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TRENDS IN GLOBAL SOURCING, PROCUREMENT, AND DISTRIBUTION RESEARCH AND PRACTICE

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1 Global Trade's Role and Influence on Historical Developments

On top floor of a commercial building on a quiet street in the heart of Hong Kong’s financial district stands the Club Lusitano, a social club for people of Portuguese and Macanese descent. Portuguese settlers and their descendants have been in Macau since the 1600s. Dominating the wall as you walk into the main dining room is a map with the main trade routes of the world circa the 1400s. Look closely at the map, and you will see that in the mid-1400s, all roads lead to Portugal. This era was the golden age of trade and discovery for Portugal.

The Portuguese didn’t have global commerce to themselves for very long. Over the next two centuries, the Spanish, the Dutch, and the English sailed the world in search of new products to bring back home, new markets to trade with, and new lands to colonize.

Global sourcing has been a part of our human endeavor for many centuries. Trade has long since been the source of wealth, conflict, and adventure. While making a handsome profit, the Portuguese traders brought home spices and silks for the wealthy and curious. Classical global trade dealt mostly in the “exotic” (e.g., people, spices, and fabric) for the home market, while modern global trade has more practical and critical ends such as the more mundane daily necessities of life.

Trade among nations has been going on since ancient times. From as far back as 19th–20th centuries BCE, Assyrian and Arabian traders travelled long distances to the Far East for spices and silk. This continued for several centuries into the Middle Ages during which time the Portuguese got into the trade. With the formation of the Dutch East India Company around 1699, international trade became big business. National fortunes and prestige were measured by global trade ports and routes controlled by European nations.

The English and their East India Company (EIC) eventually overtook the Dutch. The British East India Company (the Company) blurred the lines between private enterprise, trade, and sovereign rule in India and other parts of Asia. The EIC was in business from 1600 to 1873. By the time that America was initially colonized, the EIC had both tens of thousands of employees and a private army of around 67,000 strong that served to protect its trade routes and manage and control its territories and markets. The EIC was the de facto ruler of India, parts of East Asia, and
large territories in the Middle East/Central Asia. With this wide reach and their thousands of soldiers, the EIC controlled and managed the most important trade routes from Europe to the East.

By the 1700s, European countries were experiencing a great outflow of silver due to their citizens’ great demand for spices, silks, and tea from China. However, Imperial China didn’t have much demand of Western goods except for gold and silver. To deal with this and undermine Chinese market dominance, the EIC created a new demand for and a market in China for its new Indian narcotic: opium. Along with the EIC, Western powers waged two separate opium wars in the 1800s in China to ensure their ability to continue their own trade dominance. This controversial period of Western-dominated trade relations persisted till the beginning of World War Two.

2 The Modern Era of Global Trade

The modern era of Global trade began at the end of World War Two as Europe and Asia were rebuilding after the end of the fighting. Logistics was one of the reasons the Allies won the war as they both out-built and out-delivered the Axis Powers. The US Army Transportation Corp was the first to use standardized pallets and corrugated steel containers to speed up the movement of materials during the war. By 1955, the standardized intermodal container unit was developed, and the first purpose-built container ship set sail from Canada. Within ten years, the standardization of container sizes and stacking methods were established. Today, port capacity, shipping cargo holding capacity, and shipping terminal handling capacity are all measured in units of “Twenty Foot-Equivalent Units” (TEUs).

With the end of the wars that took place during the first half of the 20th Century, international trade grew steadily. Commodities such as oil and metal ores, grains, and other farm produce, industrial and heavy equipment for mining, farming, and transportation were the dominant goods traded.

With the improvements in transocean shipping and jet air travel, the world became smaller and more navigable. While Asia was portrayed as a source of the rare and “exotic” in the classic trade era, the continent is now a source of more common consumer-oriented products made affordable by the disparities in wages and opportunities.

Once limited to the adventurous and wealthy, overseas travel has become more reliable, faster, and more comfortable within the past century. Ocean and air travel went from being a risky form of adventure to the means for international tourism, global trade, and commerce.

Just as more global resources and commodities were consumed mostly in the West, an increasingly large amount of consumer product manufacturing moved from the West to the East. While the transition of globally manufactured goods entering Western economies began with the relative calm that followed the end of both World Wars, the major inflection point didn’t come till the normalization of America’s relationship with and recognition of the People’s Republic of China during the last days of 1978. One indicator of the importance of the change in trade relationship between the United States and China is the fact that prior to Richard Nixon in 1972, no American president had ever visited China. Following that momentous visit, every American president since Nixon has visited China at least once.

Between the 1960s and the 1980s, the early benefactors of the modern era of global trade were the Asian neighbors of China. Beginning with post-war Japan, trade and manufacturing steadily moved East to Southeast Asia and South Asia. The “Asian Tigers,” Hong Kong, Singapore, South Korea, and Taiwan, all experienced exceptionally high growth from the 1960s to the 1990s. These small economies had neither the land nor the population to satisfy the rapid increase in demand on their factories. China, with its vast land and huge labor force, became the natural destination for manufacturing.
With the opening of Modern China, a seemingly endless labor force became available for all sorts of production at labor prices that were many times below the minimum wages required in Western economies. Within two decades, all labor-intensive production migrated first to Southeast Asia and then to China.

3 Large-Scale Migration and Contract Manufacturing

The move to producing goods overseas heralded the birth of the huge global business of contract manufacturing—also sometimes referred to as outsourced production. From the 1970s, consumer products enjoyed three decades of deflationary prices globally. Just about every single household item marketed for the consumer cost less, but these items also had improved material quality and were available in significantly greater volumes with more choices and variety. Clothing, household furniture, electronic equipment, and other things once thought of as luxuries became disposable accessories. Inevitably, these price reductions came not only as result of cheaper labor but in many cases were made possible due to the usage of less reliable and less durable materials.

