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Introduction to the Globalization of Production

*A “Primer on Global Value Chains (GVC) and
International Production Networks (IPN)”*

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Module Objectives

- To understand better the concepts of “Global Value Chains” (GVC) and associated “International Production Networks” (IPN)
- To appreciate how GVCs are changing the competitive structure of international business and the global economy
- How these concepts can be used by firms, and supported by governments, to compete more effectively in international product markets

Strategic Challenge to the Enterprise

- *Production that used to be within walls of one enterprise can now be broken up into different parts/tasks in different geographic locations*
- Production of a good or service is a function of strategic choices by firms about *reorganization* and *relocation of production activities*:
→ ***what to make and where to do it***
- ***Reorganization***: which of the steps in the *value chain* should remain in the firm versus the functions that will be outsourced: purchased from other firms
 - made possible by ‘fragmentation of production’
- ***Relocation***: which activities/functions in the value chain should move out of one’s home country (“offshoring”)
 - made possible by integration of product markets, i.e. removing obstacles to flow of goods/services/capital

Development Implications

- 2 processes of reorganization and relocation go hand in hand: create new opportunities for both existing enterprises and potential new entrants
- Enterprise decisions about reorganization and relocation jointly form the ‘micro foundations’ of an economy’s structure and performance
 - What is produced, by whom, where, with what payoffs (for firm, economy)

Global Value Chain (GVC): Relates to products/services/industries

■ Value Chain (VC)

- Full range of value-added activities involved in conception, design, getting inputs, production, marketing, distribution, support of a product/service
- ‘integrated system’, local, national, regional, or global
 - Firm can focus on one or more activities in VC

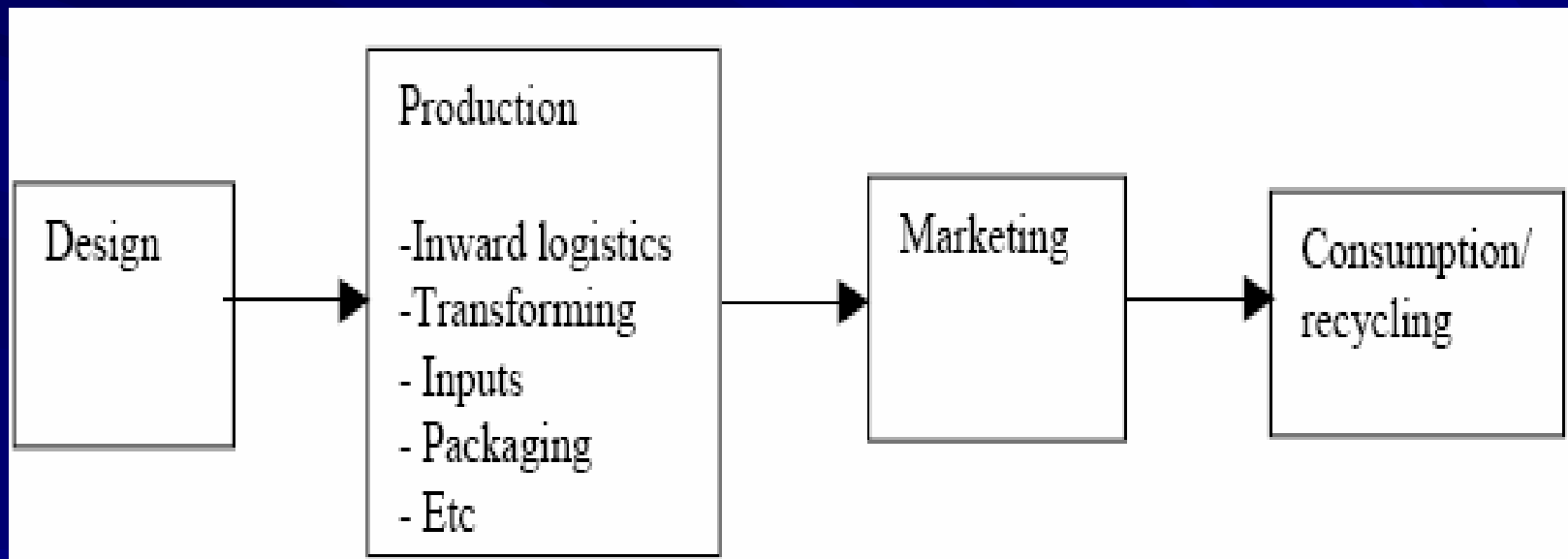
■ *Global Value Chain (GVC)*

- activities are geographically dispersed across borders to different countries (and coordinated, re-integrated)

■ NOTE: Firm can participate in multiple GVCs e.g. Sony: computers, consumer electronics, games, movies

