

EWA Webinar

Mitigating the Risk of Supply Chain Disruption in China

February 5, 2019



- A leading provider of commercial, operational & risk management solutions and detailed implementation to western companies competing in the ever-changing China & Asia markets.
- Founded in 2005 with offices in the USA and in China
- All EWA executives have lived in China & Asia and held senior management positions with P&L responsibilities for western MNCs with operations in China & Asia, including Briggs & Stratton (NYSE: BGG), Bechtel Corporation and Littelfuse, Inc. (NASDAQ: LFUS)

- Extensive experience in numerous key industries:

Automotive

Metal Fabrication

Chemicals

Semiconductors

Specialty Metals

Energy & Natural Gas

General Manufacturing

Consumer Goods

Packaging

Food & Beverage

Laboratory Equipment

Industrial Textile & Apparel

Durable Goods

Filtration & Separation Equipment

Electronics

Medical Devices

Food Technology

Costings & Building Materials

Corporate Strategy
Development

M&A Due Diligence

Risk Management

Performance
Improvement

Senior Management
Recruitment

Working
Environment
Efficiency

Location Services

Supply Chain
Management

Business
Assessment

Research Services



ALEX BRYANT

Founder & President

- Director of International Business Development for Barnhardt Manufacturing Company
- Attorney, Ogletree Deakins Nash Smoak & Stewart, P.C.



DAN MCLEOD

Director

- Former Asia Pacific Operations Director of Ashland Specialty Ingredients (NYSE: ASH)
- Former Director of Engineering for Hercules Asia Pacific

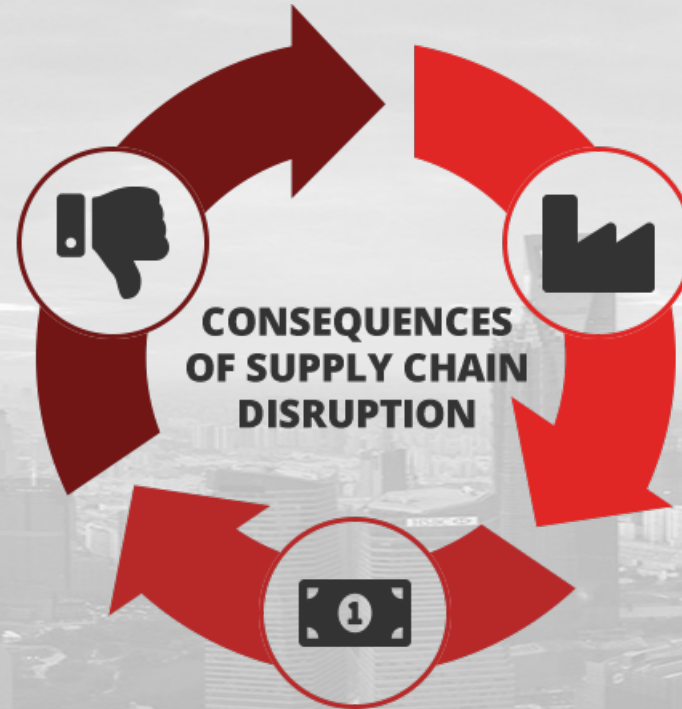


MARK PLUM

Director

- President of Briggs & Stratton Asia (NYSE: BGG)
- Vice President of Sales & Marketing, American Standard Thailand & American Standard China

- REPUTATIONAL LOSS**
- Damage in brand image
 - Customer purchase decision



- PRODUCTION LOSS**
- Closure of factories
 - Suspension of related projects

- MONETARY LOSS**
- Fines/Litigations
 - Loss in production & revenue

- Today's webinar is divided into 4 segments:
 - What Companies Are Saying About Their Supply Chains In China
 - Understanding The Threats To Supply Chains In China
 - Strategies To Mitigating The Risk Of Disruption To Supply Chains in China
 - Working Example Case Studies



What Companies Are Saying About Their Supply Chains In China

- 53% of US companies operating in China have a high or critical dependency on their suppliers (Deloitte Survey 2018)
- 87% of companies surveyed consider a supply chain disruption to be a “significant to major” risk to their operations in China

Supply Chain Disruption Is A Clear & Present Danger, For Which Companies Are Ill-Prepared To Manage

