



## Mastering complexity in global manufacturing

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Al Donald



### Market trends



- Moving to extended enterprises: design anywhere, build anywhere
- Emphasis on product innovation and time-to-market
- Grappling with growth-oriented technology investment strategies
- Pursuing operational excellence – e.g. lean and Six Sigma

*Supply chain operations are becoming more complex and dynamic*



## Agenda

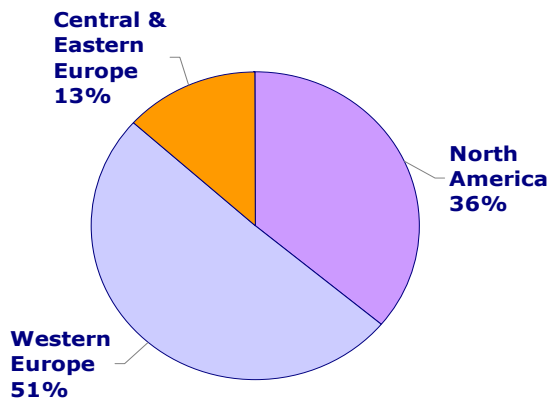


- The global manufacturing industry benchmark study
  - Background
  - Selected data
  - Paradoxes
  - Complexity masters

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## Location profile



Over 700 companies &  
26 countries

Focus:

- Global Manufacturing Strategies
- Operations
- Business Performance
- Metrics

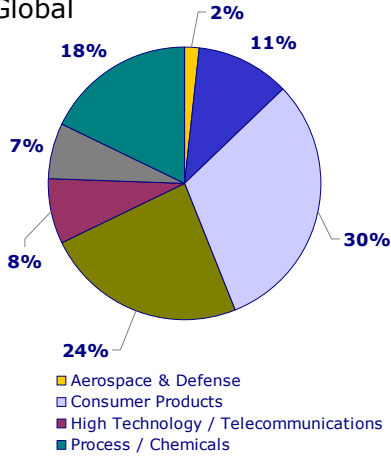
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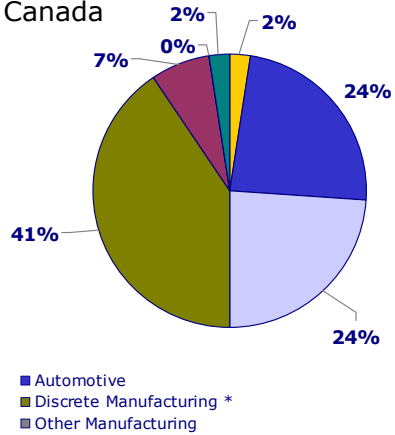
## Industry profile



Global



Canada



\*Discrete Manufacturing=metal fabrication, assembly operations, industrial machinery or equipment

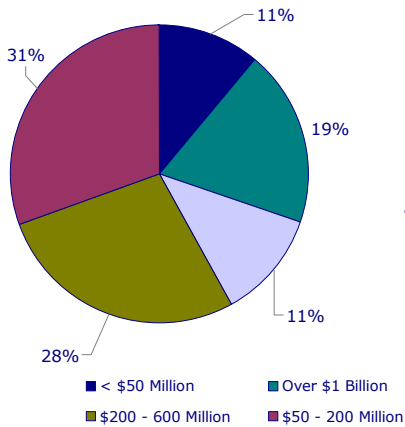
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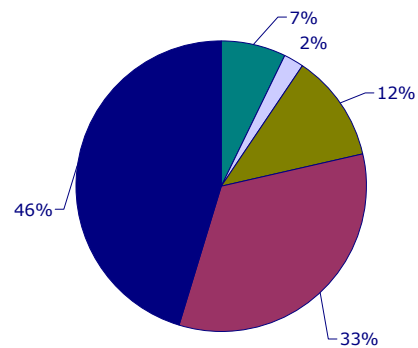
## Size profile



Global



Canada



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## Selected data



- More than 80 percent of companies surveyed sell outside their home regions
- Majority (53 percent) have shifted production to lower-cost regions such as China, Mexico, and Central and Eastern Europe
- 59 percent outsource production engineering and manufacturing to companies in less-developed regions
- More than 70 percent of manufacturers either purchase (or plan to purchase over the next three years) components and material produced in other countries
- To accomplish high revenue goals, manufacturers have cut their product development cycles an average of 12 percent (16 months) over the last three years

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## The paradoxes of complexity



- **The Innovation Paradox**
  - Product innovation is the #1 factor for revenue growth, yet is the lowest of the supply chain priorities
- **The Flexibility Paradox**
  - Despite being a critical capability, cost reduction focus is driving behaviours that inversely impact flexibility
- **The Risk Paradox**
  - Keeping quality high is a #1 priority, yet more and more companies are making radical supply chain changes that can increase the risk profile
- **The Optimization Paradox**
  - Most companies still are optimizing locally, not globally
- **The Customer Collaboration Paradox**
  - Despite customer service being the #2 supply chain priority, only a small % of manufacturers report a strong commitment to customer collaboration

