Ecosystem Aware
Global Supply Chain Management

Global Supply Chain Redesign

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People designed supply chains as simple linear processes of goods & information swiftly passing though an efficient logistics & IT pipelines and concentrate only on that part of the pipe directly controlled by them or at best that of their customers and suppliers.

This is a Myopic View

Supply Chain Redesign

- The current day supply chain networks are subjected to Disruptions & Innovations in the ecosystem elements, resources crunch and several other factors. These will affect the performance & cost savings.
- Disruptions can originate from the Banks, Governments, Bankruptcy of the supplier's suppliers, Natural disasters, Piracy, Cyber-attacks, Port strikes and other unknown factors. While One cannot anticipate all risks they cannot be ignored either.
- Innovations in products, manufacturing and delivery processes, Business models, Govt. to Govt. relations such as FTAs , Regulations and deregulations and many more affect the supply chain.
- Fluctuations in resources costs such as wages, oil prices, foreign exchange are important for the bottom line.
- Supply Chain Design should take these factors into account rather than resorting to expediting, cost saving measures when unknowns strike

The Global Supply Chain Design

- The Design involves two steps
  - Global supply Chain Formation
  - Building Governance mechanisms or Frameworks for Partner Selection , Coordination & Control

Global Supply Chain Formation

- The Formation involves five steps
  1. Map the Supply Chain Ecosystem for the Industry Vertical
  2. Formulate the Supply Chain Strategy
  3. Select possible locations for the factories, DCs based on Investment climate
  4. Identify the Supply Chain Risks
  5. List the feasible supply chain configurations

Governance: Partner Selection, Coordination & Control

- In resilient supply chains is a separate chain is formed for each order
- The Governance Function Involves
  - **Partner selection** from the group of preselected suppliers from step1 (Supply Chain Formation Stage)
  - **Coordination :** Determining who does what and when and communicating to everyone
  - **Execution:** Build a control tower to Monitor order status so that processes work as per plan & control exceptional events
- This step involves building frameworks for Partner selection , Coordination and Control for the company or the vertical under consideration

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Global Supply Chain Formation

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Global Supply Chain Formation

- This step is crucial and requires
  - Domain knowledge of the vertical & the companies: their products, capabilities & reputation for quality delivery
  - Corporate and Political connections
  - Soft skills for negotiation of acquisition of assets, Partner selection, Risk assessment and Talent recruitment
- In emerging markets, disputes over the asset acquisition can turn wicked involving long drawn negotiations or abandoning the project