Three decades of favorable trade surpluses with the West also brought significant wealth to the East. Most of Southeast Asia and China went from agrarian economies to industrialized economies. Within a generation, modern cities began to appear all along the Pacific-facing coast. Small fishing villages became port cities, dirt roads became highways, and workshops became modern manufacturing facilities.

An example of recent rapid development in China is what happened to the small fishing village of Shenzhen, a village that was right across the border from Hong Kong. In the 1970s, this small fishing village had a population of about 75,000. In 1987, when I walked across the border of Hong Kong into Shenzhen, paved roads started to disappear about five blocks north of the border. Then with the opening of China, Shenzhen became one of the new “Special Economic Zones” that engaged in export contract manufacturing. The village became a factory town that today, is a world-class business city with a population of over 20 million people. From out of nowhere, a city with the population size of Australia appeared within less than forty years. Today, downtown Shenzhen is a banking and commercial center similar to New York or London.

From the 1980s onwards, hundreds of millions of people moved from the countryside of Asia into coastal cities in search of higher paying manufacturing jobs. The largest of these people movements was the move in China from western towns to eastern coastal cities. Unnoticed and largely undocumented, these were probably the largest migration of people ever in a single generation. Along with this movement came significant social changes. Extended families became fragmented, university education became more accessible, and international travel became possible. Household incomes, especially along coastal China and SE Asia, radically improved as global commerce ushered in an era of wealth creation at a pace that was breathtaking. However, along with these changes and the arrival of wealth and education came the seeds of demise of this very system of trade. We are once again at an inflection point at end of the first decade of the century.

4 The Forces Influencing the New Global Trade—An Inflection Point

Since the turn of this century, there have been several global forces at play. These include the dwindling army of cheap labor, the impact on the environment by the intensity of decades of rapid growth, the reduction of the labor wage differential arbitrage, and the emerging patterns of global consumption.

Since 1953, the Chinese economy has been centrally managed under a series of “5-year plans.” With the opening of China to trade with the West in the 1980s, these operated in parallel...
and sometimes in tension with global market forces. Since the turn of this century, these plans increasingly call for significant growths in minimum wages and better social and retirement benefits. This is in order both to reduce the increasing wealth gap and to stimulate domestic consumption. The resulting double-digit “year on year” wage cost increases have reduced the China wage gap with the West. Chinese wage rates also set the bar for wage increases in the rest of the global manufacturing countries.

Meanwhile, the global population growth rate has been slowing down since the “baby boomer” era of the last century. Countries like Japan are aging rapidly and have steadily lowering birth rates. The Chinese government in the 1970s had concerns about its ability to feed its citizens. As a result, the government enacted the one-child policy in 1980 when the Chinese population exceeded 1 billion. In one generation, families and population growth slowed down dramatically. While on one hand, this meant fewer mouths to feed, it has also meant that there are fewer young workers coming into the marketplace. In late 2014, with an aging population and dwindling workforce, the Chinese government relaxed the one-child policy regulations in order to allow families to have two children.

The other change is rapid urbanization. More concentrated populations in the city means better access to healthcare and education, better employment opportunities, and greater access to information.

Single urbanized children have more resources invested in them. They have higher aspirations and are more ambitious to succeed economically. As result, fewer people are willing to settle for blue-collar factory work that has little career prospects. Wealth and opportunities have also gradually moved inland. So there is now less desire to move to coastal cities, as hometowns grew more prosperous. While there are still new young workers available across Asia (notably India, Indonesia, Bangladesh, and Vietnam) and Africa (specifically Ethiopia, Kenya, Nigeria), none can match the sheer numbers that the disappearing Chinese worker has left behind.

5 Pollution and Other Costs to Consuming and Manufacturing

Rapid industrialization has both a human and an environmental price tag. Cheap coal has meant the burning of more and more fossil fuel for electricity. Manufacturing processes leave behind dirty byproducts in the form of solid waste, polluted waters, and unhealthy emissions. The rapid depletion of nonrenewable resources and the increasing negative impact of industrial activities on our international community and the global environment have meant that this mode of production and trade is not sustainable. At the current scale of production, this consumption model is harming the very consumers it is supposed to be serving, leaving many to wonder if there is an alternative model available for our usage. As our current system of global sourcing creates wealth in these developing economies, there are more and more of the population that are also becoming middle-class consumers. By some estimates, the twenty years since 1985 saw the rise of 250–300 million Chinese citizens from the lower to the middle class. A consuming population equivalent to the American one came into existence. Serving a growing Chinese and increasingly global consumer population with the current model is unsustainable both because of resource constraints and the growing scale of the negative consequences this model is producing.

The success of outsourced production has resulted in wealth creation globally. As a result, wages in the developing economies and China have experienced steady annual increases. The global wage gap is getting narrower each year.

Sourcing production globally comes with new indirect and hidden costs. These costs include much longer and often more complex logistics supply chains, trade barriers to overcome, and international management challenges. In addition, there are unexpected risks associated with
many parts of the world. These risks include political disruptions, currency fluctuations, and natural disasters. At home, these are compounded by market turbulences caused by faster fashion changes and the new fickleness of a social media–influenced consumer.

In recent times, for some industries, the pull to simplify sourcing and production activities by retreating back to local production is gaining momentum.

The other side of global wealth re-distribution is the rapid rise of the global middle-class consumer, taking over from the last generation of Western middle-class consumer. Just at the point at which we see global supply chains retreat back into domestic and regional patterns, the global picture becomes even more fragmented with the increased demand for goods from the newly arrived, third world middle class. The developing world has become wealthier and consumption is rising with that wealth. There is now a reverse pull on the global trade pattern by the demands of the new international markets. Everything from cell phones, apparel, automobiles, and commodities are growing in demand everywhere in the developing world. This is especially so in the loosely grouped countries of Brazil, Russia, India, China, and the lately added South Africa (“BRICS”).

Whereas it was once upon time a simple East to West Trans-Pacific supply chain, we now have a multi-directional flow of goods, overseas and overland.

