



27 September 2007

Supply Chain Scorecard Readout

CASE STUDY



PRTM

*Management
Consultants*

Where Innovation Operates

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PRTM Has Transformed Business Performance for 31 Years

31 years of experience: global operational transformations

Focus on supply chain, product development, and customer service consulting

Staff of over 575 consultants

17 offices worldwide*

90% repeat business

Founded on principal of delivering “results not reports”

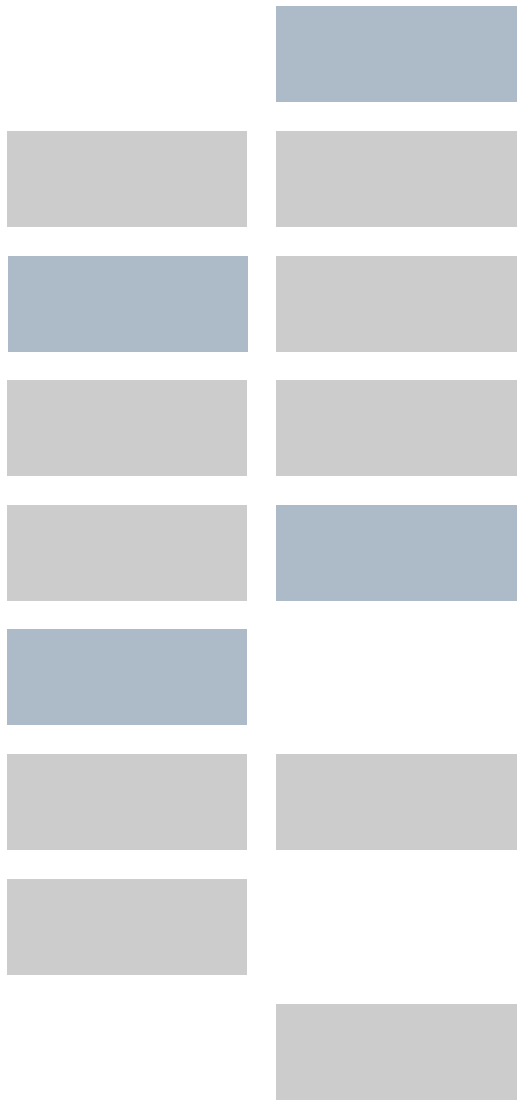
Geographic coverage:



Sector coverage:

- Industrial (Aerospace and Defense, Automotive, Industrial)
- Communications and Services (Communications, Media)
- Electronics, Computing, Semiconductor
- Life Sciences (Pharma, Medical Devices, Biotech)
- Consumer Package Goods
- Chemicals and Process Industries
- Energy Services and Technology
- Financial Services
- Government
- Software

* Including satellite offices



Introduction

Background

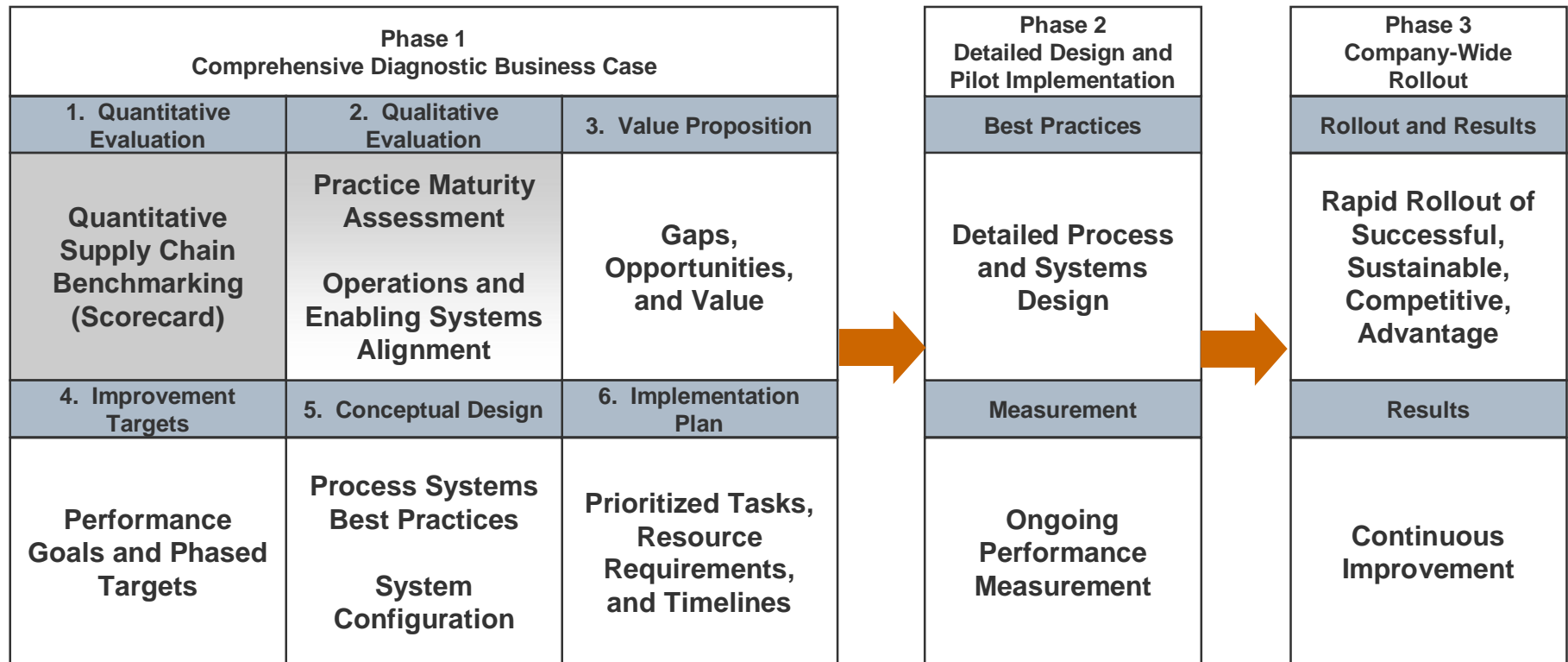
A division of a major electronics company was trying to understand its relative position in overall supply chain management performance

- Was it tracking the most important supply chain metrics?
- What was the current best-in-class performance for key supply chain metrics?