Global Supply Chain Formation

The five steps

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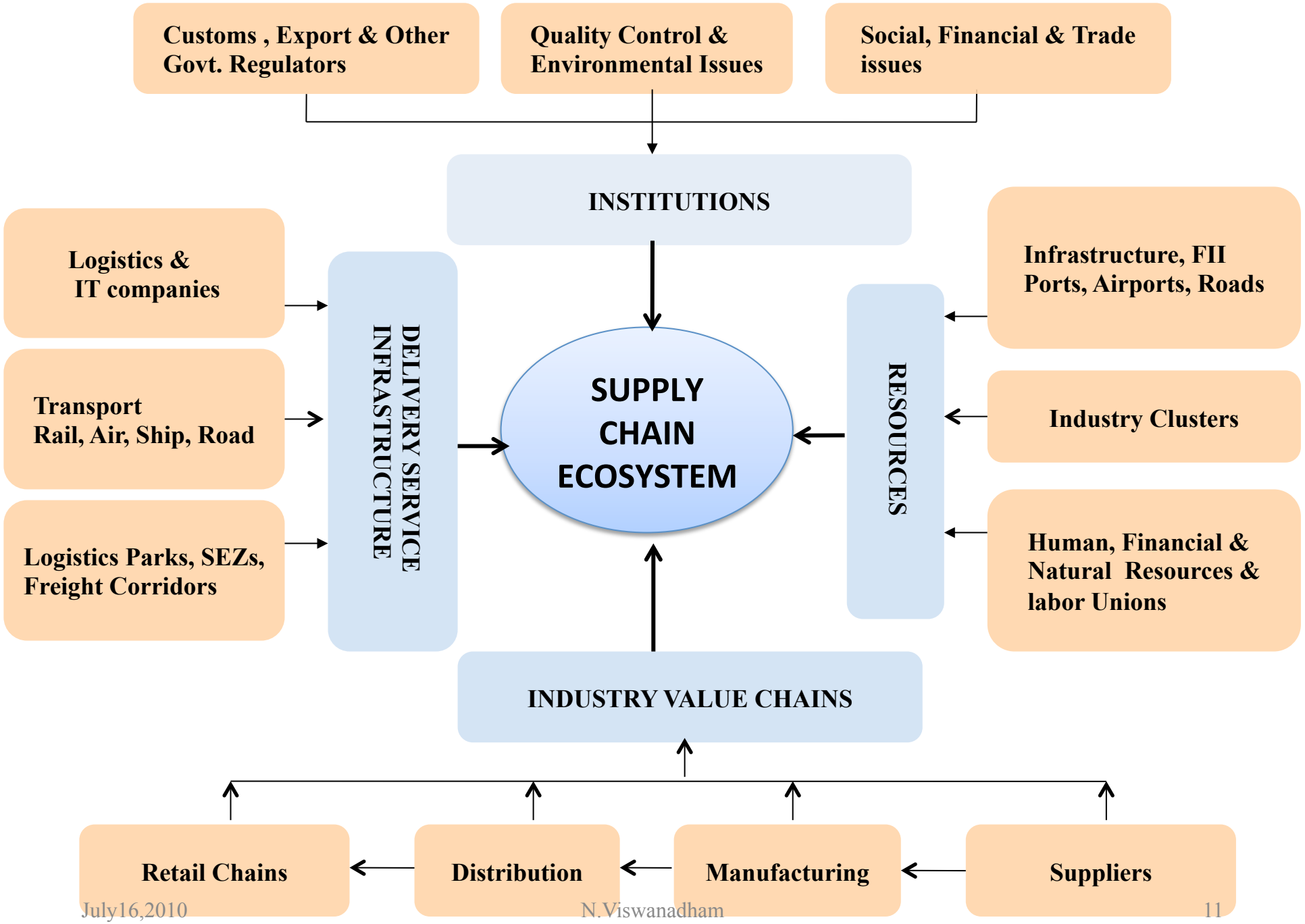
Step1: Map the Supply Chain Ecosystem for the Industry Vertical


Customs , Export & Other Govt. Regulators
Quality Control & Environmental Issues
Social, Financial & Trade issues
INSTITUTIONS
Logistics & IT companies
Transport Rail, Air, Ship, Road
Logistics Parks, SEZs, Freight Corridors
DELIVERY SERVICE INFRASTRUCTURE
SUPPLY CHAIN ECOSYSTEM
RESOURCES
Infrastructure, FII Ports, Airports, Roads
Industry Clusters
Human, Financial & Natural Resources & labor Unions
INDUSTRY VALUE CHAINS
Retail Chains
Distribution
Manufacturing
Suppliers

Step 2: Formulate the Supply Chain Strategy

Step 2: Formulate the Supply Chain Strategy

- Decide the product you are selling: knowledge of the ecosystem (Trader), Just the product, Solutions (after sales, aircraft engines, Xerox), Value chains (CEMEX: Deliver building materials to site)
- Innovations in product and process and other Ecosystem items to build a blockbuster industry subject infrastructure constraints
  - Prepaid simcard, Deregulation of airlines & telecom, Fedex courier services, southwest direct routes rather than hub and spoke, tata nano , clusters, digital delivery, home delivery
- Identify the strategic areas for partnering or outsourcing in the value chain including the risks of partnering
  - **Make or Buy decisions; Local or Low cost Country Outsourcing, FDI or Outsourcing**

Product Innovation

- **Hyundai**, customized small-car Santro, to suit Indian market conditions with 90% local components.
- **Nano** is a fuel efficient one lakh car.
- **Cummins** produces diesel engines and power generators for small retailers, regional hospitals, and farmers
- General Electric announced two revolutionary products; **$1,000 handheld electrocardiogram device and a portable, $15,000 PC-based ultrasound machine**.
  - Originally developed for emerging markets (the ECG device for rural India and the ultrasound machine for rural China), now are being sold in US, pioneering new uses for such machines.