- There is significant concern of supply chain disruptions among global companies operating in China and a growing acceptance that firms must be more diligent in addressing their exposure to supply chain disruption risk (FM Global Survey 2018)



Understanding The Threats To Supply Chains In China

- Threats to companies' supply chains in China are nothing new:
 - Cyberattacks, IT outages, natural disasters, cargo theft, labor unrest, etc.
- But today, the 2 greatest risks of supply chain disruption in China are of a very different caliber:
 - Environmental protection
 - Closure of factories producing basic materials, leading to shortages and price increases
 - Temporary shutdowns of factories – both yours and your suppliers - resulting from compliance inspections
 - Increased costs – from shortages, environmental taxes, increased compliance cost, and fines
 - US/China tariffs

- As a result of the government's environmental protection programs, many companies are facing spiraling operational costs due to the increased disruption of supply chains (China Briefing 2018)
- China's rigorous environmental inspections and subsequent capacity closures are causing waves across supply chains globally and is expected to continue (Supply Chain Management Magazine, 2018)
- On January 1, 2018, China imposed an environmental protection tax, which is expected to increase the cost of doing business in China and requires companies to carry out detailed risk assessments of their own supply chain to avoid legal ramifications (EcoVadis)

- The majority of US manufacturers perceive a disruption of supply chains to be greatest threat of the recently implemented US/China tariffs (EWA Survey, 2018)
- Of all of the current supply chain trends, the US/China tariffs present the greatest risk of supply chain disruption (2018 Supply Chain Trends, Cerasis)
- Supply chains are now so lean and interconnected, with production split into dozens or hundreds of stages, that the impact of a US-China trade war will likely be felt around the world (Raconteur 2018)



Mitigating The Risk Of Supply Chain Disruption In China

- Due to the differing natures of the new threats to supply chains, the increased likelihood of supply chain disruptions and the impact severity that a disruption of the supply chain can have upon corporate profitability, companies must now take a comprehensive approach to protecting supply chain resilience:
 - Immediate supply chain risk management
 - Proactive supply chain stability development

EVALUATE & INNOVATE

“Businesses must invest in the continuous assessment of suppliers, including an “off-boarding” plan for when the risk of a supplier outweighs the contribution”

Lance Younger, Head of Deloitte’s UK Sourcing and Procurement

“Supply chain diversity is key to mitigating modern geopolitical risks and vital to determining a successful go-to-market strategy”

Brian Alster, Global Head of Supply and Compliance at Dun & Bradstreet

EVALUATE & INNOVATE

Companies must investigate their existing suppliers and their suppliers' suppliers in order to identify risks & take actions to ensure immediate supply chain stability

- **Supply chain assessment & optimization**
- Supplier due diligence & optimization
- Supplier identification & replacement
- Qualification & recruitment of back-up suppliers
- **Covert/Overt supplier investigations & qualifications**

Companies must explore alternative supply chain options in order to identify opportunities & take actions to create prolonged supply chain stability

- **Global supply chain expansion & cross border sourcing**
- Logistics strategy development & implementation
- Value stream mapping & implementation
- **Make vs. Buy analysis & implementation**
- **Global production facility relocation**





EWA Case Studies



Supply Chain Assessment and Optimization

- Client is a US-based chemical company operating globally.
- Their Asia-Pacific manufacturing operations struggled to make on-time deliveries, carried excessive inventories, and had excessive freight and logistics expenses (primarily from expedited shipments).
- The client was extremely concerned that the existing supply chain operation would limit ability to support growth and to compete
- EWA staff was engaged to develop and implement improvements to their logistics and supply chain processes.

- In order to ensure the identification & qualification of only top quality suppliers, EWA follows a detailed 5 step process:

1. Onboarding & Alignment

2. Model current state of client's supply chain and logistics operations

3. Analysis to identify required changes and potential opportunities

4. Develop Recommendations and Action Plan

5. Assist client with implementation of Future State

Onboarding & Alignment

- Gain thorough understanding of client's overall business, markets, manufacturing operations, current supply chain, and logistics network
 - Competitive landscape for client's industry
 - Relative scale of client's business and operations
 - Potential changes in technology that may affect client's future business
 - Planned shifts in manufacturing or logistics strategies
 - Projected manufacturing and supply chain capacity requirements
 - Potential capital and internal human resource constraints
 - Flexibility with respect to 3rd Party outsourcing

