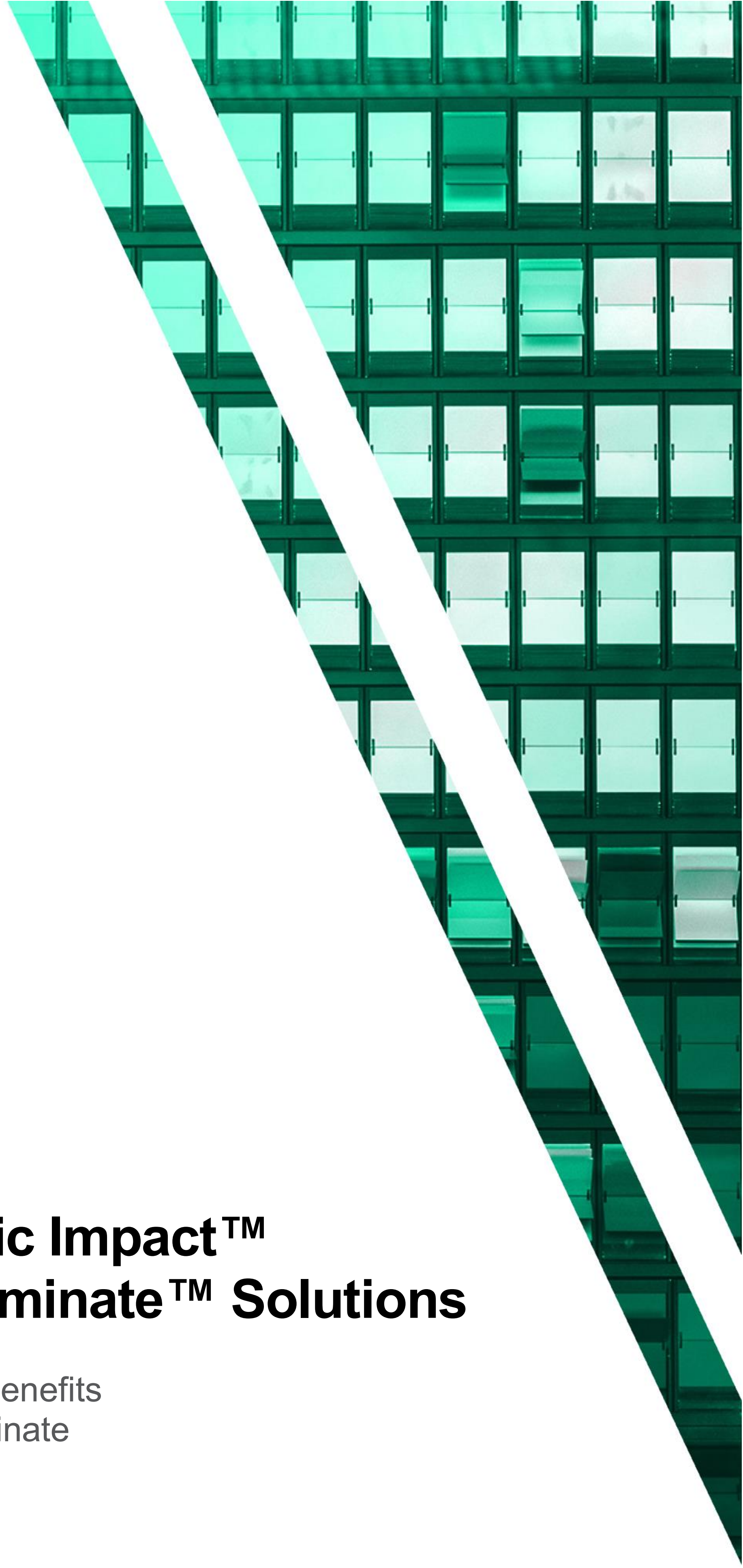
FORRESTER®



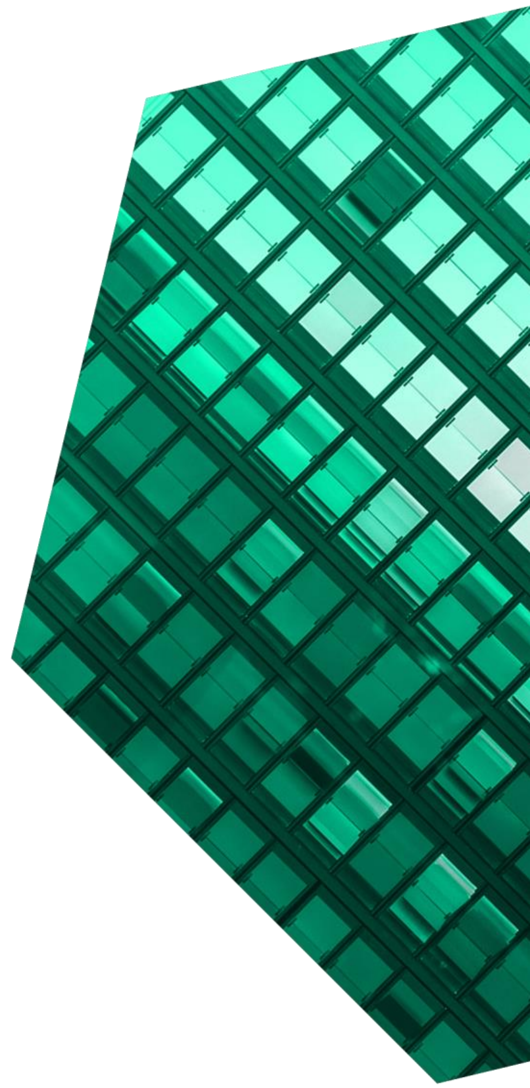
The Total Economic Impact™ Of Blue Yonder Luminate™ Solutions

Cost Savings And Business Benefits Enabled By Blue Yonder Luminate

JANUARY 2022

Table Of Contents

TEI consultant: Eric Hall



Executive Summary

The current supply-chain crisis entails exorbitant shipping costs, labor shortages, raw material shortages, unpredictable shipping times, major recovery activities, major retail shifts to e-commerce, and a future in flux. Blue Yonder Luminate provides a set of solutions to help demand planners, e-commerce administrators, inventory warehouse organizations, and distribution teams to control costs and quality to the best of their abilities while providing a positive ROI and flexibility toward responding to future changes.

KEY STATISTICS

Return on investment (ROI)
394%

Net present value (NPV)
$59.79M

Blue Yonder Luminate is a suite of software-as-a-service (SaaS) solutions that includes Luminate Supply Chain Execution, Commerce, and Planning. The solutions supply data and application integration and apply artificial intelligence (AI) algorithms to assist supply-chain-demand planners, warehouse organizations, transportation teams, and e-commerce administrators to improve the effectiveness and efficiency of running their organizations.

Blue Yonder commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Blue Yonder Luminate.[1] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Blue Yonder on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed nine decision-makers with experience using varying combinations of Luminate Planning, Commerce, and three areas within Supply Chain Execution, Luminate Warehouse Management System (LWMS), Luminate Transportation Management System (LTMS), and Luminate Control Tower (LCT). For the purposes of this study, Forrester aggregated the experiences of seven of the interviewees' organizations and combined the results into a single composite organization. Forrester also supplemented the data and experiences which were collected by interviewing two decision-makers whose organizations upgraded their Blue Yonder planning and fulfilment implementations to Luminate Planning. See the Qualitative Summary on Page 9 for more information.

Interviewees said that before using LWMS, LTMS, LCT, and Luminate Commerce, their organizations constantly needed to improve, but that they progressed too slowly and came up short on key capabilities. Interviewees from organizations that used Luminate Commerce said they had previously expanded online order delivery from distribution-center (DC) shipments to include store-based shipments, only to find that limitations in the solution's routing logic led to new problems, such as shipping an item from a store that was likely to sell it in-store, rather than from stores that were less likely to sell the item, causing unnecessary markdowns.

Interviewees said another significant problem with their organizations' prior e-commerce capabilities was that they did not have the ability to effectively check product availability at the store level when a customer was on the company's on-line product detail page. This led to customer-experience issues. Forrester research has found that 65% of US consumers say it's important for retailers/brands to show in-store product availability on the website.[2]

In the area of warehouse management, historical improvements to technology and work processes did not occur fast enough and a lack of standardization across warehouses limited progress. In the transportation space, a lack of accurate and timely end-to-end visibility to inventory positions prevented the organizations from making significant process improvements while minimizing the ability to take action to deal with increasingly challenging supply-chain delivery environments. Also, efforts to optimize carrier management, carrier selection, route determination, shipment frequency, and round trips were not only optimized as an integrated whole, but they also were not fully optimized as individual processes.