Business Model Innovation

- *Business model innovation (BMI) is a reconfiguration of activities in the existing business model of a firm that is new to the product/service market in which the firm competes.*
- Business model innovation actually involves importing a business model from one product/service market into another. For instance:
  - Southwest Airline borrowed a business model from interstate bus transportation and applied it to the airline industry.
  - McDonald's brought traditional assembly line techniques into the fast food business.
  - Xerox does not sell copying machines but installs and maintains copying machines in offices and charges per page basis.
  - Power by the Hour: aircraft engines are paid for the number of hours they are in the flying aircraft

Use Innovations in Regulations

- The governments have deregulated the telecom industry and made many positive policies.
  - Allowed private and foreign players to set up shops though FDI
  - Created Special Economic Zones to attract equipment and other manufacturers
  - Allowed foreign players to participate as manufacturing and service providers.
- Companies should use these to advantage

Disruptions Catalyzed by Cloud

- The growth of cloud delivery models helped the start up to follow pay peruse model rather than buying , installing and maintaining servers.
- The new Cloud architecture can address the needs of Orchestrators trying to manage loosely coupled network partners
- Other Industries such as health care, Finance, Logistics, Education get disrupted by Cloud. In heath care patient records can be accessed from cloud.
- Cyber Security, Breach of Trust are big issues

Innovations in Governance

- Do not own all assets – Orchestrate : New Mantra in Businesses
  - Li & Fung, does not own any factories but orchestrates a network of 15,000 suppliers and 29,000 employees in 40 countries, supplying goods to well known consumer brands .
  - Boeing's 777 jet is assemblage of three million parts from more than 900 suppliers in 17 countries around the world. Boeing produces only the wings and fuselage, and assembles the aircraft.
  - Southwest, JetBlue and RyanAir retained only the core of branding and the concept of the airline and put all other operations out to bid: **They leased engines & aircraft, and contracted out baggage handling and maintenance**
  - 4PLs are integrated logistics providers who aggregate and provide transport, warehousing and distribution services to several customers by orchestrating 3PLs, Owners of warehouses and Trucks.

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Step3: Select possible locations for the factories, DCs based on Investment climate

Select Locations: Factories, Partners, DCs based on the Investment climate

- For the industry vertical,
  - study the parameters that determine the investment climate of nations and regions and rank order the regions
  - Identify the asset specific requirements from the suppliers

Clusters

- Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions (universities, vocational training) present in a region.
- The proximity of companies and institutions in one location fosters better coordination and trust lowering the transaction costs, minimizing the inventory, importing costs and delays.