The division's ultimate objectives were to:





- Establish a basis for effective ongoing management of the supply chain
- Set improvement targets and goals
- Implement supply chain best practices

The Company Began Its Journey to Improve the Supply Chain by Doing a Quantitative and Qualitative Benchmark



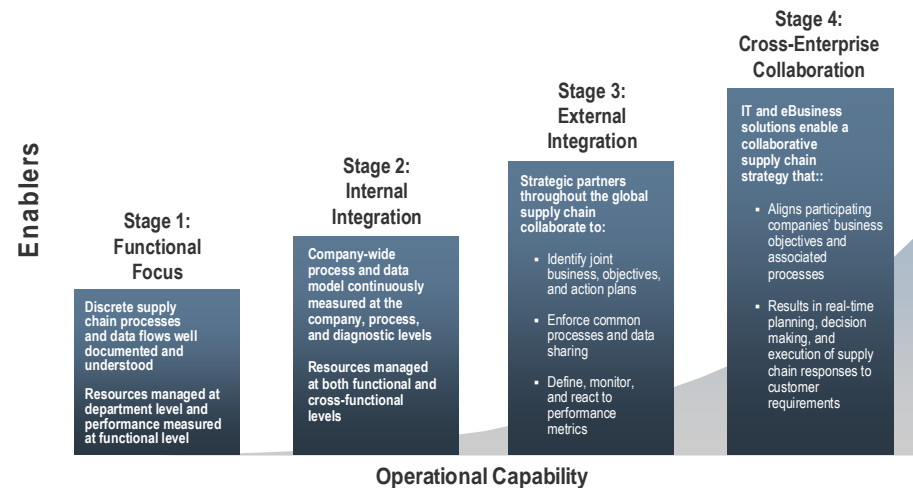
The Integrated Supply Chain Benchmarking Study Combined Quantitative and Qualitative Elements

Quantitative elements provide visibility into Level 1 supply chain performance metrics

Key Supply Chain Management Metrics				
	Delivery Performance/Responsiveness	Flexibility	Cost	Asset Management
Delivery Performance	✓			
Order Fulfillment Lead Time	✓	✓		
Production Flexibility		✓		
Total Supply Chain Management Cost			✓	
Inventory Days of Supply				✓
Cash-to-Cash Cycle Time				✓
Net Asset Turns				✓

Qualitative elements provide visibility into the maturity of a company's supply chain processes

Maturity of Supply Chain Processes and Practices



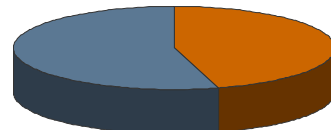
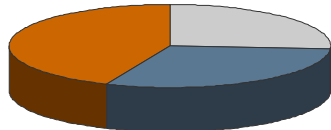
To Obtain a Fair Comparison, The Company Created a Custom Population to More Closely Represent Its Market

The custom population was selected based on average selling price, manufacturing strategy, and product revenue

Manufacturing Strategy

Standard Population

Custom Population

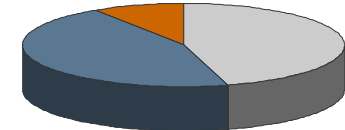
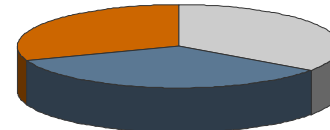


- Make to Stock
- Configure to Order
- Make to Order

Total Product Revenue

Standard Population

Custom Population

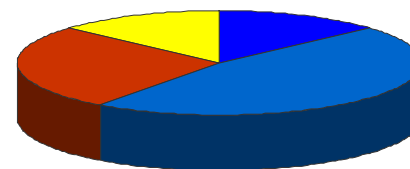
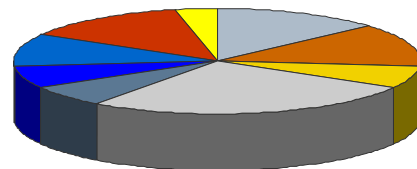


- < \$500 million
- \$500 million–\$3 billion
- > \$3 billion

Predominant Average Selling Price (ASP)

