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Innovation and learning in global value chains

GLOBAL VALUE CHAINS SPANNING FUNCTIONS, PROCESSES AND countries provide a means for accelerating the development of enterprises and countries, providing openings that developing country enterprises can exploit to upgrade their capabilities. For such enterprises, or local clusters of enterprises, the task is to insert themselves into the wider networks. This takes discipline, to attain the higher world standards. It also takes an initial base of technological capability, built through purposive innovation and learning. But the effort should be worth it, for it offers access to markets and the knowledge of players in the world economy.

The advantage of global value chains is that enterprises can seek involvement at their level of technological competence. In Mexico garment producers were vertically integrated in supplier networks that did not offer much scope for skills enhancement and innovation. With the North American Free Trade Agreement (NAFTA), however, buyer groups from the United States started to create alternative global value chains that offered enterprises much greater scope for expanding their functional responsibilities (from narrow job completion to design and manufacture), termed “full package” production. This replicates the experience decades earlier when electronics and garment contract firms in East Asia pulled themselves up the capability ladder to higher and higher levels in global value chains.

Competing in a global value chain can build a foundation for the industrial innovation and learning described in chapter 5. There are many paths for this:

- *Process innovation*, improving the efficiency of transforming inputs into outputs. Internal processes become significantly better than those of rivals, both within links in the chain (more inventory turnovers, less scrap) and between links (more frequent, smaller and on-time deliveries).
- *Product innovation*, leading to better quality, lower priced and more differentiated products, as well as shorter times to market for new products.

- *Functional innovation*, assuming responsibility for new activities in the global value chain. That can involve extending involvement from contract manufacturing to design and marketing or incorporating logistics within the contracted work.
- *Interchain innovation*, moving to new and more profitable chains. Enterprises in Taiwan Province of China moved from the manufacture of transistor radios to calculators, to televisions, to computer monitors, to laptops and now to Wireless Application Protocol telephones.

Some enterprises even latch onto several global value chains, providing further opportunities for linking to local enterprises connected with them (box 6.1). Such firms lift themselves—and those connected with them in supply chains—to new levels of performance and quality, driving forward the momentum of collective industrial development.

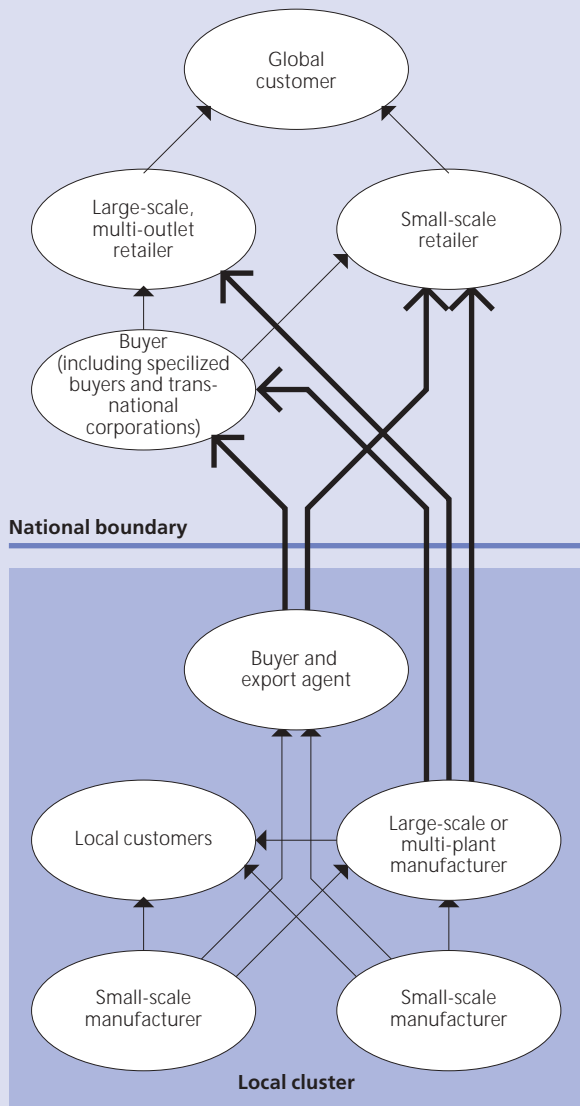
Such industrial learning is a long and strenuous process, with no short-cuts or magic solutions. The global value chains offer convenient structures to fashion this process, but they really offer only a starting point for the enterprise’s technological effort.

Links in the chains

The metaphor of global value chains captures the links among enterprises spread across a variety of locations around the world (figure 6.1). These enterprises perform a sequence of related dependent activities to bring a product or service from conception through the different phases of production to delivery to final consumers and to final disposal after use. The metaphor of global value chains is now being joined by the metaphor of value networks of specialist enterprises, suggesting rays fanning out from nodes rather than links in a chain.

The global value chains are not just a teeming mass of complementary enterprises. They are an organized set of interconnected

Figure 6.2 Linking local producers and global buyers



Source: Kaplinsky and Readman (2000).