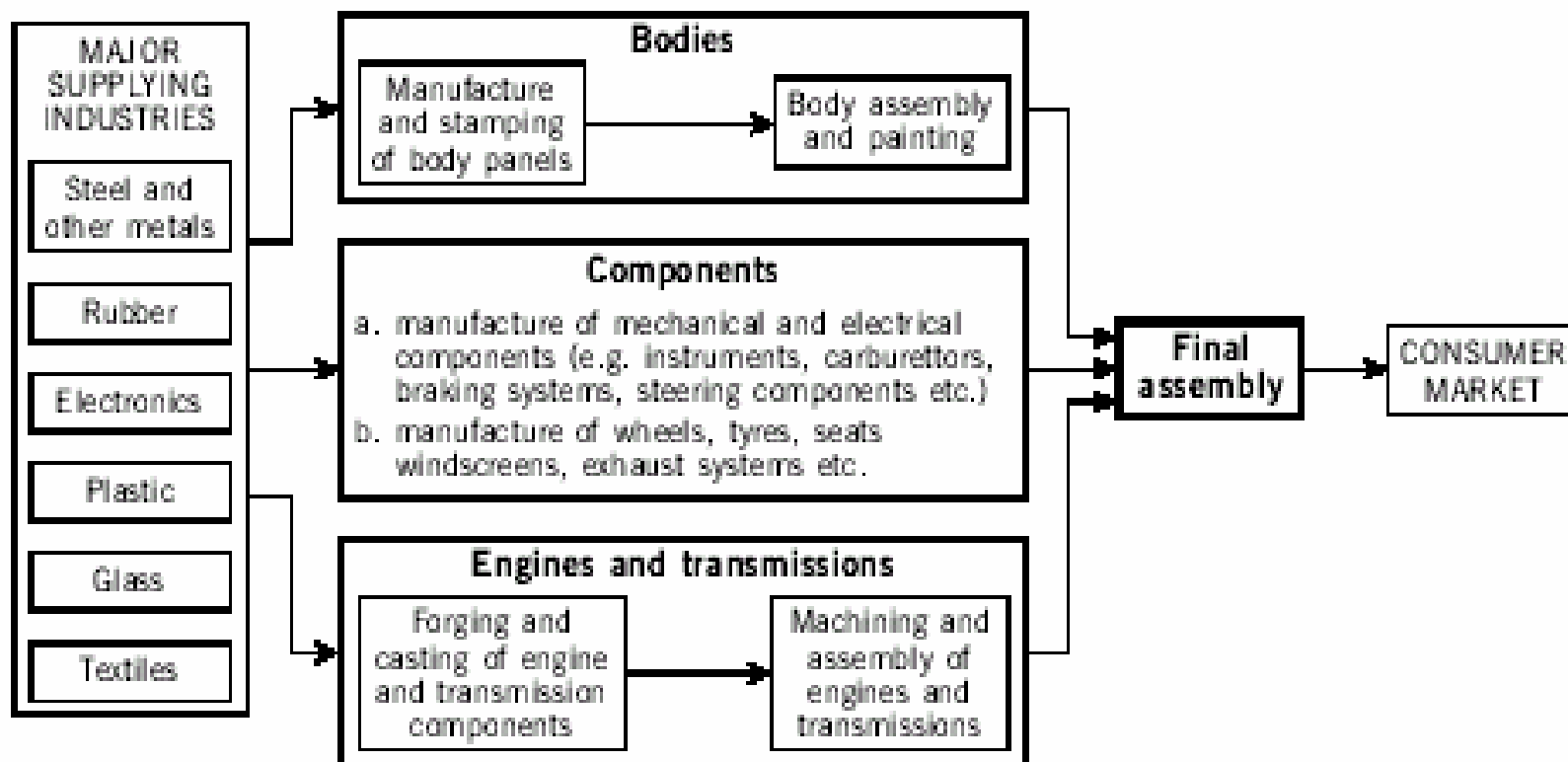
Simple Value Chain

from Kaplinksy, R. and J. Readmann, 2001. *How Can SME Producers Serve Global Markets and Sustain Income Growth*. Institute of Development Studies, University of Sussex, Figure 16, p. 25



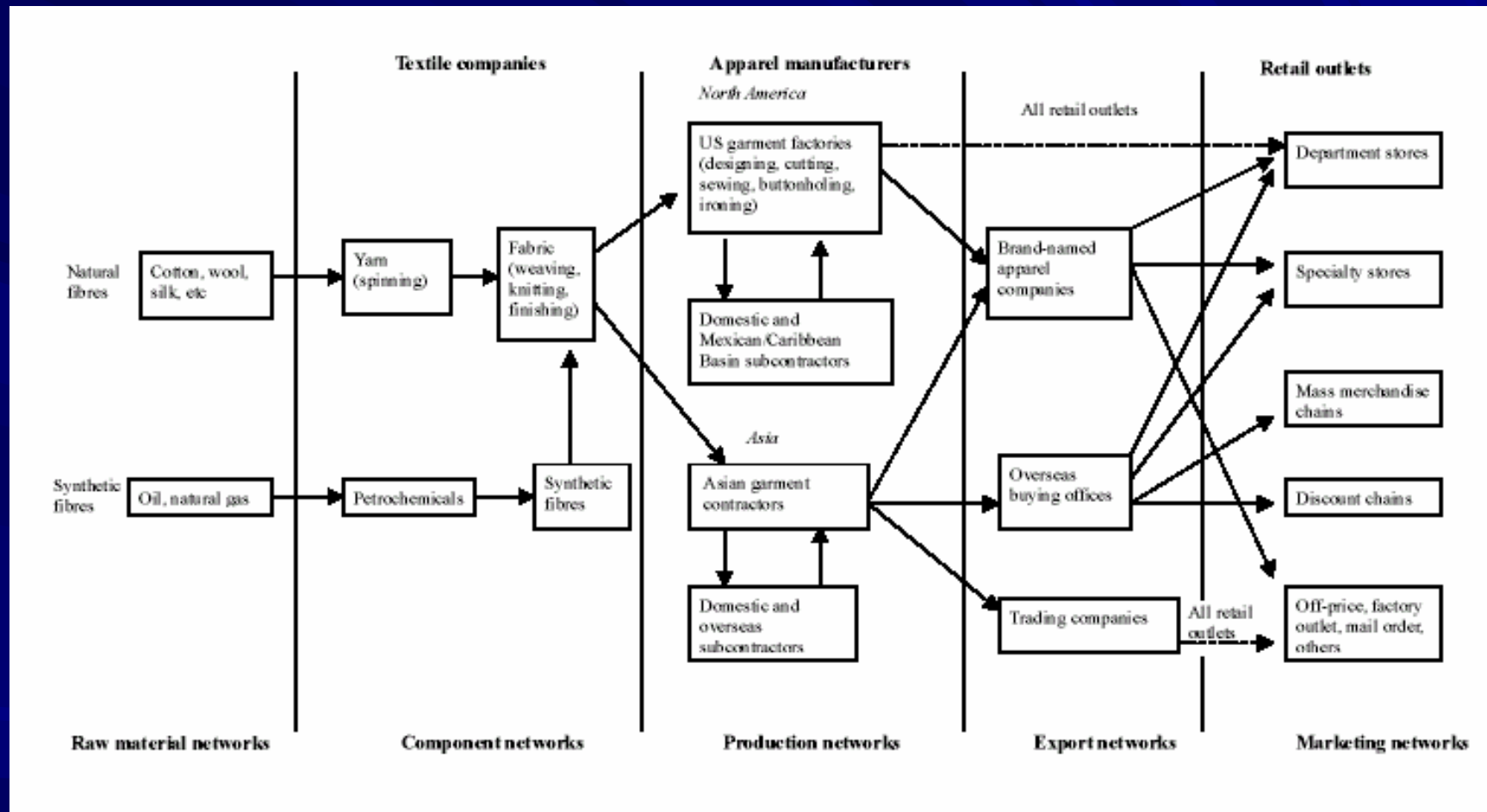
Basic Automotive Value Chain

Dicken, P., (2003), *Global Shift: Reshaping the Global Economic Map in the 21st century. Fourth Edition.* London: Sage.