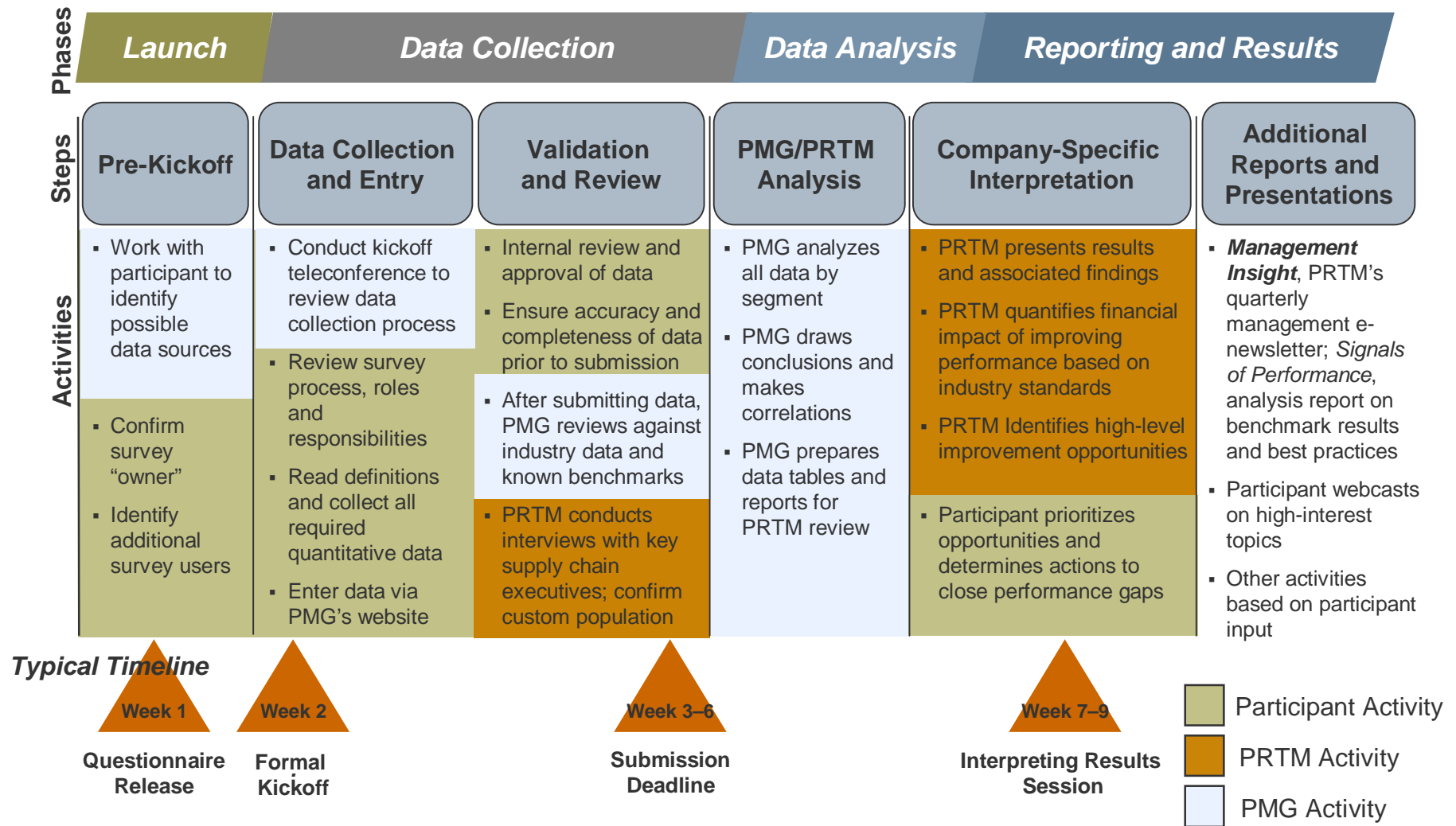
Standard Population

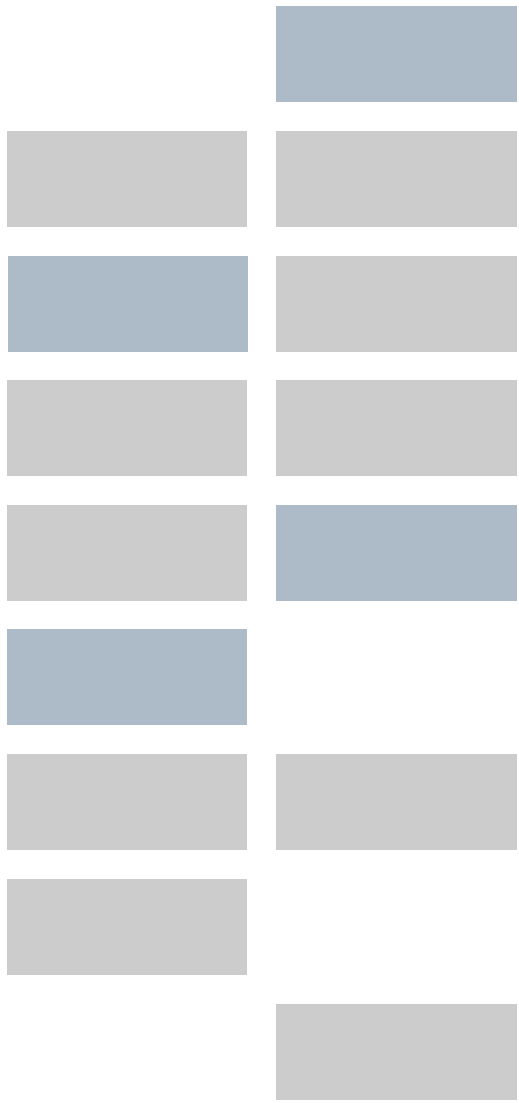
Custom Population



- <= \$10
- \$10–\$200
- \$200–\$500
- \$500–\$1K
- \$1K–\$3K
- \$3K–\$10K
- \$10K–\$20K
- \$20K–\$150K
- \$150K–\$500K
- > \$500K

The Executive Team Identified a Data Collection Team and Enabled the Benchmarking to Be Completed Quickly





