

Alumni Lecture: Competitive Strategies in a Changing World

Understanding Globalization from a Supply Chain Perspective
Prague, November 12, 2014

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Overview

1. Globalization – seen from many perspectives
2. What are the real and imagined consequences?
3. Manufacturing as Agenda : the (loud) Politics
4. Does everybody have to compete on lowest cost?
5. The (hidden) Science of Supply Chain systems
6. What policymakers and other stakeholders can do

Globalization and how Nations Compete



Source: Edward Burtynsky, China

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**Nations compete with
one another to attract companies
who create jobs, pay taxes,
and build communities**

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“...Manufacturers therefore gradually shift their places, leaving those countries and provinces which they have already enriched, and flying to others, whither they allured by the cheapness of provisions and labor, till they have enriched those also, and are again banished by the same cause...”

1748 David Hume cited in
„The Travels of a T-Shirt
In The Global Economy“ (2005),
p.97



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The historical migrations of textile production

- 1780 Manchester, England
- 1880 New England, USA
- 1930 Piedmont, USA
- 1940 and 1950 Japan (interrupted by the war)
- 1970s Hong Kong, Korea, Taiwan
- 1990 China
- Specialists profitably stayed in Italy and France and US and Spain



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**Jobs move from location to location
(they always have!)**

But

**Can their “Flow” be managed?
If so: by whom?
And How?**



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Globalization Stakeholder perspectives

- Unprecedented division of Labour across borders and regions



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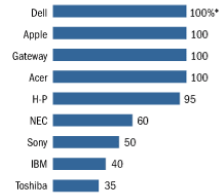
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All Over the Map

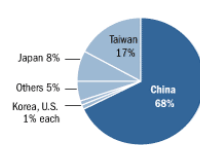
When a U.S. customer orders an H-P Pavilion laptop, the request travels all the way to China in just days. A look at the process, and China's increasing role not just as manufacturer, but supplier of more sophisticated laptop parts

Outsourcing ratio for world's top laptop PC brands, 2004:



*Dell takes care of final assembly in its factories.
Source: Merrill Lynch

World-wide laptop PC production by country, 2005:



Source: IDC

Filling the order

- 1 Order placed online in the U.S.
- 2 Validated order transmitted to Taiwanese-owned Quanta plant in Shanghai
- 3 Laptop assembled from parts from China and all over the world
- 4 Computer shipments consolidated at Shanghai airport and flown freight to the U.S.
- 5 Individual laptops sent to customers

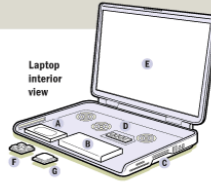
H-P Pavilion
zd8000 laptop
computer



Putting it together

1 Hard-disk drives	Japan, China, Singapore, U.S.
2 Power supplies	China
3 Magnesium casings	China
4 Memory chips	S. Korea, Taiwan, U.S., Germany
5 Liquid-crystal display	S. Korea, Taiwan, Japan, China
6 Microprocessors	United States
7 Graphics processors	Designed in U.S., Canada; made in Taiwan

Note: List does not include every country that manufactures a given part
Sources: Hewlett-Packard; WSI research



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From „The Laptop Trail“, Wall Street Journal, June 9, 2005

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Manufacturing has no (more) Borders



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Globalization Stakeholder perspectives

- Unprecedented division of Labour across borders and regions
- Consumer access to goods



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The longer technology is around, the cheaper products get for consumers...



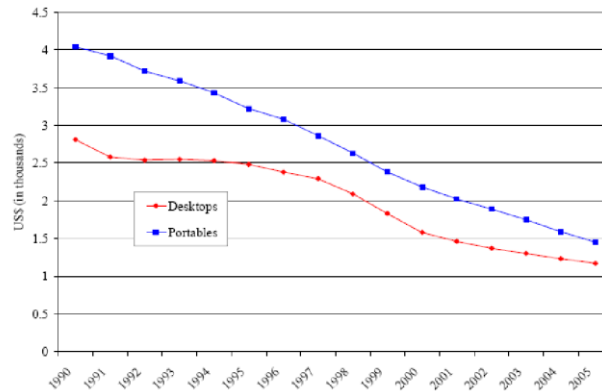
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**The longer technology is around,
the cheaper products get for consumers...**



Source: Jason Dedrick and Kenneth L. Kraemer "Innovation in Global Industries: U.S. Firm Competing in a New World".