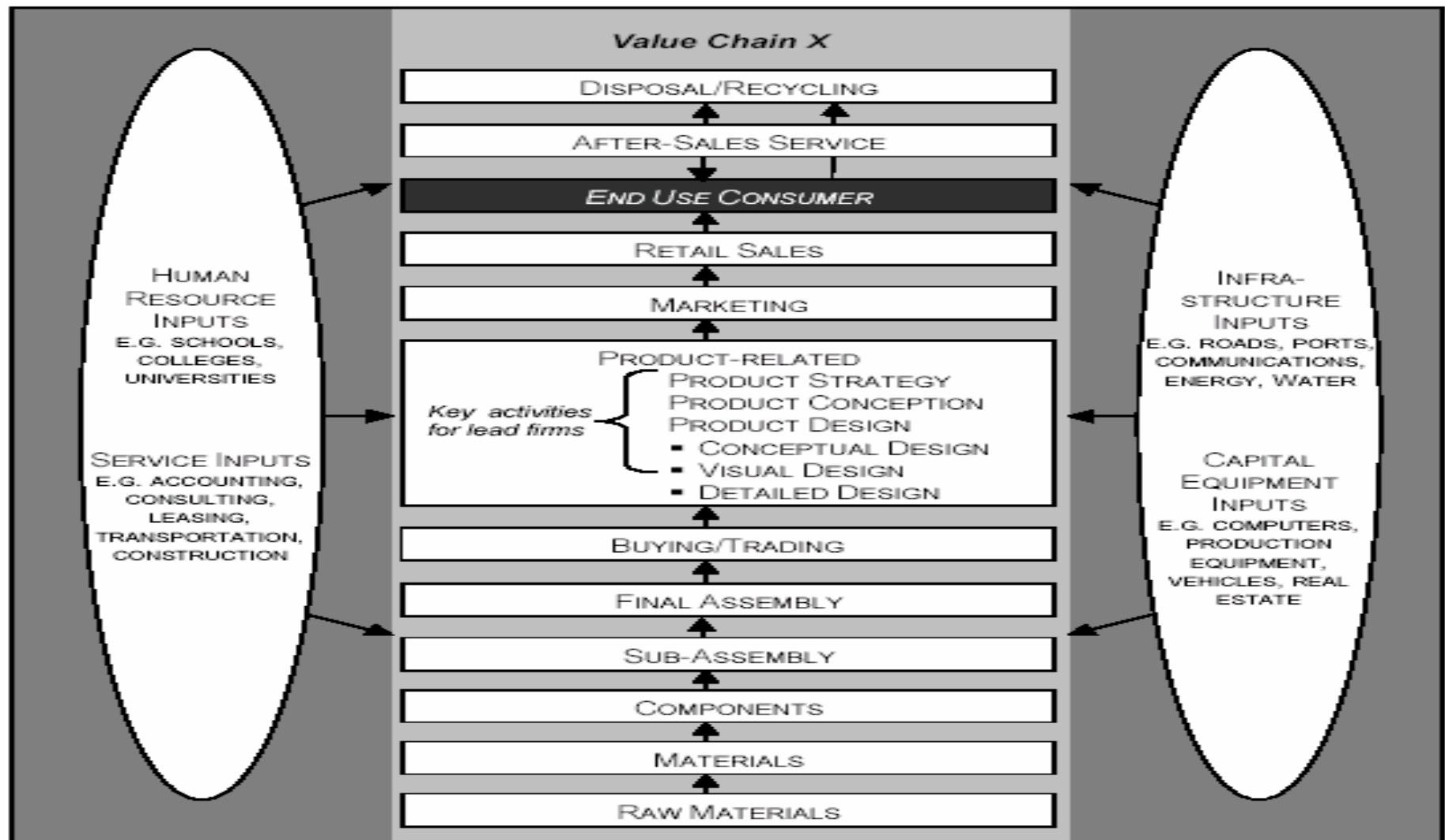
Garment/Apparel GVC

Source: G. Gerefi and O. Memedovic (UNIDO, 2003)



Generic Value Chain and Supporting Inputs

From: Sturgeon, T.J, "How Do We Define Value Chains and Production Networks", Industrial Performance Centre, Massachusetts Institute of Technology, April 2001.



In Sum: Global Value Chain

- GVC describes organization of production of particular ***products or services***
 - Example: garments, automobiles, computers
 - ‘map’ of the production process for product/service

International Production Network (IPN)

■ Production network

- Full set of linkages within or among group of firms in a particular value chain to produce specific goods and services
- How lead firms such as Toyota, Carrefour, Levi organize their network of subsidiaries, affiliates, suppliers to deliver a product

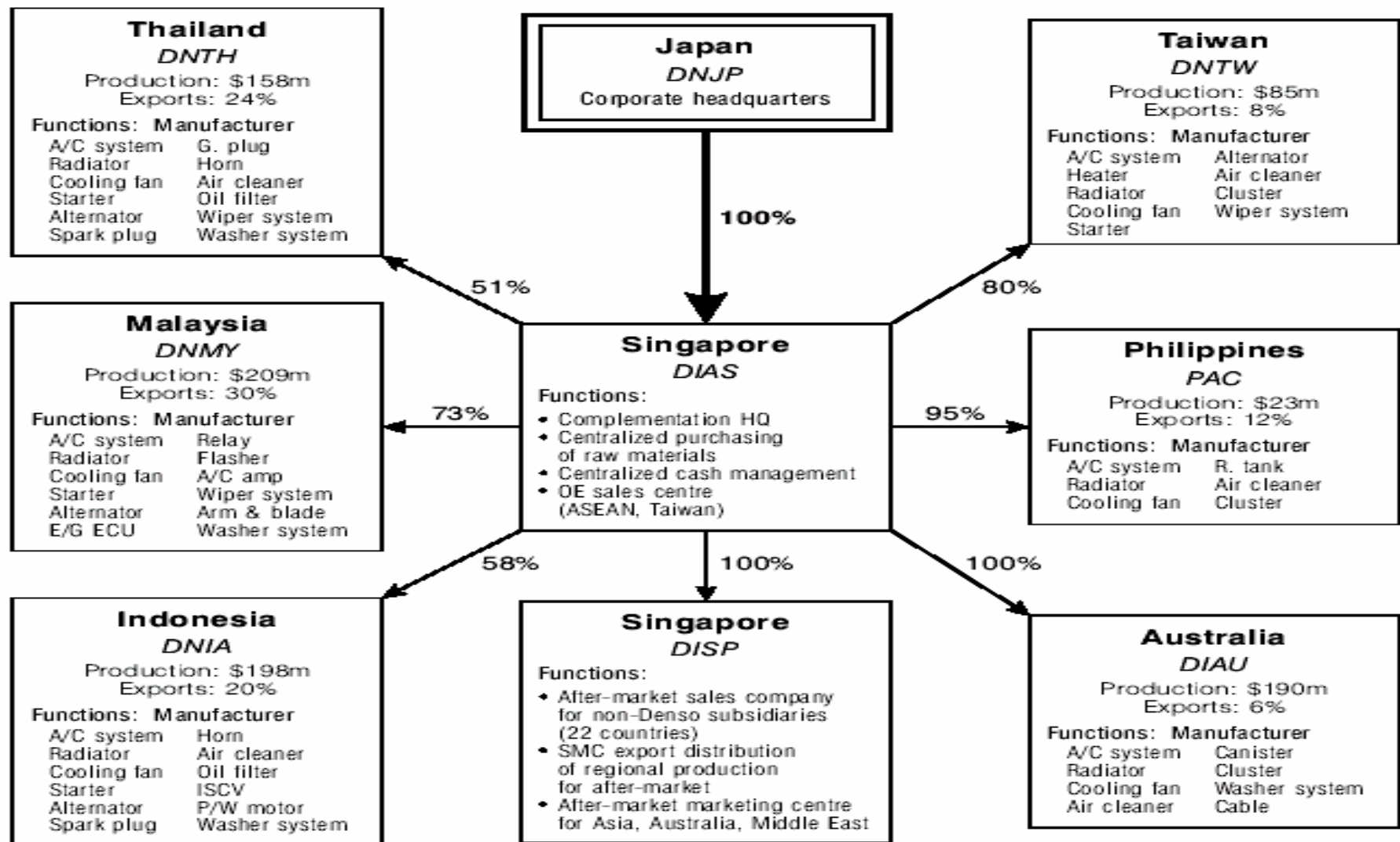
■ *International Production Network (IPN)*

- Distribution and coordination of geographically dispersed activities in multiple country locations
 - 'Intra-firm' network
 - Inter-firm network, e.g. subcontracting, outsourcing

■ NOTE: A firm can belong to multiple IPNs, e.g. Saha Group in Thailand as supplier to Nike, Adidas, Reebok