Model Current State

- Current Logistics Network
 - Geographic location of key suppliers and customers
 - Location, replenishment activities of 6 regional warehouses
 - Overall logistics costs, delivery lead times, inventory holdings
- Process Assessment
 - Evaluate effectiveness of forecasting, planning, delivery, inventory management processes
- Determine Customer Requirements
 - Conduct "Voice of the Customer" survey of key customers
- Organization structure supporting Logistics and Supply operations

- **Performance**

- Falling far short of achieving customer service and working capital targets
- Excessive carriers (>50) being used resulting in lack of negotiating leverage on price and service levels

- **“Voice of the Customer” results**

- Quality of Products – Superior
- Technical Support – Excellent
- Delivery Services – Poor
- Processes – Poor...lack of visibility to supply info

- **Processes**

- General lack of KPIs and adequate processes across planning, logistics, and inventory management functions
- Strong reliance on manual (people-dependent) processes

- **Organization Design/Effectiveness**

- Overly silo'd organization without clear responsibility for managing the overall supply chain
- Lack of experience/capability in key supply chain functions

	Target	Actual
Inventory - days on hand	58	120
On-Time Deliveries	>95%	60%
Expedited Shipments	<10%	57%

Recommendations and Action Plans

• **SHORT TERM:**

- Consolidate Freight Carriers
- Consistent pricing, improved service levels, improved transparency
- Streamline transactions
- Reduce compliance risk
 - A key factor in carrier selection was a “green assessment”, focusing on transportation safety, hazardous material hauling certification, emergency response capability, incident history, etc.
- Redesign forecasting, production planning and inventory management processes
- Restructure organization to align Order to Delivery processes under a single leader

• **MEDIUM TERM:**

- Recruit a specialist Supply Chain Manager to lead the organization and to drive improvement in organizational capability
- Introduce appropriate Key Performance Indicators across functions to better manage performance

Implementation

- Provided an interim Supply Chain Manager to initiate transition
 - Develop RFP for logistics services
 - Qualify and contract with primary supplier
 - Initiated improved production and inventory planning processes
 - Assisted with implementing the recommended organization changes
 - Recruit and hire permanent Supply Chain Manager
 - Develop position spec/job description
 - Participate in interview and selection process
- Support transition of new organization and processes - bi-weekly project implementation meetings
 - These continued for 6 months following hire of new SCM

Substantial improvements were made within 1 year

- Savings achieved through rate negotiation and reduction in expedited shipments
 - Carriers were consolidated and outbound logistics processes were improved, with a 15% reduction in freight costs ~ **US\$300k annually**
- Improvements made to forecasting and planning generated the expected results
 - Inventories reduced by nearly half, generating ~ **US\$2MM** cash
- Customer service levels improved dramatically.
 - On-time deliveries improved to > **90%**
- Organization stabilized and capabilities improved

An aerial, grayscale photograph of a dense urban skyline, likely Shanghai, featuring prominent skyscrapers and the Oriental Pearl Tower. The image is semi-transparent, serving as a background for the title text.

Covert/Overt Supplier Investigations

- Client is a US-based private equity firm acquiring a US-based company with a China Sourcing office and 7 Chinese vendors
- Acquisition target sourced consumer products from Chinese vendors and had all products shipped to 2 distribution sites in the US
- China sourcing office overseen by Chinese executive who had worked for the acquisition target company for 8 years
- Sourcing office responsible for identifying/qualifying suppliers, product development, purchase order execution, shipping coordination, product testing
- China sourcing was a key part of the acquisition targets business plan, so a thorough Due Diligence was critical
- PE firm hired EWA to conduct Covert & Overt investigations of the China sourcing office and the 7 Chinese vendors

- EWA Approach broke down their investigation into Covert and Overt of the China Sourcing Office and the 7 Chinese vendors
- Covert investigation focused on:
 - * Entity registration, Identity of Owners, Ownership Structure, Licensing, Registered Capital, Business Scope
 - * Equity ownership by Sourcing office employees of competing companies or vendors
 - * Equity ownership by Vendor managers of competing companies or vendors
 - * Recent layoffs, organizational changes and any evidence of company disruption
 - * Outstanding lawsuits, owner criminal history, liens / judgements by other US companies
 - * Company reputation by local Chinese government officials, Labor Bureau, Tax Bureau, etc.
 - * Reported financial data and company credit worthiness
 - * Competitive company data from governmental authorities, industry competitors and suppliers