Benchmarking Findings and Conclusions

The Supply Chain Scorecard Indicated Poor Customer-Facing and Average Internal-Facing Performance

Company SC Performance Scorecard for the Custom Population

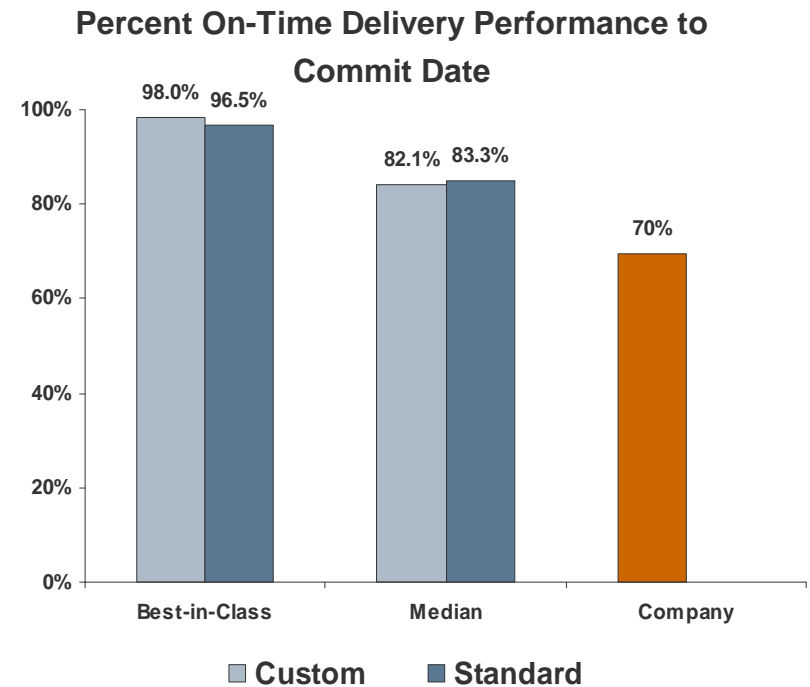
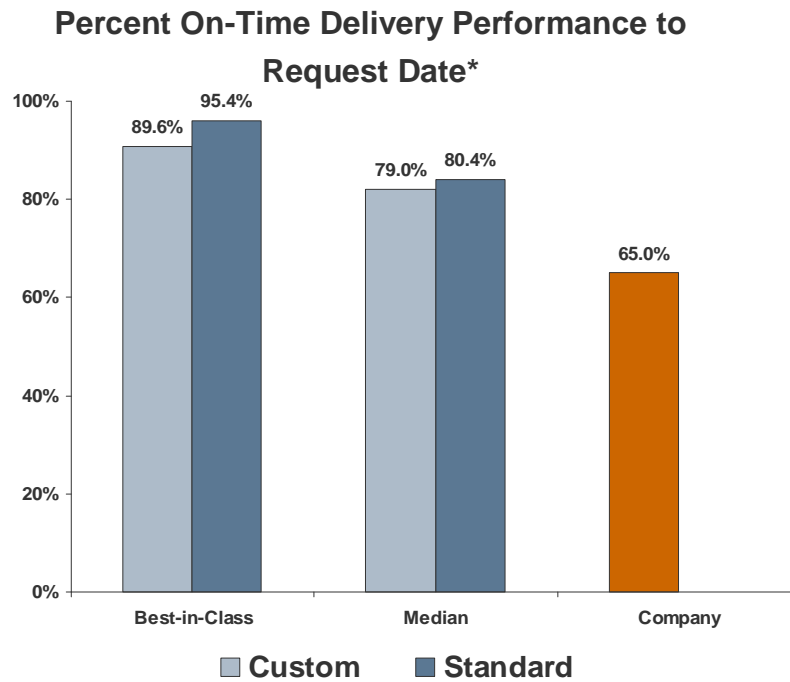
Key Perspectives	Metrics	Performance versus Comparison Population					CO	
		0–20% Major Opportunity	20–40% Disadvantage	40–60% Median	60–80% Advantage	80–100% Best-in-Class		
Customer-Facing Metrics	On-Time Delivery to Request %			82.0%		90.7%	65%	
	On-Time Delivery to Commit %			84.1%		98.5%	69.5%	
	Order Fulfillment Lead Time (OFLT): Configure to Order (days)				17.5		7.5	15
	Upside Production Flexibility: Principle Constraint (days)				60.8		33.0	65.0
Internal-Facing Metrics	Total Supply Chain Management Costs (% of Revenue)			11.2%		5.6%	8.5%	
	Inventory Days of Supply			69		41.5	61.5	
	Cash-to-Cash Cycle Time (days)			58.3		39	58.8	
	Net Asset Turns			2.6		14.8	1.6	
	Forecast Accuracy (unit)				65.0%		84.0%	55.0%

Company Data

Customer-Facing Performance Was Very Poor

Low on-time delivery to commit is most often a result of breakdowns in material planning and production schedule management