Box 6.2 Pluses and minuses of being in a global value chain

In the late 1960s the Sinos Valley shoe cluster, in the South of Brazil, was made up mainly of small firms producing for the domestic market. With the arrival of buyers from the United States, and stimulated by local initiatives and Brazilian government export incentives, the characteristics of the cluster began to change. The buyers looked for large volumes of standardized products and encouraged a rapid increase factory size. They also helped their suppliers raise process standards and product quality. They also eased the considerable risks of entering export markets. They studied the market, developed models, worked out the product specifications, helped choose technology and organize production, inspected quality on site and set up transport and payment arrangements.

The firms in Sinos Valley concentrated on production and the organization of their own local supply chains, while the buyers were responsible for product definition (and hence, market knowledge) and logistics. This greatly reduced the investment and risks in entering export markets, but it also confined firms in the Valley to a narrow range of functions. Becoming very competent in these functions, they benefited from rapid growth in export sales in the 1970s and 1980s. But they also depended on the buyers, evident when Chinese producers undercut Brazilian products in the United States market in the early 1990s.

This is a danger inherent in global value chains. Global buyers actively scout for new sources of supply, and substitution by new sources is always a threat to existing suppliers. Indeed, some of Brazil's main buyers in the United States helped to build Chinese export capability. As a result, the Brazilian producers were faced with sharply declining prices for their products in North America. But by reorganizing their factories and local supply chains, they raised quality, reduced batch size and increased speed. Indeed, the buyers helped them switch to a new way of producing.

The advances in production were not matched, however, by advances in marketing—even though firms tried. The Brazilian producers worked out a collective strategy of raising Brazil's image in the world footwear markets, strengthening design capabilities, and exhibiting in significant numbers at the world's main trade fairs. But the proposed strategy was not put into practice, mainly because a small number of very influential export manufacturers did not support it. They feared that advancing into design and marketing would upset the relationship with their main foreign buyer, which accounted for more than 80 percent of their output and close to 40 percent of the cluster's output.

Source: Schmitz (1995, 1999b).

that are producer-driven (table 6.1). Global value chains can also be regional or national, providing a local latecomer enterprise with opportunities to be pulled into a wider network of activities through contracting its services to enterprises beyond its immediate environment.

Staying nimble in the turmoil of global value chains

Entering global value chains does not provide an automatic move up the capability ladder. It is often a fast track to acquir-

ing production capabilities, but moving further up the chain can lead to conflicts with existing customers.¹ Some enterprises even have had their capabilities downgraded as a result of their integration in global value chains. So, it makes sense for latecomers to use all the resources they can acquire from the advanced world, in return for providing such services as low-cost manufacturing. But the tradeoff can be exploited to the advantage of the latecomer only if there is a strategic choice to use the links to gain knowledge—to learn.

Innovation within global value chains moves along two dimensions of leverage strategies: market expansion and technological capabilities. Own brand manufacturing, usually the most

Table 6.1 Characteristics of producer-driven and buyer-driven global value chains

Characteristics	Producer-driven chains	Buyer-driven chains
Driver of global chains	Industrial capital	Commercial capital
Core competencies	Research and development (R&D), production	Design, marketing
Sectors	Consumer goods, intermediate goods, capital goods	Non-durable consumer goods
Typical industries	Automobiles, computers, aircraft	Apparel, footwear, toys
Ownership	Transnational corporations	Local enterprises, predominantly in developing countries
Main network links	Investment-based	Trade-based

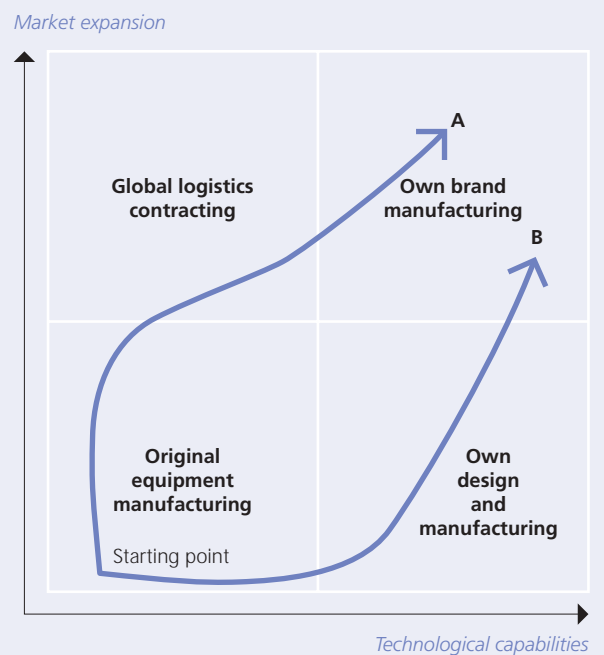
Source: Gereffi (1999b).

profitable segment of a global value chain, requires both market and technological competencies (figure 6.3).² Path A represents a trajectory along which many of the activities entailed in original equipment manufacturing, all of them initially accomplished domestically along with key activities, are relocated to production facilities in third countries, giving rise to “triangle manufacturing”. Capability enhancement is centered on mastering the complex of logistical functions required when sourcing and combining inputs from a number of different producers and locations. Path B by contrast focuses on capability enhancement through expanding functional responsibilities, from original equipment manufacturing to including some responsibility for design, leading the enterprise to then market its own designs under its own brand. Enterprises pursue market niches by developing unique production capabilities, often of a technological form. But the process of developing such capabilities creates new market opportunities in the form of a redesigned product to meet customer needs better. The interactive process is endless.