- Overt investigations conducted by on-site visits to the Sourcing office and 7 Chinese vendors
 - * Meetings with owners & key managers & employees
 - * Clarifications of work scope, job responsibilities
 - * Financial money flows and compliance with Chinese regulations, including salaries, payments to suppliers, commissions to agents, CIIC/FESCO payments, etc.
 - * Compliance issues relating to employee status, benefit payments, contracts, etc. , including any aberrations in welfare benefits, pension or housing funds, customs and tax
 - * Evaluation of all operational processes of the Sourcing office and any resulting risks such as poor Quality Control procedures, factory turnover, etc.
 - * Factory tours of each vendor with observations of plant/inventory conditions, operational controls, capacity utilization, defined supply chain procedures
 - * Identification of operational issues with vendors, including quality issue, delivery, consistency of performance, pricing fluctuation, etc.

- 2 vendors were not Chinese owned companies but rather owned by one Taiwanese family who had controlling interests in both companies as well as ownership of another China-based company in the same industry
- 1 vendor had secretly begun subcontracting their production, after closing 1 of their 2 manufacturing plants. Vendor had not informed their customer – the acquisition target.
- 4 of the 7 vendors had qualified operating business licenses
- 3 of the 7 vendors were owned by previously unknown entities
- Based on the financial tax filings of each company, the vendors had either average returns to strong financial reportings to the government.
- China Sourcing office – 6 of the 10 employees deemed critical to future success. 4 of the 10 added no real value and of these 4, 2 of the employees were family members with limited skill sets.

- Director of the China Sourcing office was found to have ownership in a key supplier through her husband's company – she had not disclosed this to her own company, the acquisition target.
- 2 vendors had outstanding lawsuits against them by a former employee and another Chinese vendor – both lawsuits were deemed by EWA as without basis and did not reflect poorly on the vendor

Immediate Actions of the 100 Day Plan, included:

- Identifying and qualifying new suppliers to replace the 2 Taiwanese suppliers – 11% decrease in costs
- Dropped relationship with vendor who recently began subcontracting their production and went direct to the primary manufacturer – 6% decrease
- Operational strategy developed to keep 6 key employees
- Terminated 4 employees – reduced operating costs by 7%
- Director of China Sourcing office terminated for having equity ownership in key supplier – new Director hired.
- Made clear to Sourcing Team that this behavior is not longer tolerated.

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Global Supply Chain Expansion and Cross Border Sourcing

- A USA-based manufacturer of consumer appliances had relocated a manufacturing facility to China to produce its products for the China market
- One of the key components continued to be sourced from the USA due to concerns about quality and reliability.
- Long lead times for the components and excessive logistics costs were negatively impacting both margins and responsiveness.
- Decision was made to evaluate sourcing the component locally.

Step 1: Define specific project objectives and requirements

- Extensive interviews with senior management and project technical team
 - Overall company background and objectives for the project
 - Project economics
 - Volume requirements, growth plans
 - Product specifications, anticipated challenges for meeting reliability and performance requirements
 - IP concerns/implications
 - Develop a strong working relationship and communications

Step 2: Deploy formal process and develop core elements for analysis

- Identified potential suppliers within China and Southeast Asia
- Detailed, standardized template developed
 - Completed by each potential supplier candidate
 - Information required included:
 - Company financial history, evidence of strength/stability
 - Major customers/clients
 - Quality certifications, evidence of currency/compliance
 - Full listing of technical resources on staff by discipline
 - Facility and production equipment details
 - Lead time requirements
 - Current capacity utilization, evidence of ability to expand quickly and reliably
- Detailed technical specifications shared
 - Individual components/subassemblies
 - QC and testing procedures

Step 3: ID potential suppliers and obtain analytical data

- Conduct Interviews
 - Quickly develop “short list” of finalists
 - Each finalist required to provide extensive, detailed project proposals with:
 - Projected unit costs
 - Quality Control plans, Failure history
 - Productivity commitments/price breaks for increased volumes
 - Samples for performance and life-cycle testing