Figure 5. Average unit price, desktops and notebooks, 1990-2005

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Globalization Stakeholder perspectives

- Unprecedented division of Labour across borders and regions
- Consumer access to goods
- There seem to be Winners and Losers

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The Latest Scandal: Primark

Primark Scandal: Second Shopper Finds 'Forced Labour' Label

Another Swansea shopper has come forward as Primark responds to claims on Twitter



Ellen Stewart
News and Features Writer
June 25, 2014

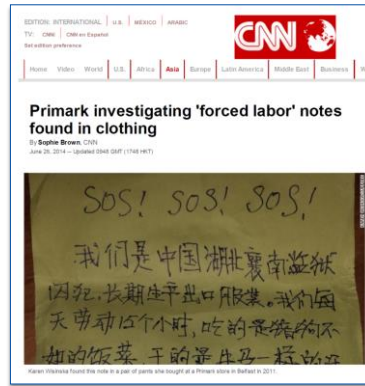
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8-1

Filed under: Shopping

UPDATE: Third shocking message describing "sweat shop" conditions found in Primark trousers in Belfast

Another Primark shopper has come forward, claiming she discovered a hand-stitched "forced labour" label sewn into a polka dot top purchased in Swansea in May 2013.

Rebecca Jones told MyDaily she initially tweeted a picture of the hand sewn label which read: "Degrading" sweatshop conditions," to BBC News last year and had no



„...what the biography of a simple product can contribute to current debates over global trade“



Many of the world's T-shirts begin life as cotton in Texas, before becoming T-shirts in places such as China. They re-enter the U.S. market for sale and are eventually shipped to third-world countries such as Tanzania for resale.



“...‘Who made your T-shirt?

...Was it a child in Vietnam, chained to a sewing machine without food or water? Or a young girl from India earning 18 cents per hour and allowed to visit the bathroom only twice per day? Do you know that she lives 12 to a room? That she shares the bed and has only gruel to eat? That she is forced to work 90 hours each week, without overtime pay? Did you know that she has no right to speak out, no right to unionize? That she lives not only in poverty, but also in filth and sickness, all in the name of Nike's profits?’ ”

From „The Travels of a T-Shirt
In The Global Economy“ (2005),
Preface vii



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“...(in her) pathbreaking study of England's Industrial Revolution...(concluded) that its most significant legacy was the liberation of women...

Similarly, researchers have found that the young rural women who powered South Korea's and Taiwan's economic miracle in the 1980s benefited from income but especially from increased autonomy and a chance at self-determination. ”

From „The Travels of a T-Shirt
In The Global Economy“ (2005),
p. 95



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“The countries that have lost the race to the bottom are some of the most advanced economies in the world today, but they share a common heritage in the cotton mill and the sweatshop as the ignition switch for the urbanization, industrialization, and economic diversification that followed, as well as for the economic and social liberation of women from the farm.”

From „The Travels of a T-Shirt
In The Global Economy“ (2005),
p. 99

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**The
Economist**

A dramatic decline in suicides Back from the edge

The first of two articles on China's suicide rate looks at the effect of urbanisation

Jan 28th 2014 | BEIJING | From the print edition

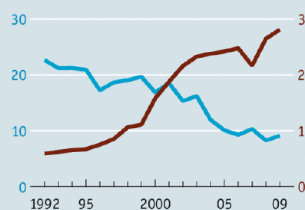
Two intertwined social forces are driving the reduction: migration and the rise of an urban middle class. Moving to the cities to work, even if to be treated as second-class citizens when they get there, has been the salvation of many rural young women, liberating them from parental pressures, bad marriages, overbearing mothers-in-law and other stresses of poor, rural life. Migrants have also distanced themselves from the easiest form of rural suicide, swallowing pesticides, the chosen method in nearly 60% of rural cases, and often done impulsively. The reduction in toxicity of pesticides has helped as well.

Happy city-dwellers

China's:

rural suicide rate
Per 100,000 population

% of rural labour
force working in cities



Source: Tsinghua University, based on official statistics

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Globalization Stakeholder perspectives

- Unprecedented division of Labour across borders and regions
- Consumer access to goods
- Jobs are „lost“ and „won“
- Policymakers :Brawn is cool again



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At the Top of the Agenda: “U.S. manufacturing is in crisis”*

“At this make or break time
for the middle class and our economy,
we need a strong manufacturing sector
that will put Americans back to work
making products stamped with
three proud words: Made in America”



-Obama establishes Office of Manufacturing Policy, Dec. 12, 2011

*ITIF Study



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Policy or Management Decision?