6 New Consumption Models and the Complex Cycles of Global Sourcing

To add to the challenge, there are also new consumption and retailing models emerging. These include, but are not limited to such models as:

- “Omni Channel” businesses sell across multiple platforms from various e-commerce platforms, mobile platforms, apps, traditional brick & mortar stores, and combinations of all of these to create continuous accessibility for consumers to their products.
- “O2O” or “Online to Offline” usually refers to buying online and picking up the goods in a physical store. Retailers use this to drive retail traffic into the stores with the hope of making additional sales. Consumers use this to save on delivery costs.
- “Pure play e-commerce” are purchases that are only available online from retailers and brands that have no physical stores. Consumers can do their purchases from the convenience of their computers or smart devices, retailers can save on the expenses of rent, payroll, distribution, and all the costs associated with a real store presence.
- “Socially Responsible Consumption” or “Ethical Consumption” is consumption based on one’s values that either rewards or punishes companies based on their behavior and action in areas dealing with the environment, social responsibility, and ethical behavior among other various causes. This layers a new filter on top of the traditional judgment of a product or company by its price, esthetic, or quality.

These are all big trends that are skewing consumption and creating new market uncertainties and sometimes, structural mismatches.

At the same time, consumption cycles, volumes, and frequency are also going through changes. Retailers and brands are used to working with seasonal calendars. Christmas gift giving comes once a year, and that remains the most important buying season. Marketing campaigns, seasonal promotional calendars, and store planograms (visual plans and schematics of how products are displayed) determined sales volumes and sell through. There were seasons to the year, and annual cycles were how goods were bought and sold.

Global sourcing and production brought with it longer and more rigid production cycles. To take advantage of overseas material and far away labor costs, the supply chain got longer and more
complex. From North Asia, production swept South and East into the smaller Asian countries, India, and on into the newly opened China and before moving further on in the Middle East and Africa. Increasingly, countries such as Ethiopia, Kenya, and Nigeria are being developed as sources of production. Raw materials have to be moved from one country to the next to take advantage of local labor supply. Different parts of the manufacturing processes are subcontracted farther and farther afield. All of these activities made production cycles longer, more complex, and more difficult to orchestrate. Consumption patterns and habits don’t usually stay still for long. While the United States is still the largest consumer market in the world, it also is going through changes. In the 1970s and ’80s, the US retail landscape was disrupted by the arrival of the big box stores and specialty discounters. Customers began to have more choices as smaller communities gained better retail access. With more places to shop from, and a more diverse consumer base, demand volume was more difficult to predict and manage. At the same time, fashion cycles became faster as retailers responded with more frequent discounts, private label programs, and more market segmentations. Then in the 2000s, online stores and e-commerce became more and more important as a retail channel. The concurrent global growth of social media created more rapid dissemination of trends and instantaneous demand for goods. Consumers got used to products being ubiquitous and available on demand. Existing supply chain and procurement practices found it hard to meet the variable cycles of demand and the resulting growth in consumption velocity.

The new purchasing patterns, and the new need for smaller lots of more customized goods, strained the old system of production and logistics. For half a century, trade was calculated in units of containers (TEUs). Now, demand shifts, not with the regularity of the seasons or with the predictability of promotional calendars, but fluctuates with the fickleness of informal social popularity, the spontaneous outbursts of fads, and the unpredictable popular influences from multiple media and social sources. Retailers are now finding it necessary to produce more variety, frequent updates, and agile product changes just to keep up with the new marketplace.

7 Global Sourcing

In 1989, Hong Kong was the largest container port in the world. 4.5 million TEUs went through the port that year alone. By 2009, the largest container port in the world shifted to Singapore with the country handling an estimated 25.8 million TEUs of freight. In 2009, 4.5 million TEUs would not even put you in the top 20 largest ports in the world. As we can see, global trade volumes are growing exponentially.

Global sourcing is the broad international search for, and assessment of, appropriate capacity and capability of materials suppliers, manufacturers, and service vendors to produce and supply finished goods for a marketplace.

There are several major activities that take place in the process of making a product out of an idea. These start with putting form to an idea or a design. Designers and buyers work with a sourcing function to see how they can make a product or a line of products. Sourcing teams look at design ideas and make decisions about where to take these next as sourcing starts with technical design inputs. The goal is to achieve desired product performance, improve manufacturing process, and propose appropriate materials and specs for the product. These are usually iterative processes. Negotiations, trial and error, testing, and prototyping are all part of the process to get to the best possible product.

Communication barriers are usually one of global sourcing’s major challenges. The various teams that work on the same project can be separated and located in multiple countries. Face-to-face meetings are infrequent and expensive, and there are usually only narrow windows for
daily real time interaction due to the differences in time zones. Common means of electronic communications like email, a flat medium, and a compromise at best, has become the chief mode of communication as a matter of cost, expediency, and convenience.

Complicating this distant linkage are multiple barriers in languages and cultures. It is not uncommon for several nationalities to be involved in the sourcing activity. Miscommunications and misunderstandings are frequent issues. This is compounded by the fact that the sourcing team, manufacturers, materials suppliers, and other participants in the supply chain are often not the end users of the product. For example, one current popular manufacturing country of down jackets and snow parkas is hot and tropical Thailand. This makes it critical to spell out in great specificity the intent of use, requirements in performance, and the functional expectations of the end user.

Sourcing usually involves some element of innovation. A new product generally incorporates some change or updates to material, process, or function. While there may be some pattern or progression in the steps of innovation, a lot of times these novel inputs can be nonlinear, stem from multiple sources, and sometimes follow surprising directions.

To the observer, design and sourcing can at times seem chaotic and confusing. Since some trial and error is involved in the development process the road to market at times can be longer than planned and may involve more than its expected share of failures.

In many organizations, the early processes in sourcing and development are where enterprise-level systems have a hard time keeping up. Large computer systems often offer limited support to the less than well-defined development process.