Step 4: Prepare final negotiation and recommendation

- Following successful testing, final negotiations conducted with suppliers:
 - Initial unit manufacturing cost, payment terms, and projected productivity improvements
 - Sharing of productivity/volume benefits
 - Inventory holding/stocking
 - Lead times/forecasting requirements
 - Warrantee/Failure Policies
 - Product documentation/manuals

- **Recommendation to company management:**

- Two suppliers were qualified, one in China and one in Thailand
 - Product quality based on 6-month evaluation was acceptable for both suppliers
 - Landed cost vs USA was lower in both cases
 - Lead times improved with both suppliers
- Thailand supplier was chosen based upon lower cost, better quality performance, openness to share savings going forward.
 - Total cost reduced 12-14% vs sourcing from USA, with potential for additional reductions as volume grows
 - Inventories reduced by 30% vs supply from USA



Make vs. Buy Evaluation

- A global consumer electronics company was developing a totally new product line. Products were:
 - Built around some fundamentally new digital printing technology
 - Deployed in a core “engine” for the finished product
 - In the final development and commercialization stages
- Company operated its own manufacturing operation in the Yangzi River Delta Region (YRD)
 - Plant produced similar, but not identical, technology-based products
 - Operation had an outstanding track record supporting prior new product intros
- Due to the nature of the products, it was determined that:
 - The technology and economics required it to be made somewhere in China
- New company management team held a strong bias toward outsourcing vs. internal manufacturing
 - Independent help was sought for an objective Make vs. Buy analysis

Step 1: Define specific project objectives and requirements

- Extensive interviews with senior management and project technical team
 - Overall company background and objectives for the project
 - Project economics and product launch plans
 - Technical requirements, anticipated challenges for the core engine
 - Develop a strong working relationship and communications
- Basic technical requirements included:
 - Controlled environment for final assembly, test and burn-in
 - Class 100 clean room
 - Microelectronics assembly and test capability
 - Demonstrated capability for rapid productivity improvement
 - Production yields at time of engagement less than 30%
- Comparison of total life cycle costs, internal vs. external manufacturing

Step 2: Deploy formal process and develop core elements for analysis

- Detailed, standardized template developed
 - Completed by each potential supplier candidate
 - Internal and external
 - Information required included:
 - Company financial history, evidence of strength/stability
 - Major customers/clients
 - Quality certifications, evidence of currency/compliance
 - Full listing of technical resources on staff by discipline
 - Facility and production equipment details
 - Current capacity utilization, evidence of ability to expand quickly and reliably
- Common set of detailed technical specifications developed
 - Individual components
 - Finished engine assembly and test

Step 3: ID potential suppliers and obtain analytical data

- Supplier search focused on YRD and Pearl River Delta (PRD) Regions
- Conduct preliminary interviews
 - Quickly develop “short list” of finalists
 - Each finalist required to provide extensive, detailed project proposals with:
 - Projected unit costs,
 - Quality and yield improvement plans
 - Any added “pass thru” costs beyond UMC
 - Productivity commitments
 - Most finalists had full in-house microelectronics capability
- Internal manufacturing option:
 - Utilize nearby sub-contractor for die placement/wire bonding
 - Maintain direct control over final assembly and test
 - Unique info included:
 - Capital costs
 - Additional inventory carrying costs and projected
 - Learning curve costs

Step 4: Prepare final analysis and recommendation

- Key elements of the analysis included:
 - Initial unit manufacturing cost and projected productivity improvements
 - Upfront costs (learning curve, capital costs)
 - Production scheduling flexibility/ability to quickly adjust supply as needed
 - Projected cash flow requirements
 - Level of inventories to be carried by the company
 - Experience and track record with commercializing similar technology products
 - Demonstrated microelectronics experience and capability
 - Willingness to “pass through” cost benefits of yield and productivity improvements immediately
 - Level of transparency; willingness to work share all operational information with company
- Final recommendation prepared and shared with company senior management

- **Recommendation to company management:**

- Maintain direct manufacturing control over core engine for at least 2-3 years
 - Internal manufacturing costs projected to be 10% less than most qualified external bidder
- Any lack of direct capability for microelectronics mitigated via close proximity to subcontractors
- Yield improvements could be driven more quickly
 - All financial benefits flowing directly to the company
 - Higher degree of focus, priority and control

- **Key takeaway:**

- For make versus buy analyses/decisions, special considerations required for newly developed technologies

An aerial, grayscale photograph of a dense urban skyline, likely Shanghai, featuring prominent skyscrapers and the Oriental Pearl Tower. The image is semi-transparent, serving as a background for the title text.