The insertion of a local enterprise in a global value chain—instigated by a buyer or a producer—puts great pressure on the enterprise to meet demanding quality, reliability and logistics standards. But the buyer or producer also wants to be able to make rapid product adjustments (in response to shifting patterns of consumer demand in their stores, for example), and so there is also great pressure to change product lines quickly and reliably. The endpoint is an enterprise that has attained full “lean production” capabilities in flexibility and agility.

Then there is the all-important step of moving from one functional specialization to another. The move from production to design might seem a small step in itself—but it is a huge step

Figure 6.3 Leverage paths within two dimensions



Source: Mathews and Cho (2000).

for a latecomer enterprise looking to build its capabilities. It is the first step towards self-sufficiency, where the enterprise might no longer be entirely dependent on the global value chain for its survival. This step is sometimes taken by the individual enterprise itself—as with East Asian electronics firms. They moved through phases of original equipment manufacturing, where the buyer enterprise gives all specifications to contracting firms, to own design and manufacture, where the buyer enterprise simply gives broad specifications and allows the contractor to fill in the details, to own brand manufacturing, where the enterprise is fully fledged and produces its own line of branded products.

Last is the all-important break from one global value chain to another. Of course inserting an enterprise or local cluster into a global value chain is an important step—but the smart enterprise or cluster does not have to see its horizons limited. Always seeking ways of spreading its involvement across two or more global value chains, it looks to expand its options and capabilities. This leverages skills, enhances capabilities and reduces the risk of being tied to a single global value chain. In Taiwan Province of China, television producers in the electronics industry used global value chains instigated by buyers in the United States like J.C. Penney and Kmart to leverage the skills in mass production of television sets. They then transferred these skills to produce computer monitors for such computer producers as Hewlett Packard, IBM and Apple, which were building quite different global value chains. This cross-insertion builds a vari-

ety of capabilities and provides a platform of independence for the developing enterprise.

The chapter now turns to the global value chains for garments and for wood furniture. The first shows the dynamics within a global value chain, dynamics that demand considerable nimbleness from the enterprises and local clusters working in them. The second shows what a local cluster has to do to move into a global value chain.

Trust and triangles in garments

The apparel industry is labour-intensive, with labour accounting for 60 percent of production costs.³ Asia has become the dominant region of production. This trend started in the 1950s and 1960s as the industry shifted from Europe and the United States to Japan. The second shift was from Japan to Hong Kong Special Administrative Region (SAR) of China, Taiwan Province of China and the Republic of Korea, which dominated in the 1970s and 1980s. In the 1990s production shifted to China and other Asian countries and to some Latin American countries.

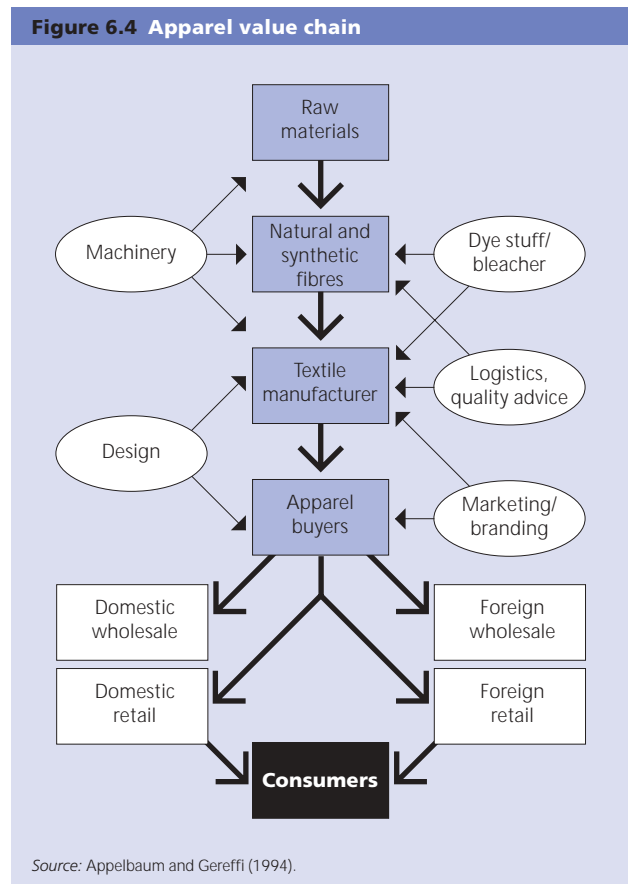
The big export drivers in the apparel business have been quotas and preferential tariffs. Quotas on apparel and textiles items will continue to be regulated by the Multi-fibre Arrangement (MFA) until it expires in 2005. Used by the United States, Canada and various European nations since the early 1970s to impose quantitative limits on imports, the clear intent was to protect industrialized country enterprises from a flood of low-cost imports that threatened to disrupt major domestic industries.

The long-run result was just the opposite. Protection in industrialized countries heightened the competitive capabilities of developing country manufacturers, who learned to make sophisticated products that were more profitable than simple ones. In recent years the European Union and NAFTA have granted preferential tariffs within regional markets, shifting global sourcing dynamics in these regional markets.

