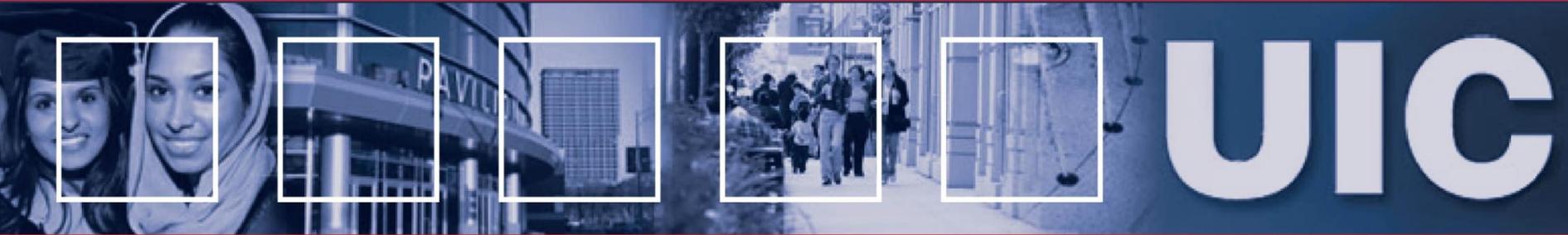


Aligning Technology with Supply Chain Strategies



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Overview

Supply chain business trends

Supply chain value creation elements

Motivation for technology investments

Technology areas

Criteria for successful technology solutions

Open issues



Supply Chain Business Trends

Supply chains are now used to support company business strategy

Most companies recognize their supply chain as a key business process versus a cost center

Digital demand & eCommerce are creating more variability in demand patterns:

- Problem for upper tier suppliers to keep up
- Increases bullwhip effect
- Causing exponential growth in SKUs
- Can be used to inform product innovation



Supply Chain Business Trends (continued)

Distribution networks are evolving

- Centralized vs. distributed vs. hybrid
- Single vs. multi-mode logistics & transportation
- Direct vs. channel shipping to customers

Growth in supply chain risk

- Disruptions due to adverse events
- Leads to the following challenges:
 - Improving communication with suppliers
 - Multi-sourcing of goods & services
 - Careful safety stock auditing
 - Improved risk planning techniques
 - Diversification of offerings & customer base



Supply Chain Business Trends (continued)

Emphasis on social & environmental responsibility

- Positive brand image
- Stricter regulatory compliance
- Improve energy resource utilization
- Reduced material utilization



Supply Chain Value Creation Elements

Enhance customer service

- Customer loyalty (on-time delivery)
- Repeat purchase generation

Reduce operating costs

- Efficiency

Strengthen supplier relationships

- Collaborative Planning, Forecasting & Replenishment (CPFR)

Accelerate product introduction

- Support fast ramp-up
- Ease product transition



Supply Chain Value Creation Elements (Continued)

Expand new product offerings

- Innovative approaches
- Sustain competitive advantage

Expand market base

- Improve distribution efficiency
- Aid local regulatory compliance

Offer premium pricing

- Support on-time delivery
- Enable quick response
- Improve order flexibility
- Provide value added-services