Global Plant Relocation

- US manufacturer of industrial products for the laundry market with operations in the US, China & Europe
- The Chinese manufacturing facility was located in the Guangdong Province and in operation for 5 years
- Business had been growing 12-15% for the last 3 to 5 years
- The company was operating at maximum production capacity
- Given their growth in China/Asia Pacific, a significant increase in production capacity was mandatory
- The manufacturer required a new facility approximately 10 times larger than their current facility
 - Factory was to be approximately 200,000 square feet
 - Located on a 400,000 to 500,000 square foot site
 - 200 employees (150 production staff & 50 management/engineering)
- Although satisfied with the Guangdong Province, the client accepted the EWA proposal to also investigate the benefits of an expansion into the ASEAN market

Step 1: Identifying the expansion criteria

- Company analysis
 - 15% of their entire Asian consumption was consumed in China -> ease of exportation
 - Sales projections indicated strong growth -> future production capacity expansion -> labor & material supply
 - Price is a major influencer within the competitive environment -> government incentives & inflation rates
 - Large products with labor intensive production process -> labor costs & transport costs
- Expansion criteria: labor supply/costs, government incentives, inflation rates, availability of raw materials, transport & export logistics

Step 2: An in-depth comparative analysis of 6 selected countries

- Philippines, Malaysia, Indonesia, Vietnam, Thailand & China
- Weighted areas of focus:
 - Government incentives, labor supply/costs, inflation rates, availability of raw materials, land costs, utility costs, ease of doing business, corruption index, domestic market size, transport & export logistics
- Expansion recommendation: Thailand

Step 3: On the ground interaction

- Met with two of the largest industrial zone developers, visited 5 potential sites & selected 2 sites for soil testing
- Negotiated conditions for property purchase & property management (waste removal, perimeter security, etc.)
- Negotiated investment incentives with Secretary General of Royal Thailand Board of Investment
- Interviewed, evaluated & qualified:
 - 3 architect and engineering firms
 - 3 general contractors
 - 4 project management firms
 - 3 executive recruiters and manpower staffing firms capable of staffing the 200 person facility
- Met with local legal and accounting firms to identify the necessary criteria for establishing a business entity
- Presented a 360° recommendation to the US Board of Directors which was approved for implementation

Step 4: Hands-on implementation

- Board of Investment business and tax incentives negotiations finalized in October 2017
- Property was purchased and all pre-construction permits/licenses/registrations were acquired by November 2017
- Plant blueprints, construction budget/timeline & all construction partner contracts were finalized in December 2017
- Mechanical, structural and architectural drawings finalized and approved in April 2018
- Land preparation commenced in May 2018 and facility construction began in July 2018
- Identification, recruitment and hiring of General Manager, Finance Director and HR Director finalized in August 2018
- Identification, recruitment and hiring of Facilities and Operations Managers finalized in October 2018
- Handover of 1st half of assembly area to owners in December 2018
- Limited production scheduled for February 2019 & full production to begin in April 2019

Government Incentives

- 8 year tax holiday from corporate income tax (CIT)
- 50% holiday for an additional 5 years

Cost Reduction*

- \$22.0M tax savings over 10 years
- \$4.3M annual labor savings after 5 years
- \$1.8M annual material savings after 5 years
- \$120/unit average freight savings

Growth Development*

- 42% increase in sales over 5 years
- 53% increase in revenue over 5 years

*Company Forecasts



Summary

- The US/China tariffs and growing environmental protection are creating unprecedented challenges for companies operating & investing in China - challenges that threaten corporate stability.
- There are numerous counteractive strategic options to mitigating the risk of supply chain disruption - each with its own potential benefits & implementation requirements.
- But just as every company is unique, every company requires a company-specific counteractive approach to mitigating the impact of the US/China tariffs - success is dependent upon the right implementation of the right strategy.
- The EWA approach to successfully mitigating the risk of disruption to supply chains in today's changing business environment in China is founded upon the development & implementation of a 2 pronged, pre-emptive strategic foundation:

EVALUATE

Supply Chain Risk Management

INNOVATE

Supply Chain Opportunity Development

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