The clothing global value chain ranges from raw materials processing and production of textiles and manufacturing garments, to marketing and retail (figure 6.4). Aside from the upstream activities there are four stages of moving up the chain:⁴

1. *Assembly of imported products* (typically in export processing zones near major ports).
2. *Original equipment manufacturing*. Production for transnational corporations (design specification comes from foreign company, which is responsible for market-

Figure 6.4 Apparel value chain



ing and branding). Supplier lacks control over distribution. A variant is global logistics contracting.

3. *Own design manufacturing*. Design of products sold under the brand of foreign firms.
4. *Own brand manufacturing*. Sale of own branded products.

Entry barriers are low for most garment factories, but they get progressively higher in the move upstream to textiles and fibres.

Three global buyers

The apparel chain has three categories of buyers: retailers, branded marketers and branded manufacturers. The retailers account for 50 percent of imports, branded marketers and branded manufacturers 20 percent each, and various others for the rest.

RETAILER

Such international retailers as Wal-Mart and Sears Roebuck, once the apparel manufacturers' main customers, are now

their competitors. In the 1980s many retailers began to compete directly with the national brand names of apparel producers and marketers by expanding their sourcing of “private label” merchandise. These products are sold more cheaply than the national brands, yet they are also more profitable to the retailers, who can eliminate the middlemen in the chain. Private label goods were about 25 percent of the apparel market in the United States in 1993.

While retailing and marketing are becoming more concentrated, manufacturing is splintering. Today’s superior information flows give retailers far better day-to-day market knowledge about consumer purchasing decisions, allowing them to demand more from their suppliers in better inventory management, faster responses and more frequent deliveries. As each type of buyer in the apparel commodity chain has become more active in offshore sourcing, the competition between retailers, marketers and manufacturers has intensified, blurring the traditional boundaries between these enterprises and realigning interests within the chain.

BRANDED MARKETER

Well-known manufacturers without factories—such as athletic footwear companies (Nike, Adidas, Puma) and fashion-oriented apparel companies (The Gap, Liz Claiborne)—carry out no production. Instead, they just design and market their goods. As pioneers in global sourcing they provided knowledge that later allowed overseas suppliers to upgrade their own positions in the apparel chain.

To deal with new competition, branded marketers are discontinuing some support functions (such as pattern grading and sample making) and reassigning them to contractors. They are instructing contractors where to obtain needed components, reducing their own purchase and redistribution activities. They are shrinking their supply chains, using fewer but more capable manufacturers. They are adopting more stringent vendor certification systems to improve performance. And they are shifting their sourcing configuration from Asia to the Western Hemisphere. Marketers (and retailers even more) now recognize that overseas contractors can manage all aspects of production, which offers linking and leveraging opportunities for contractors to move into designing and branding.

BRANDED MANUFACTURER

Apparel manufacturers, such as Levi Strauss, have been caught in a squeeze because foreign producers can often provide the same quantity, quality and service as domestic producers, but at lower prices. In the United States and Europe, the attitude among many smaller and mid-sized apparel manufacturers is “If you can’t beat them, join them.” Feeling that

they are unable to compete with the low cost of foreign-made goods, they are defecting to the ranks of importers.

The decision of many larger manufacturers in industrialized countries is no longer whether to engage in foreign production but how to organize and manage it. They supply intermediate inputs (cut fabric, thread, buttons and other trim) to extensive networks of offshore suppliers, typically in neighbouring countries with reciprocal trade agreements that allow goods assembled offshore to be reimported with a tariff charged only on the value added by foreign labour. This kind of international subcontracting system exists in every region of the world. It is called the 807/9802 program or “production sharing” in the United States (USITC 1997), where the sourcing networks of U.S. manufacturers are predominantly in Mexico, Central America and the Caribbean because of low wages and proximity to the market. The trend for the branded manufacturers is to de-emphasize production in favour of marketing by capitalizing on brand names and retail outlets. Sara Lee Corporation, one of the largest apparel producers in the United States, recently announced its move out of making the brand-name goods it sells.

Latching onto the global value chain

The first step for garment manufacturers in developing countries is to become linked to branded manufacturers. The easiest way has been to engage in contract manufacturing under U.S. tariff schedule provision 807/9802. But those activities—often performed in export processing zones—have low value added. Enterprises in the United States engaged in production sharing have an incentive to minimize locally purchased inputs since only components made in the United States are exempt from import duties when the finished product is shipped back to the United States (box 6.3). There is a similar system in Europe, known as outward processing trade, with the principal suppliers located in North Africa and Eastern Europe. The same holds in Asia generally, where manufacturers from relatively high-wage economies like Hong Kong SAR have outward processing arrangements with China and other low-wage nations.

The next stage after export processing is to link with global retailers or branded marketers in original equipment manufacturing or full-package production. Compared with the mere assembly of imported inputs, full-package production fundamentally changes the relationship between buyer and supplier in a direction that gives far more autonomy and learning potential for industrial innovation to the supplying enterprise. Full-package production is needed because the retailers and marketers that order the garments have limited knowledge of their manufacturing details. Hong Kong SAR, Taiwan Province of China, Republic of Korea and China used the full-package route to create an enduring edge in export-oriented development.