As a result, the other challenge is the difficulty to train and scale the sourcing and development functions. The innovative process is hard to teach in a standardized curriculum and hard to organize into a standardized process. Tribal learning and lengthy apprenticeships are oftentimes the only ways that people can become proficient in the development process.

As ideas move closer to becoming a viable product, the next step in the sourcing process is usually to make a sample or a prototype of the end product. This is useful for product design input and for review of aesthetics. Multiple generations of prototypes are usually made. The appropriate materials, their suitability, and the viability of the manufacturing process are all unknowns and still under consideration at this point.

8 Procurement

Procurement is the process of acquisition of specific goods and services. This involves determining who to do business with, agreeing on a price, agreeing on the terms of the sale, and agreeing to the specifications of the goods and services involved.

The selection of whom to buy from is usually determined by a set of purchasing criteria. These criteria usually include the qualifications of the seller and the acceptability of the products they are already producing. In many product segments, reputation, and word of mouth about the manufacturer are very important.

The price of a transaction is made up of various components and is also dependent on the terms of sale. The manufacturer’s price may include the raw materials, various transportation costs, the cost of various material transformation processes, the labor costs, and the various profit margins and other costs along the way.

The buyer may also choose to acquire the raw materials separately and contract the manufacturer to do the assembly and other value-added processes. In this case, the price to the buyer is the sum of the materials; labor; transportation; and other costs such as tax, duty, financing or capital costs, and insurance.
Other pricing arrangements may include more services such as warranties of performance, guarantees for profitability, and trade financing for the purchases with very long payment terms. In footwear and apparel, it is not uncommon for payment to be made 30, 60, or even 90 days or more after delivery. Long payment terms mean, in effect, that the goods are most likely sold before payment.

How and on what terms purchasing is done may be a function of many considerations. These include not only various costs but also various perceived risks; time and speed desired; and market forces such as other competition, availability, and seasonality. Artificial Christmas trees are much cheaper to buy in January than November. Other cost components along the way may be the logistics costs of the finished goods, and the overheads of storage and distributions.

The quality standards and logistics terms are agreed to as part of the procurement process. Quality includes not only product performance quality but may include some social compliance in the manufacturing process, conforming to various ethical standards, and satisfying certain environmental requirements. Some of these may be legal requirements; others may be set by the buyers. While these may not impact the consumer’s use or experience with the product, nonconformity may impact the reputation of the brand. The most famous of these may have been Nike’s experiences in the 1990s when it was accused of operating sweatshops overseas.

The terms of sales determine the point of ownership and its associated risks and liabilities. For fast-depreciating goods and goods with fast obsolescence like some consumer electronics, fashion items, and perishables with short shelf lives, ownership risks are of significant considerations.

With international procurement, multiple countries may be involved. These transitions then may also be subjected to currency fluctuations, changes to multi- or bi-lateral trading agreements, and adjustments to logistics costs due to seasonal demands or fuel prices.

As product specifications are finalized, manufacturing decisions have to be made. There are several possible routes this can take. If there are internal manufacturing or production capabilities, sourcing can look to them for help in producing the product. More often than not, most firms have some internal or limited capabilities, but these capabilities may stop at the sample room or engineering, with bulk manufacturing outsourced to an outside manufacturer.

If there are some internal manufacturing and sampling capabilities, usually mock-ups, prototypes, and other production samples are put together to see if these ideas work or if there are needs for modifications and changes. Changes are often made, not only for design or production reasons, but also for costing and margin improvements. Some of these changes are made purely to circumvent or reduce import duties. For example, by adding a thin layer of felt on the bottom of canvas sneakers imported to the US, the footwear’s classification changes from a fabric sneaker to house slipper and import duty drops from 37.5% to just 3%.

While engineering and design skills are important in global sourcing and purchasing, more often than not the ability to overcome various communication and cultural barriers is even more important. This ensures speedy progress in the specification of the product and in negotiations on the price and terms of the contract. As the design and engineering decisions are made, if outsourcing is involved, the critical decision is where and who will do the actual manufacturing.

Outsourcing of bulk manufacturing for many owners of brands and designs is a very common practice, especially when large volumes of products are manufactured. This is especially true for products that have fast fashion cycles, that require significant marketing investments, where value is created in the design process, and where there exist skilled contract manufacturers.

Right up to the 1960s, it was still very common for most companies to have everything from design to manufacturing functions under one roof. The Ford Motor Company owned their entire supply chain for the Model T. From the forests the company used for lumber to the mines it used for iron ore, Ford owned it all. The challenge with managing all of these activities is
the difficulty of balancing manufacturing capacity to seasonal demand for goods, the complex
task of managing very different companies, and the high costs of owning everything. Having
everything under one roof also means that significant capital investments are necessary to start
a new product. New workers have to be hired and trained. New factories have to be built and
outfitted.

As contract manufacturing and overseas outsourcing gained favor, companies found that by
divesting themselves of these “behind the scenes” activities and focusing their attention on the
customer, they are more flexible to respond to consumer demands, they can introduce new prod-
ucts faster, and they can deploy resources to design and market even better products.

Specialized manufacturers have the advantage of being very skilled and experienced in a
single, narrow type of product or component. As products become more complex, a level of
specialization is critical for efficient production costs, continuous improvements to product, and
rapid speed to market. More and more brands are broadening their product offerings. This helps
brand owners maximize the value of their brand. IKEA for example sells wooden furniture, but it
also sells electronics, bedding, and kitchen hardware as well as foods and plants. Many brands have
become a one-stop solution or a convenient destination to serve the needs of their consumers. In
the process, they need the support of many specialized manufacturers and suppliers.

The industries that have adopted outsource manufacturing the fastest are consumer product
companies especially where production is most labor intensive. Apparel, footwear, and toys,
for example, quickly embraced this new way of getting products made. Heavier industries like
the automobile and aviation industries are slowly moving to outsourcing subcomponents and
subassembly.