Prof. Suzanne Berger, Dept. of Political Science chairs an MIT-wide faculty commission named to analyze the role of manufacturing in advanced industrial countries.

Can the United States be a "services economy" specializing in R&D and system design? Or does the ability to sustain innovation and build new companies and jobs require production to take place in the U.S.?



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Only 15 years ago... Everybody believed that the World became Flat!

"The service sector ...will be further outsourced to the English-spoken abroad; manufacturing, meanwhile, will continue to be off-shored to China. As anyone who reads his column knows, *Friedman agrees with the transnational business executives who are his main sources that these developments are desirable and unstoppable*, and that American workers should be preparing to 'create value through leadership' and 'sell personality.' "

-Publishers Weekly Review of *The World is Flat*



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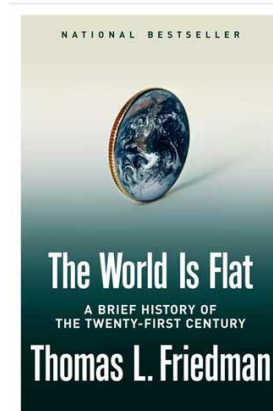


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Firms worked very hard to eliminate Manufacturing

The Manager who
didn't take advantage
of low-cost countries
was a loser!


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Firms worked very hard to eliminate Manufacturing Making Supply Chains longer and Centralized

Today manufacturing remains highly centralized and concentrated in large factories and components and finished goods are transported at great cost and with high impact on the environment through long supply chains. Trends to offshoring and outsourcing have made manufacturing plants bigger and the distances goods traverse even longer.

Written Testimony of Suzanne Berger
Professor of Political Science and Co-Chair,
MIT Production in the Innovation Economy Commission
Massachusetts Institute of Technology
Before the Senate Committee on Banking, Housing, and Urban Affairs
Subcommittee on Economic Policy, December 11, 2013

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Firms worked to eliminate Manufacturing, making Supply Chains longer, less agile, more Centralized

“Tomorrow we can imagine technologies that would “destroy the tyranny of bulk” and distribute manufacturing, thus making it possible to manage capacity and demand flexibly through networks of small, localized manufacturers linked by Internet.”

Written Testimony of Suzanne Berger
Professor of Political Science and Co-Chair,
MIT Production in the Innovation Economy Commission
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Before the Senate Committee on Banking, Housing, and Urban Affairs
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Capturing Value in Global Networks

“ We find that Apple continues to capture the largest share of value from these innovations.

While these products, including most of their components, are manufactured in China, the primary benefits go to the U.S. economy as Apple continues to keep most of its product design, software development, product management, marketing and other high-wage functions in the U.S.”

“China’s role is much smaller than most casual observers would think. “

Capturing Value in Global Networks: Apple’s iPad and iPhone
Kenneth L. Kraemer, Greg Linden, and Jason Dedrick¹
University of California, Irvine, University of California, Berkeley and Syracuse University



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Capturing Value in Global Networks

“A key finding for policymakers is that there is little value in electronics assembly. Bringing high-volume electronics assembly back to the U.S. is not the path to “good jobs” or economic growth. “



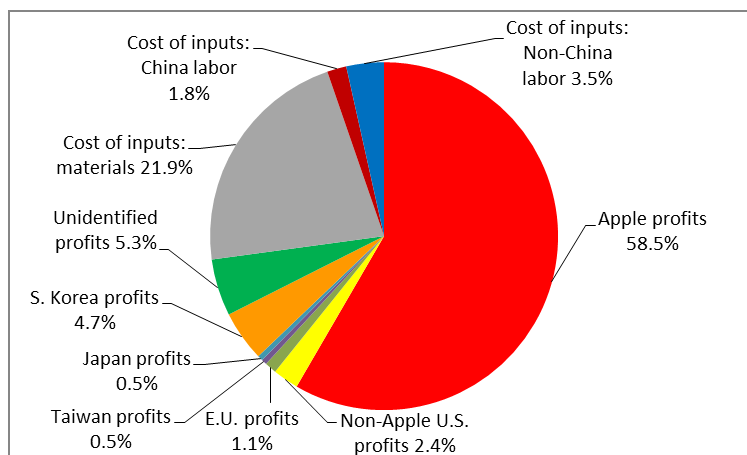
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Capturing Value in Global Networks: iPhone 2010