Box 6.3 Races to the bottom

The Dominican Republic has an especially large dependence on export processing zone assembly using the U.S. 807/9802 trade regime. The share of export processing zones in official manufacturing employment increased from 23 percent in 1981 to 56 percent in 1989, when they generated more than 20 percent of foreign exchange earnings. Investors in the United States account for more than half (54 percent) of the companies operating in the zones, followed by firms from the Dominican Republic (22 percent), Republic of Korea (11 percent) and Taiwan Province of China (3 percent).

The rivalry among export processing zones in neighbouring countries to offer transnational companies the lowest wages fosters a perverse “competitive devaluation”, where currency depreciations are seen to increase international competitiveness. Export growth in the Dominican Republic’s export processing zones skyrocketed after a very sharp depreciation of its currency against the dollar in 1985. Similarly, Mexico’s export expansion was facilitated by recurrent devaluations of the peso, most notably in 1994–95.

Hourly compensation rates for apparel workers in the early 1990s were \$1.08 in Mexico, \$0.88 in Costa Rica, \$0.64 in the Dominican Republic and \$0.48 in Honduras, compared with \$8.13 in the United States. It may make sense for one country to devalue its currency to attract users of unskilled labour to their production sites. But the advantages quickly evaporate when other nations simultaneously engage in wage-depressing devaluations, which lower local standards of living while doing nothing to improve productivity.

Source: Kaplinsky (1993); ILO (1995).

But NAFTA, along with a relative decline in the importance of East Asian apparel exports to the United States, has now created favourable conditions for extending full-package production to the North American setting (box 6.4).

Prominent apparel suppliers to Europe, such as Turkey and several East European economies, also appear to be adopting the full-package model. Manufacturers from those countries need to acquire the skills and resources to move into the more diversified activities associated with full-package production. The arrangement offers further innovation opportunities towards own brand manufacture. It enhances the ability of local entrepreneurs to learn the preferences of foreign buyers, including international standards for the price, quality and delivery of export merchandise. It also generates substantial backward linkages in the domestic economy because original equipment manufacture contractors are expected to develop reliable sources of supply for many inputs, including those to be imported. The supplier learns much about the downstream and upstream segments of the apparel commodity chain from the buyer. This tacit knowledge can later become a powerful competitive weapon.

One of the most important mechanisms facilitating the shift to higher value-added activities for mature export industries like apparel in East Asia is the process of “triangle manufacturing” (global logistics contracting). The essence of triangle manufac-

Box 6.4 Linking to the leaders

The key factor in Mexico’s ongoing transition from assembly to original equipment manufacture (or full-package) production has been NAFTA, which began to remove the U.S. restrictions that had virtually locked Mexico into assembly. The maquiladora system effectively conditioned Mexico’s access to the U.S. market on the use of its inputs. More of the apparel supply chain—cutting, washing and producing textiles—is relocating to Mexico as U.S. restrictions on each of these stages is eliminated.

But NAFTA does not guarantee Mexico’s success. While the massive peso devaluations of 1994–95 made Mexico very attractive as a production site for U.S. apparel manufacturers with international subcontracting operations, Mexico has traditionally lacked the infrastructure and supporting industries to do full-package production of garments. Textile and apparel companies in the United States have been expanding their investments in Mexico at a rapid and accelerating pace. So Mexico is now better positioned to provide the quantity and quality of inputs needed for original equipment manufacture of standard apparel items, such as jeans, knit shirts, trousers and underwear. But Mexico is still lagging in the fashion-oriented, women’s wear categories.

The solution to completing the transition to full-package supply, and developing new production and marketing niches, is to forge links to the kinds of lead enterprises that can supply technology and tutelage. Mexico needs to develop new and better networks to compete with East Asian suppliers for the U.S. full-package market. Enterprises in the United States have already shown a strong interest in transferring missing pieces of the North American apparel supply chain to Mexico. A real problem to be confronted, though, is who controls critical nodes of the chain and how to manage the dependency relationships this implies.

Thus far, enterprises in the United States are in clear control of the design and marketing segments of the apparel chain, while Mexican companies are in a good position to maintain and coordinate the production networks in apparel. But textile manufacturers in the United States, and to a lesser degree Mexico, are making strong bids to integrate a broad package of apparel services that would increase their leverage over smaller garment contractors.

Mexico is likely to retain a mix of assembly plants linked to U.S. branded manufacturers and a new set of full-package producers linked to private-label retailers and marketers. As more of the critical apparel inputs become available in Mexico, inputs from the United States will decline and traditional Mexican assembly plants will be replaced by full-package manufacturers or by clusters of related enterprises that compete through localized networks, such as the jeans producers in Torreón.

Source: UNIDO.

turing, initiated by the East Asians in the 1970s and 1980s, is that global buyers place their orders with the manufacturers they have sourced from in the past; those manufacturers then shift some or all of the requested production to affiliated offshore factories in low-wage countries (China, Guatemala, Indonesia). These offshore factories can be wholly owned subsidiaries, joint-venture partners or simply independent overseas contractors. The triangle is completed when the finished goods are shipped directly to the overseas buyer under the U.S. import quotas issued to the exporting nation.

Triangle manufacturing thus changes the status of original equipment manufacture from established suppliers for retailers and designers in the United States to middlemen in buyer-driven commodity chains that can include as many as 50 to 60 exporting countries (box 6.5).