Motivation for Supply Chain Technology Investments

Improve ROI

- Better utilization of capital

Create operational efficiencies

- Reduce inventory
- Improve cycle time

Improve customer responsiveness

- Reduce lead time
- Reduce stock-outs
- Offer flexibility



Supply Chain Technology Areas

Transportation systems management

Business intelligence

Mobility

Warehouse management

EDI

ERP

RFID

Supply chain visibility

Supply chain planning & forecasting

Data analytics

- Helps us understand buyer/supplier behavior



Supply Chain Technology Solution Criteria for Success

Value creation thru high ROI

Low risk implementation

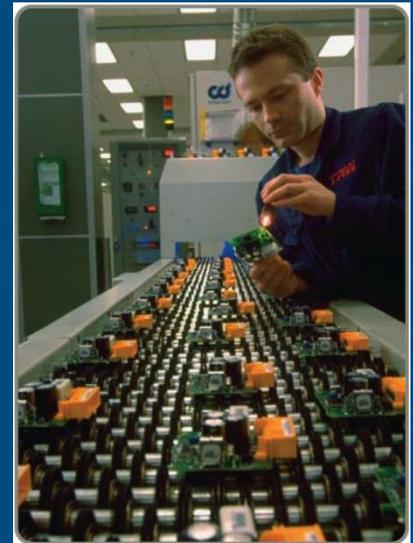
- Ability to migrate
- Integrate easily with new/legacy systems
- Maintainability (high uptime)

Economies of scale with growth

Flexibility to adapt to changing conditions

Interoperability with other systems

- Improve connectivity to facilitate coordination/communication



Supply Chain Technology Solution Criteria for Success (continued)

Ability to automate supply processes

Ability to standardize supply chain processes

Ability to improve process precision & quality

Conformance to industry standards

Reduce complexity in vendor selection

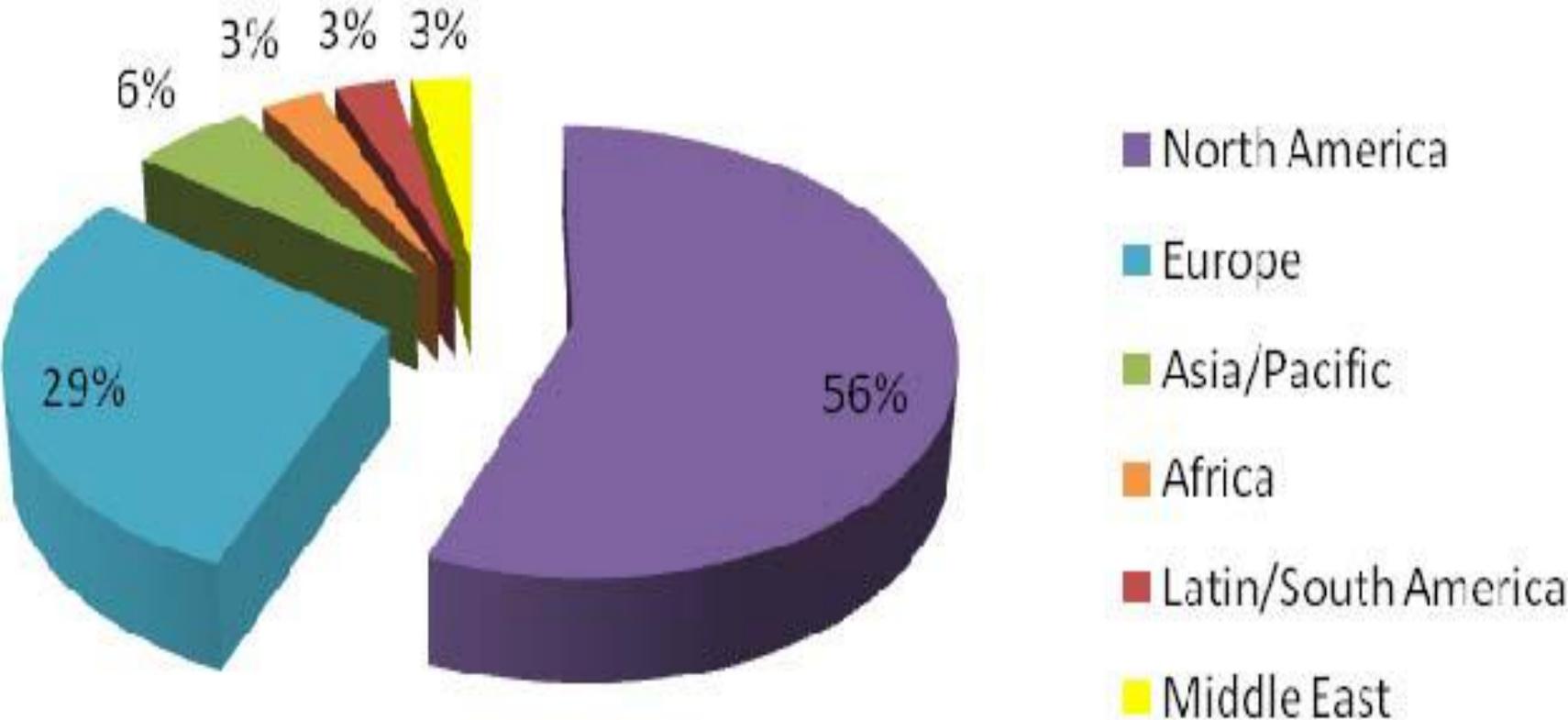
Off-the-shelf bundled vs. customized solutions



