



Robert Eller Associates LLC

CONSULTANTS TO THE PLASTICS AND RUBBER INDUSTRIES

QUALITY PERFORMANCE TIERING: EVOLUTION OF THE SUPPLY CHAIN IN EMERGING ECONOMIES

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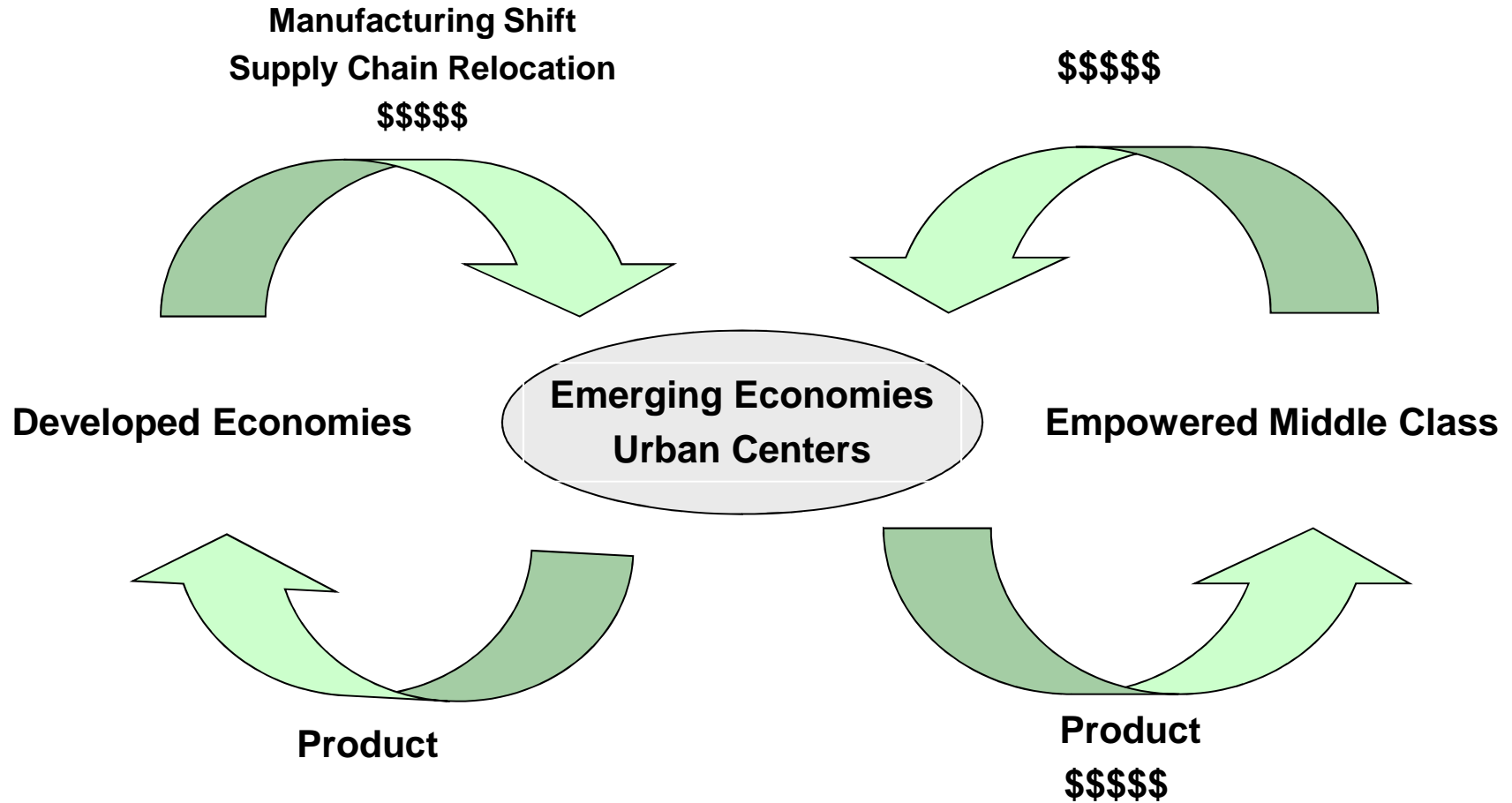


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CONSULTANTS TO THE PLASTICS AND RUBBER INDUSTRIES

- Robert Eller Associates is a 16 year-old global plastics consulting company
 - Assist companies in the strategic decision making process by analyzing technical, marketing and economic implications for their business and market sectors
 - Focus on TPE's, ETP's, PP Compounds/TPO, Automotive, Compounding and Foams
- Offices in Akron, Ohio (main office), France, China, New Zealand
- Multi-client studies
- Single client studies
- Mergers and acquisitions