Opportunity and initiative in wood furniture

In 1998 the furniture industry, with global trade of close to \$45 billion, was the largest traditional, low-tech sector, exceeding both apparel (\$41 billion) and footwear (\$34 billion).⁵

Although furniture is a resource- and labour-intensive product, many of the major furniture exporting countries are industrially advanced (table 6.2). Italy is far and away the leader, with net exports of \$7.8 billion in 1998. Developing countries in the top 10 are China, Mexico, Malaysia, Romania and Indonesia.

The wooden furniture global value chain starts with the provision of seed inputs, chemicals, equipment and water for the forestry sector (figure 6.5). Cut logs pass to the sawmill industry, which obtains its primary capital inputs from the machinery industry. Sawn timber moves to the furniture manufacturers who, in turn, obtain inputs from the machinery, adhesives and paint and other industries and also draw on design and branding skills from the service sector. Depending on the market served, the furniture then passes through various intermediary stages until it reaches the final customer, who after use consigns the furniture for recycling. The chain is very heterogeneous due to the many market segments (office, kitchen, bedroom, dining room and living room) and within these segments the many market niches (high volume, price sensitive, design intensive, brand-intensive, and so on).

Three major buying agents facilitate the entry of wood furniture producers into final markets:

- *Large multinational retailers*, with both retail outlets and suppliers in many countries. (For example, IKEA sources from 2,000 suppliers in 52 countries and has more than 300 outlets in three continents)
- *Small retailers*, purchasing directly from a limited number of suppliers in a limited number of countries.
- *Specialized medium-size buyers*, sourcing from many countries and on-selling to retail outlets, predominantly in a single country or region. It is not atypical for these buyers to have more than 1,500 suppliers, in many coun-

Box 6.5 From trust to triangles to own brand manufacturing

The East Asians did not employ the production-sharing provisions established by the 807/9802 U.S. trade regime in apparel because their great distance from the United States made textile imports from the United States impractical. In addition, textile mills in the United States did not have the production capability or mentality to supply the diverse array of fabrics favoured by the designers of women's wear and fashion-oriented apparel, which became the specialty of the East Asian exporters. Both factors created an original equipment manufacture niche, adroitly exploited, for East Asian apparel companies.

Highly successful textile and apparel exporters from Hong Kong SAR, Taiwan Province of China and Republic of Korea (preceded by Japan, followed by China) progressed through a sequence of export roles from assembly to original equipment manufacture to own brand manufacture. They developed and refined their original equipment manufacture capabilities in the 1960s and 1970s by establishing close ties with retailers and marketers in the United States, and then "learning by watching" to use these foreign partners as role models to build East Asia's export capabilities.

The performance trust built up through many successful business transactions with these U.S. buyers enabled East Asian suppliers to internationalize their original equipment manufacture expertise through triangle manufacturing. The East Asian manufacturers became intermediaries between the buyers in the United States and hundreds of apparel factories in Asia and other developing regions to take advantage of lower labour costs and favourable quotas around the world. The creation of these global sourcing networks helped the East Asians sustain their international competitiveness when domestic economic conditions and quota constraints threatened the original, bilateral original equipment manufacture relationships.

The East Asians have been moving beyond original equipment manufacture in many ways. They have shifted to higher value upstream products in the apparel commodity chain (exports of textiles and fibres, rather than apparel). They have been moving downstream to own brand manufacture in apparel. And they have been aggressively investing in efforts to switch to other global product chains. The Republic of Korea is the most advanced of the East Asians in own brand manufacture, with its brands of automobiles (Hyundai), electronic products (Samsung) and household appliances (Samsung and Goldstar), among other items, being sold in North America, Europe and Japan. Companies in Taiwan Province of China have pursued own brand manufacture in computers, bicycles, sporting equipment and shoes, but not in apparel.

Clothing companies in Hong Kong SAR have been the most successful in shifting from original equipment manufacture to own brand manufacture. The women's clothing chain, Episode, controlled by Hong Kong SAR's Fang Brothers Group, one of the foremost original equipment manufacture suppliers for Liz Claiborne in the 1970s and 1980s, has stores in 26 countries, only a third of which are in Asia. Giordano, Hong Kong SAR's most famous clothing brand, has added to its initial base of garment factories 200 stores in Hong Kong SAR and China, and another 300 retail outlets scattered across Southeast Asia and Republic of Korea. Hang Ten, a less-expensive line, has 200 stores in Taiwan Province of China, making it the largest foreign-clothing franchise on the island.

Source: UNIDO; Granitsas (1998); Gereffi (1997, 2000).

Table 6.2 Global furniture trade—top 10 net exporting countries, 1994 and 1998

	Net export value (millions of dollars)	
	1994	1998
Italy	6,105	7,831
China	1,381	2,725
Canada	32	1,804
Denmark	1,412	1,323
Mexico	259	1,190
Malaysia	698	1,052
Spain	251	741
Sweden	254	494
Romania	375	382
Indonesia	754	339

Source: <http://www.intracen.org>.