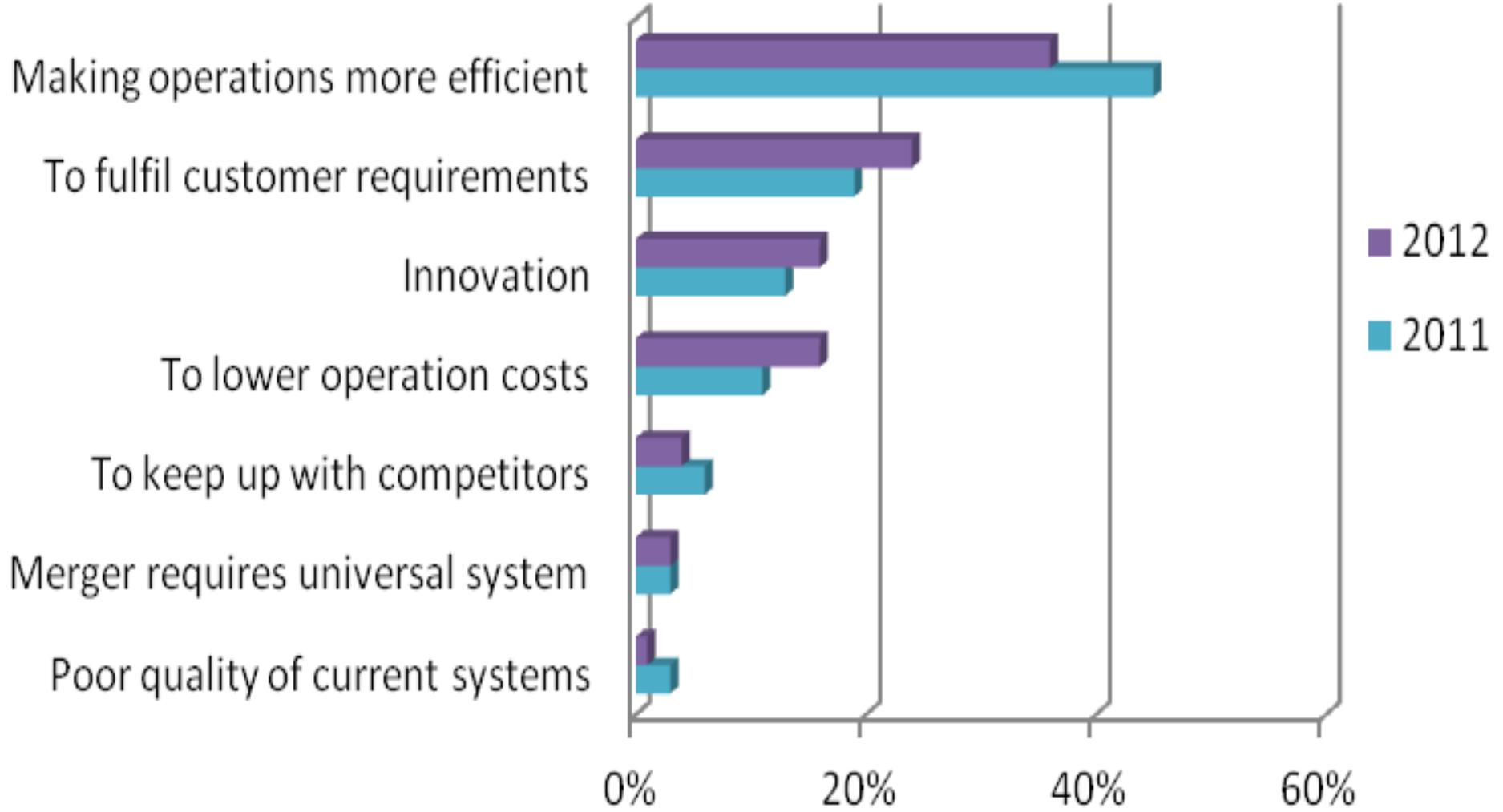
What Do We Know About Company Use of Technology in Supply Chain?