Capturing Value in Global Networks: Apple's iPad and iPhone
Kenneth L. Kraemer, Greg Linden, and Jason Dedrick¹
University of California, Irvine, University of California, Berkeley and Syracuse University



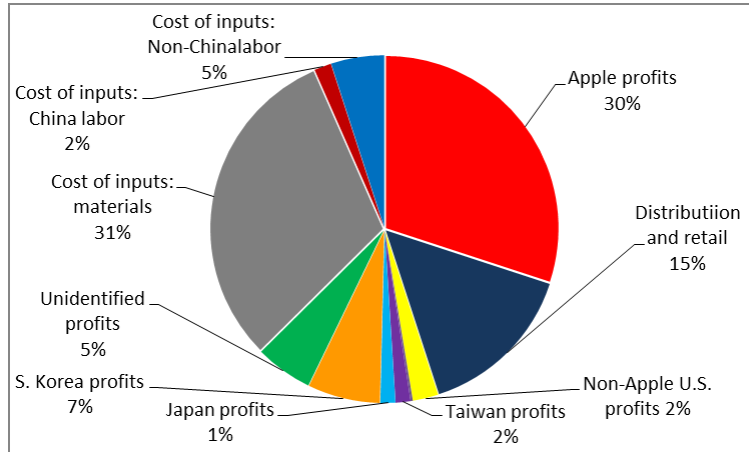
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Capturing Value in Global Networks: iPad



Capturing Value in Global Networks: Apple's iPad and iPhone

Kenneth L. Kraemer, Greg Linden, and Jason Dedrick

University of California, Irvine, University of California, Berkeley and Syracuse University



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The Cost of Cheap Labour

- Do Supply Chains have to be cheap to be successful?



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We tend to imagine „Business“ like this (BIG)



But there are other models: „Hidden Champions“



Mittelstand's Strategies beyond Lowest Wage

- Low Profile, small size, „old-fashioned“
- Ultraniche, unsexy, usually B2B
- Global Exports, often dominate markets
- Innovation with attention to detail
- Collaborative workforce, quality jobs, talent shortage
- Agile and tenacious
- Enduring manufacturing base
- Profitable service business

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National Varieties of Capitalism*

Coordinated / German & Japanese	Liberal Market / Anglo-American
Long-term horizons, Private financing or banks. Funding traditional activities for years.	Quarterly returns and short-term gains for shareholders, venture capital allocates resources to new activities.
Highly-skilled workforce, vocational education system	Universities decoupled from industry skills, or unskilled labor.
Cooperative labor relationships	Combative labor relationships
Company loyalty, over generations, lifetime employment	High job turnover, Hire and fire
Flexible production systems focusing on quality and customer requirements	Inflexible mass production to reduce cost. Works best in long series and large batches
Social solidarity and equality, value continuity	Societies tolerant of extreme inequality, disruptive change, excel at innovation

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*Source: Michel Albert "Capitalism vs. Capitalism"

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Some companies are reversing Outsourcing / Offshoring decisions

Decisions, decisions Reshoring, selection of companies		
Company	What and where	Why
Chesapeake Bay Candle	Production was shifted from China to Maryland in 2011. The company will export to China from there	Rising labour costs in China; wanting to respond more quickly to customers
Ford Motor Company	Production of medium-duty trucks is moving from Mexico to Ohio, saving 2,000 jobs. Adding extra capacity to a Michigan plant will save another 1,200	Thanks to an agreement with the trade union, the firm can now hire new workers at \$14 an hour
Otis Elevator	A factory is being moved from Mexico to South Carolina	To keep R&D closer to manufacturing and reduce logistics costs
General Electric	Production of large household appliances (eg. water heaters, fridges) is being shifted from China and Mexico to Kentucky	Having manufacturing, design and development close together; being more responsive to customers
Sleek Audio	Production of high-end earphones has moved from Dongguan in China back to Florida	Quality problems in China

Sources: Boston Consulting Group; PricewaterhouseCoopers; press reports; *The Economist*

„The Herd Instinct“
The Economist, January 19, 2013



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Some companies are reversing Outsourcing / Offshoring decisions

