12th Annual Midwest Supply Chain Conference

Supply Chain Capabilities and Trends

David J. Closs, Ph.D.
The John H. McConnell Chaired Professor of Business Administration
Chairperson, SCM Department
The Eli Broad College of Business
Michigan State University

March 11, 2015
Background


MEGA TRENDS

• Mega Trends: Used to provide direction to further advance supply chain management practice/thought
• Former 10, Additional 5 (10+5)
• Past-Where we were
  – 2000
• Present-Where we are
  – 2013
• Future-Where we will be
  – 2025
• Continuous Improvement As A Whole
  – 2000 Average: 3.6
  – Current Average: 7.15
MEGA TREND #1
Customer Service to Relationship Management to Intelligent Value Co-creation

PAST
- MONOLITHIC CUST SERVICE---Score: 5.5/10
- Focus on serving all customers with same levels of service
- One Size Fits All

PRESENT
- SERVICE STRATIFICATION---Score: 7.8/10
- Focus on prioritizing customers and service stratification
- Suppliers promoting criteria for movement into more desirable segments
- Customer Intimacy Vs. Mass Marketing

FUTURE
- INTELLIGENT VALUE CO-CREATION
- Focus on developing automated stratification processes and value-creation delivery
- Emphasis on value optimization through the use of system automation that facilitate the capability to offer multiple different ideal service levels
- Big and small data extraction tools with Intelligent programming will allow leading firms to integrate business rules surrounding service offering both internally and across partner interfaces
- Mass Customization
MEGA TREND #2

Functional Focus to Process Focus to Systemic Focus

PAST

- FUNCTIONAL FOCUS---Score: 4.5/10
  - Focus on improving activities within internal supply chain functions
  - Improving individual parts rather than the sum

PRESENT

- PROCESS FOCUS---Score: 7.5/10
  - Focus on integrating processes across functions, within and across supply chain entities
  - Overcome internal gaps to look at process in its entirety

FUTURE

- SYSTEMIC FOCUS
  - Focus on optimizing the entire supply chain network of processes to optimize customer value co-creation
  - Greater visibility, processing capabilities, and collaborative capabilities afforded by emerging computer and cloud technologies
  - Expand opportunities to optimize processes expanding entire supply chain, not just own operations
  - Enhanced Enterprise Resource Planning importance
  - Supply chain itself will become solution rather than flow oriented
    » Based off single forecast
MEGA TREND #3

*Incremental Change to Transformational Agility to Prognostic Agility*

**PAST**
- **INCREMENTAL CHANGE---Score: 3.5/10**
  - Decision-making processes are static and rely solely on previously successful strategies and tactics
  - Only able to learn from past experiences

**PRESENT**
- **TRANSFORMATIONAL AGILITY---Score: 7.2/10**
  - Decision-making processes reactively account for constantly changing competitive conditions
  - Flexibility in adapting to unexpected environmental changes

**FUTURE**
- **PROGNOSTIC AGILITY**
  - Decision-making processes proactively account for both realized and anticipated competitive situations
  - Challenges to supply chain agility continuously render existing infrastructure
    - Ever-shifting global network design predicated by new or changing geo-political events
    - Demand patterns
    - Supply locations
    - Omni-channel distribution
    - Technological innovation/Internet
  - Expanded total landed cost-to-serve models that include risk, sustainability, and social costs
  - Continuous and dynamic situation analysis provide supply chain solutions to different segments
MEGA TREND #4
Information Hoarding to Information Sharing to Information Synthesis

PAST
- INFORMATION HOARDING---Score: 3.5/10
  - Little information is shared with suppliers/ customers so as to gain leverage over other organizations within the supply chain
  - Slow adoption process

PRESENT
- INFORMATION SHARING---Score: 7.2/10
  - Holistic sharing of strategic and tactical information occurs throughout the SC (including multi-tier suppliers, sub-contractors)
  - Great opportunity for widespread improvements

FUTURE
- INFORMATION SYNTHESIS
  - Information is holistically shared and jointly interpreted to create supply chain knowledge and understanding of how it affects performance
  - Fully develop collaborations with partners and customers
  - Importance of using big data (linking masses of information from multiple sources) to achieve competitive advantage
  - Excelling in big data could bring new supply chain insights regarding customer, product, supplier, and operational inter-dependencies
MEGA TREND #5
Adversarial Relationships to Collaborative Relationships to Vested Relationships

PAST
• ADVERSARIAL RELATIONSHIPS---Score: 2.5/10
  – Focus on competition between supply chain partners to get the best financial deal in each transaction
  – Short term focus rather than long term

PRESENT
• COLLABORATIVE RELATIONSHIPS---Score: 7.2/10
  – Focus on joint problem/opportunity identification and resolution that leverages partners’ differential strengths
  – General deployment of mutual trust