- This is based on benchmarking and consulting experience in this industry

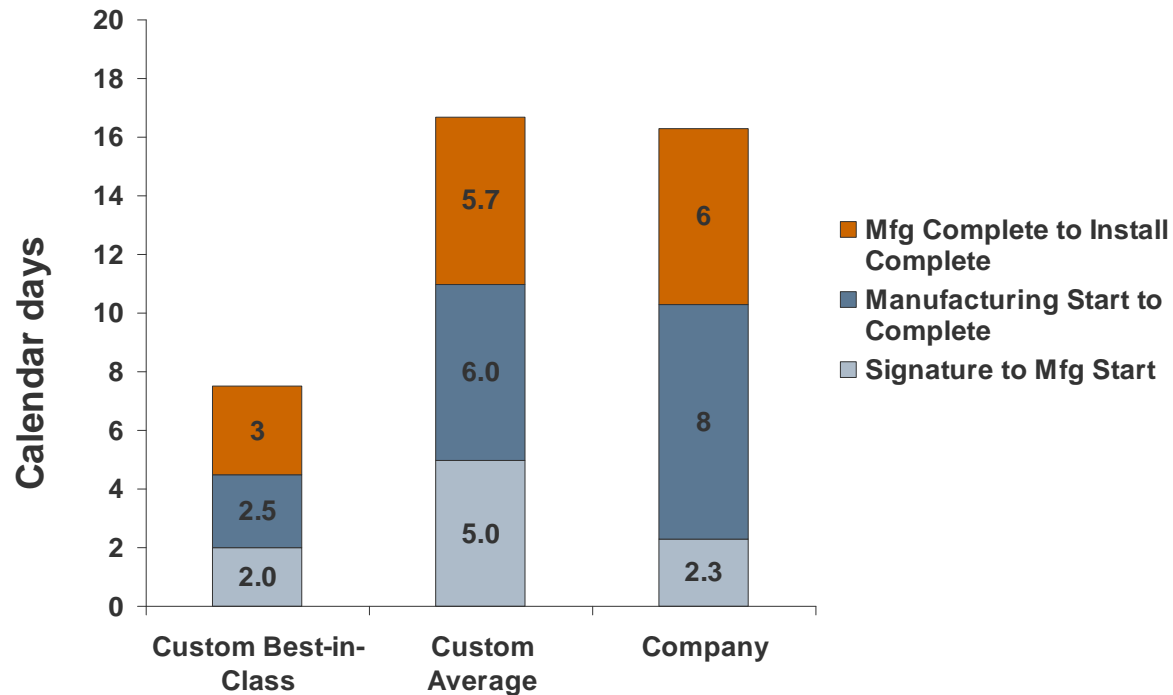


* Performance to request/commit—percentage of orders shipped on time to the customer's requested or vendor's committed date

Manufacturing Cycle Time Is Significantly Longer than Competitors

Most of the manufacturing cycle time was related to testing and dwell time

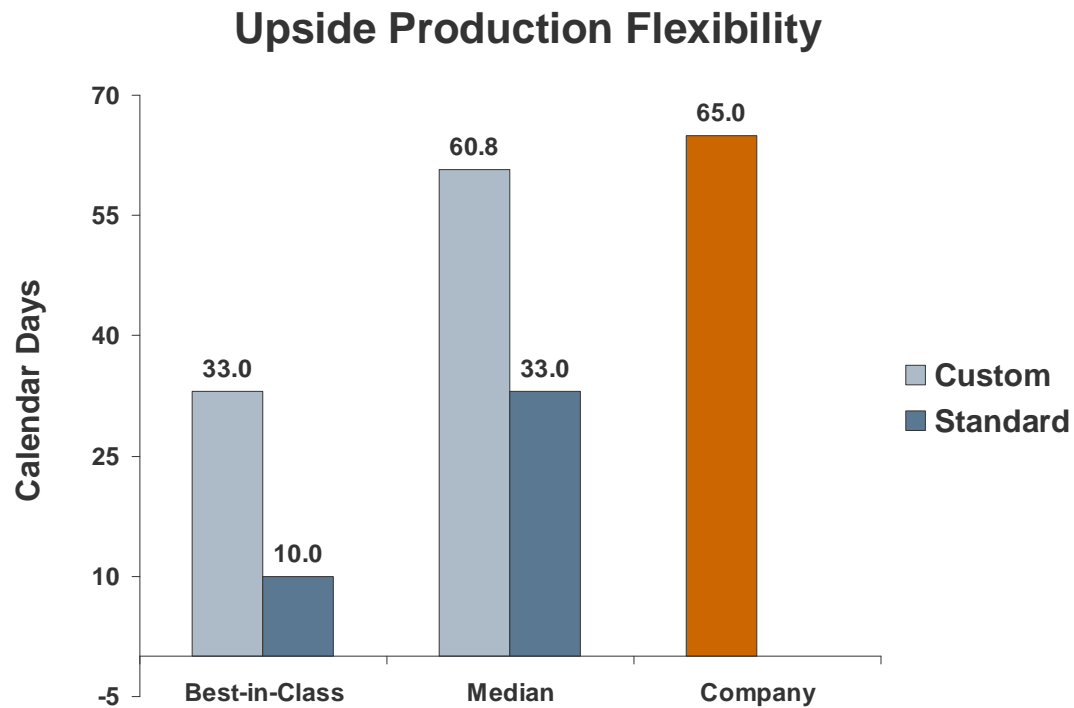
Order Fulfillment Lead Time (Configure to Order)



Note: Order fulfillment lead time—calculated as the calendar days between order receipt from the customer to order delivered to customer