„Die Verlagerungsaktivitäten deutscher Betriebe haben mit 8 Prozent einen neuen Tiefpunkt erreicht. Mittlerweile kann aufgrund der Trendentwicklung davon ausgegangen werden, dass **der Scheitelpunkt der Verlagerungswelle mittlerweile überwunden ist**. Trotz dieser Entwicklung ist festzuhalten, dass deutsche Betriebe mit ihren Produktionsaktivitäten global aufgestellt sind. Bislang sind etwa 21 Prozent der gesamten Produktionskapazitäten des deutschen Verarbeitenden Gewerbes im Ausland angesiedelt worden. Dies entspricht einem Bruttoproduktionswert von etwa 389 Milliarden €.

Zu den bedeutendsten Zielregionen für Produktionsverlagerung zählen nach wie vor die EU-Staaten, vor allem die in Osteuropa. An zweiter Stelle China, gefolgt von anderen Ländern in Asien. Allerdings verlagern derzeit mehr Unternehmen Produktionskapazitäten aus asiatischen Ländern – Ausnahme China – wieder zurück nach Deutschland.... **Die Vorteile kostenorientierter Verlagerungsaktivitäten in Niedriglohnländer scheinen immer mehr zu schwinden**, während Erweiterungs-investitionen in Wachstumsmärkten gesamtwirtschaftlich an Bedeutung gewinnen.“

„Globale Produktion von einer starken Heimatbasis aus: Verlagerungsaktivitäten deutscher Unternehmen auf dem Tiefstand“
Fraunhofer Institut ISI, 2 March 2013

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Manufacturing Location is an Engineering Decision And a technical problem



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„ All our (*outsourcing*) decisions were made objectively, not
privileging any location.

If we hadn't made the decisions we made, we wouldn't have
been doing our jobs. ...“

- Director of an American Multinational,
who first outsourced the production of
computers to Singapore



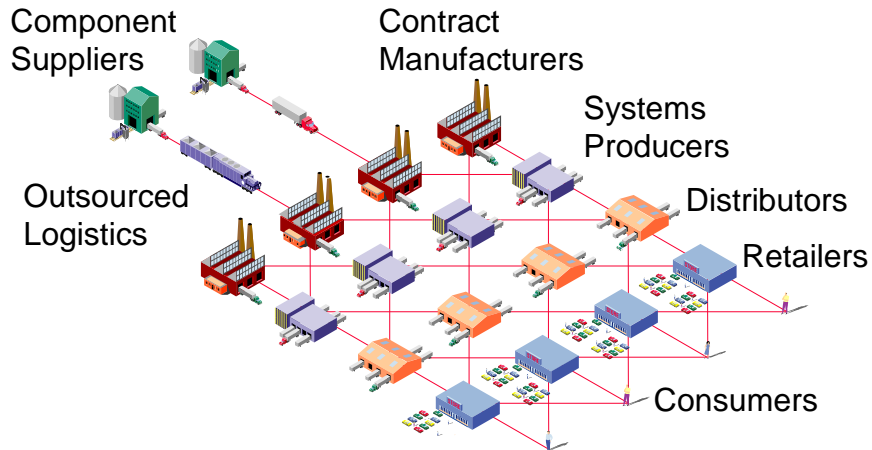
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Supply Chain Topology in 3D


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“Make or Buy”: Logical Decision Criteria

1. Political
2. Better
3. Tax
4. Cheaper (not #1)

What would you have done?

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The Engineer's Dilemma

“We need to control and monitor performance...
We see a lot of surprises.”



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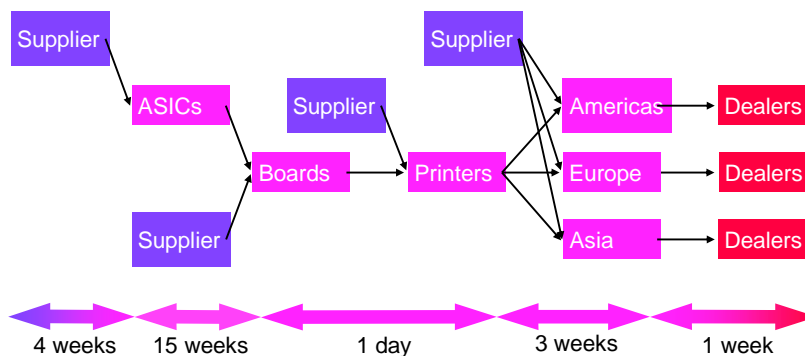


Hewlett-Packard Supply Chain Manager 2

January 9, 2007

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A Global Supply Chain



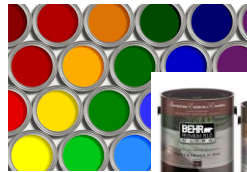
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The Engineer's Dilemma: Demand Uncertainty Matching Supply to Demand


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The Engineer's Dilemma

“The main focus is on cost reduction
and assurance of supply.”