FUTURE
• VESTED RELATIONSHIPS
  – Shared values and goals that eliminates win-lose situations (benefit both sides)
  – Focus on creating joint accountability and rewards to motivate each supply chain partner to optimize total system value creation
  – Long-term success for both parties by developing operational and strategic plans detailing joint rewards
  – Joint accountability
MEGA TREND #6

Demand Forecasting to Demand Endcasting to Demand Shaping

PAST
• DEMAND FORECASTING---Score: 3.5/10
  – Focus on historic data and internal estimates of supply and demand
  – Efficient consumer response (ECR) and collaborative planning, forecasting and replenishment (CPFR) initiatives

PRESENT
• DEMAND ENDCASTING---Score: 7.1/10
  – Focus on reactively understanding buying/consumption patterns
  – Transform accurate forecasts into actionable business and supply chain plans

FUTURE
• DEMAND SHAPING
  – Focus on proactively influencing demand to conform to supply chain capabilities that optimize value co-creation
  – Forecasting and demand planning processes that “sense and respond” to dynamic and evolving customer or consumer behaviors
    » Gather data from multiple sources
  – Utilization of demand point projections
    » From Integrated Sales and Operations Planning to Sales Order Processing to Manufacturing Execution
MEGA TREND #7
Training to Knowledge Based Development to Talent Management

PAST
• TRAINING---Score: 1.5/10
  – Developing skills required to complete tasks specific to an employee’s functional area
  – Complications with increased complexity of business operations and globalization

PRESENT
• KNOWLEDGE BASED DEVELOPMENT---Score: 7.0/10
  – Recruiting, hiring, developing and retaining the best talent, in response to current and anticipated needs

FUTURE
• TALENT MANAGEMENT
  – Proactively sourcing and developing talent by identifying the critical range of skills needed for future success and education required to keep employees effective and involved
  – Succession planning to ensure employees are ready to step into vacated positions by retirements from baby boomer generation
  – Firms commit to in-house and external training, and educational programs
  – Flexible approaches for talent retention are needed to retain top employees
MEGA TREND #8
Vertical Integration to Virtual Integration to Flexible Network Integration

PAST
• VERTICAL INTEGRATION---Score: 4.5/10
  – Owning both upstream and downstream supply chain activities to reduce reliance on external supply chain partners and diminish conflict
  – Challenges: Capital investment, high complex organizational structure and limitations on workforce

PRESENT
• VIRTUAL INTEGRATION---Score: 6.9/10
  – Selectively outsourcing upstream and downstream supply chain activities to maximize quality and downstream value and minimize risks and costs
  – Challenges with partner selection (complimentary visions, strategies, capabilities), cooperation and incentives

FUTURE
• FLEXIBLE NETWORK INTEGRATION
  – Selecting and engaging a dynamic constellation of partners to perform upstream and downstream supply chain activities to optimize total system value depending upon prevailing requirements
  – Improvements in virtual integration governance structures and processes, technology innovations and non-proximal additive manufacturing further reduce outsourcing risk
  – Maximize total value to customers by collaboration with multiple outsourcing partners
MEGA TREND #9

*Functional Measurement to Customer Service*

*Measurement to Relevant Value Measurement*

**PAST**
- **FUNCTIONAL MEASUREMENT**---Score: 2.5/10
  - Measuring operational performance at the functional level without regard to overall organizational success
  - Absolute market share as measured by gross sales dollars

**PRESENT**
- **CUSTOMER SERVICE MEASUREMENT**---Score: 6.9/10
  - Measuring operational performance based upon the profitability of key customer segments through specific indicators

**FUTURE**
- **RELEVANT VALUE MEASUREMENT**
  - Measuring operational performance based upon the creation of value for customers of choice and supply chain entities
  - Key focus on critical data, correct metrics, and long term goals
    » Not enough to focus on internal firm success (longer term and external focus required)
  - Consideration must also be given to supporting customers
MEGA TREND #10
Managerial Accounting to Value-Based Management to Total Value Orientation

PAST
• MANAGERIAL ACCOUNTING---Score: 2.5/10
  – Driving organizational objectives based upon the pursuit of total market share or revenue maximization

PRESENT
• VALUE-BASED MANAGEMENT---Score: 6.8/10
  – Driving organizational objectives based upon the pursuit of customer value maximization
  – Take focus away from functionally specific metrics

FUTURE
• TOTAL VALUE ORIENTATION
  – Driving organizational objectives based upon the pursuit of value maximization for both customers of choice and supply chain entities
  – Supply chain as a driver of value for key customers
  – Leverage shareholder value
    » Working capital
    » Human resources
    » Physical assets
    » C-Level Support needed
The New Trends
MEGA TREND #11
*Inertia to Innovation to Transformation*