Interviewees said that after investing in Blue Yonder Luminate, their organizations saw the results decision-makers expected along with further benefits resulting from gaining the ability to adjust to the supply-chain changes and disruptions that have occurred during the past two years.

In the area of omni-channel commerce, interviewees said their organizations have seen dramatic reductions in markdowns and that they have been able to effectively adjust to DC and store closures much better than they could in the past. Their organizations' warehouses have been able to improve throughput and quality while significantly reducing labor costs. Transportation-planning and demand-planning teams have seen some labor savings, but more importantly, they have been able to see end-to-end inventory positions that enabled improvements to demand forecasts and allowed issues to be identified soon enough to act.

Major savings in the transportation area in an ongoing basis include carrier selection that led to lower costs and better service; optimization of operational processes, routes, frequencies, and round trips (which leads to service-level improvements and cost reductions); and a reduction of out-of-stock products that is associated with more revenue.

KEY FINDINGS

Quantified benefits. Risk-adjusted present value (PV) quantified benefits for the composite organization over three years include:

- **Markdown reductions driving margin improvement of $15.3 million.** Interviewees said that combining the intelligent sourcing capabilities of Luminate Commerce with its stock-out forecasting capability allowed their organizations to shift store-sourced products to come from stores that were less likely to sell the product in-store. This benefit increased with store closures due to the COVID-19 pandemic and social unrest by prioritizing product sourcing from closed stores over open stores to minimize markdowns.

- **Additional margin driven by new revenue or reduced revenue loss of $3.8 million.** Interviewees said Luminate Commerce-enabled improvements to their organizations' customer experiences (CX) on their e-commerce sites that improved customer satisfaction and reduced cart abandonment. Their organizations have also seen reductions in backlog orders and e-commerce performance issues during high-demand periods such as Black Friday and Cyber Monday.

- **E-commerce labor, software, and IT productivities of nearly $1.4 million.** Interviewees said Luminate Commerce enabled fast and configurable processes to allocate workloads across DCs and stores and that it also eliminated the need for some e-commerce software modules and provided IT productivities.

With labor shortages and closures across DCs and stores, the ability to effectively allocate labor prevented or reduced DC overtime or contract hiring, allowed the organizations to better utilize available labor at closed stores, and prevented partial reductions of e-commerce offerings to keep demand in line with a reduced abilities to fill orders.

- **Reduced transportation costs of $14.1 million.** LCT and LTMS contributed to a reduction of numerous transportation-related costs related to carrier selection, trailer type selection, distribution optimization, and late-delivery penalties.

  Interviewees said their organizations were able to significantly increase their primary carrier use and significantly decrease their carrier spot-market use. They further reduced costs through a combination of route optimization, delivery frequency optimization, and increasing their use of round-trip load optimizations. With improvements to on-time deliveries, interviewees' organizations reduced paying late-delivery penalties.

- **Margin increase of $6.5 million due to reduction of out-of-stock inventory.** Interviewees said LWMS, LCT, and LTMS each contributed to reducing out-of-stock inventories. Their organizations' warehouses gained the ability to see better throughput and reduced recovery activity due to a combination of LWMS and LTMS. Demand planners made better forecasts due to accurate end-to-end inventory visibility and lead-time knowledge that is both automated and timelier. Interviewees said distribution improvements that lead to more on-time deliveries included carrier selection weighted on service levels, route optimization, delivery frequency optimization, and the ability to adjust sooner due to identifying issues in the supply chain soon enough to take action.

- **Labor productivities associated with LWMS/LCT/LTMS totaling $31.2 million.** Interviewees said Luminate enabled automation, process improvements, and even the complete restructuring of their organizations' supply chain organizations, including IT. Demand planners benefited from end-to-end inventory positions provided by LCT. Warehouse labor productivities stemmed from process improvements provided by LWMS and scheduling flexibility provided by LTMS carrier lock-in timing improvements. Distribution-teams saw labor productivities from automated processes provided by LCT and LTMS, optimization capabilities provided better and more timely information for decision-making, and quality improvements that reduced recovery activities. Interviewees said IT productivities included making the transition to a SaaS solution and eliminating the coding and maintenance of gap-filling code that previous solutions required.

Unquantified benefits. Benefits that are not quantified for this study include:

- **Inventory reductions.** Interviewees stated their organizations could not quantify inventory benefits due to the demand fluctuations and various supply-chain issues that occurred during the past two years.

- **Demand planners gained the ability to make better forecasts due to end-to-end inventory visibility.** Interviewees who are focused on supply-chain execution broadly said that end-to-end inventory visibility improved forecasts.

- **Simplifying and improving the accuracy of onboarding new carriers.** Interviewees said their organizations saw significant cost savings and service-level improvements related to carriers.

- **Improving the immediate response time for carrier tendering and other process improvements that enable business expansion.** Interviewees said service levels have improved to the point where new business is available to customers with historically unachievable requirements.

- **Improving the ability to handle acquisitions.** Some interviewees said their organizations now consider transportation to be a competitive advantage, so using their staff's current Luminate knowledge about how to absorb other transportation organizations increased the value proposition of certain mergers and acquisitions (M&A) opportunities.

- **Providing asset and driver compliance monitoring.** Interviewees' organizations started to expand their capabilities to include truck maintenance and driver compliance, and they've seen positive results.

- **Having the integration synergy of LWMS and LTMS implementations.** Interviewees said they have seen synergy from sharing source data and integration between LWMS and LTMS.

- **Having integration synergy of LTMS and LCT implementations.** Interviewees said they have seen synergies related to sharing source data and integration between LTMS and LCT.

Costs. Risk-adjusted PV costs over three years include:

- **Licensing costs of $9 million.** Interviewees said the costs of all of their organizations' Blue Yonder solutions were more expensive than costs for their previous solutions. But they said decision-makers realized the organizations had to pay more to get the key capabilities they sought.

- **Implementation costs of $6 million.** Each implementation required outside consulting and considerable planning and implementation time. Interviewees said the complexity increased with the size of the company due to managing multiple sites and applications and a lack of standardization. Some interviewees said their organization's implementation took longer than decision-makers hoped, but that they were not surprised once the implementation started. Despite early implementation costs, interviewees' organizations saw major benefits early. For the composite organization, this leads to a payback period less than six months.

The decision-maker interviews and financial analysis found that a composite organization experiences benefits of $74.96 million over three years versus costs of $15.17 million, adding up to a net present value (NPV) of $59.79 million and an ROI of 394%.

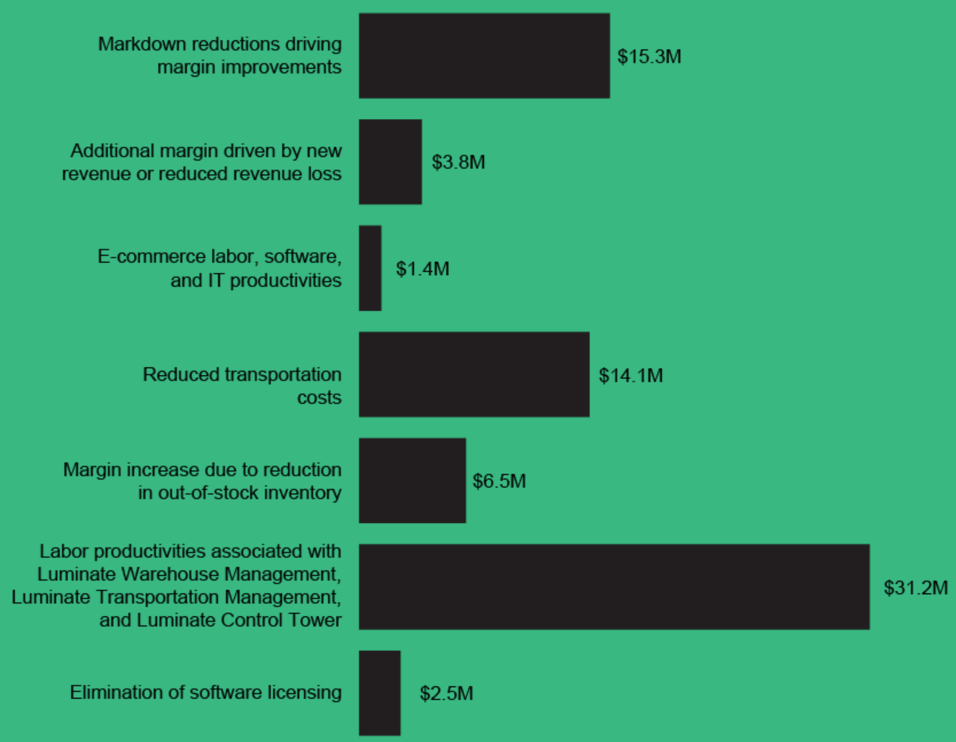
ROI
394%

BENEFITS PV
$74.96M

NPV
$59.79M

PAYBACK
<6 months

Benefits (Three-Year)