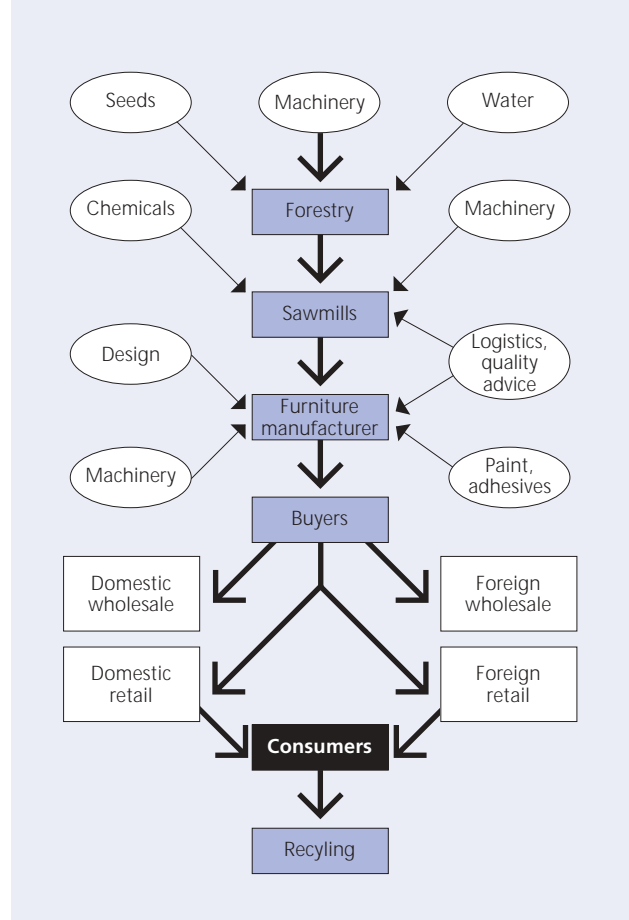
tries; even the smaller specialized buyers will typically source from more than 100 suppliers.

In general, buyers serve different market segments. Often these segments are distinctively different, but the growing capabilities of world class manufactures means that there is a diminishing trade-off between critical success factors. For example, the large retailers are increasingly able to offer low prices and high quality, and low prices and variety. Suppliers confront a much more demanding set of critical success factors when they sell to global retailers than when they sell to small retailers and specialist buyers. Not only are almost all the critical success factors considered important, but they are also all ranked as being of higher order importance.

The innovation challenge confronting part of the wood furniture global value chain in South Africa is symptomatic of a more general challenge facing other furniture exporting countries. South Africa's wood furniture global value chain has been on a suboptimal trajectory since its pine furniture has faced increasing price competition in overseas markets. The unit prices of its exports, measured in dollars, fell by 250 percent between 1992 and 1999. Moreover, South African products have been considered cheap, but of low quality and poor delivery reliability. As a consequence IKEA, the major global buyer, decided to move out of South Africa (to Eastern Europe and East Asia).

This has placed the South African wooden furniture firms in a dilemma. An effective response was found, after much searching, in the context of the global trend towards environmental responsibility. South Africa is the home of a commercially grown semi-hardwood named saligna. Furniture based on saligna offered the potential to become a low-cost and environmentally acceptable alternative to increasingly scarce and highly priced traditional hardwoods such as teak and mahogany.

Figure 6.5 Links in the wood furniture value chain



The opportunity

One of the key dynamic market forces in the global timber products industry is the move (primarily by the industrial countries) towards environmental responsibility. For most developing countries, this threatens their exports because their timber product industries have traditionally drawn on indigenous hardwood forests.

South Africa, however, happens to be uniquely placed to take advantage of this opportunity. The most outstanding feature of saligna (a species of Eucalyptus hardwood) is that in South Africa it is a commercially grown semi-hardwood distinguishing it from other hardwood species grown in indigenous forests in the developing world. Although saligna is not a traditional hardwood, it has the ability to take colouring well and can therefore be treated to look like virtually any wood, including all the species of threatened hardwoods.

Traditionally saligna was grown for use in the local mining industry, but the changeover to concrete mining supports has

led to a sharp decline in domestic demand. In the context of growing environmental concerns in final markets, therefore, the existence of the previously low-priority saligna hardwood plantations, with unused capacity, offers unexpected potential for exporting of furniture to Europe and North America. It is also an opportunity that offers the potential to move furniture producers into new market niches, with higher unit prices.

The innovation challenge

Grasping this opportunity requires inter-chain innovations, a reorientation from the previous trajectory of the wooden furniture global value chain, which has traditionally focused on the export of pine furniture into increasingly price-competitive markets. This reorientation entails substantial inter-chain innovation through simultaneous and carefully coordinated process, product and functional innovations.

PROCESS INNOVATION

The primary challenge was to increase the supply of clear saligna hardwood, at an affordable price. This challenge exists both because of competing uses (in pulp and paper), for which clarity is unimportant, and because the sawmills serving furniture manufacturers were geared for cutting softwoods (pine) rather than hardwoods (saligna). The mills had also operated in a sellers' market for many years, and consequently were unresponsive to the needs of the manufacturers, delivering at unpredictable intervals, with varying quality and in inconvenient take-it-or-leave-it product specifications. An additional processing problem was that manufacturers needed to learn how to work with saligna, and to be effective, this required close collaboration with the sawmills (for example, in regard to knowledge about timber density).