Consumer Electronics Supply Chain Manager
January 9, 2007

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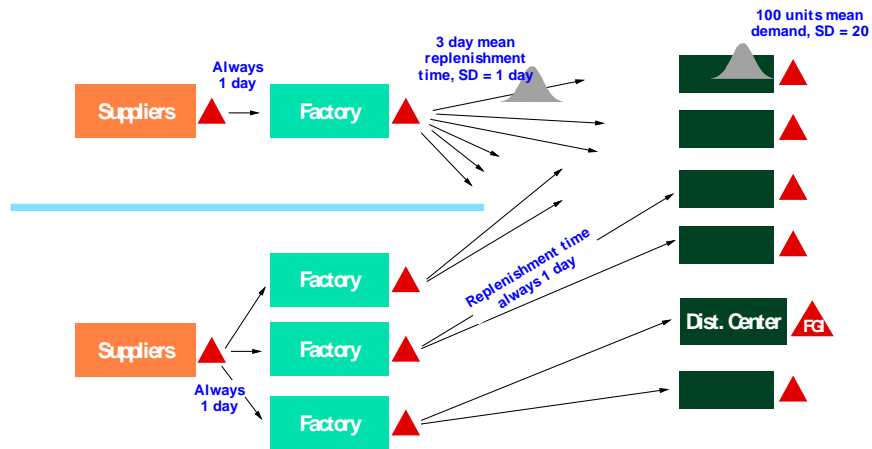
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Typical day in the life of a SC engineer: Which supply chain requires less inventory?


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It is not easy to make the right decision You have to do the math – but few bother!

Cyclestock inventory :

$$CS = \frac{\mu}{2f}$$

Safety stock inventory:

$$SS = k \cdot \sqrt{\underbrace{\mu^2 \cdot s^2}_{\text{Supplier LT variability protection}} + \underbrace{(L + R) \cdot \sigma^2}_{\text{Forecast Error protection}}}$$

DEFINITIONS:

L = mean supplier lead time
 s = standard deviation of supplier lead time

μ = mean demand per unit time
 σ = standard deviation of forecast error per unit time

k = safety stock factor (service lvl)
 R = review period
 f = delivery frequency

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National tax rates dwarf cost savings

	Base Case	Lower Wages	Lower Tax
Sales Revenue	100	100	100
Costs	90	89	90
Operating Profit	10	11	10
Net Profit	5	5.5	8



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National tax rates dwarf cost savings

	Base Case	Lower Wages	Lower Tax	How much more do I have to sell...?
Sales Revenue	100	100	100	160
Costs	90	89	90	144
Operating Profit	10	11	10	16
Net Profit	5	5.5	8	8

In order to achieve the same net profit,
I have to sell 60% more!



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Yet there are also examples
of highly successful companies
that choose not to offshore
to any great extent,
even in labour-intensive industries.

„The Herd Instinct“
The Economist, January 19, 2013

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Zara, the main clothing brand of Inditex,
a Spanish textile firm, is famous for making
its high-fashion clothes in Spain itself and
in nearby Portugal and Morocco.
This costs more than it would in China,
but a short, flexible supply chain allows
the firm to respond quickly to changes
in customer tastes. It sells the vast majority
of its outfits at full price rather than at a discount.



„The Herd Instinct“
The Economist,
January 19, 2013

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Its decision to stay close to home
has become its main source
of competitive advantage.

„The Herd Instinct“
The Economist, January 19, 2013



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Luxottica We Calculate the Real Costs of Cheap Labor

„Our objective is to concentrate as much as possible in the Italian plants.
We realized that our labor cost advantage, even in the Guangdong,
China plants, was minimal if you took indirect labor costs into
account.“

From: „How We Compete“ p. 122



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Luxottica We Calculate the Real Costs of Cheap Labor

„To make two lenses cost
 USD 2.63 in Fuling, China;
 USD 2.49 in Waterford, Ireland; and
 USD 1.20 in Italy
 – with the same equipment.