Intra-firm Production Network: Denso in SE Asia

Source: GPN Working Paper 7



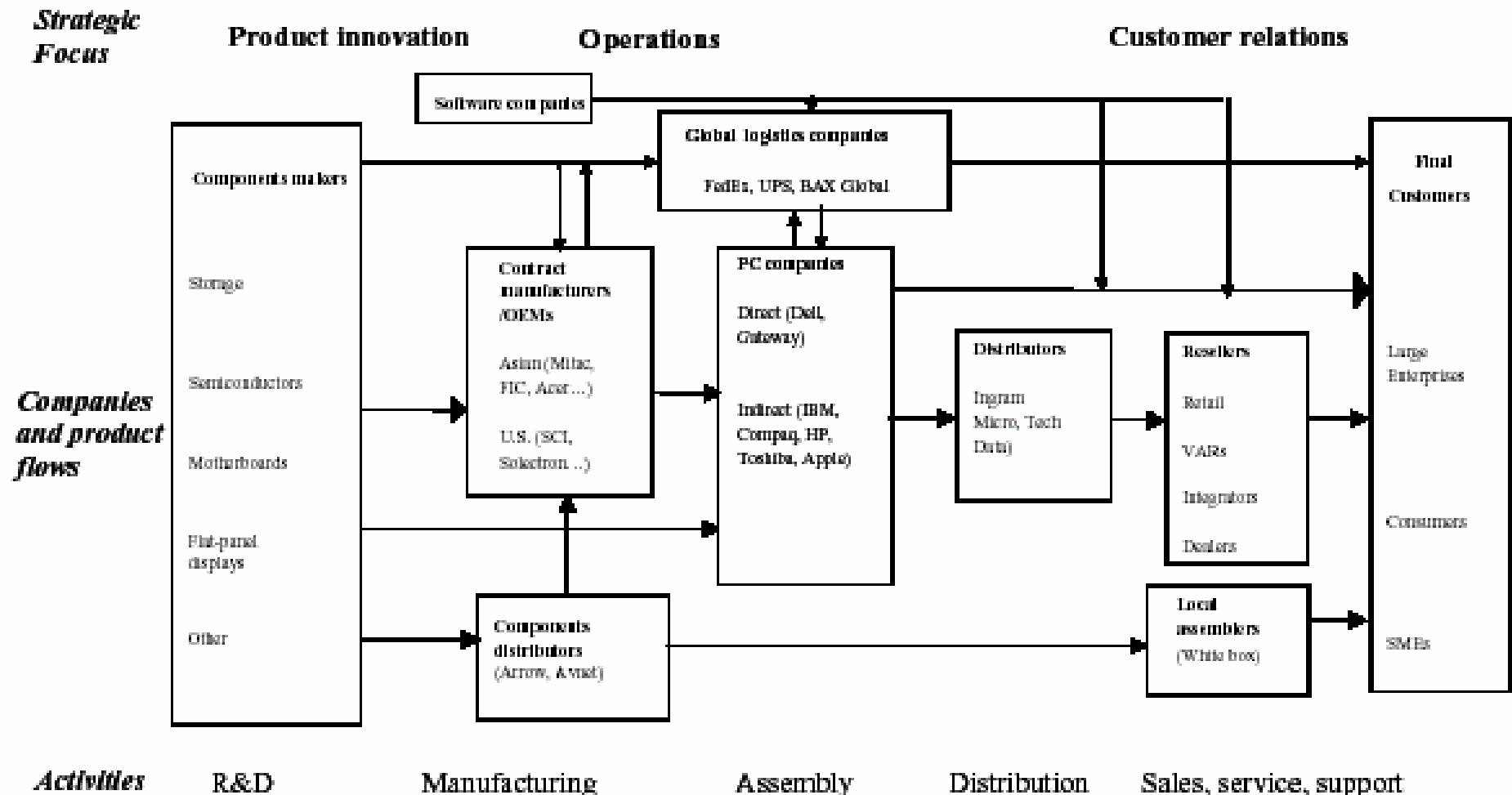
Inter-Firm IPN in the Apparel GVC: “Production” of Jeans by Levi

- Purchase South Korean yarn
- Woven and dyed in Taiwan
- Cut in Bangladesh
- Assembled in Cambodia
- Matched with Japanese zippers
- Deliver final product to US, EU retailers
 - *All by subcontractors*
 - *Coordinated by Li & Fung from Hong Kong*

In Sum: International Production Network

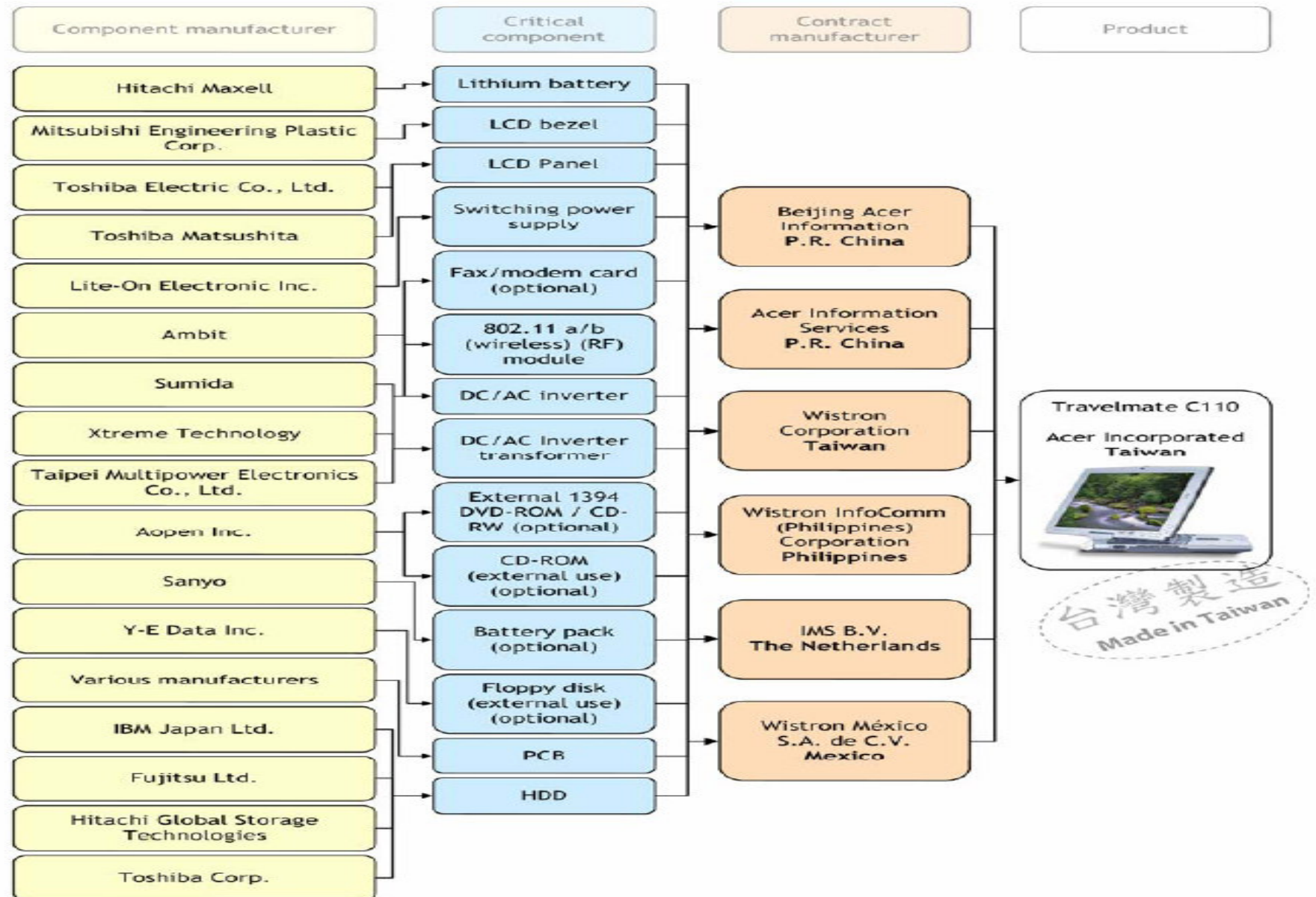
- IPN describes the relationship among specific set of ***enterprises*** that jointly produce particular set of products/services
 - Examples: Levi and its suppliers for jeans, Toyota and its suppliers for particular products, Dell and its suppliers...
 - “map” of relationship among a specific set of firms

Example: PC Global Value Chain



Source: Adapted from Curry and Kenney, 1999.