- Report of One Study
- Surveyed Variety of Businesses
- Many Unanswered Questions

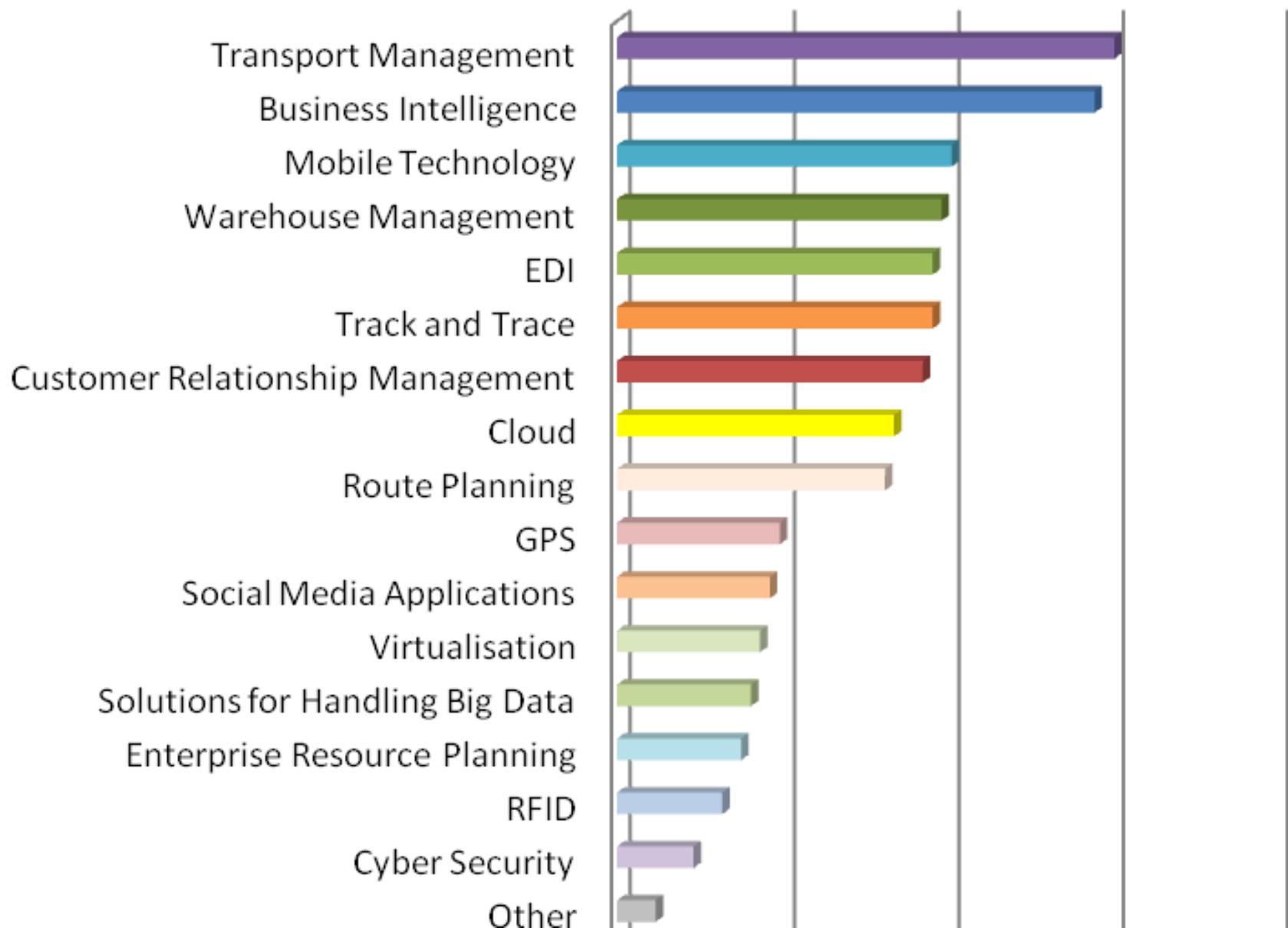