Contract manufacturers meanwhile have become better and better in their particular niches.
In their area of manufacturing expertise, they now usually know more than their customers. This
can result in better products for consumers, but sometimes this can also result in risks in product
quality, as there are more and more opportunities for the specialized manufacturers to reduce
material quality, manipulate manufacturing processes, and violate other quality requirements
shielded, not only by their greater domain knowledge, but also by the separation of great distances
between where things are made and where things are sold. As manufacturers also subcontract
subassembly to other specialized manufacturers and producers, global procurement can at times
be an opaque process with poor visibility to quality and production risks. There are now layer
upon layer upon layer of submanufacturers and suppliers, some of these may be single points of failure, or
bottlenecks or other hidden disruption risks.

If the brand owner has limited product development or production capabilities, they then
will have to work with an external party such as an agent, a trading company, or an Original
Equipment Manufacturer (OEM) or Original Design Manufacturer (ODM). An OEM will take
technical specs and manufacture the product while an ODM will do more of the engineering
design work. As more and more engineering skills gravitate to manufacturers, work seems to be
divided between the creative/user interface activities and the engineering/production activities.
The customer-facing activities fall mostly to the brand managers and retailers. The engineer-
ing, technical design, and production are then assigned to either an external vendor or to the
manufacturer.

Up till the last few decades of the last century, there was an element of discovery and adventure
in sourcing and procurement. As production for the Western markets flowed overseas eastwards
and southwards, there were many unknowns to what was available and possible. New frontiers
were waiting to be found by brave pioneers. New manufacturers were discovered, and new
countries were explored as manufacturing went farther and farther afield. A lot of these early
efforts were in an era when there were significant linguistic and cultural barriers.
As marketplaces become more mature and regulated, sourcing and procurement moved to a new phase of finding efficiencies and productivity in the material (use and yield) and product production processes. As markets matured and countries developed, there are now fewer new producers to be discovered. The more consolidated supply of manufacturers means that rather than trying to find a replacement for existing producers, the opportunities lie in working with existing manufacturers to help them become better at what they do. Many companies have also created clusters of manufacturers close to their own facilities so as to reduce logistics challenges while at the same time ensuring there is visibility and availability. An example of these manufacturing clusters would be the ones Toyota and other big Japanese automobile manufacturers have maintained over the last century. As more capital investments are made, and as clusters get bigger, some supply chains become less portable and more rigid.

The interface between the outside manufacturers and the brand owner is usually a buying or procurement function. In many companies, their buying office is also where most technical functions are housed. Purchasing also manages the interface and relationships with the production vendors of the company. These relationships today could be as impersonal as arm’s-length blind auctions, or they could be so integrated into the company as to be indistinguishable where one company starts and the other ends. It is not uncommon to see different companies in some supply chains share office locations, access each other’s system data, or have very integrated payment and financing systems.

9 Costing

Cost determination drives decisions about where and how to manufacture. There are multiple components that make up the cost of a product. These include all the direct costs of the raw material; the labor costs to process the material; transportation costs to move raw material and finished goods; and all taxes, tariffs, and import duties. Then there are the indirect costs. These include buying and selling agents’ commission, manufacturers’ profits, overheads, and energy costs like water and electricity. There are costs associated with risks such as currency fluctuations, transportation uncertainties, labor costs, and other unknowns associated with manufacturing in a foreign country.

If the manufacturing is done in-house, it may be easier to arrive at a true cost of ownership. This could be as simple as adding up the key cost components. Once there is a choice from multiple outside parties, costing becomes more complicated. Material costs can be skewed by different payment terms and other financial arrangements. Labor cost varies not only by countries but also by regions within countries. Labor costs are also a function of productivity, skill levels, raw material yield in processing, and percentage of reworks as a result of defects. A cheaper labor cost can also sometimes be offset by currency or transportation costs. If it takes longer to transport and make, it will mean fewer days of availability to sell or higher risks due to earlier commitments, and higher financing costs. It is always hard to make completely fair or accurate side-by-side cost comparisons. Sometimes, how costs are calculated will also have an impact on where goods are made.

“Open Book Costing” is an agreement by buyers and sellers to make all costs visible. A cost sheet with all the components that make up the cost is constructed. This usually consists of a bill of material, labor costs, and various overheads and profits. If the cost sheet is exhaustive then this is a good way to gauge true cost. However, in practice, it is very difficult to get to an exhaustive cost sheet. The process is also very time consuming.

A lot of consumer product companies use “FOB Price” as a means of comparing price. FOB, “Freight On Board” or “Free On Board,” is usually how much the product costs up to the point
that the goods are delivered to the port of export. This is a useful comparison when the choices are all from a similar part of the world. This gets more complicated if the comparisons are with manufacturers from different parts of the world where there may be differences in import duties and tariffs and where the shipping costs are significantly different.

So some companies that buy internationally use the cost of LDP for comparison. LDP or “Landed Duty Paid” is the cost of goods up to domestic import port, after overseas freight and duties are all paid. While this may take out some of the price variability for comparison, it still does not account for differences in transit times, risks, and differences in quality and reliability.

Some retailers use “Gross Margin Return on Investment” (GMROI) as a way of determining value. This tries to get at the profitability of inventory held. The challenge with this method is that often only an estimate of total inventory profitability can be made at any given time.

True total costs are often not known accurately till after goods have been shipped and sold.

### 10 Building Relationships Rather Than Making Transactions

Many companies now make high-level, longer-term procurement commitments to individual manufacturing vendors, geographical regions, or individual countries. These procurement frameworks are usually based on longer-term considerations such as relationship management, regional risk mitigation, and the consolidation of multiple purchasing commitments for raw material. By optimizing and leveraging groups of purchases, companies hope to gain better overall terms, enhance flexibility to respond to sudden market changes, and have better control and visibility over their general outsourced production activities.