Example: ACER's IPN for Travelmate C110



Implications of GVCs/IPNs for Enterprises

- Niche markets can be regional/global
 - organic fruit and vegetables through global retailers (Carrefour)
- Global export markets increasingly involve exports of parts/components within GVCs
 - auto parts supplier to Toyota, or Ford
- New opportunities for firms, including SMEs, to enter global markets (components, niche)
- Even small components can be produced for regional and global markets in GVCs

→ IF enterprise can deliver right product, right quantity, right quality, at right time; and IF can upgrade over time

Why GVCs/IPNS: A Managerial Perspective

■ *Why reorganize (and relocate)?*

- Basic *management challenge* for enterprise: coordination of its activities in the value chain (e.g. sourcing, design, production, distribution, service)
- Particularly when activities cross borders

■ Traditional forms of coordination

- *Markets*: buy inputs/components at ‘arms length’ on open market, e.g. supermarkets purchasing fresh fruit and vegetables on open markets
- *Hierarchy*: vertical integration— enterprise ‘controls all activities, e.g. ‘old’ auto industry; does it all—design, production of components, assembly, sale, service

■ From “hierarchies” and “markets” → to GVCs

GVCs/IPNs (1): Breaking up the Vertically Integrated Enterprise

- Competitive and cost pressures leading to 'breaking up' vertically integrated firms
 - Focus on core competence of enterprise
 - 'shedding assets'/activities → 'outsourcing'

Possible because:

- Advances in technology allow lead firms to ask much more of their suppliers
 - Systems for coordination/integration
 - Rising competence of suppliers

Examples: From producing globally to buying globally

■ Levi Strauss

- Even in 1990s owned production facilities (22)
- By mid-2004 ALL production outsourced
- Retain key value added functions (e.g. design, branding)
 - Sets product/process standards for its network

■ GM and Ford

- Classic example of vertically integrated firms
- By late 1990s both spun off parts manufacturing
- Today GM and Ford mostly design and assemble vehicles
 - Their suppliers mostly make what goes into them

■ *Levi Strauss, GM/Ford in very different industries but reacting to global competition/developments similarly*

GVCs/IPNs (2): Away from “buying on markets”

- Global retailers/buyers want more information about suppliers, and further back in value chain
- Driven by
 - competitive pressures
 - E.g. eliminate stocks, reduce delivery time, etc.
 - demands of final markets
 - E.g. higher quality, lower prices, speed, flexibility, *standards*
- Trend away from ‘arms length’ market-based transactions toward ‘network linkages’ in the value chain, in widening range of industries
 - E.g. Carrefour in food, Wal Mart in general retailing

Example: Fresh Fruit and Vegetable Industry

- Fresh fruit and vegetable industry characterized by increasing concentration
 - Emergence of large supermarkets in key markets (e.g. North America, EU---now, Asia), e.g. Carrefour, Tesco, Safeway
- As supermarkets grow in size, exercising growing influence on fresh fruit and vegetable value chain
 - exerting control over product, production process, suppliers
 - Through multiplicity of strictly enforced standards
- Using smaller number of first tier large volume suppliers
 - Who are consolidating lower tier suppliers
- *Producers (e.g. SMEs) wishing to enter supermarkets' network have to be able to meet standards on quality, quantity, control (traceability), reliability of delivery*

GVCs/IPNs (3): New Types of Enterprises

■ *'Network orchestrators'*

- new type of firm *not established* to produce a product; core competitive advantage is based on coordinating activities along a VC, e.g. Cisco, Dell, Nike

■ *Global suppliers*, e.g. Li & Fung, Flextronics

- Global suppliers are particular type of 'network orchestrators' supporting lead firms in GVCs/IPNs
- Example – electronics/IT ("contract manufacturers"):
 - Hon Hai/Foxconn (Taiwan): 2005 revenues - \$21 billion
 - Flextronics (Singapore/San Jose): 2005 revenues -\$16 billion
 - E.g. now investing \$200 mil. in industrial park in India
- Example -- apparel/garments:
 - Li & Fung (Levi example)

New Face of Global Competition

- *Competitiveness function of overall network efficiency (systemic) not only or even primarily enterprise performance*
 - *“optimizing the supply chain”*
 - *Competition in global industry value chains is increasingly among networks*
 - *Toyota network (Denso+ lower tier suppliers) vs. Ford's (Visteon) vs. GM's (Delphi) vs.....*
 - *Nike's network vs. Reebok's vs. Adidas..vs...*
- NOTE: enterprise can belong to more than one IPN*

GVC/IPN: Supplier Structure

■ Evolving tiered structure

- Lead Firm
 - E.g. Levi, Carrefour, Ford, Samsung, Acer
- 1st tier: core partners (e.g. global suppliers)
 - Examples: Levi-- Li & Fung; Ford—Visteon
- Surrounded by lower-tier suppliers of ‘parts’, often lower skill, lower value added, competing on low cost

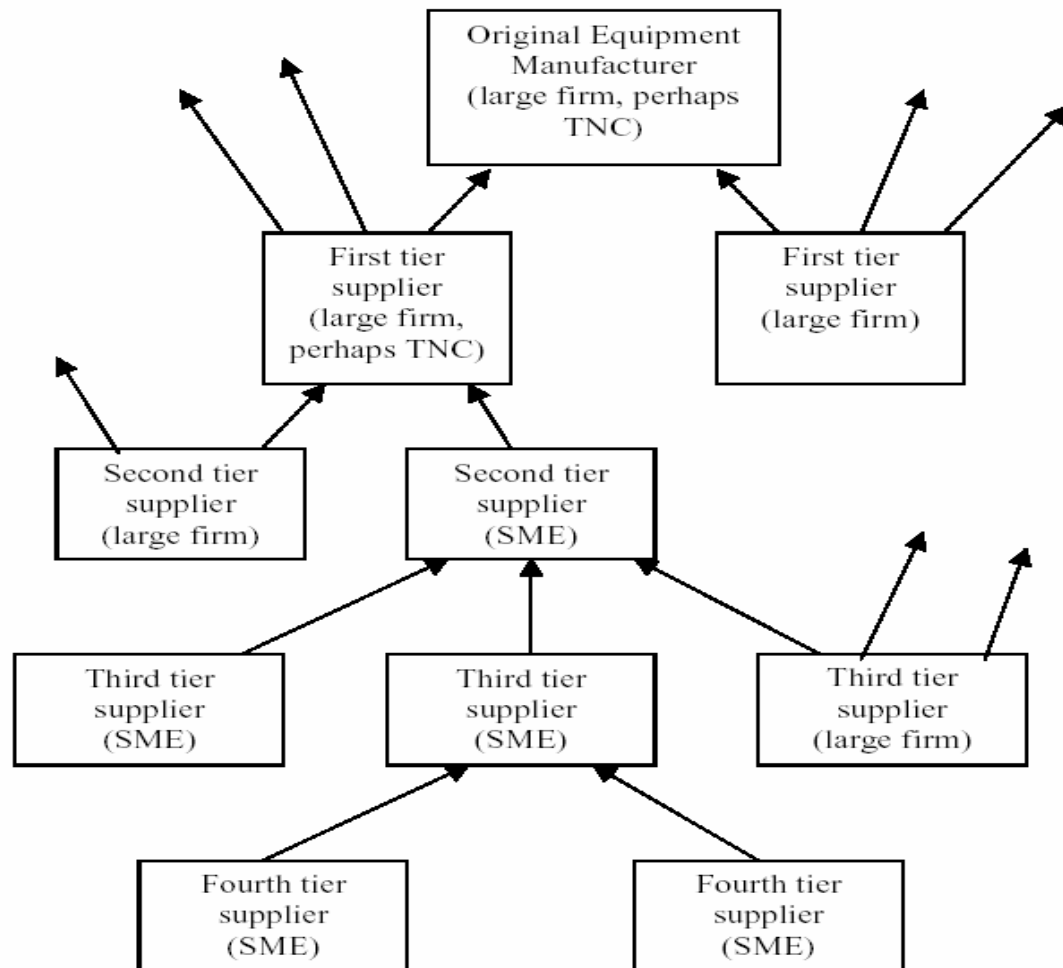
■ Lower tiers often easier to enter, but unstable