Samples Of Individual Company Results

- Primary carrier from 75% to 90%
- Warehouse orders out per day up 10%
- Asset utilization up 8%
- Availability date on product screen
- Spot market from 3% to greater than .5%
- Warehouse labor productivity 8% to 10%
- On-time shipments from 98% to 98.7%
- Ship-from-store, millions of dollars in markdown reductions

Base: 7 decision-makers at companies using Blue Yonder Luminate
Source: A commissioned study conducted by Forrester Consulting on behalf of Blue Yonder, January 2022

TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in Blue Yonder Luminate.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that Blue Yonder Luminate can have on an organization.

DUE DILIGENCE

Interviewed Blue Yonder stakeholders and Forrester analysts to gather data relative to Blue Yonder Luminate.

DECISION-MAKER INTERVIEWS

Interviewed nine decision-makers at organizations using the Blue Yonder to obtain data with respect to costs, benefits, and risks.

COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of seven of the interviewees' organizations.

FINANCIAL MODEL FRAMEWORK

Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the decision-makers.

CASE STUDY

Employed four fundamental elements of TEI in modeling the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The Blue Yonder Luminate Customer Journey

Drivers leading to the Blue Yonder Luminate investment

Interviewed Decision-Makers

Interviewee	Industry	Region	Annual revenue
Director of global sourcing	Health consumer goods	Global	$25 billion
Head of engineering innovation	Logistics	North America and Central America	$40 million
Director of manufacturing and supply chain systems	Food service products	North America	$2.5 billion
E-commerce fulfillment director	Fashion retail	Global	$2.5 billion
Global digital supply chain project manager	Manufacturing	Global	$10 billion
Director of omni solutions	Specialty retail	Global	$2.5 billion
Director of supply chain	Medical technology	Global	$20 billion
Director of merchandising services	Groceries	US (regional)	$20 billion
VP planning and allocation	Retail	US (regional)	$1 billion

KEY CHALLENGES

The interviewees noted how their organizations struggled with common challenges, including:

- **High markdown costs due to an inability to prioritize slower-moving fulfillment sources.** Interviewees from organizations that used Luminate for e-commerce said markdowns were their organization's top priority for improvement. They said decision-makers wanted to improve ship-from-store availability and shipping selection capabilities. Due to the seasonality of items and fashion life cycles, markdowns are expected, but interviewees said they were able to reduce markdowns by prioritizing the delivery of items from stores that were less likely to sell those items.

- **An inability to effectively adjust previous processes for DC and store closings due to the COVID-19 pandemic, protests, challenges with available labor, and other causes.** Before Luminate Commerce, changing sourcing priorities for closing and reopening DCs and stores required multiple days if the organizations could do it at all. Interviewees said their organizations markdowns increased due to items sitting in closed facilities, and they endured shipping-role labor shortages because they could not effectively rebalance shipping workloads and needed to limit e-commerce offerings due to overall order-fulfillment risk.

- **Lack of end-to-end inventory visibility.** Interviewees said that a major goal of their organization's investment was to have inventory visibility at every step of the supply chain. Previously, this had proven to be a very difficult task because an item could be present in demand-planning systems, multiple enterprise resource planning (ERP) systems, warehouse management systems (WMS), and transportation management systems (TMS), and with carriers both in electronic form and through direct communications. Benefits spread across the entire supply chain, from demand planners to the distribution organization.

- **Logistics data errors from internal sources and carrier sources without means of identification or correction.** Interviewees said decision-makers knew their organizations had data-quality challenges due to efforts to source from numerous internal systems and from the numerous carriers they worked with. Frequently, the organizations were unaware of errors, or they didn't identify them until too late. They did not implement formal processes to prevent future errors because there was no opportunity for a central, coordinated approach.

> **"We were able to ship from store with our prior solution, but we found that we frequently shipped from a store more likely to sell the product than other stores. This means that we end up losing a sale in the sourcing store while ultimately marking down the product on the slow-move store. We were exchanging a $10 to $50 write-down for what may have been as low as a 10-cent difference in shipping cost, all because we couldn't identify slow-move sources."**
>
> *E-commerce fulfillment director, fashion retail*

- **Accurate, current lead times have become more important.** Lead times are crucial to accurate demand planning, and interviewees said their organizations had poor maintenance of lead times with their demand-planning systems. They also stressed that current supply-chain challenges mean their organizations need near-real-time timeframes to make quality delivery decisions.

- **A recognized need to better manage carriers and carrier selection to reduce transportation costs.** Interviewees said there were many flaws in their organizations' previous carrier management and selection processes, which led to high transportation costs and quality issues. The primary improvement goals were to optimize primary carrier selection and minimize the use of high-cost spot-market shipments.

> **"We wanted to see inventory positions around the world compared to our forecast and our actual demand. We wanted to see which things are in transit, as well as identifying where there are delays and whether or not they would cause stock outages."**
>
> *Director of supply chain, medical technology*

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of seven of the decision-makers' organizations, and it is used to present the aggregate financial analysis in the next section.

Description of composite. The composite organization is a global specialty retailer with annual revenues of $10 billion. It operates 1,200 stores primarily located in Europe, the United States, and Canada, and it already had a rapidly growing e-commerce presence before the COVID-19 pandemic. It has transportation center in North America and one in Europe with an overall distribution team of 80 employees. It has approximately 20 DCs with approximately 3,000 employees, and it also has 100 demand planners. The composite's items often have short life cycles due to seasonality and fashion cycles, which is common in the industry.

Key assumptions

- **Specialty retailer**
- **$10 billion annual revenue**
- **3,000+ warehouse workers**
- **100 demand planners**
- **80 distribution team members**

QUALITATIVE SUMMARY

SAAS Upgrade Journey Of Two Long-Time Blue Yonder Supply Chain Planning Customers

Introduction. Forrester interviewed two long-time Blue Yonder Supply Chain Planning customers that have upgraded to Blue Yonder Luminate Planning's SaaS solution. The customers include a groceries organization with over $20 billion in annual revenue and a retailer with over $1 billion in annual revenue. The customer journeys are strictly qualitative because including the financials of an upgrade for the composite organization are not applicable.

Prior state. Prior to upgrading to Luminate Planning, both customers were happy with their on-premises Blue Yonder solutions. Each provided a set of three reasons for upgrading:

- The groceries organization had fallen behind in applying version upgrades, making it a good time to shift to the cloud. They had significant customizations within their on-premises solution, and Luminate offered a path to eliminate them. Lastly, Luminate Planning offered new technology and capabilities while promising quicker adoption of future capabilities.
- The retailer had an IT resource exposure, with impending turnover that would leave system knowledge gaps due to too many individuals having critical knowledge. They also always lacked 24/7 monitoring, but e-commerce growth was increasing the likelihood of off-hour issues that a cloud solution could better handle. E-commerce growth created a short-term need for the company to shift from monthly to weekly planning, and there were other scope and technology enhancements that Luminate Planning and the cloud were better suited for.

Selection. Both companies chose to move to Luminate Planning without considering other options. The respective decision-makers are quoted as follows.

> **"We didn't consider leaving Blue Yonder. We have been a happy customer of theirs for around 15 years now. They are a strategic partner that has shown that they have a very good understanding of grocery and the challenges that come with it. Their demand, fulfilment, and inventory supply chain planning solutions are top-notch."**
>
> *Director of merchandising services, groceries*

> **"We have been using Blue Yonder's demand planning solutions since 2005. Everything has been working really well, so we didn't even consider changing solutions when we decided to switch to SaaS."**
>
> *VP planning and allocation, retail*

Implementation. Both companies used outside consultants and had 12-month implementations. A summary of their experiences is as follows:

- The grocer utilized a major Blue Yonder partner for planning and implementing Luminate; the director of merchandising services was pleased with how smoothly it went. All but one of their major customizations were eliminated in the original Blue Yonder upgrade.