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## The innovation paradox



### Revenue growth

1. New products
2. Economic turnaround
3. Industry growth
4. New market channels
5. New geographic markets
6. Joint Ventures
7. Mergers & Acquisitions

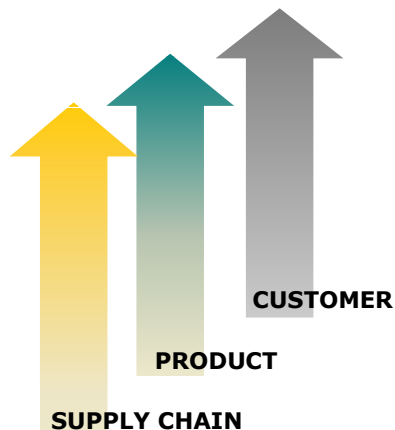
### Supply chain priorities

1. Product quality
2. Customer service
3. Manufacturing cost
4. Manufacturing flexibility
5. Supply chain cost structure
6. Sourcing effectiveness
7. Logistics
8. Manufacturing lead time
9. Time-to-market
10. Product innovation

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## Three forces driving complexity



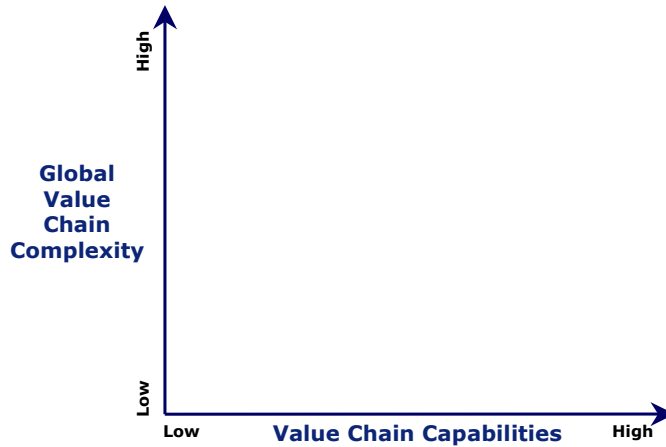
### What's Driving Complexity:

- Pressure to continually drive down supply chain and engineering costs
- Pace of product innovation
- Pursuit of new markets and channels

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## Value chain index



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## Value chain index



1. Product innovation
2. Time to market
3. Sourcing effectiveness
4. Product quality
5. Manufacturing flexibility & responsiveness
6. Manufacturing productivity & cost effectiveness
7. Manufacturing lead time
8. Logistics effectiveness
9. Customer service
10. Supply chain cost structure

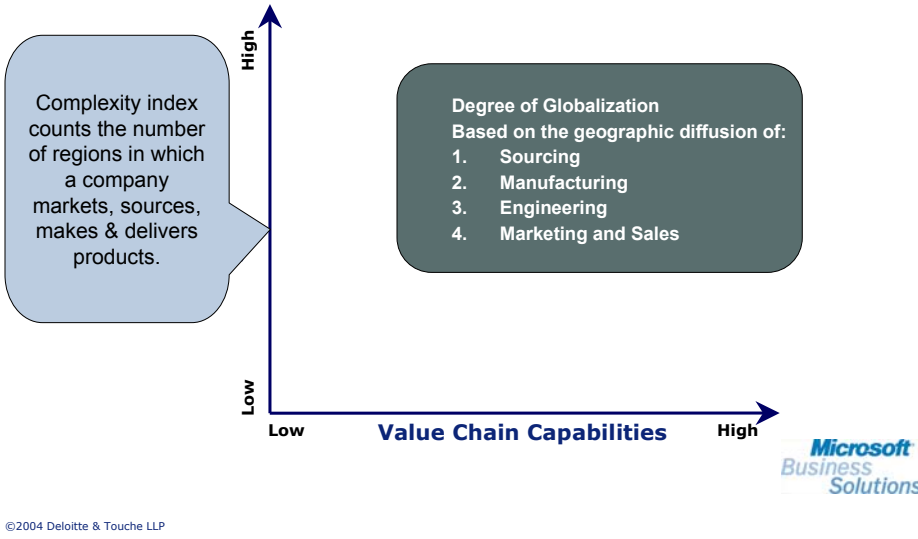
Capability index measures the degree of competitive advantage respondents believe they have vs. their primary competitors across 10 dimensions.



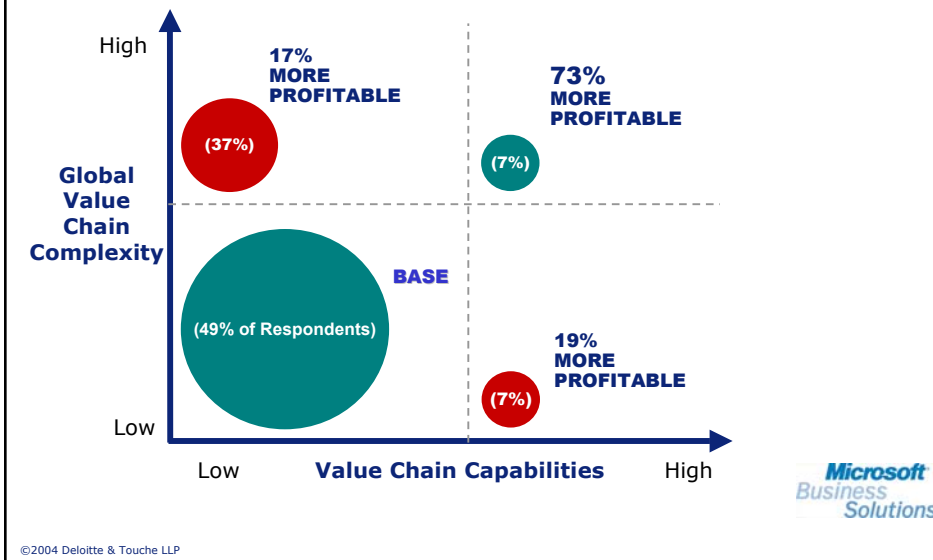
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# Value chain index