- Easier to become lower-tier supplier in IPN *BUT*
 - Can be more easily ‘replaced’ by other producers
 - Can be “locked in” to low skill/low return activities/outputs

→ *But it may be a place to start*

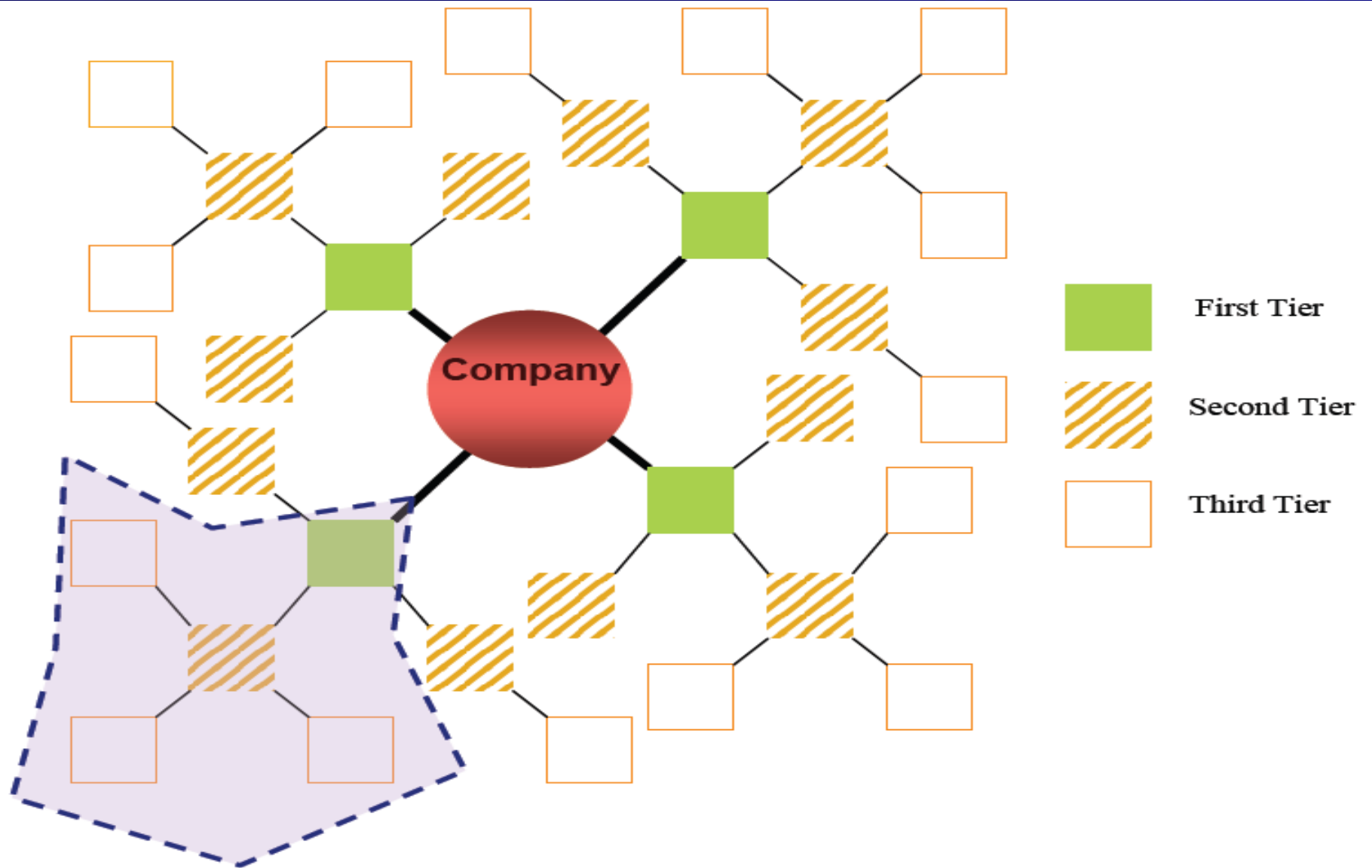
IPN Supplier Structure

(Kaplinsky and Readman, 2001)



IPN Supplier Network

G.R. Bitram et al, "Emerging Trends in Supply Chain Governance", MIT Sloan School of Management, Working Report, 2006, Fig. 7, p. 16



Governing Relations Between Higher Tier Firms and Suppliers

- *Governance*: organization of production network
 - Lead firms--global brands e.g. Levi (garments), Carrefour (food), Ford (auto), Ericsson (telecom)
 - decisions about suppliers: who, what, how much, how
 - Provide market and information to suppliers—e.g. on product, consumer tastes, technology/equipment, standards
 - Expect supplier performance to “global standards”
 - E.g. Adidas → Saha/Pan (Thai supplier)
 - Lower tier suppliers
 - Invest in equipment, skills, specialization—with expectation that lead firms will continue to buy outputs
 - E.g. Saha/Pan → Adidas
 - Note: Key role of *global suppliers (1st tier)*
 - Organizing/managing lower tier suppliers for lead firms

Governing Relations (cont.)

- *Standards:* suppliers must meet multiplicity of strict standards
 - General international standards, e.g. ISO 9000 (quality), ISO 14000 (environment)
 - Industry standards, e.g. Hazard Analysis and Critical Control Point (HACCP) in the food industry, ISO/TS 16949 for auto parts suppliers
 - Market/region-specific standards, e.g. US Food and Drug Administration (FDA) and Food Safety Inspection Service (FSIS) food standards
 - Firm-specific product standards, e.g. “Carrefour’s Quality Line” standard for fresh food products (e.g. fruit, vegetables, meat, cheese)
 - Firm-specific process standards, e.g. IKEA Way on Purchasing Home Furnishing Products (IWAY) Code of Conduct in areas such as labour and environment (wood sourcing) standards