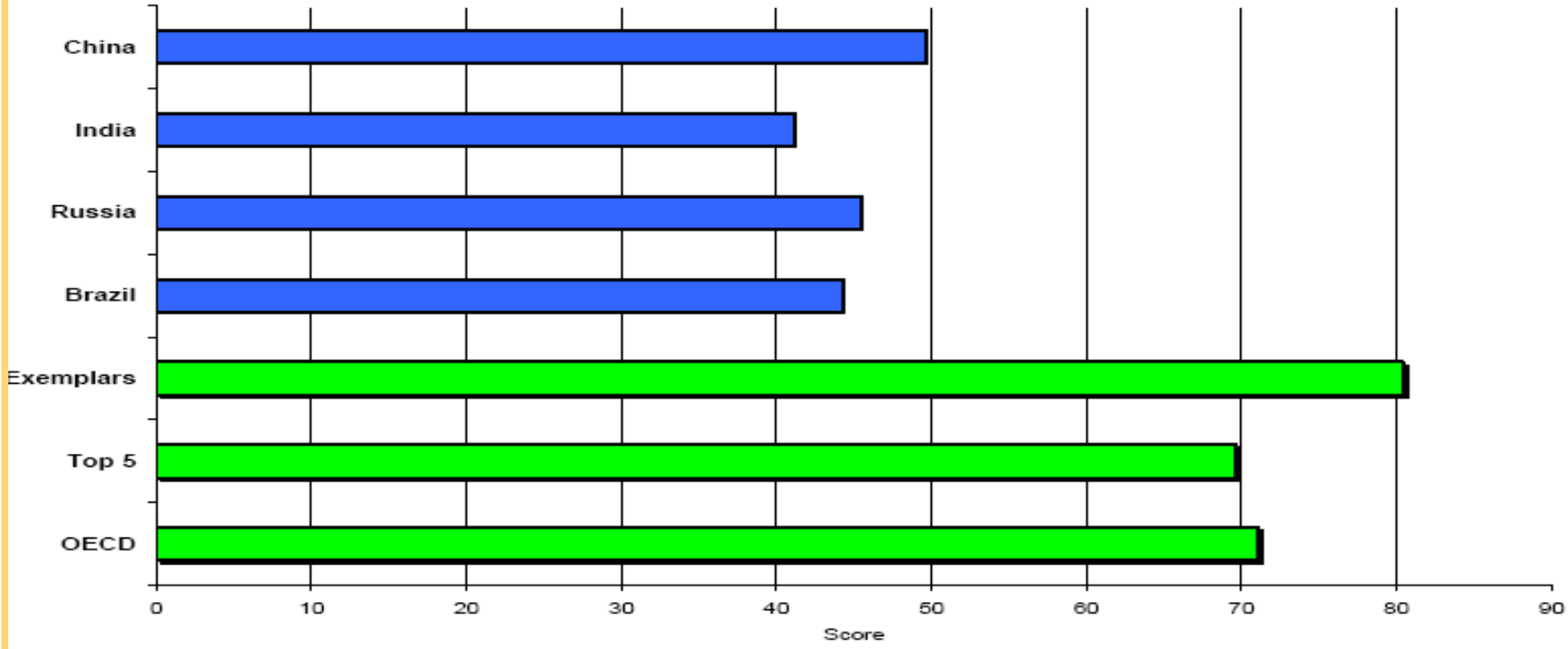
Types of Supplier Asset Specificity

- **Physical asset specificity** refers to the mobile and physical features of assets such as specific dies, molds, and tooling for the manufacture of a contracted product.
- **Dedicated asset specificity** represents discrete and/or additional investment in generalized (as opposed to specific) production capacity in the expectation of making a significant sale of a product to a particular customer.
- **Human asset specificity** arises in a learning-by-doing fashion through long-standing customer-specific operations.
- **Site asset specificity** refers to the successive stages that are immobile and are located in close proximity to one another so as to economize on inventory and transportation.

The Global Competitiveness Indicators

- Global Competitiveness Indicators based on which countries are evaluated include
  - National Policies for Openness in Trade and Markets
  - Best Practices for International Trade
  - Effective Legal and Enforcement Systems
  - Infrastructures for a Global Economy
  - Financial Services for Cross-Border Commerce
  - Human Capital

Government policies that directly affect global economic competitiveness



Countries that have a very good growth record like China, India, Vietnam, Laos, Indonesia, Pakistan and Bangladesh – rank very low on these indices .

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Investment Climate at Various Levels

	Logistics & IT	Regulations	Resources & Management	
Country	Logistics & IT Infrastructure, 3 PLs & Software developers Soft infrastructure	Customs, Trade, Tax Policies, Industry and FDI incentives, Labor Unions , Forex , Legal enforcement	Human, Financial, & Natural resources : mines, land, water & Management Skills	→ **Country Competitiveness Index**
Region	Regional Logistics & IT Infrastructure	Govt. Policies, Center-State relations, Tariffs, Duties, Sales Taxes	Same as above	
Industry Vertical	Vertical Industry Specific Logistics & IT Infrastructure	Industry Promotion Incentives like SEZs, Tax breaks, FTAs	Mining & other skilled resources, Vertical Industry Clusters, R &D Labs , Univs	
Firm Level	Firm specific Logistics & IT Infrastructure	Firm specific incentives & tax-breaks from Govt.	Firm specific skill, Financial & Cluster availability	→ **Firm Competitiveness**