Perhaps most important, the key determinant of timber costs was the gestation period of the trees. Traditionally, saligna had been cut at an age of 23 years, but it was thought possible to reduce this considerably, to around 12 years; given high interests costs (a real interest rate of more than 10 percent), the financial benefits to this innovation would be considerable. But to be effective it required close collaboration between growers, the sawmills and the manufactures. Thus, process innovation could only be achieved in the saligna furniture global value chain through a combination of enterprise-specific innovations and inter-enterprise collaboration to enhance communication within the chain and to address important chain-specific problems.

PRODUCT INNOVATION

In itself, process innovation would not produce sufficient benefits. The problem was that alternative uses for saligna in

paper and pulp meant that unless the final furniture products could be positioned within a relatively higher product niche than South Africa's pine furniture exports, the manufacturers would not be able to survive paying the market price for the timber input.

An additional product innovation challenge was that the specific properties of saligna (when compared with pine), and especially of young saligna, meant that the designs used for pine furniture could not always be translated into the new type of wood. Product redesign—design for manufacture—was therefore a necessity, which required many furniture manufacturers to venture into new territory, and this could not be done in isolation from the sawmills. Finally, one of the virtues of saligna was its ability to absorb finishes, and this required the manufacturers to work closely with lacquer and paint suppliers, particularly because environmental pressures in Europe are forcing a move to water-based finishes (one of the main areas of competitive advantage of Italian producers).

FUNCTIONAL INNOVATION

If new designs were to be introduced, who would take responsibility for this high value-added activity? Would the saligna industry fall back on the pattern in the pine industry, where global buyers provided design templates for manufacturers, or where manufacturers continued to produce standard items such as garden benches? Alternatively, would there be a surge in domestic design capabilities, and if so, would these be lodged in South African buyers, furniture manufactures or in specialized design houses? Just as saligna furniture represented a transition within the wood furniture chain from softwood to a hardwood, were there also opportunities to move from saligna furniture to other saligna-based products such as garage doors (a big export item), industrial products and toys?

The initiative

To stimulate innovation, a first saligna network workshop was organized in late 1998 by a university-based research project. It was well attended by government departments, manufacturers, timber traders, industry specialists (both academic and consultants) and timber growers and sawmills. It successfully brought together stakeholders from all levels of the saligna global value chain with a view to promoting cooperative problem resolution. The involvement of a number of competing enterprises at each level of the global value chain created a situation where a failure to cooperate held the risk of missing out on benefits enjoyed by competitors. The workshop gave birth to the Saligna Global Value Chain Group (SVC Group), a cooperative national network of stakeholders spread throughout the global value chain.

Technical working groups, led by the sawmills, worked on a variety of issues for improving knowledge flows. A questionnaire was sent to all timber product customers to try to establish optimal sizes and to get consensus on a range of dimensions that manufacturers felt most comfortable with. The mills then experimented with new grading systems to see if this could increase the total availability of clear wood. They also began to collect more accurate data on total demand in order to determine overall existing and potential supply and usage of saligna in South Africa.

The full flowering of a Salinga furniture global value chain remains a work in progress, with much yet to be achieved to realize the promise that may inhere in exports of salinga furniture to advanced country markets. So far, the activities of the SVC Group have yielded the greatest efficiency gains in the areas of:

- Generating information in all three of the innovation trajectories—process, product and function.
- Markedly improving inter-enterprise process and supply chain efficiency between the mills and manufacturers.
- Important product development occurring both within and between linkages through the young tree and wood density experiments.
- Internal enterprise process innovation primarily of a technical nature.
- Some gains in changing the mix of activities within enterprises and up the global value chain through emphasizing design, finishing and marketing.

Innovation in the production processes of the firms in the global value chain was not an explicit focus of the activities of the SVC group. But work on the numerous supply issues between the sawmills and the manufacturers in the global value chain did in fact have an innovation impact on the internal production processes of the manufacturers, through challenging the technical parameters of what they could produce.

Working local to go global

Enterprises are thus part of a local industrial fabric. Despite globalization and new communication technologies, geographical proximity and local sources of competitiveness are still important. The local advantages of synergy have been well documented in recent case studies on industrial clusters. They show the passive and active gains that clustering can provide to enterprises. The passive gains arise from agglomeration economies; the active, from inter-enterprise cooperation. The success and failure of clusters depend on achieving dynamic synergy within the cluster and on being nimble in the interactions with the outside world.

For developing countries the capturing of cluster benefits is difficult and elusive. If it is hard to start individual enterprises, it is harder still to start clusters—or to get enterprises to cooperate locally, as customers and suppliers of each other, rather than as cut-throat competitors. In the long run developing country clusters will have to be inserted into a wider cluster—into a global value chain—if they to survive in the face of continuing global competition.

Notes

For further details on sources, information and the literature on subjects covered here, see the background papers.

1. Schmitz (1999b).
2. Similar innovation models are offered by scholars in the formerly developing countries, such as Korea (Kim 1998, 1999).
3. This section draws on Mathews (2001, background paper).
4. Gereffi (1999b).
5. This section draws on the Web site of the UNCTAD-WTO International Trade Centre: <http://www.intracen.org> and Kaplinski (2001, background paper).