**PAST**
- **INERTIA---Score: 1/10**
  - Prioritizing and assigning resources to maintain stability and consistency in outcomes

**PRESENT**
- **INNOVATION---Score: 4/10**
  - Prioritizing and assigning resources to drive desired change in outcomes in response to competitive conditions
  - Innovations focused on products rather than supply chain processes

**FUTURE**
- **TRANSFORMATION**
  - Prioritizing and assigning resources to shape future outcomes in advance of competitive conditions
  - Supply chain innovation to transformation should occur not only in product-focused contexts but also in the case of intangible/service-based supply chains
    - Example: Car sensor detects problem and transmits distress signal to dealership
  - Complexity of flexibility will give way to variable rates of adoption
  - “Reimagining of supply chain relationships that are designed around flexibility and problem solving in real time rather than fixed contracts and cost management”
MEGA TREND #12
“Dumb” Technology to “Smart” Technology to Autonetic Technology

PAST
• “DUMB” TECHNOLOGY---Score: 1/10
  – Prevalence of technology that accepts, transmits and displays data but has only limited processing capability
  – Evolution of technology at rapid speed (E-Commerce < 20 years)

PRESENT
• “SMART” TECHNOLOGY---Score: 3/10
  – Prevalence of technology that can process data inputs and convert them to valued outputs
  – Impact of higher data transmission speeds and larger storage capabilities

FUTURE
• AUTONETIC TECHNOLOGY
  – Prevalence of technology that anticipates a range of potential data inputs and proactively devises solutions based probable likelihoods
  – Costs and confusion surrounding smart supply chain applications decreasing will lead to increase in usage
  – Predictive data analytics allow companies to anticipate and alleviate supply chain breakdowns before they occur, based on probability distributions
    » Kimberly Clark and Amazon shipping goods in general directions based on things
    » Demand signals rather than POS data
    » Learning from supply chain mistakes and adapt networks in real time
MEGA TREND #13
Local Optimization to Global Optimization to Glocal Optimization

PAST
• LOCAL OPTIMIZATION---Score: 1/10
  – Positioning supply chain activities and processes to serve regional demand locations

PRESENT
• GLOBAL OPTIMIZATION---Score: 5/10
  – Positioning supply chain activities and processes globally to optimize functional performance
  – Sparked by changes to trade laws and expansion of internet

FUTURE
• GLOCAL OPTIMIZATION
  – Positioning supply chain activities and processes to optimize total system performance across multiple demand centers
  – High complexity including higher inventory levels and increased cycle times
  – Scare of The Great Recession from 2008-2010 (security concerns, product quality, limited access to third party providers) could lead to some elements of supply chain decentralized to regional levels
  – Segmentation approach
MEGA TREND #14
Risk Agnostic to Risk Management to Risk Prognosis

PAST
• RISK AGNOSTIC---Score: 1/10
  – Lack of formalized processes that identify, prioritize, and mitigate supply chain risk
  – Limited threats to operational continuity (i.e. Bullwhip effect)

PRESENT
• RISK MANAGEMENT---Score: 3/10
  – Instituting formalized processes to dynamically identify, prioritize, and mitigate supply chain risk based on probable likelihood of occurrence
  – 9/11 showed risk management is operational and financial concept

FUTURE
• RISK PROGNOSIS
  – Instituting formalized processes to reduce or eliminate supply chain risk prior to its occurrence based on business intelligence
    » Designing supply chains that exclude risk factors
  – Incorporated in expanded total cost-to-serve models
  – Supply chain value creation decisions based on the risk profiles calculated for entire expected supply chains
MEGA TREND #15
Untenability to Sustainability to Prostainability

PAST
• UNTENABILITY---Score: 1/10
  – Designing supply chains that consider seek to optimize economic outcomes without considering the impact on social responsibility or environmental outcomes
  – Belief of pervasive availability of substitutable options

PRESENT
• SUSTAINABILITY---Score: 2/10
  – Designing supply chains that consider trade-offs between social responsibility, environmentalism and economics in achieving outcomes
  – Less stiff requirements for firms outside Europe leading to sustainability only being an issue for discussion, but not yet for action

FUTURE
• PROSTAINABILITY
  – Designing supply chains that actively seek to improve social, environmental and economic outcomes---Not just a company project
  – Incorporate into organizational DNA (Combining social and environmental goals with economic objectives not only will provide market benefits, but positive financial returns)
MEGA TRENDS

• Consider all, not some

• No firm is perfect

• Talent management emerging as linchpin required for advancement

• Broad definition of supply chain required
  • Experimental methods that Identify precision and control
    – Increase in dynamic simulation modeling, physical simulation exercises, controlled scenario-based experiments, etc., to help identify challenging issues
    – Case studies

If you would like to receive a copy of the full article supporting this presentation, please send an e-mail message to Dave Frayer (frayerda@msu.edu).