> **"The technical team that worked with us was really amazing. They were so good that we requested that they come back and work with us on our next project, which they did."**
>
> *VP planning and allocation, retail*

- The retailer utilized Blue Yonder's professional services. The design, implementation, and parallel testing was completed in 12 months. The implementation included expanding planning to include location and shifting to a weekly planning cycle.

Key results.

- Labor productivities and IT exposure was reduced. Both interviewees said that they were able to reduce: 1) four FTEs in support of their Blue Yonder solutions and 2) the number of IT exposures due to customized code reduction by limiting dependencies on on-premises resources.
- Stability and performance was improved. The VP of planning and allocation for the retailer noted that performance did not change, even after the massive overhaul of adding locations to their planning and transitioning to weekly plans. The director of merchandising services for the groceries organization shared that they are consistently exceeding their service-level agreements with the distribution centers, allowing distribution centers to start earlier and leading to a measurable improvement in demand fulfillment.
- Business value from the Luminate Planning upgrade. Both interviewees believe that Luminate Planning has benefited their business in many ways, though adding that there are many factors at play. The grocer's director of merchandising services described it well, "We have less inventory, we have more sales, and we have higher margins – Luminate Planning didn't make it happen, but it played an important role."

> **"We are happy with the relationship and constantly in conversations with Blue Yonder on how we can do new things to improve. Their customer service has been very responsive; when we have questions, they answer them quickly, and when we have issues, Blue Yonder gets on them right away."**
>
> *Director of merchandising services, groceries*

> **"I could not ask for a better partner. I really appreciate the lack of team changes over time."**
>
> *VP planning and allocation, retail*

Analysis Of Benefits

Quantified benefit data as applied to the composite

Total Benefits						
Ref.	**Benefit**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Atr	Markdown reductions driving margin improvements	$5,625,000	$6,187,500	$6,806,250	$18,618,750	$15,340,909
Btr	Additional margin driven by new revenue or reduced revenue loss	$1,406,250	$1,546,875	$1,701,563	$4,654,688	$3,835,227
Ctr	E-commerce labor, software, and IT productivities	$476,000	$556,000	$636,000	$1,668,000	$1,370,068
Dtr	Reduced transportation costs	$5,168,000	$5,684,800	$6,253,280	$17,106,080	$14,094,545
Etr	Margin increase due to reduction in out-of-stock inventory	$2,400,000	$2,640,000	$2,904,000	$7,944,000	$6,545,455
Ftr	Labor productivities associated with LWMS/LTMS/LCT	$10,710,000	$13,050,000	$14,265,000	$38,025,000	$31,238,993
Gtr	Elimination of software licensing	$708,900	$1,127,100	$1,277,040	$3,113,040	$2,535,401
	Total benefits (risk-adjusted)	$26,494,150	$30,792,275	$33,843,133	$91,129,558	$74,960,598

MARKDOWN REDUCTIONS DRIVING MARGIN IMPROVEMENTS

Evidence and data. Interviewees from organizations that used Luminate Commerce said they significantly reduced product markdowns by sourcing based on Blue Yonder's stock-out forecasting capability. When sourcing from a store, the intelligent availability and selection capabilities utilize this forecast to ship from a store that is less likely to sell that item instead of making the selection based solely on labor and shipping costs. A common scenario would be one in which a historical markdown situation of between $10 and $50 would be replaced by a labor and shipping cost increase of far less than $10.

Interviewees said the original justification for selecting Luminate Commerce was to reduce markdowns based on the velocity of likely sales items per store. They said the solution accomplished that and gave early wins to e-commerce fulfillment teams.

With the COVID-19 pandemic, labor shortages, and social unrest, responding to DC and store closures became a common use case for intelligent availability and selection capabilities to ensure fulfillment and to reduce markdowns. When a DC closes, it spreads fulfillment across remaining DCs, but also to stores to prevent the DCs from being overwhelmed. Luminate Commerce helps reduce markdowns by prioritizing slow-move store items. Store closures also put seasonal and high-demand fashion items at risk for markdowns but staffing them as miniature DCs and managing route logic to prioritize slow movers reduces the markdown risk.

"Before [using Blue Yonder Luminate], we had no means to ship a SKU (stock-keeping unit) from a slow-move store over a store that was more likely to sell that SKU. Blue Yonder provides a stock-out forecasting ability to help us ship from the store with the slower velocity."

Director of omni solutions, specialty retail

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The overall markdown percent for the composite organization is 1% of its overall revenue.
- Due to DC and store closures, an additional 0.25% of the composite's overall revenue ($25 million in Year 1) is at markdown risk.
- Luminate Commerce provides a 5% reduction in markdowns due to better fulfillment logic and prioritizing inventory in slower moving locations.

Risks. The impact of the benefit may vary depending on:

- The organization's risk of reduced product demand with time, which can lead to item markdowns or inventory write-offs.
- The frequency of the organization's DC and store closures.
- The organization's ability to utilize closed stores as shipping sources.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $15.3 million.

"As things opened up and closed down, it used to take significant multi-day projects to make changes in our system. With intelligent sourcing, we have been able to make extremely large changes in less than an hour related to sourcing and fulfilling orders. We are able to avoid some markdowns while keeping inventory positions where we need them. And, to be honest, I don't think it's hyperbole to say there would have been days when we might have had to bring our website down without Blue Yonder."

E-commerce fulfillment director, fashion retail

Markdown Reductions Driving Margin Improvements

Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Overall revenue	Composite	$10,000,000,000	$11,000,000,000	$12,100,000,000
A2	Markdown percent	Composite	1%	1%	1%
A3	Markdown cost (historical)	Composite	$100,000,000	$110,000,000	$121,000,000
A4	Markdown cost (DC and store closures)	Composite	$25,000,000	$27,500,000	$30,250,000
A5	Markdown reduction by better sourcing assignments	Interviews	5%	5%	5%
At	Markdown reductions driving margin improvements	(A3+A4)*A5	$6,250,000	$6,875,000	$7,562,500
	Risk adjustment	↓10%			
Atr	Markdown reductions driving margin improvements (risk-adjusted)		$5,625,000	$6,187,500	$6,806,250
	Three-year total: $18,618,750		**Three-year present value: $15,340,909**		

ADDITIONAL MARGIN DRIVEN BY NEW REVENUE OR REDUCED REVENUE LOSS

Evidence and data. Interviewees from organizations that used Luminate Commerce said it has led to revenue improvements. They said their organizations gained better user experiences (UX), which led to more revenue and increased customer satisfaction. Interviewees also said the solution reduced their organizations' revenue losses during high-demand periods.

Interviewees said their organizations previously limited their ability to communicate availability to customers while they were on their e-commerce websites. Because they were unable to access store inventories in real time and promised delivery dates were not available, they could only provide the customer with an estimated date range. Also, as part of shortcomings with availability determination, shipping-date options were not available until checkout. Both weaknesses led to avoidable sales losses. Interviewees said Luminate Commerce provided real-time inventory levels to the DC and stores that enabled them to provide delivery dates and expedited delivery options on product detail pages before items were added to the cart.

"Our previous solution could not determine availability as the customer was looking at items only at checkout. We believe this led to complete order abandonment as well as customer-satisfaction issues. Blue Yonder provides availability information on the product detail page, including expedited shipping options."

Director of omni solutions, specialty retail

Interviewees also said it was challenging to fill orders during high-demand periods (e.g., Black Friday, Cyber Monday) and due to intermittent DC staffing problems. Being unable to fill orders in a timely manner can lead to backlogs, which can have negative repercussions. With the high performance demands of availability and selection processes, interviewees said they considered the performance of the e-commerce website to be at risk. Luminate Commerce decoupled availability and selection processes from their primary e-commerce solutions, and the interviewees said they consider it a resolution to the performance risk. They also said they found that having the ability to rapidly configure Luminate Commerce to spread workloads across DCs and stores improved their timeliness at filling orders sufficiently to reduce backlogs.

"Previously, we could only provide the customer with a date range versus a promise delivery date, because the solution couldn't see store inventory in real time. Customers [would] abandon orders due to the lack of specificity. Blue Yonder solves this because it obtains DC and store inventories in real time. Furthermore, we have improved a key metric [by] promising [delivery in] five days or less well over 40% of the time when, historically, it was around 30%."