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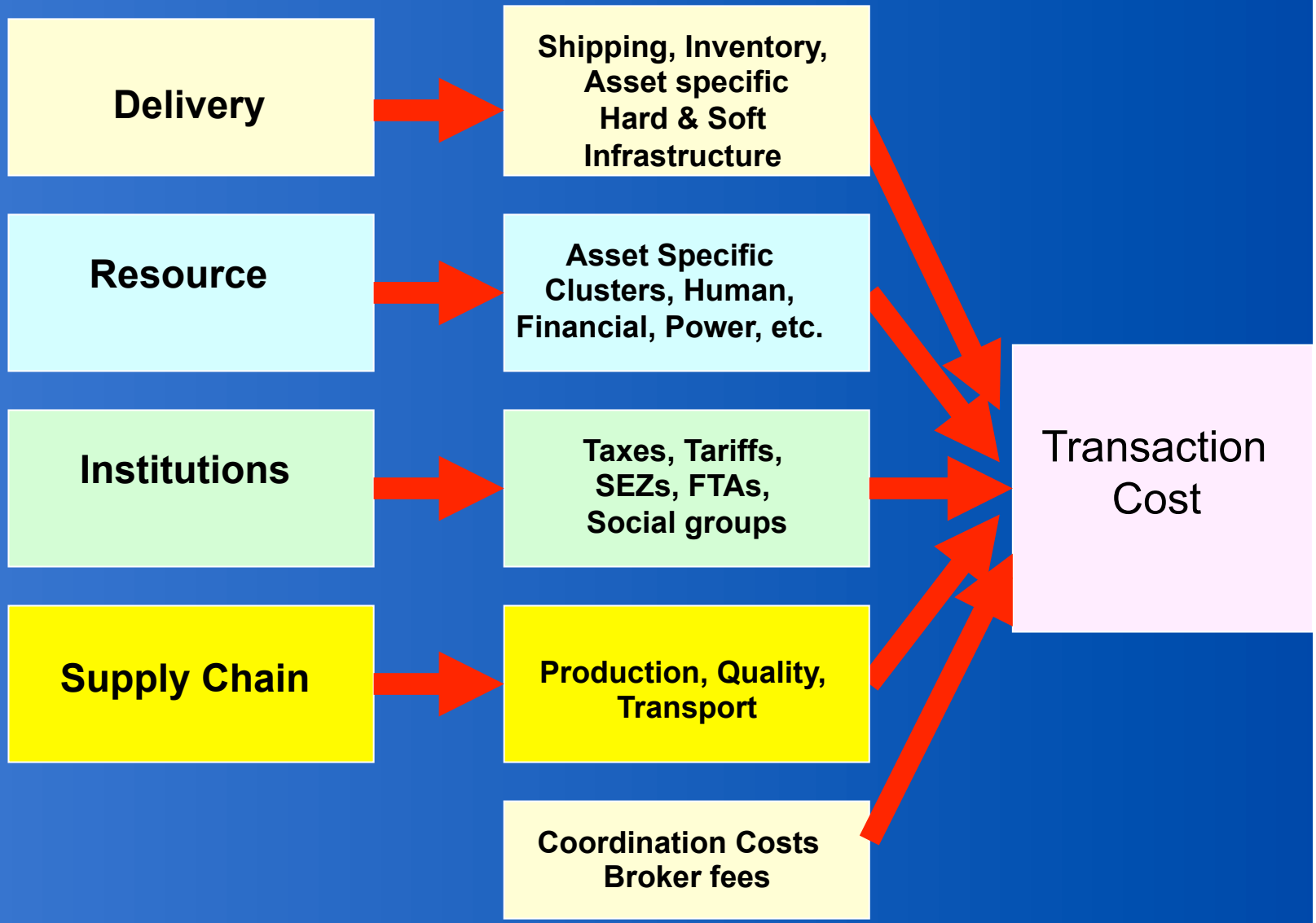
Transaction Costs



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Step4: Identify the Supply Chain Ecosystem Risks

Step 4: Identify the Supply Chain Ecosystem Risks

- All possible social, political & environmental risks that may affect your ecosystem and the goods, information and financial flows.
- Estimate the risk and identify what it takes for their resolution

The Supply Chain Risks

- **Outsourcing** : the loss of IP, quality issues, transport delays, foreign exchange fluctuations, energy costs escalation, loss of goods due to theft or piracy, etc.
- **In case of mergers or acquisitions:** all the risks associated with their supply chain ecosystem must also be considered..
- **Large scale and a high degree of concentration** *e.g.* Giant firms such as DHL, Flextronics etc.and geographical concentration (*e.g. low cost manufacturing in China, IT clusters in India*) make the clusters highly vulnerable for terrorist attacks and natural disasters

The Supply Chain Risks

- Political and Societal risk: Land acquisition or people displacement are involved : Risks such as change in the government, State- Center relations, Corruption, Social factors need to be assessed
- If resource intensive shortages such as infrastructure, oil, power , water, mining etc should be quantified.

Cyber Security: Biggest Risk of Connectivity

- Computer systems are subjected to electronic attacks originating from sources that are usually unidentified.
- The terrorist and counterfeit networks are also globally connected and indeed they follow the HR practices of recruitment, training of people and also systematic planning processes for implementing their objectives