Some purchases are done as entire packages of multiple items in a related family of products. These purchases could be items made from similar materials, from similar processes, or delivered at around the same time. There may also be purchases of subcomponents of products that are then assembled or customized before sales.

There are also multiple financial terms of purchase. Some customers take title as early as the raw materials stage. At the other extreme are companies who do not take title till the point of sale to customer. The control of material, the visibility of manufacturing processes, or cash flow are usually the deciding factors.

Managing dispersed teams engaged in complex activities is oftentimes difficult. Even a low-level quality inspector in a foreign country may have significant influence and authority over huge manufacturers. As a result, there are oftentimes opportunities for corrupt practices and other conflict of interest issues to emerge. Legal systems and enforcement still vary significantly from country to country.

With closer relationships in the supply chain comes greater accountability for all parties in the supply chain. Consumers are now calling for greater transparency and visibility as to how goods are manufactured and how workers engaged in manufacturing are treated anywhere in the process. Issues include fair wages, working hours, and workers’ safety. Other concerns include the use of underage workers, forced or coerced labor, and dangerous working environments. Some of these concerns have resulted in negative press for various brands and companies. These once invisible issues have become concerns for all stakeholders in the supply chain.

The impact of our global supply chain activities on the environment is also a growing concern. How heavy a carbon footprint our supply chain leaves, how much environmental damage is done, what impact the use of certain materials have on our air, rivers, and land are questions more and more consumers care about. Increasingly, consumers are aware of the interconnectedness of the world. Consumption is not only a matter of convenience, but also an opportunity to demonstrate personal sustainability values and to tangibly support causes.
11 The Challenges of Distribution

Making products available to the consumer is the process of distribution. Moving finished products from a global supply chain so that they are available to consumers can be complicated. The physical movement of goods oftentimes is the easier part of the task. Making sure the right product is at the right place at the right time is more challenging.

Many manufacturing countries have barriers of entry for various raw materials. Most have requirements for declaration of content and composition of materials, and international movements of materials oftentimes incur various duties, tariffs, and taxes.

Exporting finished goods after manufacturing is another set of requirements that demand documentation. Destination countries, apart from duties and tariffs, may also have import restrictions, annual import quotas, testing reports, certifications, provenance, and other documentation requirements. Importers usually also incur the ultimate liabilities for the nonperformance of products in their marketplace.

A series of multi-lingual documents are often necessary for the movement of raw materials to the point of manufacturing, and manufactured goods to the points of sale. Various service providers like customs brokers and import agents oftentimes provide specialized services to navigate the complicated rules and regulations from the various national jurisdictions.

Between the manufacturer and the points of sale there may be multiple locations of storage, consolidation, deconsolidation, warehousing, and staging. These steps are to get the product properly labeled, assorted, price tagged, and shelved for presentation to the potential consumer.

Since the turn of the century, the marketplaces for most products are international and moving through multiple channels. Where goods are positioned, so that they can be accessed for sale, is more and more important. Retailers need to place products so that they are accessible, grouped so that fulfillment is cost effective, and prepositioned so that fast deliveries are possible. Tracking, tracing, and inventory management of products now require specialized systems.

Consumer product supply chains have long adopted tools and hardware to track and manage inventory. In the 1970s, supermarket retailers were the first to adopt the barcode system as a way of managing inventory. This proved to be a runaway success. Barcodes are cheap and allowed for the management of large quantities of different items. Various forms of barcodes are still in use today.

The limitations to barcodes are that they are a visual system that requires direct line of sight for scanning. The tags themselves also have a limited data storage capacity. Since the turn of the century, RFID tags of various forms have been introduced as a more effective way of tracking inventory. RFID or Radio Frequency Identification tags have the advantage of being scannable at a distance without contact. Current systems also allow for very rapid scans of warehouses or containers full of different merchandise.

Machine readable inventory systems and technologies ensure real time visibility of products, traceability to source in case of quality issues, and a degree of inventory accuracy that was difficult to achieve in the past without those tools.

12 The Opportunities Ahead

Since the 1970s, as reliance on outsourced production grew, the prices that consumers paid for most of their household products, as part of their total house income, has lessened and remained flat to negative for the last few decades of the twentieth century. Apparel for the average American household went from 14% of household spending in 1900 to 4% in 2003. Labor and cost savings changed our attitudes to items such as apparel, household furnishings, and appliances from heirloom items to disposable commodities.
Apparel fashion cycles exploded from two collections a year to collections that are continuously arriving year round at the present time. Thanks to “fast fashion,” a seemingly endless supply of faster and more frequent product cycles are now more expected than demanded. Consumer product companies grow by creating more demand at home and by opening new markets aboard. Success has meant markets growing exponentially. An increasingly prosperous global economy means greater amounts of middle-class consumers all around the world. Starting in the 1980s, we have more and more time, resources, and appetite for consumption thanks to decades of relative global peace, better farming methods, highly efficient global trade, and the eradication of more and more diseases and illnesses. Supply chains now have to satisfy growing consumption globally especially in large economies like China and India. These economies now challenge the dominance of Western markets. Global supply chains will have to be even more agile and responsive to serve global customers.

In this environment, business models, enterprise systems, and management skills will all need to adapt to the new opportunities. E-commerce and multi-channel businesses will mean even faster and nimbler supply chains. Once upon a time retail distribution used to stop at the shelves of the large retail stores. A few big box discount stores, a department store, or a regional mall can serve the needs of an entire community. Now, more and more consumers no longer go to a store to shop. With e-commerce now ubiquitous on smart devices, consumers expect the store to arrive at their doorstep and at their convenience. The challenge of “the last mile” is now even fiercer as everything speeds up and the consumer globally disperses. Consumers expect more convenience, better service, greater value, and greater variety from their purchases.