Director of omni solutions, specialty retail

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The composite increases its revenue by 0.25% by improving its user experience, preventing performance issues during high-demand periods, and reducing backlog lost sales.
- The composite's retail margin is 7.5%.

Risks. The impact of the benefit may vary depending on:

- Whether or not other revenue increasing opportunities exist.

"DC labor shortages and high-demand events put stress on fulfilling orders. For us, a backlog of over seven days is a real problem, and we oftentimes will send the item but not charge the guest for it. We have considered restricting the inventory we advertise on our website in the past. With Blue Yonder, this is no longer a worry."

E-commerce fulfillment director, fashion retail

"Our e-commerce business has grown rapidly, and we have had concerns that we might have to control the volume during peak times, such as Black Friday and Cyber Monday. The issue would be in the availability and order-sourcing capabilities. Moving those functions to Blue Yonder has alleviated any performance concerns at this time."

Director of omni solutions, specialty retail

- Whether or not the organization's current solution can obtain store-level inventory and provide accurate delivery dates.
- The capacity of the organization's DCs, the risk of DC staffing issues, and whether or not the organization has the ability to quickly shift sourcing effectively across DCs and stores.
- The level at which the organization uses its current solution and the associated risk of computer resources issues.
- The organization's retail margin.

Results. To account for these risks, Forrester adjusted this benefit downward by 25%, yielding a three-year, risk-adjusted total PV of $3.8 million.

Additional Margin Driven By New Revenue Or Reduced Revenue Loss

Ref.	Metric	Source	Year 1	Year 2	Year 3
B1	Annual revenue	Composite	$10,000,000,000	$11,000,000,000	$12,100,000,000
B2	Percent revenue gain	Interviews	0.25%	0.25%	0.25%
B3	Additional revenue due to having a better user experience, preventing high-demand period performance issues, and reducing backlog lost sales	B1*B2	$25,000,000	$27,500,000	$30,250,000
B4	Margin	Interviews	7.5%	7.5%	7.5%
Bt	Additional margin driven by new revenue or reduced revenue loss	B3*B4	$1,875,000	$2,062,500	$2,268,750
	Risk adjustment	↓25%			
Btr	Additional margin driven by new revenue or reduced revenue loss (risk-adjusted)		$1,406,250	$1,546,875	$1,701,563
	Three-year total: $4,654,688		**Three-year present value: $3,835,227**		

E-COMMERCE LABOR, SOFTWARE, AND IT PRODUCTIVITIES

Evidence and data. Interviewees from organizations that used Luminate Commerce said their organizations reduced labor costs by better allocating workloads across DCs and stores and that they have eliminated IT- or vendor-supplied software supporting availability and commit capabilities.

- Interviewees said there were numerous scenarios in which their organizations have been able to better allocate labor to fill e-commerce orders. This included configuring sourcing to deal with higher-than-expected demand or labor shortages, which reduced the need for overtime or more expensive contractors at DCs. They said another labor-saving change was gaining the ability to reduce split orders during the availability and sourcing phases to provide a single shipment to a customer and reduce both labor and shipping costs.

  One interviewee said their organization used one solution to provide availability and sourcing capabilities and another said their organization needed to take additional steps to consolidate DC and store inventory data into regional buckets to prevent significant performance issues during availability and sourcing processes. Both of those interviewees said their organizations would have required coding to balance workloads due to DC and store closures. With Luminate Commerce, they were able to adjust configurations, if the organization needed to take any action at all.

> **"Split shipments were a problem with our previous solution because it was a little too hierarchy-based. Blue Yonder uses a cross-based approach that has enabled us to utilize ship-from-store to reduce splits, ultimately reducing labor costs and providing the customer with a single delivery."**
>
> *Director of omni solutions, specialty retail*

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- Forrester conservatively estimated labor savings due to the composite's increased ability to balance shipping workloads with Luminate Commerce.
- The average cost of a warehouse or retail worker is $50,000 per year.
- The composite saves $195,000 by eliminating the need for availability and sourcing coding and software.

> **"Previously, if a DC closed, then IT would have to do a lot of coding to prevent other DCs from being bombarded. With intelligent sourcing, we are able to diffuse the closed DCs' demand throughout the network with a simple configuration change."**
>
> *E-commerce fulfillment director, fashion retail*

Risks. The impact of the benefit may vary depending on:

- The organization's ability to forecast labor demands and staff.
- The number of DC and store closures.
- Whether or not decision-makers wish to reduce splits and labor related to splitting order fulfillment.
- Whether or not the organization eliminates availability and sourcing software and IT labor.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV of $1.4 million.

E-Commerce Labor, Software, And IT Productivities					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
C1	Commerce-labor productivities by balancing workload between stores and distribution centers (FTEs)	Interviews	8	10	12
C2	Annual labor cost	TEI Standard	$50,000	$50,000	$50,000
C3	Subtotal: E-commerce labor savings by balancing workload between stores and distribution centers	C1*C2	$400,000	$500,000	$600,000
C4	Elimination of previous availability and commit capabilities (vendor supplied or coding)	Composite	$195,000	$195,000	$195,000
Ct	E-commerce labor, software, and IT productivities	C3+C4	$595,000	$695,000	$795,000
	Risk adjustment	↓20%			
Ctr	E-commerce labor, software, and IT productivities (risk-adjusted)		$476,000	$556,000	$636,000
	Three-year total: $1,668,000	**Three-year present value: $1,370,068**			

REDUCED TRANSPORTATION COSTS

Evidence and data. Interviewees from organizations that used Blue Yonder for distribution said there were numerous transportation-related use cases they wanted to improve. The most notable was related to carrier management and shifting shipments to less costly carriers while maintaining or improving service levels. Interviewees' organizations sought not only to improve individual processes but also the synergy of optimizing across processes such as routes, frequencies, and round-trip optimizations. Other significant areas of improvement included optimizing trailer-type selection and improving on-time deliveries, which led to lower late-delivery penalties.

- Interviewees said a primary business case for LCT and LTMS was to manage carriers and to improve carrier selection for transportation. Controlling carrier costs had always been challenging, but recent supply-chain issues made it worse. This made it more challenging to source carriers and led to increased use of the more expensive spot market. Simplifying carrier management while being able to understand carrier volume and service levels positioned interviewees' companies for better carrier negotiations. Blue Yonder also automated carrier selection, tendering, and acceptance, which significantly increased primary carrier selection while reducing spot-market selection.

"With Luminate TMS, we have been able to shift work up the contracted carrier hierarchy. Before the COVID-19 pandemic, the spot market could save us money. But now it is risky, so we have been able to use Luminate TMS to minimize using it."

Director of global sourcing, health consumer goods

- Interviewees said their organizations' carrier management and selection processes did not effectively optimize costs and services. Decision-makers frequently took action based on personal relationships or locality biases, and the organizations lacked information to better support rate negotiations or understand carrier service levels. In addition to not optimizing the use of primary carriers, many organizations considered it unacceptable to use spot-market shipping because those rates are far higher than primary carrier rates.

Interviewees said Blue Yonder changed that completely by providing visibility to carrier volumes, performance, etc., and providing automated carrier selection based on distribution team priorities beginning with rates and performance levels.

“Luminate TMS has allowed us to significantly increase our use of primary carriers while reducing our spot-market use. Our primary carriers are now at 90%, which is up from 75%, while our spot-market use has gone from around 2.5% to less and 0.5%. With spot-market rates frequently [being] two to three times our primary carrier rates, this change has been huge for us.”

Director of manufacturing and supply chain systems, food service products

- Interviewees from a logistics company and the health consumer goods company said their organizations saw opportunities for improving round-trip loads and optimizing routes and delivery frequencies. A director of global sourcing in the health consumer goods industry said their organization improved all three at one time by modifying routes from a scenario of "A to B” then “B to A” to adding a third site while changing the frequency of deliveries and moving goods between the three sites. The interviewee said their organization wasn’t able to do this until implementing LTMS.
- Interviewees from organizations with distribution teams that ship in Europe said their companies face the challenge of optimizing the use of trailers of various sizes. Due to street-width differences, overpass/underpass height differences, and other local or historical reasons, there are an array of trailer sizes with varying load capabilities. The director of global sourcing in the health consumer goods industry said Blue Yonder handles that and saves their organizations millions of dollars.

“Europe has 39 different trailer types in our transportation management system, for local and historical reasons. This visibility has saved us time and money in delivering our goods.”