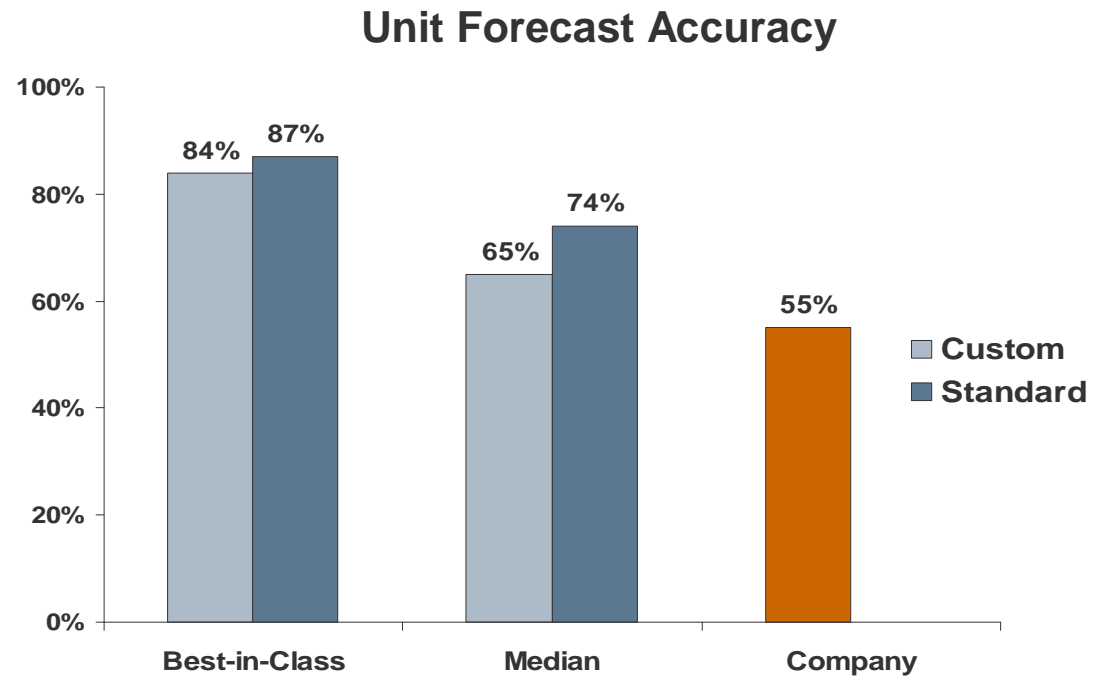
Upside Production Flexibility Was Twice That of the BIC Custom Population

Poor upside flexibility often underlies poor delivery performance and missed revenue opportunities



Note: This represents the time required to fill the material pipeline and adjust manufacturing capacities to sustain a 20% increase in total demand

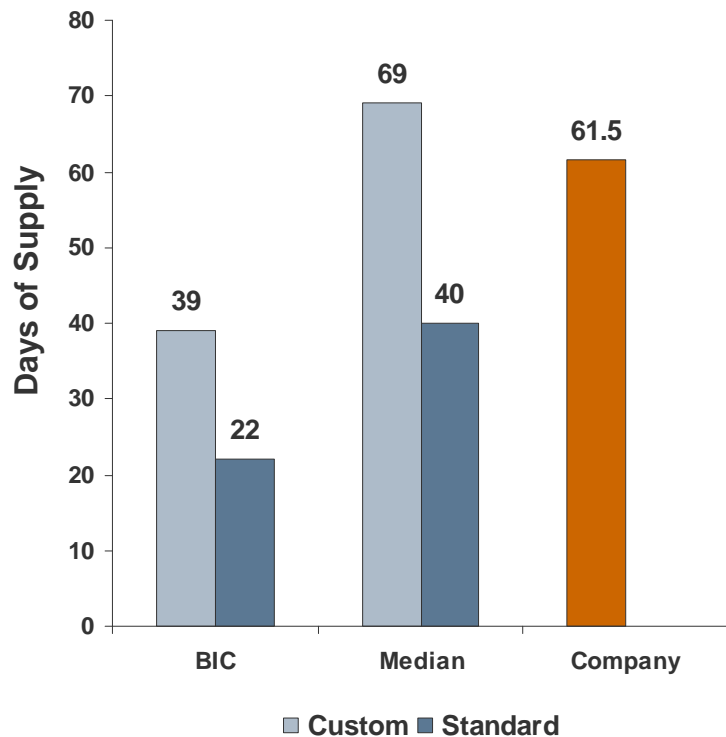
Company's Unit Forecast Accuracy Was Below Median as Compared to the Custom Population



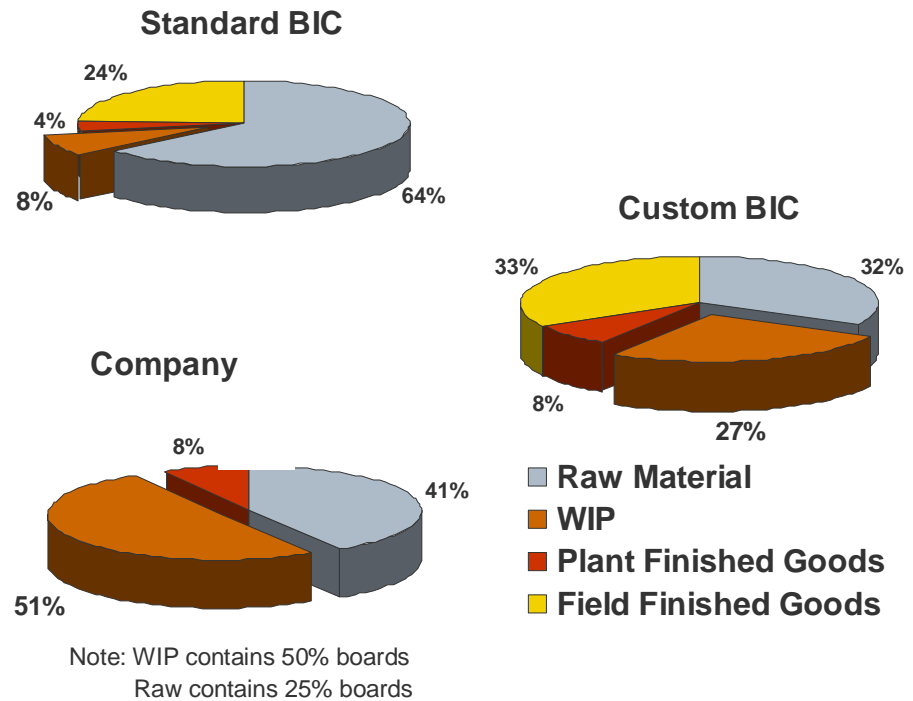
Although Inventory Levels Were at Parity with the Custom Population, WIP Was over Represented as a % of Total