...The savings from centralization in Italy are so great –
 the bottom line was that so many of those made in China are
 defective that labor savings were canceled out.“

From: „How We Compete“ p. 123

Competitive Advantage: national educational model



Apprenticeships Keeping up with the Schmidts

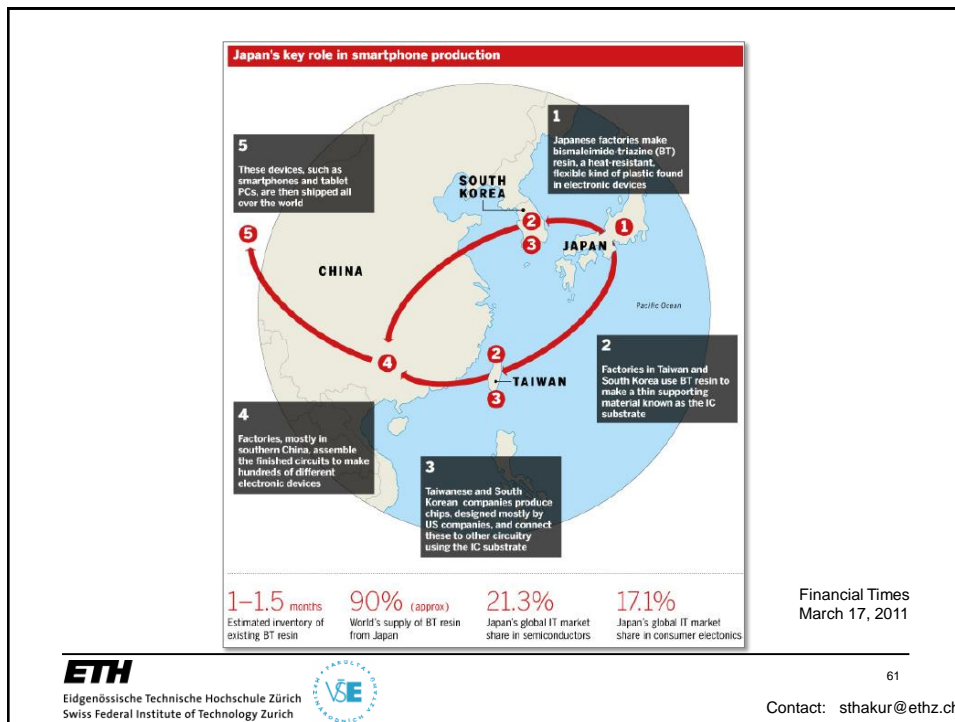
Attempts to build a snazzy, German-style apprenticeship system crash into cultural and economic differences

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AS THE football World Cup approaches, so too does the prospect of another drubbing by Germany. The England team crashed out of the last tournament, in 2010, in a humiliating defeat to its old rival. Sports fans, however, are not the only Britons looking to learn from the Germans. So are many in Westminster, for whom the 2008 financial crash was the economic equivalent of that 4-1 defeat in Bloemfontein. By broad agreement, the country needs to move away from finance and towards the sort of sturdy manufacturing industries in which Germany specialises.



British ministers strive especially to emulate their near neighbour's apprenticeship system. Adopting what David Cameron, the prime minister, calls a "Germanic approach", they have increased by half the budget subsidising workplace training and introduced £1,500 (\$2,500) grants for small businesses to take on their first apprentice. The number of people starting apprenticeships in England has duly soared (see chart). A similar pattern is evident in Scotland, Wales and Northern Ireland, where devolved administrations run their own skills policies.



Remember this when setting policy

- Global Supply Chains are not Zero-Sum games
- A convergence on one country or region is not inevitable
- There are hidden costs and unintended consequences of short-term optimization and „single factor solutions“.
- Expensive models can be competitive

Remember this when setting policy

- Countries compete on tax, labour engagement, specialization, product and process innovation, material flows, risk pooling, lead times, clusters, and financial plumbing, and more
- All these factors can be influenced - labour organisations, decision- and policy-makers are not powerless.
- Find your **national business model, educate** your policy-makers, and **collaborate to succeed**
- **CZ competitive advantages include proximity to EU, culture, SMEs, infrastructure, political stability, natural resources, low cost.**