Geographical Region



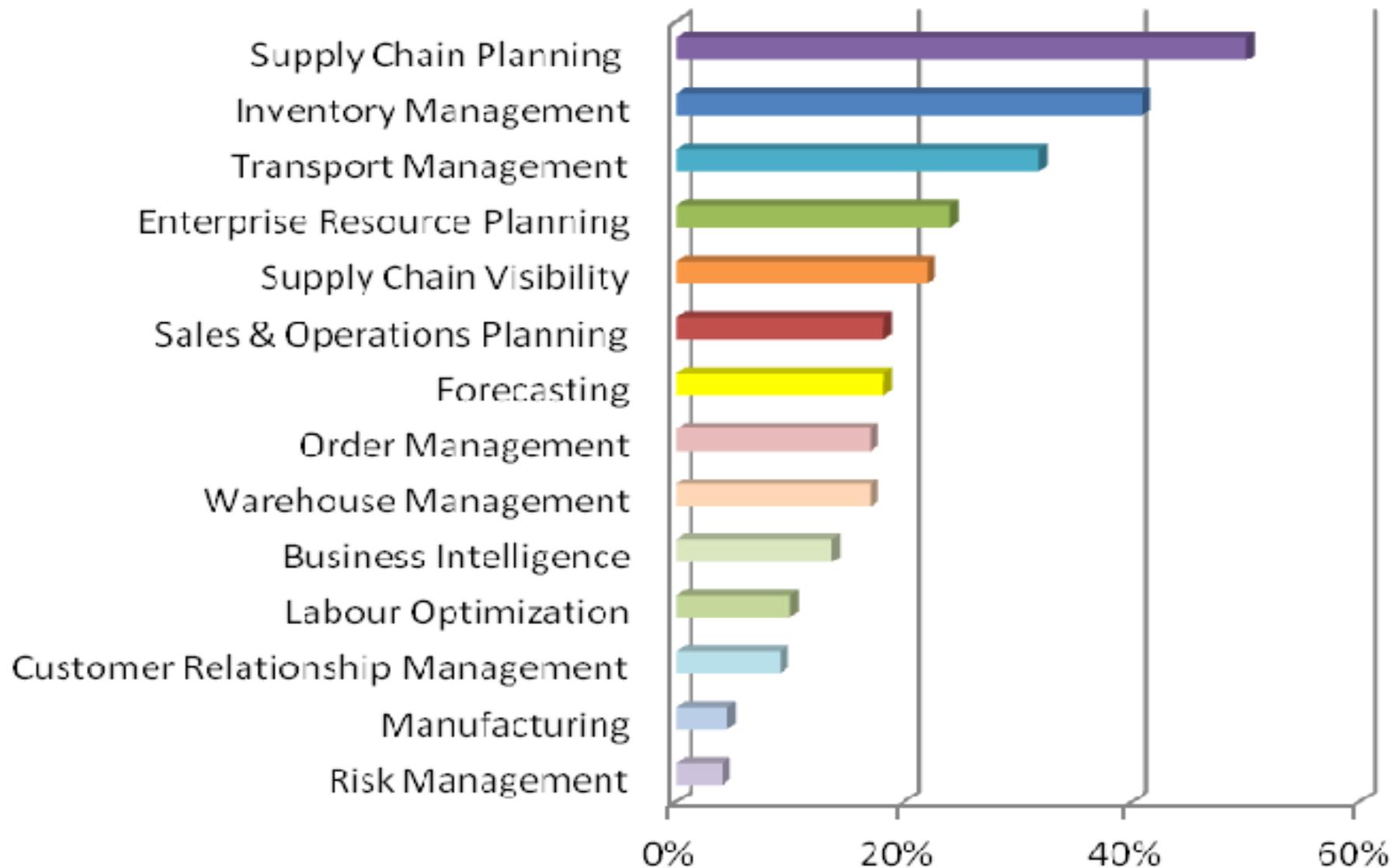
Primary Reason for Investing in New Technology