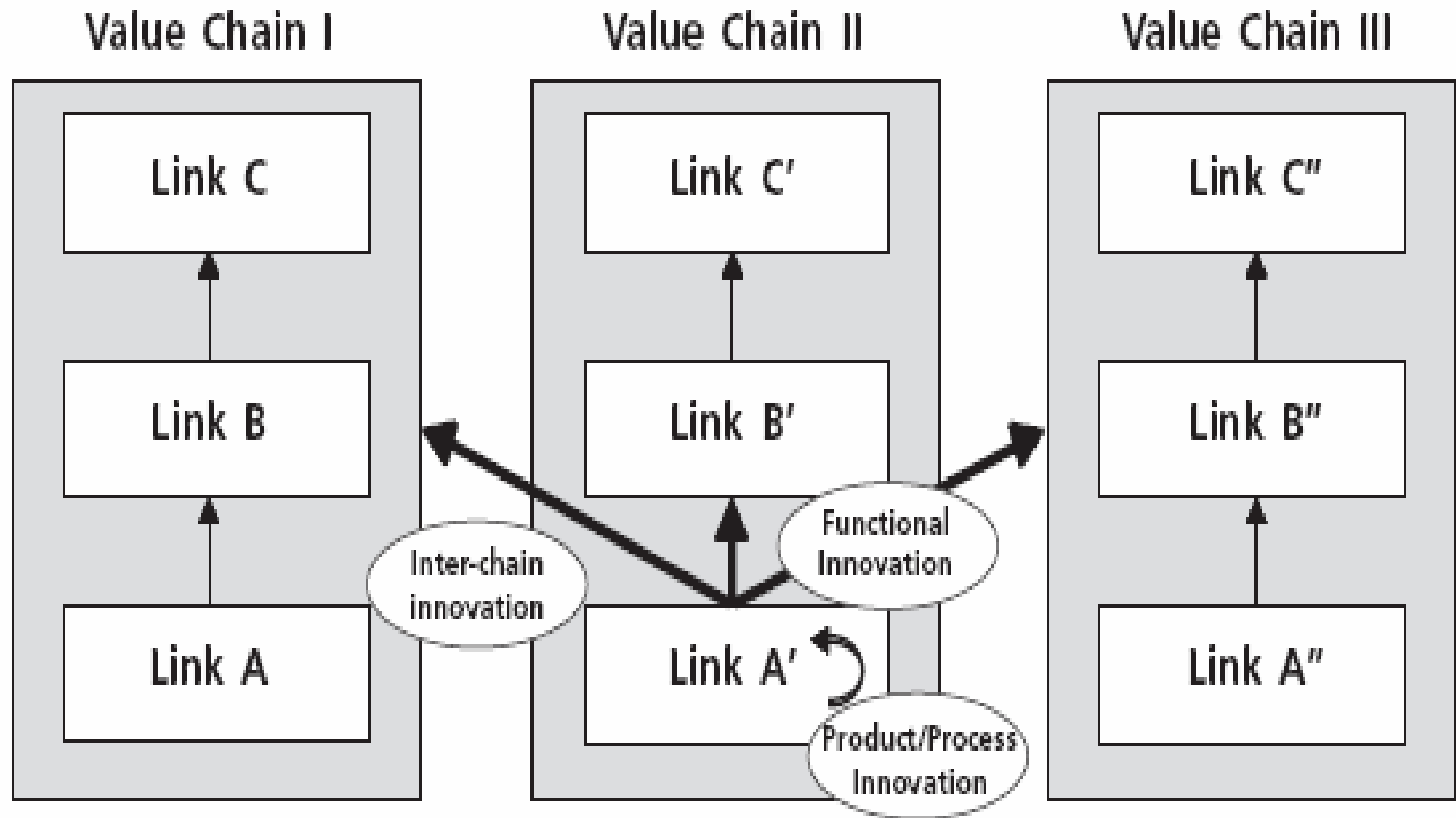
****But GMS Example -- Cambodia: Transform labour standards from threat to competitive opportunity***

Governing Relations (cont.)

- *Upgrading (innovation)*: to “add value” and pricing power
 - Process: e.g. efficiencies in manufacturing activities for cost savings/higher returns
 - Product: e.g. improve exist products or new products to strengthen firm pricing power
 - Functional: e.g. “add value” by moving upstream from manufacturing to design
 - Inter-chain: e.g. use existing capabilities to move to different VC (e.g. Taiwanese firms move from microwaves to personal computers)

Example: Upgrading

from Memedovic, Olga, 2004. *Inserting Local Industries into Global Value Chains and international production networks*. UNIDO, Vienna, Figure 1, p. 6.



Summary: GVCs and IPNs

- E.g.: Cisco (IT), Levi (garments), Ericsson (telecom), Carrefour (food), IKEA (furniture), Dell (computers)
 - In very different industries
 - But none does volume manufacturing
 - All play a similar 'lead firm' role in IPN in their GVCs, e.g.
 - Determining which suppliers get into their network
 - Particularly 1st tier suppliers (who may determine lower tiers)
 - What product mix suppliers produce for network
 - Setting product and process standards
 - Which functions suppliers undertake, e.g. manufacturing, design
 - Which areas will suppliers will be allowed to upgrade, e.g. move upstream from manufacturing to design
- *IPN: Different implications for development than MNE-FDI nexus (e.g. IKEA/Levi sourcing vs. Toyota JV)*

So What?

Policy-related Implications

Implications of GVCs for CAREC Enterprises

- Opportunities for *qualified* CAREC enterprises to concentrate on specific components, activities, or niche products where competitive advantage, e.g. labour
- Basis of strategy where CAREC economies already competitive
 - E.g. Processing cotton into textile yarn, fabric, clothing in apparel GVC
 - E.g. link local producers to agri-business GVC (global buyers/retailers)
- GVCs provide framework for CAREC enterprise access/information on markets, products, technology, know how, etc.
- BUT GVC challenges to CAREC firms and governments
 - CAREC enterprises must meet multiplicity of demanding requirements
 - Government must support “value chain-related capabilities”
 - Government-business cooperation
 - Regional cooperation: common/shared constraints and opportunities
- Example—Mr. Tony Zola on agro-industry

GVC Mindset

for Public and Private Sector Decision Makers

- Need to focus on “systemic efficiencies” in particular value chains for exports
 - Not just on individual firm-level performance
- GVC provides opportunities to specialize, but requires value-chain related coordination among firms
 - And related supporting services
- Framework for public-private dialogue