Modern cities and modern lifestyles are not possible without sophisticated global supply chains working seamlessly in the background. In parts of the world today, we are already experiencing the limits of yesterday’s supply chain infrastructure for today’s demands. Too much planning is being done to meet demand that exists and not enough is being done to meet demand that will be. The dynamics of our contemporary life, the growing size of our cities, and the expectations of new generations of connected global consumers require even more powerful, agile, and smart supply chains to adequately service and satisfy.

Just as the Portuguese traders of the 1400s set sail to seize the opportunities of their global supply to satisfying market demands, so modern-day businesses, traders, and operators of supply chains crisscross the globe to find their fortunes. The complexity and dynamics of modern global trade also opens up opportunities to study, explore, and research for innovations, improvements, and efficiencies. Markets are changing and evolving constantly, at rates faster and even more dramatic than ever.

The world today may seem smaller than that of the 1400s. However, the opportunities today loom ever larger.

13 Effective Global Supply Chain Operations—A Product and Process Characteristics-Based Decision-Making Framework

In a rapidly changing and evolving marketplace, the ability for globalized or dispersed supply chain teams to make optimum decisions in real time is critical. In the experience of many fast-growing businesses, the inability for rapid global collaboration is oftentimes one of the key limits to growth.

Communication tools, enterprise systems, and standardized processes all equip teams for their daily work. However, strategic and operational effectiveness also involves consistently making good decisions at all levels, setting the right priorities in every process, and globally driving towards the same goals. Between the hardware and tools that allow routine work to get done and
enable the values and the mission of the business, there are also “decision-making frameworks” that allow for rapid analysis of circumstances and evaluation of possible courses of action. These “decision-making frameworks” are intended to rapidly provide consistent tactics and appropriate responses across the entire supply chain so that local and individual actions and decisions complement and reinforce each other globally without the need for frequent consultation.

Decision-making frameworks are a way to analyze situations and make choices for action. An effective analytical tool and applied decision-making framework that has been introduced to multiple global supply chains is the “Product and Process Characteristics Based Decision-making Framework.” This tool, explained below, is based on and inspired by Kasra Ferdow’s (2008) work.

13.1 Product Characteristics

If we look at the characteristics of manufactured products, the continuum runs from basic commodities to unique more complicated products as shown in Figure 33.1. Commodity Products are usually simple common products that are manufactured rapidly and in large quantities. These tend to be inexpensive, oftentimes seen as disposable in nature, and as consumables in use.

Unique Manufactured Products are assembled and engineered and often require multiple processing systems and materials. These are usually made in small numbers and are generally more expensive or difficult to make. Some degree of complexity is involved in their design and manufacturing process. Commodity Products are akin to white t-shirts or building bricks. A Unique Manufactured Product is a product valued for its special worth such as a luxury sports car or a designer leather handbag.

The key considerations here are how ubiquitous are these products? How frequently are their consumers influenced by fashion and social changes? How affordable are they?

13.2 Manufacturing Process Characteristics

The other continuum is the manufacturing process characteristics as shown in Figure 33.2. The focus is on what it takes to get the product made. What are the requirements of the production process? How are these products manufactured? What is necessary for the process? The extremes of this continuum are characterized by manufacturing environments that are either capital intensive or labor intensive.

Capital-Intensive manufacturing processes and environments usually require costly equipment. These are often large, heavy, and/or expensive. Steel mills, computer chip factories, and automobile assembly plants are all examples of Capital-Intensive manufacturing. Another way of gauging how Capital Intensive a manufacturing process is would be to look at the way equipment is depreciated. The bigger the percentage of equipment cost in the total manufacturing cost per unit, the more “Capital Intensive” is that process.

![Figure 33.1 Product Characteristics](image-url)
Capital-Intensive manufacturing is also characterized by its relative lack of mobility. Once a Capital-Intensive manufacturing plant is set up, it is usually difficult to change what, how, and where it produces. Capital-Intensive manufacturing tends to be rigid, inflexible, and not portable. A steel mill or an automobile plant would be hard to move or retool to make another product.

Labor-Intensive manufacturing on the other hand may require many workers, a high level of craftsmanship, a great deal of manual processes, or all of the above. Labor-Intensive manufacturing processes are usually difficult to automate, have a significant amount of variability, and use materials that are delicate, soft, irregular, and generally hard to manipulate.

If machines and tools are involved in Labor-Intensive manufacturing, these usually require many human operators. They can be viewed as an extension to the operators. These machines and tools tend to be lighter, less costly, and depend on operator skills to execute. With Labor-Intensive manufacturing, the workers, and not the machines usually make the difference in the quality, quantity, and velocity of manufacturing.

It was previously noted that Labor-Intensive manufacturing tends to be “portable.” Where there are sources of workers, the manufacturing can be done. Moving the enterprise to take advantage of changes in politics, economics, or demographics tend to be more commonplace.

Examples of Labor-Intensive manufactured products are things like simple apparel (t-shirts or underwear), footwear, and various bags. These industries are known to move to where wages are lower, to where taxes and tariffs are more favorable, and to where labor supply is more plentiful. Labor-Intensive manufacturing operations tend to stay in one place if specialized skills are needed or if labor costs are stable or productivity is competitive.
If we look more at the emerging picture or framework of how the production processes and characteristics help us frame a view of our supply chain, we can begin to note some general characteristics important to all Commodity Products (versus) all Uniquely Manufactured Products, and how they differ from each other.

First observe that we can make certain statements that apply to Commodity Products and other statements that apply to Uniquely Manufactured Products (see Figure 33.4). Commodity Products, no matter how they are manufactured, are sensitive to market prices. Demand usually goes up when prices go down, and down when prices increase. Whether it’s rolls of steel or packs of underwear, affordability influences the volume of consumption. Availability often is important. Since one commodity or product looks very much like the next, consumers will substitute one for the other based on price, availability, or convenience.