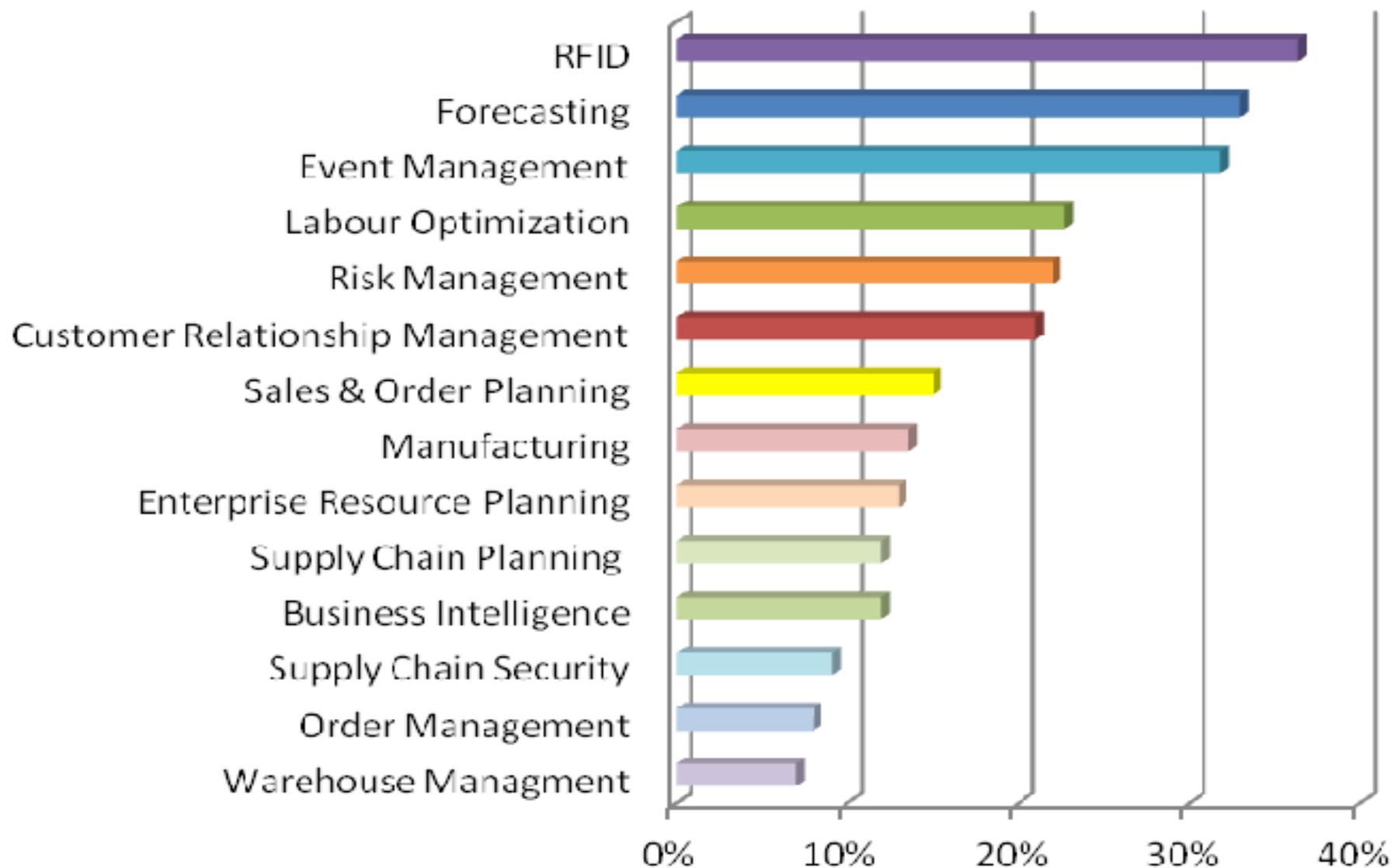
Intended Investments for Next Year



Supply Chain Technologies with Best ROI



Supply Chain Technologies with Worst ROI



Open Issues

What technologies are companies investing in (in the short term) to support supply chain processes?

Hardware

Software

In what processes are these being used?

How do these technologies create value?

How is the value measured?

What ROI is envisioned?

Who are the key vendors?



Technology Trends in Logistics & Supply Chain Management Research Proposal

Two Year Study

Analyzes a Sample of Leading Technology Companies

Identify Trends in the Use of Technology Solutions

Visit a Sample of Companies That Have Implemented the
Technology

Objectives of The Research

- Identify the Emerging Technologies, Either Hardware or Software
- Understand the Implications of the Technologies
 - Value Creation
 - Operational Effectiveness
 - Investment Level
 - Technical Migration
 - General Industry Acceptance

Objectives

- Forecast short-term trends in technology acceptance and utilization
- Characterize the supply chain and logistics applications
- Identify favored suppliers for the technologies
- Develop a reference base

Year One Study

- Phone Survey of Technology Companies
- Identify the Pros and Cons of Each Technology
- Technology's Ability to Successfully Satisfy Criteria
- What Are the Associated Risks?

Year Two Study

- **Site Visits to a Sample of Companies That Have Implemented the Technology**
 - **Ease of Implementation**
 - **Cost Savings**
 - **Quality Improvements**

Year One Tasks

- **Phase 1: Project Kickoff**
 - Identify the Goals for Project Success
 - Establish Project Controls and Processes
 - Project Management Plan