High WIP levels appeared to be a result of poor test yields and excessive manufacturing cycle times

Total Inventory Days of Supply

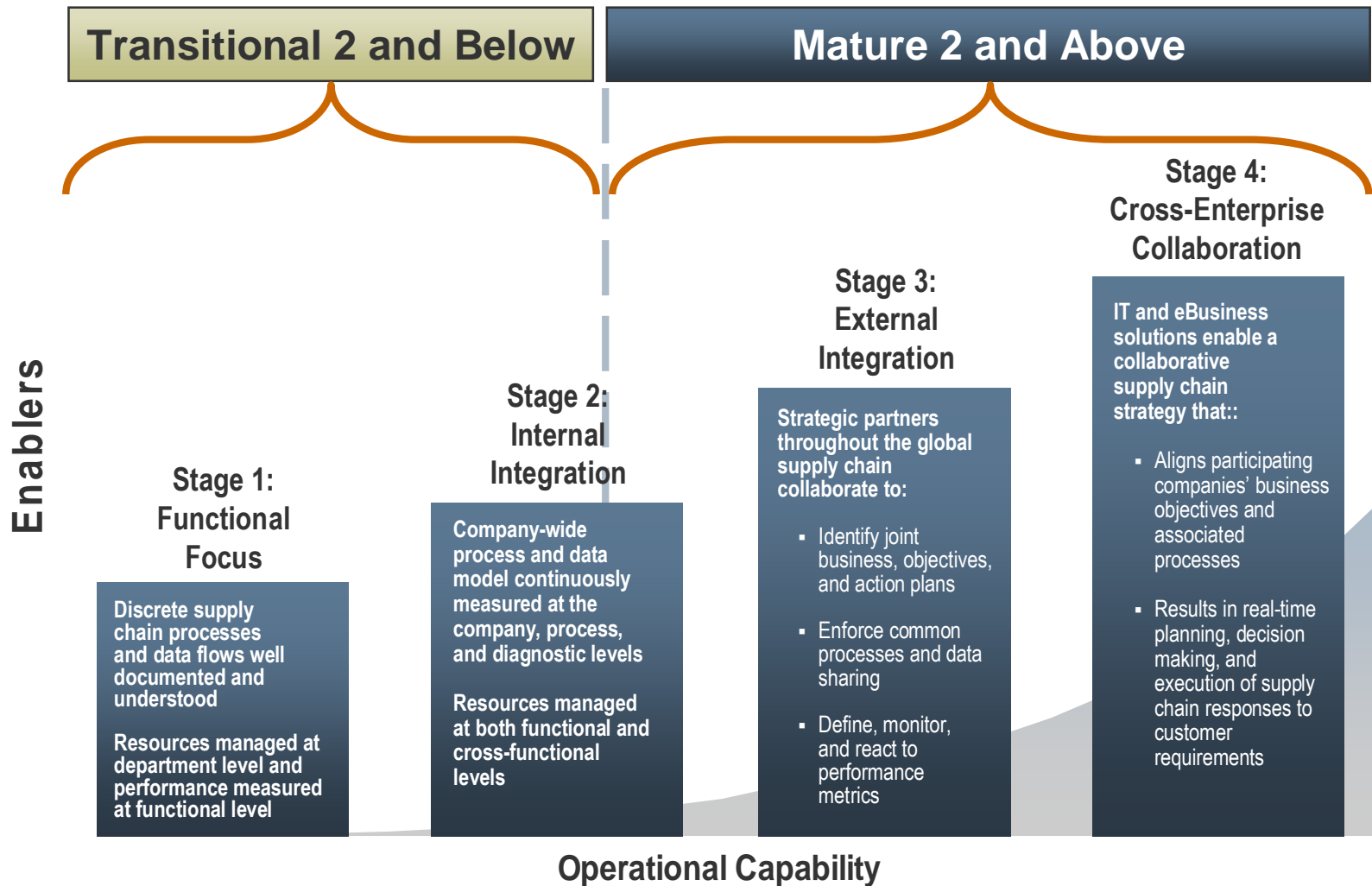


Inventory Mix



Note: Inventory days of supply—the calendar days of supply represented by the five-period average inventory level relative to the average daily cost of goods sold

PMG Uses the Stages Model to Help Measure the Maturity of a Company's Supply Chain Processes



Supply Chain Practices Indicated a Transition to Become More Externally Integrated...