# Complexity masters



# Building a world class value chain



	Customer	Product	Supply Chain	Technology
<b>Synchronized Value Chain</b>	Customer Strategic Planning	Product Lifecycle Management	Supply Chain Network Optimization / Tax Structure	Scenario Planning
<b>Differentiator</b>	Collaboration - New Products	Design for Manufacturing	SCM Organization	Business Intelligence
	Collaboration - Cost Reduction	Product Data Management	Program Management	Customer/Supplier Portal
<b>Qualifier</b>	Customer / Channel Profitability	Common Parts / Common Platform	Flexible Capacity	Product Lifecycle Mgmt
	Inventory Replenishment	Product Profitability	Production Schedule Optimization	Advanced Planning Systems
	Collaboration - Demand Planning	Design for Quality	Transportation Optimization	Customer Relationship Mgmt
	Customer Segmentation	Cross-Functional Design Teams	Integrated Sales & Operations Planning	Transportation Mgmt
	Customer Service Levels - Fulfillment	SKU Rationalization	Quick Changeover	Product Data Mgmt
	Customer Collaboration - Quality	Supplier Collaboration -New Materials -New Processes	Six Sigma / SPC	Warehouse Mgmt
		Product Quality	Demand Planning	Demand Planning
			Lean Manufacturing	EDI
			ISO Quality Certification	Quality Mgmt
				ERP



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# Building a world class value chain



	Customer	Product	Supply Chain	Technology
<b>Synchronized Value Chain</b>	<p><b>Plastics Co.</b></p> <ol style="list-style-type: none"> <li>1. <b>Priority</b> Need for unrivalled speed and customer service</li> <li>2. <b>Committed to innovation</b> by investing in automation technology from customer to shop floor</li> <li>3. <b>Maintained the focus</b> by using data to prevent problems</li> </ol>			Business Intelligence
<b>Differentiator</b>				Customer/Portal
				Flexible Capacity
<b>Qualifier</b>				Production Schedule Optimization



Reference: Kate Calder, "Productivity in Plastics" Manufacturing Automation

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## Summary

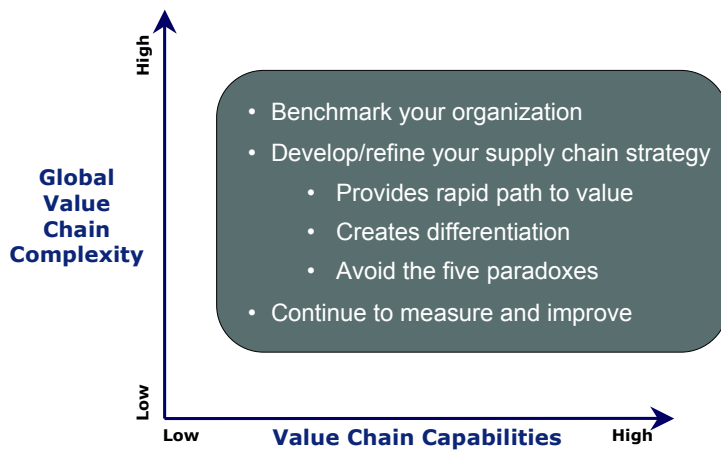


- Complexity in global value chains is being driven by:
  - Pursuit of new markets
  - The need for continuing cost reductions
  - The rapidly increasing pace of product innovation
- Mastering Complexity allows companies to gain sustainable competitive advantages
- Managing complexity is key to surviving and thriving

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## Mastering complexity



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**Brad Cartan**  
tel: 416-874-3653  
email: [bcartan@deloitte.ca](mailto:bcartan@deloitte.ca)



•Review the benchmarking series at:  
[www.deloitte.com/ca/manufacturing](http://www.deloitte.com/ca/manufacturing)



## Contact



**Al Donald**  
Partner, National Manufacturing Industry Leader  
Phone: 416-643-8760  
Email: [adonald@deloitte.ca](mailto:adonald@deloitte.ca)

- Al heads Deloitte's manufacturing practice, which is one of the largest groups serving the industry in Canada. Al uses his depth and breadth of manufacturing experience to identify best practices that can be reapplied for rapid results.
- Al has seen what works and what doesn't, and his practical bias for action has driven sustainable improvements to manufacturing organizations both large and small.

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# Questions



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