use what-if scenarios to identify potential business problems, suggest alternatives to solve them, and make more informed decisions after evaluating all of the risks.

The transformation journey is complex and laden with challenges, but not with the right partner. Join us in our journey to drive planning excellence!



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