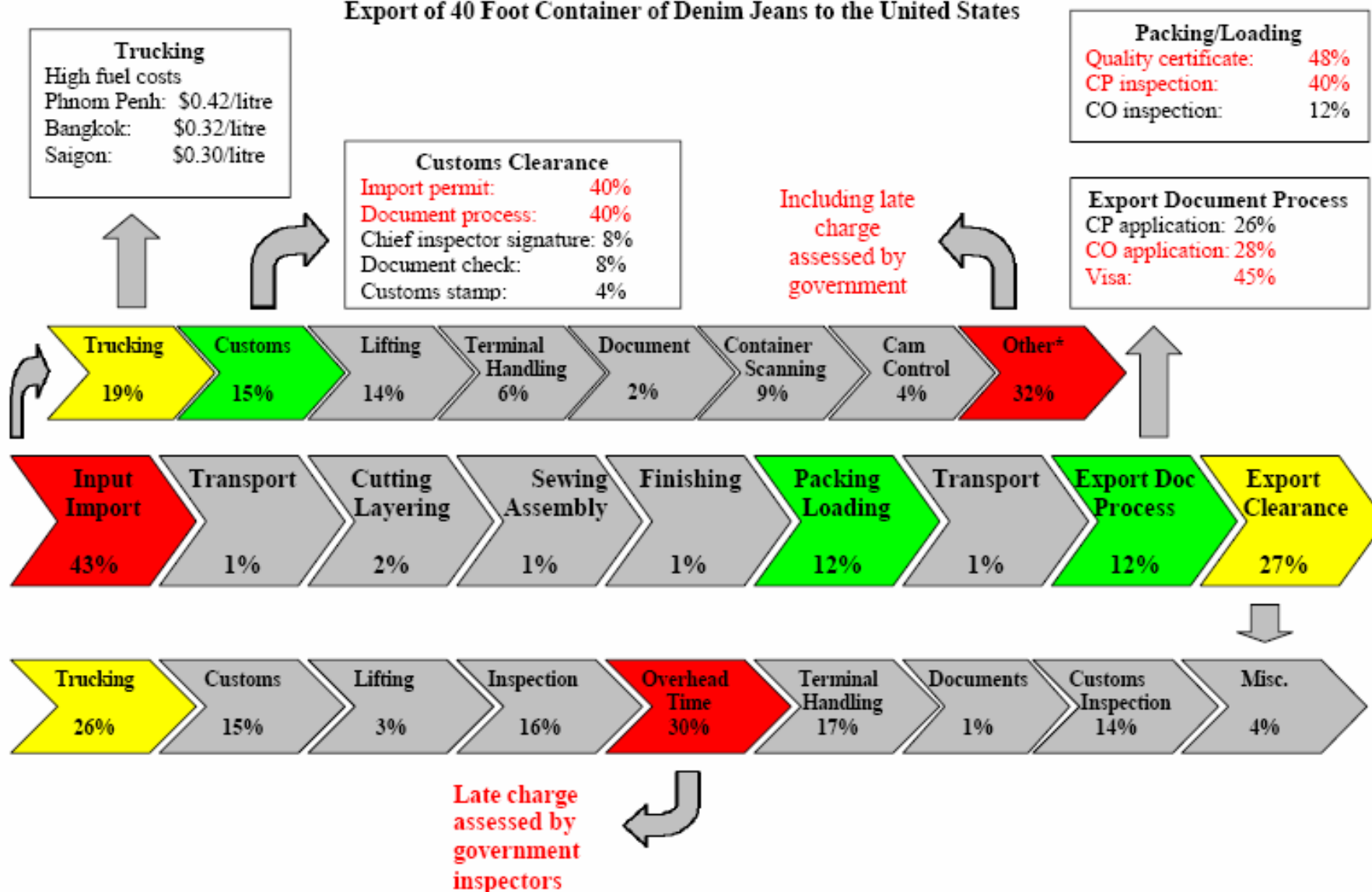
Value Chain Analysis

- Performance is determined to a significant extent by activities and relationships outside the firm, related to value chain linkages—not only firm-level productivity
- Examine enterprises in given VC and linkages among them to see how “chain efficiencies” can be generated
 - E.g. inter-firm VC logistics: to reduce transit times and “spoilage” in shipments among firms through improved logistics services
- Assess more general factors influencing VC-level performance
 - E.g. import/export procedures for particular VC-related products
 - E.g. training institutions for key VC-related skills
 - E.g. Penang Skills Development Centre (Malaysia)
- Framework for public-private sector cooperation

Example: VC Analysis of Cambodian Denim Jeans Exports

From World Bank and Global Development Solutions LLC, 2003. *Towards a Private Sector-Led Growth Strategy for Cambodia*. Washington D.C., Chart 10, p. 71.

Administrative Interventions Analysis for the Production and Export of 40 Foot Container of Denim Jeans to the United States



Example: Improvement in Logistics + Trade Facilitation = Profits → Competitiveness

From I. Sayers. *Trade Facilitation in Export Delivery Supply Chains*. ITC, Geneva.

Any reduction in supply time & costs has a direct, large and predictable impact on export competitiveness

For every 1 Dollar earned approximately 60cts is spent on inputs

Profit \$0.1
Overheads \$0.15
Labour \$0.15
Input supplies & Logistics \$0.6



Profit now \$0.16 †
Overheads \$0.15
Labour \$0.15
Input supplies & Logistics \$0.6 \$0.54

A 10 % reduction in export supply costs =

A 60 % increase in Gross profits without increasing sales

Opportunities for New Entrants

- In many industries now possible to create a successful enterprise, however small:
 - based on a single function or a few functions
 - E.g. Cambodian garment industry's use of global labour standards to competitive advantage
 - Or to serve global niche markets
 - E.g. Brazil watermelons through Carrefour

Opportunities for “Value Creation”

- In GVCs framework firm’s core capabilities in a particular industry VC that are most important—not the industry or sector
 - E.g. competitive supplier of hubcaps, glasses’ frames, zippers
- Value creation may be anywhere along an industry value chain—in any industry—through specialization and upgrading
 - Not only linked to final products, brands

Example: Opportunities for Value Creation through Innovation--Apple does *not* produce the iPod

- Concept to market (2001): ***less than 1 year***
 - Apple conceived a product that combines components made by others:
 - Tiny Toshiba hard disk
 - Nidec disk-drive spindle
 - ARM core processor
 - Texas Instruments firewire controller
 - Cypress USB interface chip
 - Sharp flash memory
 - Inventec assembly
- Cost of components/services half of retail price
- ***Apple concept and brand: pricing power***

“Match the best, or outsource to the best”

- In a world of GVCs enterprises, large or small, have to be able to continuously match performance to “best in their class”
- Global buyers in GVCs have access to global sourcing options

Cooperate to Compete

- Individual CAREC enterprises, particularly SMEs, face significant constraints in responding to GVC opportunities
- *Enterprise clusters* provide opportunities for collective efficiencies through joint actions
 - Vertical linkages among firms at different levels in VC
 - E.g. improve access to new markets, skills, technology
 - Horizontal linkages among firms at same level
 - E.g. volume purchasing, economies of scale, specialization
- Examples: Tirrupur textile producers (India); Sialkot surgical instruments (Pakistan); Penang electronics/IT (Malaysia)

New Challenges to Development Strategy

- Traditional model of externally-driven development
 - Key role of final product exports through MNE
 - E.g. Japan, Korea
 - Central role of MNE + FDI to develop local capacity (e.g. manufacturing) for export
 - E.g. Malaysia, Thailand
- GVC-framework changes ‘rules of the game’
 - Global sourcing increasingly looking for required capabilities (firm-level, VC-related services), e.g. Li & Fung in garments, Carrefour in fresh fruit/vegetables
 - E.g. shift in strategy of Penang Skills Development Centre
 - Changing framework for FDI
 - New players, e.g. global suppliers such as Flextronics
 - Different role for government “BOIs”, e.g. Estonia, Ireland

GVCs and Regional Cooperation

- GVC-focused cooperation
 - In what VCs are there likely to be payoffs to cooperation among (some) CAREC countries
- Build on existing CAREC activities
 - On transport: Transport infrastructure necessary, not sufficient
 - Key role of regional logistics systems linkages
 - On trade facilitation: facilitate intra-product flows in particular value chains, and regional volume sourcing by global buyers
 - e.g. streamline import-export procedures in particular regional VCs
- GVC framework for
 - more integrated VC-based approach to transport/trade/transit
 - Strengthen domestic VC capabilities in regional VC framework
 - E.g. Cooperation in VC-related training, certification

Stepping back -- Revisiting Prof. Kawai's lecture: Another look at Asian Integration

- As Professor Kawai noted, global value chains and related production networks are reshaping economic map of Asia – production-driven Asian integration
 - And Asia's linkages with the global economy
- Implications – examples:
 - China
 - Manufactured exports and “domestic value added”
 - “Chinese” manufactured exports as “Asian manufactured exports”
 - Malaysia
 - Penang electronics/IT cluster
 - Thailand
 - “GVC-based strategy”: auto parts, hard disc
 - Cambodia
 - Positioning the garment industry
 - India
 - GVCs/IPNs in services: accounting/financial analysis, CAT scan
 - With manufacturing to come?