Director of global sourcing, health consumer goods

- Interviewees said penalties for late deliveries are a significant problem, and some major retailers penalize late shipments by more than 3% of the shipment value. Blue Yonder helped their organizations improve their on-time delivery results, which reduced the penalties associated with late deliveries and led to millions of dollars in savings.

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The composite’s transportation costs are equal to 10% of its revenue.
- Shifting shipments away from the spot market and increasing the use of primary, lower-cost carriers produces 0.4% savings for transportation costs.
- Round-trip, route, and frequency optimizations save the composite 0.075% in transportation costs.
- Optimizing trailer-type selection saves the composite 0.033% in transportation costs.
- Penalty reductions for late shipments saves the composite 0.100% in transportation costs.

Risks. The impact of the benefit may vary depending on:

- The relationship of transportation costs to revenue within the organization.
- The organization's state of viewing and analyzing end-to-end inventory positions and carrier performance.
- Whether or not the organization has an opportunity to improve on carrier contracts and select carriers based on cost and service levels.
- Whether or not the organization can benefit from round-trip, frequency, and route optimizations or the synergy of using all three together.
- Whether or not the organization has a need for trailer-type optimizations and its current capabilities.
- Whether or not the organization is at risk for late-delivery penalties and the magnitude of those penalties.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $14 million.

"Our top implementation risks were business continuity and maintaining service levels, which were quite high already. The implementation [ran] very well, so business continuity was not an issue. Very early on, we saw an improvement of on-time shipments from 98% to 98.7%. This led to reduced penalties for late delivery that could be as high as 5% of net sales."

Director of global sourcing, health consumer goods

"We have been able to negotiate lower rates with carriers we subcontract to because we help them be more efficient, and we also frequently provide them with return loads. We now have a marketing campaign to attract customers to expand this win-win relationship further."

Head of engineering innovation, logistics

Reduced Transportation Costs

Ref.	Metric	Source	Year 1	Year 2	Year 3
D1	Revenue	Composite	10,000,000,000	11,000,000,000	12,100,000,000
D2	Transportation cost as percent of revenue	Assumption	10%	10%	10%
D3	Transportation cost	D1*D2	1,000,000,000	1,100,000,000	1,210,000,000
D4	Carrier cost reduction due to shifting away from spot market and increasing use of primary carriers	Interviews	0.400%	0.400%	0.400%
D5	Round-trip, frequency, and route optimizations	Interviews	0.075%	0.075%	0.075%
D6	Trailer-type optimization	Interviews	0.033%	0.033%	0.033%
D7	On-time shipment level-of-service penalty reduction	Interviews	0.100%	0.100%	0.100%
Dt	Reduced transportation costs	D3*(D4+D5+D6+D7)	$6,080,000	$6,688,000	$7,356,800
	Risk adjustment	↓15%			
Dtr	Reduced transportation costs (risk-adjusted)		$5,168,000	$5,684,800	$6,253,280
	Three-year total: $17,106,080		Three-year present value: $14,094,545		

MARGIN INCREASE DUE TO REDUCTION OF OUT-OF-STOCK INVENTORY

Evidence and data. Interviewees said Blue Yonder Luminate provided improvements to demand planning, warehouse management, and transportation management, and that they reduced out-of-stock inventory. Demand planners gained a better understanding of shipping times and inventory levels of items at sites and in transit, which led to more accurate planning. The organizations' DCs are more effective at preparing loads on time, and distribution teams improve on-time deliveries due to numerous improvements described for the previous benefit.

- Interviewees said demand planners often received updated lead times very infrequently — sometimes less than once a year. They said having knowledge of inventory that was in-transit or at DCs required searching on multiple systems and that they frequently couldn't do so completely. Both LCT and LTMS provided visibility that led to improved demand forecasting, which reduced out-of-stock inventory at stores and DCs.
- Distribution teams at interviewees' organizations wanted to reduce carrier costs and service levels. They said using LTMS improved service levels and on-time shipments by providing better carrier selection algorithms; automating carrier selection, tendering, and acceptance; and making optimizations related to delivery frequencies, route selections, and round trips.

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The composite's historical out-of-stock ratio is equal to 7.5% of its revenue.
- The composite's customer-supplied stockout improvement is 10%.
- The composite's revenue loss associated with stockouts is 50%.
- The composite's net margin is 8%.

Risks. The impact of the benefit may vary depending on:

- The organization's historical stockout levels.
- Industry-level margins.
- Customer-specific opportunities for stockout improvements.
- The organization's priorities with Luminate.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV of $6.5 million.

Margin Increase Due To Reduction Of Out-Of-Stock Inventory

Ref.	Metric	Source	Year 1	Year 2	Year 3
E1	Annual revenue	Composite	$10,000,000,000	$11,000,000,000	$12,100,000,000
E2	Historical stockout ratio	TEI Standard	7.5%	7.5%	7.5%
E3	Stockout improvement	Interviews	10%	10%	10%
E4	Revenue loss from stockout	Assumption	50%	50%	50%
E5	Margin	Assumption	8%	8%	8%
Et	Margin increase due to reduction of out-of-stock inventory	E1*E2*E3*E4*E5	$3,000,000	$3,300,000	$3,630,000
	Risk adjustment	↓20%			
Etr	Margin increase due to reduction of out-of-stock inventory (risk-adjusted)		$2,400,000	$2,640,000	$2,904,000
	Three-year total: $7,944,000		**Three-year present value: $6,545,455**		

LABOR PRODUCTIVITIES ASSOCIATED WITH LUMINATE WAREHOUSE MANAGEMENT, TRANSPORTATION MANAGEMENT, AND CONTROL TOWER

Evidence and data. Interviewees said Luminate enabled automation, process improvements, and even completely restructured their organizations' supply chains, including IT. They have also seen quality improvements and labor reductions for DC workers, demand planners, distribution planners, and IT staff.

- Interviewees said gaining automation (most notably around carrier selection, tendering, and acceptance) provided distribution-planner labor savings, delayed planner hiring, improved planner work quality, and improved service levels. Features of this improved process, such as having the ability to lock in carriers earlier, provided labor savings because the organizations could plan and balance workloads more effectively.

"In addition to automatic tendering and automatic acceptance freeing up planners' time, we are seeing responses much more quickly than with our Luminate TMS on-premises implementation. This has translated more to quality improvement and delays in planner expansion than to immediate labor reductions for us."

Director of manufacturing and supply chain systems, food service products

- A director of manufacturing and supply-chain systems in the food service products industry said: "Another significant improvement LTMS has provided is the ability to lock in carriers up to six days prior to departure, when we previously could only lock in carriers two or three days prior. This not only helps the distribution team, but it also provides more flexibility to the warehouse coordinator to deal with the ebb and flow of work.

"Luminate Control Tower has enabled us to grow dramatically in Mexico while reducing labor costs. We were able to convince truck drivers to provide us visibility, either through GPS or a phone application because it meant that they would be disturbed less while driving. Our internal time savings came about because we can digitally track the drivers versus calling them, so our team only acts when something is wrong, and we need to intervene."

Head of engineering innovation, logistics

- Direct and indirect process improvements provided labor productivities and quality improvements across the organizations' supply chains. Having end-to-end visibility within Luminate eliminated search efforts that became automated, improved the accuracy of the data, and enabled better decision-making from demand planners and distribution planners to warehouse workers. Process improvements within the organizations' DCs also translated to quality improvements that led to labor savings. A director of manufacturing and supply-chain systems with a food service products organization said: "Quality improvements from reduced recovery activities has been worth around $1 million dollars for us. A process improvement of note is that we now do dock dates for all pickups. That's made life in the warehouse a thousand times better. We now calculate backwards from the dock date based on the labor tool and other tools, and that tells them when to begin wave-picking. The wave picking [of LWMS] has made a huge difference for us. The number of orders out per day has gone up around 10%."

- Interviewees said their organizations went through major and minor restructurings because of their Luminate implementations. Demand planners and distribution planners expanded their responsibilities to work more closely with internal customers and partners. A director of global sourcing with the health consumer goods company (the largest of the interviewees' organizations) completely rebuilt its distribution organization as part of their Luminate implementation, moving from a decentralized to a centralized organization structure.

"LTMS enabled us to completely redesign and reconstruct our distribution structure, shifting from decentralized planning and execution to two transportation centers in the US and Europe. We moved from manual, gut feel, and relationship-based carrier selection to automated selection based on service levels and cost. We won by significantly reducing our carrier costs while also reducing labor costs and improving service levels."