- **Phase 2: Project Definition**
 - Representative Sample of Leading Technology Vendors to Logistics and Supply Chain Operations of Major Firms
 - Hardware and Software Technologies

Year One Tasks

- **Phase 3: Information / Data Collection and Analysis**

 - Interview the Organizations by Phone

 - Supplement with Professional and Academic Literature

- Phase 4: Write Report**

 - Report – Understandable to Industry and Academics

Year Two Tasks

- **Phase 5: Site Visits of Companies Implementing the Technologies**
 - **Site visits will take one or two days**
 - **Select Companies From a Range of Industries and a Variety of Technologies Implemented**
 - **Interview Company Personnel**
 - **Observe Technology in Application**

Year Two Tasks

- **Phase 6: Evaluation – Overall Qualitative and Quantitative Evaluation of Technology Trends and Implications**

- Information Exchange Requirements
- Operational Structure and Architecture
- Cost
- Reporting and Notification
- Degree of Process Automation
- Modeling and Mapping
- Resource Management
- Interface Requirements
- Support Infrastructure

Year Two Tasks

- **Phase 7: Recommendation and Final Report**
 - **Dissemination Plan Will Be Developed**
 - **Project Stakeholders**
 - **Audiences Identified by the Project Sponsors**

Conclusions

- **Technology is Constantly Changing**
- **Has Vast Implications for Supply Chain Management**
- **Affects All Members of the Supply Chain**
 - **Transportation**
 - **Manufacturing**
 - **Distribution**
 - **Warehousing**
- **Can Lead to Further Reductions in Supply Chain Cost**
- **Can Lead to Additional Increases in Quality**
- **Important that All Stakeholders Understand the Implications of Technological Change**



Thank You!