Dominant Practices
Supply Chain Practice and IT Assessment

		Stage 1: Functional Focus	Stage 2: Internal Integration	Stage 3: External Integration	Stage 4: Cross- Enterprise Collaboration
PLAN	Strategy		●	▲ ★	
	Demand Planning		▲ ●		★
	Supply Planning		● ▲	★	
	Demand/Supply Balancing and Decision Making		● ▲	★	
SOURCE	Strategy		● ▲	▲ ★	
	Commodity and Process Management		● ▲	★	
	Supplier Development/Management		● ▲	★	
	Organization and Infrastructure		● ▲	▲ ★	
MAKE	Manufacturing Strategy		▲ ●		★
	Production Scheduling		▲	●	★
	Material Issue, Movement, and Tracking	▲		● ★	
	Manufacturing Process Control		▲	● ★	
DELIVER	Enable		●	▲	★
	Order Entry and Scheduling		●	▲ ★	★
	Warehousing, Transportation, and Delivery		●	▲ ★	
	Invoicing and Cash Collection		● ▲	★	
OVERALL	Supply Chain Strategy		▲ ●		★
	Supply Chain Performance Management		▲ ●		★
	Supply Chain Processes		● ▲		★
	Supply Chain Organization			▲ ●	★

The company's self-assessment in the area of "demand planning and make" confirmed the quantitative findings

★ = Best in Class

● = Median

▲ = ABC Co.

An Initial High-Level Supply Chain Value Proposition Showed Significant Potential for Financial Return

Company SC Performance Scorecard for Custom Population

Key Perspectives	Metrics	Performance Versus Comparison Population					Co	Value to Median	Value to BIC
		0–20% Major Opportunity	20–40% Disadvantage	40–60% Median	60–80% Advantage	80–100% Best-in-Class			
Customer-Facing Metrics	On-Time Delivery to Request %			82.0%		90.7%	65%		
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	Upside Production Flexibility: Principle Constraint (days)			60.8		33.0	65.0		
Internal-Facing Metrics	Total Supply Chain Management Costs (% of Revenue)			11.2%		5.6%	8.2%	NA	\$38M
	Inventory Days of Supply			69		39	61.5	NA	\$25M
	Cash-to-Cash Cycle Time (days)			58.3		41.9	57.3	NA	\$18M
	Net Asset Turns			2.5		14.8	1.6	NA	NA
	Forecast Accuracy (unit)			65.0%		84.0%	55.0%	See other values	

Company data

Cost Reduction Potential: \$0–\$438M¹
Asset Reduction Potential: \$0–\$25M¹

¹ Estimates based on the benchmarking data and PRTM experience. Does not reflect a comprehensive understanding of company's current capabilities and performance

Benchmark Data Indicated Potential Reductions of Supply Chain Management Costs by \$38M and WIP by \$25M

The recommendation was to redesigning the manufacturing and testing processes

- Determine the total cost (investment and operating) implications of modifying test sequencing and location (in-source/outsource) of activities
- Redesign test processes to reduce variability and increase yield
- Align test processes and supply chain structures to achieve lowest total cost and investment

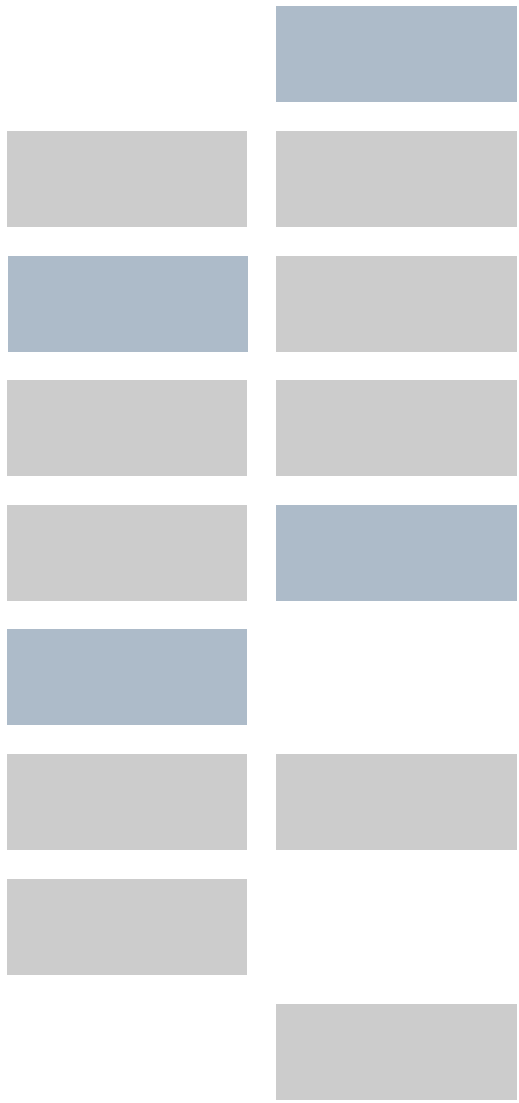
Survey Results Indicate That the Company Should Also Take Actions to Drive Improved Delivery Performance

Improve delivery performance

- Identify root causes of poor commitment management
- Leverage improvements in the testing process and reductions in manufacturing cycle time

Increase upside production flexibility

- Review current supplier agreements and scheduling processes
- Identify the primary drivers of poor production flexibility
- Revise agreements and redesign processes to provide management with median to BIC levels of flexibility



Results

The Company Acted on Many of the Findings

Established performance tracking system around Levels 1 and 2 metrics

- Deployed tracking system across multiple divisions and created cross-division best practices sharing framework

Redesigned manufacturing, assembly, and test processes

- Reduced cycle time by 25% and increased ship-to-request and deliver-to-commit performance to the advantaged level

Improved upside production flexibility through improved supplier strategy, linkage with product development, and supplier negotiations

- Increased upside production flexibility by 20%

The actions above also helped drive an inventory days of supply reduction equal to \$20 million

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