Director of global sourcing, health consumer goods

- Interviewees said IT labor savings came from a combination of transitioning to a SaaS solution and eliminating requirements to consolidate data and write and maintain code in support of legacy systems and processes.

"We integrated all of our existing carriers through EDI (electronic data exchange). We also brought in more carriers because it was so easy. This allowed us to repurpose two workers to other roles."

Director of manufacturing and supply chain systems, food service products

"We are not tracking all carriers via Luminate Control Tower at this point and the Suez Canal fiasco really exemplified that fact. Within Luminate Control Tower it was very easy to see the goods involved and understand the effect on warehouse stocks, etc. For flows not tracked in Luminate Control Tower we had to invest days and weeks to find out the effect. The labor cost was bad, but the most significant costs were the time delay in obtaining actionable information."

Global digital supply chain project manager, manufacturing

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The average annual labor cost of a warehouse worker is $50,000.
- The average annual labor cost of a demand planners, distribution team member, or IT resource is $100,000.
- The composite's actual FTE reduction for warehouse workers is 7.5%.
- The composite's actual FTE reduction for demand planners is 5%.
- The composite's actual FTE reduction for the distribution team is 12.5%.
- The composite's actual FTE reduction for IT resources is four FTEs.

Risks. The impact of the benefit may vary depending on:

- The organization's labor rates.
- The current maturity level of the organization's supply-chain solutions, integration between solutions, data quality, and end-to-end visibility.
- The degree to which the organization is open to culture change if warranted.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of $31.2 million.

Labor Productivities Associated With Luminate Warehouse Management, Luminate Transportation Management, and Luminate Control Tower

Ref.	Metric	Source	Year 1	Year 2	Year 3
F1	Number of warehouse workers in LWMS run warehouses	Composite	2,667	3,333	3,667
F2	Warehouse-worker productivities due to scheduling and processing improvements	Interviews	7.5%	7.5%	7.5%
F3	Warehouse-worker labor reduction due to scheduling and processing improvements	F1*F2	200	250	275
F4	Average annual cost of warehouse worker	TEI Standard	$50,000	$50,000	$50,000
F5	Subtotal: Warehouse-worker productivities due to scheduling and processing improvements	F3*F4	$10,000,000	$12,500,000	$13,750,000
F6	Number of demand planners	Composite	100	105	110
F7	Demand planner productivities due to lead-time and tracking improvements	Interviews	5%	5%	5%
F8	Demand planner reassignment due to lead-time and tracking improvements	F6*F7	5	5	6
F9	Average annual cost of demand planners	TEI Standard	$100,000	$100,000	$100,000
F10	Subtotal: Demand planner reassignment due to lead-time and tracking improvements	Interviews	$500,000	$500,000	$600,000
F11	Distribution team productivities due to automation, reporting improvements, and tracking productivities	Composite	80	84	88
F12	Distribution team productivities due to automation, reporting improvements, and tracking productivities	Interviews	12.5%	12.5%	12.5%
F13	Distribution team productivities due to automation, reporting improvements, and tracking productivities	F11*F12	10	11	11
F14	Average annual cost of distribution team members	TEI Standard	$100,000	$100,000	$100,000
F15	Subtotal: Distribution team productivities due to automation, reporting improvements, and tracking productivities	Interviews	$1,000,000	$1,100,000	$1,100,000
F16	IT labor productivities due to using a SaaS solution and eliminating coding	Interviews	4	4	4
F17	IT labor productivities due to using a SaaS solution and eliminating coding	TEI Standard	$100,000	$100,000	$100,000
F18	Subtotal: IT labor productivities due to using a SaaS solution and eliminating coding	Interviews	$400,000	$400,000	$400,000
Ft	Labor productivities associated with LWMS/LTMS/LCT	F5+F10+F15+F18	$11,900,000	$14,500,000	$15,850,000
	Risk adjustment	↓10%			
Ftr	Labor productivities associated with LWMS/LTMS/LCT (risk-adjusted)		$10,710,000	$13,050,000	$14,265,000
	Three-year total: $38,025,000		**Three-year present value: $31,238,993**		

ELIMINATION OF LEGACY WMS/TMS/CT SOFTWARE LICENSING

Evidence and data. Each of the interviewees said their organization was able to reduce some software costs. None said their organization decreased its net software costs, but decision-makers did not expect that to happen because they considered Luminate to be a better solution than their previous tools.

- Interviewees said the most significant software-license cost savings relative to the cost of LWMS were in warehouse management systems. Some of their organizations replaced previous warehouse solutions during several years due to differences in warehouse management processes and software across the organizations.
- Although each of the interviewees' organizations had a transportation management solution, none had a full, vendor-supplied transportation control tower. However, some did have some level of data warehouse solution. Interviewees also said their organizations saw partial synergy of software savings by implementing both LCT and LTMS solutions, but they did not have enough information to estimate its full value.

Modeling and assumptions. Based on the interviews, Forrester assumes the value of software eliminated due to Blue Yonder Luminate is 75% for the LWMS, 33% for LCT, and 25% for LTMS.

Risks. The impact of the benefit may vary depending on:

- The organization's capability coverage.
- The costs of the organization's current solutions.
- Discounts and pricing terms.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $2.5 million.

Elimination Of Legacy WMS/TMS/CT Software Licensing

Ref.	Metric	Source	Year 1	Year 2	Year 3
G1	Cost of previous control tower	Composite	$181,500	$231,000	$257,400
G2	Cost of previous transportation software	Composite	$112,500	$150,000	$165,000
G3	Cost of previous warehouse management software	Composite	$540,000	$945,000	$1,080,000
Gt	Elimination of legacy WMS/TMS/CT software licensing	G1+G2+*G3	$834,000	$1,326,000	$1,502,400
	Risk adjustment	↓15%			
Gtr	Elimination of legacy WMS/TMS/CT software licensing (risk-adjusted)		$708,900	$1,127,100	$1,277,040
	Three-year total: $3,113,040		Three-year present value: $2,535,401		

UNQUANTIFIED BENEFITS

Additional benefits that customers experienced but were not able to quantify include:

- **Inventory reductions.** Interviewees said Blue Yonder Luminate improved their organization's demand planning and that its ability to deliver products more efficiently, quickly, and effectively put it in a better inventory position. They also said that under normal circumstances, these improvements would lead to a measurable decrease in inventory levels. Interviewees said there is currently too much complexity in the supply-chain system to estimate these savings.

- **Demand planners gained the ability to make better forecasts due to end-to-end inventory visibility.** Interviewees said demand planners spend less time trying to understand inventory positions and lead times than they did before, and that the information is more timely, more thorough, and more accurate. As a result, the demand planners became able to produce better forecasts. The director of supply chain at the medical technology company described it, "LCT frees up 10% to 20% of the demand planners' time by eliminating transactional work. This allows them to spend more time with sales and marketing teams, so they more thoroughly understand which things are coming and going. Their forecasts are better as a result."

- **Simplifying and improving the accuracy of onboarding new carriers.** Interviewees said onboarding carriers requires much less time than before and that it now only resides in LTMS. Although their carrier cost savings include their current states in which new carriers were added, none of the interviewees' organizations focused effort to identify new prospective carriers, evaluate them, or engage with them.

- **Improving the immediate response time for carrier tendering and other process improvements that enable business expansion.** Interviewees said using automatic carrier confirmations for a process that typically took 12 to 24 hours allowed transportation teams to meet customer requirements they could not meet before. This improvement provided efficiencies and expanded offerings, such as allowing a carrier to take on loads 12 hours before departure.

- **Improving the ability to handle acquisitions.** Some interviewees said decision-makers now consider their organization's supply chain to be a competitive advantage and a means to quickly integrate an acquired company's supply-chain and its cost and service position.

- **Providing asset- and driver-compliance monitoring.** A head of engineering innovation at a logistics company said Blue Yonder Luminate tracks compliance instead of requiring many people to track it. They said: "We believe there has been a reduction in fuel costs due to truck-maintenance monitoring. Our most recent estimate of incident count per million miles showed an 8% decrease."

- **Having the integration synergy of LWMS and LTMS implementations.** A director of manufacturing and supply-chain systems at a food service products company said: "[Integration] provided better statuses, better visibility to the current pipeline, and better understanding of where a specific order is at, among other things. You know more faster and without making a lot of phone calls." Interviewees said they did not have enough data to measure the financial benefits of using both LWMS and LTMS.

- **Having the integration synergy of LTMS and LCT implementations.** Interviewees said they did not have enough data to measure the financial benefits of using both LTMS and LCT.