This is not usually true of Unique Manufactured Products where the demand and loyalty are more specific. Uniquely Manufactured Products are so scarce, differentiated, and desired that price is usually not the highest consideration. If, for example, a much-anticipated release of a new cell phone becomes available, demand for the phone will not fluctuate much if the price is 95% or 105% of the anticipated price. The key consideration for Unique Manufactured Products is the consumer demand for a specific (brand of) product. Lines forming outside retail stores in anticipation of low availability, or web sites groaning under heavy traffic on news of a new model; that’s what’s important. The other side of the coin for Unique Manufactured Products is that if the demand is low, price discounts are unlikely to help create much more demand.
The relative lack of portability of the Capital-Intensive process and the portability of the Labor-Intensive process also drives relationships in these supply chains (See Figure 33.5). To move Capital-Intensive (CI) supply chains takes time and significant expenses. So these relationships tend to be more stable, long term, and they require commitments from all parties in the supply chain to make the investments possible. CI Systems that are rigid and difficult to change are called “Sticky” supply chains.

Labor-Intensive (LI) supply chains on the other hand are usually more transactional. With their lower costs, higher volumes, or greater velocity, producers and production placements can change frequently and rapidly. Sourcing teams can move manufacturing suppliers, and manufacturing countries from season to season, or from order to order. Relationships in LI supply chains tend to be cost driven, short term, and indifferent, so there are few loyalties and frequent changes of producers. In other words, these supply chains are “Slippery” and more transactional.

If we accept that these characteristics are usually true in the different quadrants of the framework that we have just built, then we have constructed a picture of what is important in terms of our priorities, behavior, and investments based on what and how we are manufacturing (See Figure 33.6).
When we are manufacturing CI Commodities (such as steel or petroleum products), our priorities should be on process improvements. We will use new technologies and advanced operations to become the most efficient production plant in the world.

When making Capital-Intensive Uniquely Engineered products like cars or personal computers, we should work hard on managing and building manufacturing capabilities for all of our vendors in the supply chain. Car companies like Toyota, and manufacturers like Foxconn are examples of companies that have their key suppliers in very close proximity to their plants. They strive constantly to ensure their suppliers work with them to improve quality, reliability, and cost competitiveness in their products.

Labor-Intensive Uniquely Engineered product supply chain managers, on the other hand, should spend a lot of time in their (consumer) user facing activities (i.e., relationship management). They want their users to have very positive experiences; they want user interfaces to be friendly and seamless. They also should spend a lot of time on innovations for their products while developing Intellectual Property (IP) protection. An Apple iPhone, or a Louis Vuitton handbag, are examples of products of Labor-Intensive Uniquely Engineered supply chain products.
Finally, LI Commodity Product supply chain operators usually work hard to globally orchestrate their supply chains. They want to make the cheapest products by creating globally portable (agile) supply chains. They will buy materials at the lowest possible price, move these to the lowest cost labor markets for assembly, and then look for cost reduction opportunities in duties, taxes, and other bi-lateral trade advantages. Also, they want to build scale to take advantage of leveraged volume production efficiencies. The types of products that Walmart makes and sells would be mostly Labor-Intensive Commodity Products.

Supply chain leaders, to effectively manage their supply chain, need to begin with a clear understanding of their production processes and product characteristics. Then, they can drive priorities, investments, and behaviors to optimize their global supply chains.

The best (in-class) supply chains have managers who consistently follow this procedure of aligning product and process characteristics. Walmart aggressively outsources production and is always striving for better prices, Designer and luxury brands like LVMH fiercely protect their Intellectual Properties. BMW works diligently on its supply chain’s engineering prowess. In which quadrant one sits impacts all decisions about where to make the product, whether to outsource production, and how transactions and relationships are managed.
14 Implications for Future Research

As supply chains spread out, to make and sell globally, the resulting competition may now be the best in the world. A method for evaluating the strength of existing supply chains would be valuable. In that regard, post mortems on supply chains and companies that failed in recent years, as well as a study of supply chains that are more successful than their peers, both point to shared and common reasons in most cases. Researchers could provide measurable evidence as well as helping to identify best practices for both CI and LI types of systems. It would certainly help to validate the belief that supply chain managers who understand where they “sit” and who consistently act appropriately for their product and process combinatorial characteristics tend to be most successful.

This research effort would help to validate the belief that for managers and practitioners in global supply chains it is worth their time to identify where their supply chain product and production process characteristics place them. It is likely to fine-tune the categories of CI and LI as well as demonstrating that they are changing as technology develops. For example, the impact of robots on the definition of Labor-Intensive work offers great research opportunities. Similarly, advances in flexible manufacturing systems (that lead to mass customization) will have an as yet unknown impact on what is considered normal output of Capital-Intensive manufacturing systems.

The kinds of research described above will alter the decision-making details as shown in Figures 33.1 through 33.6. With greater understanding, managers will be able to better assess whether they are spending their time and resources on the right things. They can manage their supply chain vendor relations appropriately. This vendor and supplier inclusion provides another dimension for researchers. How extensive should the examination of total supply chain involvement become? Additionally, it raises questions about how many suppliers a producer should have at any one time. With few, the emphasis on alignment can be intense. As the number of suppliers increase, the ability to “sit” in the same quadrant diminishes.

Finally, in the real world, there is another (future) complication as an increasing number of supply chains develop multiple product and production process characteristics of alternate types. Thus, one finds Basic Commodity Products being sold side-by-side with Uniquely Manufactured Products. Walk through a general retail outlet, or scroll through most web sites, and numerous instances will be found where limited edition fashion products are being offered alongside of basic year-round items. To deal with such situations, supply chain management dexterity and a deep understanding of supply chains is critical, but it must be informed by suitable research.

In concluding this section on implications for future research, it may be essential to delve far deeper into the relationship of the product and process characteristics to improve the decision-making process. We are but at the beginning of understanding some of the more interesting implications and things are changing very rapidly. Even without the technology shifts, there should be numerous opportunities to refine the model and develop more useful tools to support improved decision making and assessment tools to better understand supply chain performance.

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