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might implement Blue Yonder Luminate and later realize additional uses and business opportunities, including:

- **Being able to respond to a constantly changing supply chain.** Each of the interviewees said Blue Yonder Luminate helped their organization adjust to the array of challenges that popped up in the supply-chain realm during the last two years. They said Luminate Commerce provided scaling that prevented disruption due to the rapid changes in e-commerce demand and also provided a means for the companies to quickly adjust to warehouse labor shortages as well as DC and store closures. Gaining visibility into end-to-end inventories has provided insights into global supply chain issues that have allowed and will continue to allow planners to make better decisions than experts have proposed. Demand planners gained the ability to update lead times as needed, which ensured better forecasts. Distribution teams are able to continue to maximize their use of primary carriers and minimize their use of the spot market.
- **Being prepared for technology improvements.** Interviewees said they are confident their organization's implementation of Blue Yonder will enable it to more quickly utilize new technologies (e.g., autonomous vehicles, internet of things, 5G).
- **Expanding carrier selection beyond cost and service levels.** A director of global sourcing with a health consumer goods organization said their transportation team is in the process of adding carbon emissions to its selection criteria. The interviewee said customers, stakeholders, and investors are increasingly looking into sustainability.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

Analysis Of Costs

Quantified cost data as applied to the composite

Total Costs

Ref.	Cost	Initial	Year 1	Year 2	Year 3	Total	Present Value
Htr	LCT, LTMS, LWMS, and Luminate Commerce licensing costs	$0	$2,750,000	$3,888,500	$4,455,000	$11,093,500	$9,060,744
Itr	LCT, LTMS, LWMS, and Luminate Commerce implementation costs	$3,575,000	$1,842,500	$660,000	$412,500	$6,490,000	$6,105,372
	Total costs (risk-adjusted)	$3,575,000	$4,592,500	$4,548,500	$4,867,500	$17,583,500	$15,166,116

LCT, LTMS, LWMS, AND LUMINATE COMMERCE LICENSING COSTS

Evidence and data. Interviewees said Blue Yonder Luminate is more expensive than the cost of their organizations' previous solutions, but they believe it's worth paying more to get the key capabilities they sought.

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The composite has 15 million item locations.
- The composite makes 250,000 shipments per month.
- The composite uses 11 million warehouse lines per month.

Risks. The impact of the benefit may vary depending on:

- The organization's number of item locations, shipments per month, and warehouse lines per month.
- Discounts based on volume pricing, negotiated payment terms, etc.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $9 million.

LCT, LTMS, LWMS, And Luminate Commerce Licensing Costs

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
H1	Cost of LCT license	Composite	$0	$550,000	$700,000	$780,000
H2	Cost of LTMS license	Composite	$0	$450,000	$600,000	$660,000
H3	Cost of LWMS license	Composite	$0	$720,000	$1,260,000	$1,440,000
H4	Cost of Luminate Commerce license	Composite	$0	$780,000	$975,000	$1,170,000
Ht	LCT, LTMS, LWMS, and Luminate Commerce licensing costs	H1+H2+H3+H4	$0	$2,500,000	$3,535,000	$4,050,000
	Risk adjustment	↑10%				
Htr	LCT, LTMS, LWMS, and Luminate Commerce licensing costs (risk-adjusted)		$0	$2,750,000	$3,888,500	$4,455,000
	Three-year total: $11,093,500		**Three-year present value: $9,060,744**			

LCT, LTMS, LWMS, AND LUMINATE COMMERCE IMPLEMENTATION COSTS

Evidence and data. Each interviewee said their organization's implementations required outside consulting and considerable time for planning and implementation. The larger the company, the more complex the implementation was due to the number of sites and applications and less standardization.

Some interviewees said their organization's implementations took longer than decision-makers hoped but that they were not surprised.

Forrester modeled the composite organization to be larger than most of the interviewees' organizations, so its implementation requires more work.

> **"As far as implementation goes, there were no major surprises. We got to where we thought we would get. Both sides underestimated the complexity of pulling it off. The project took us longer than we thought it would, but it has been totally worth it."**
>
> *Director of omni solutions, specialty retail*

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

> **"We worked with a Blue Yonder partner for the implementation. We had three parallel regional teams working all the time and completing a region about every other month. We completed Europe in about 13 months."**
>
> *Director of global sourcing, health consumer goods*

- The composite uses a relatively significant amount of external consulting during implementation to minimize the risk of disrupting business continuity and service levels.
- The composite takes a phased, standardized approach to implementation that provides more productivities as phases are completed because workers improve their skill levels during implementation. This is most notable in its LWMS and LTMS implementations.

Risks. The impact of the benefit may vary depending on:

- The number of external consultants the composite uses, their skillsets, and availability.
- The organization's timing and standardization requirements.

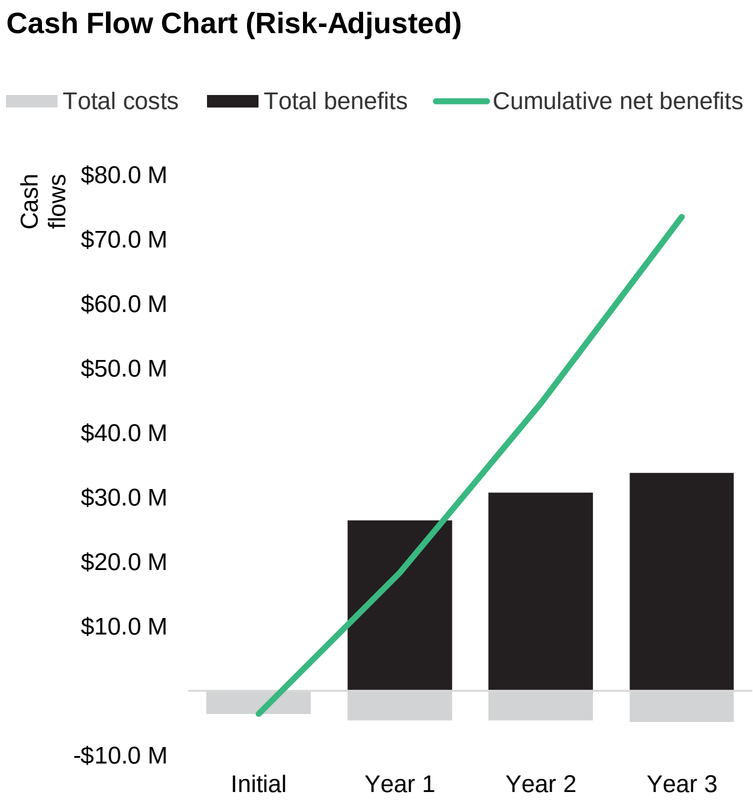
Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of $6.1 million.

LCT, LTMS, LWMS, And Luminate Commerce Implementation Costs

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
I1	Cost of LCT implementation	Composite	$600,000	$300,000	$100,000	$100,000
I2	Cost of LTMS implementation	Composite	$1,100,000	$500,000	$0	$0
I3	Cost of LWMS implementation	Composite	$800,000	$500,000	$250,000	$150,000
I4	Cost of Luminate Commerce implementation	Composite	$750,000	$375,000	$250,000	$125,000
It	LCT, LTMS, LWMS, and Luminate Commerce implementation costs	I1*I2*I3*I4	$3,250,000	$1,675,000	$600,000	$375,000
	Risk adjustment	↑10%				
Itr	LCT, LTMS, LWMS, and Luminate Commerce implementation costs (risk-adjusted)		$3,575,000	$1,842,500	$660,000	$412,500
	Three-year total: $6,490,000		**Three-year present value: $6,105,372**			

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS



The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Analysis (Risk-Adjusted Estimates)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	($3,575,000)	($4,592,500)	($4,548,500)	($4,867,500)	($17,583,500)	($15,166,116)
Total benefits	$0	$26,494,150	$30,792,275	$33,843,133	$91,129,558	$74,960,598
Net benefits	($3,575,000)	$21,901,650	$26,243,775	$28,975,633	$73,546,058	$59,794,482
ROI						394%
Payback						<6 months

Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

TOTAL ECONOMIC IMPACT APPROACH

Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

PRESENT VALUE (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

NET PRESENT VALUE (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

RETURN ON INVESTMENT (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.

DISCOUNT RATE

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.

PAYBACK PERIOD

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Appendix B: Endnotes

[1] Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

[2] Source: "Forrester Consumer Energy Index and Retail Pulse Survey, September 2021."


FORRESTER®