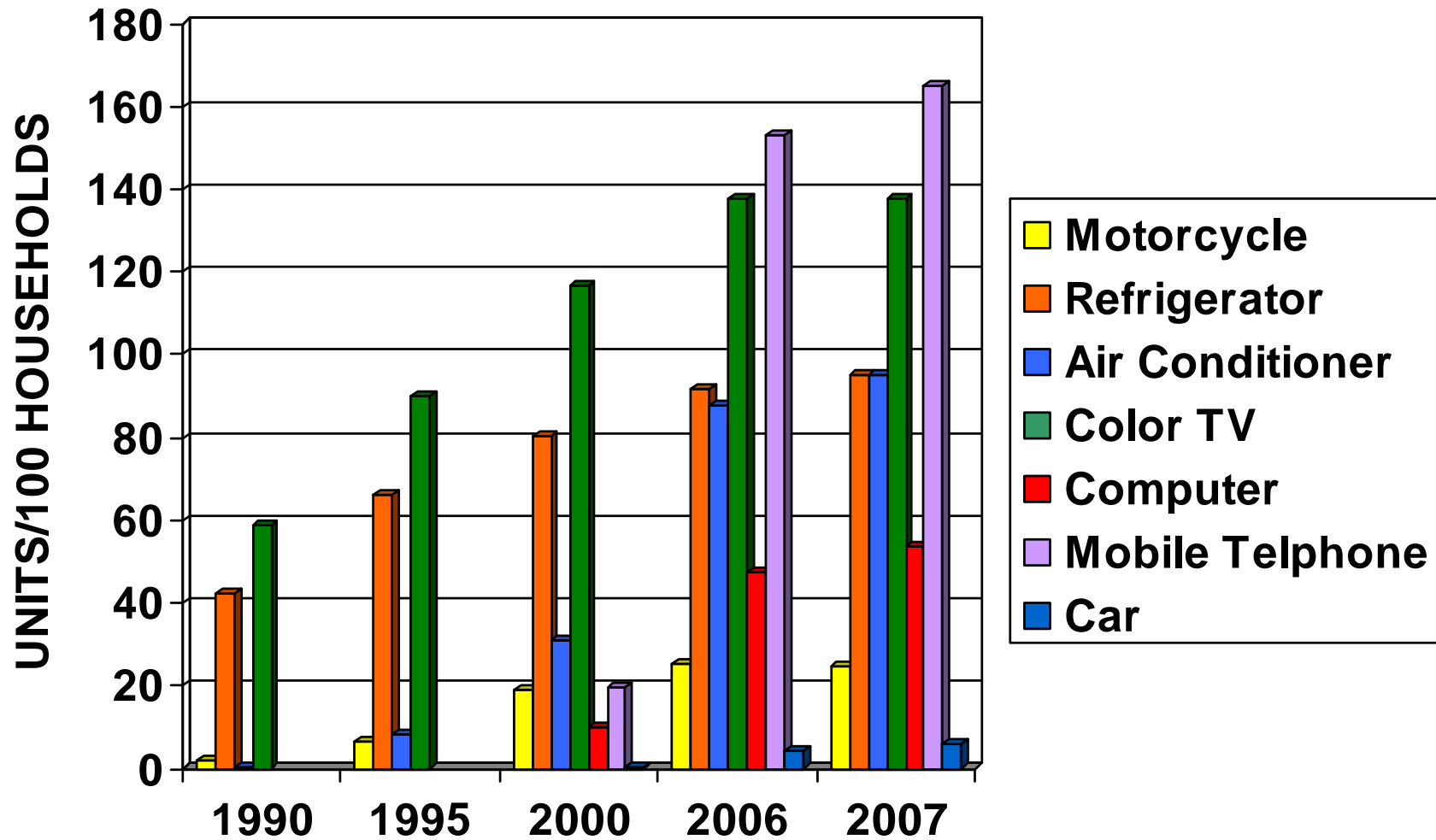
GLOBALIZATION EFFECTS



EMPOWERED MIDDLE CLASS AND SHIFT TO DOMESTIC MARKETS

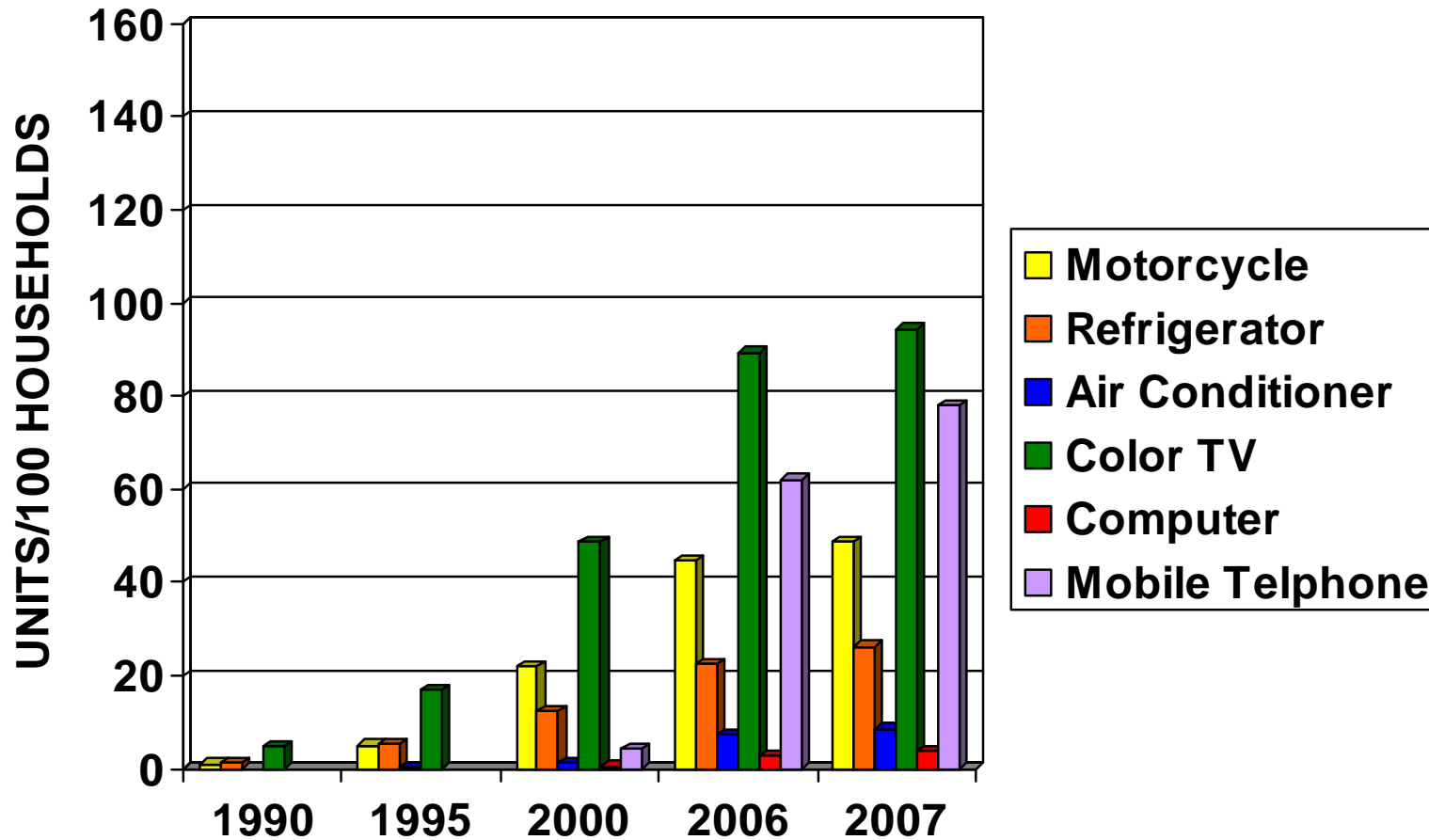
- In China, the number of urban households with income greater than 40000 RMB/year will triple in the next ten years and by 2025 will represent over 70 % of the forecast 400 MM urban households
- Buying boom is taking off
- Significant driving element of Asian emerging economies
- Driven by urban centers, rural areas are also growing but not as quickly.
- Buying cars, mp3 players, video games, computers, telephones, appliances
- Foreign brands popular and extract premiums over domestic products

DURABLE GOODS OWNED PER 100 HOUSEHOLDS IN URBAN CHINA



SOURCE: CHINA NATIONAL BUREAU OF STATISTICS
ROBERT ELLER ASSOC LLC 2010

DURABLE GOODS OWNED PER 100 HOUSEHOLDS IN RURAL CHINA

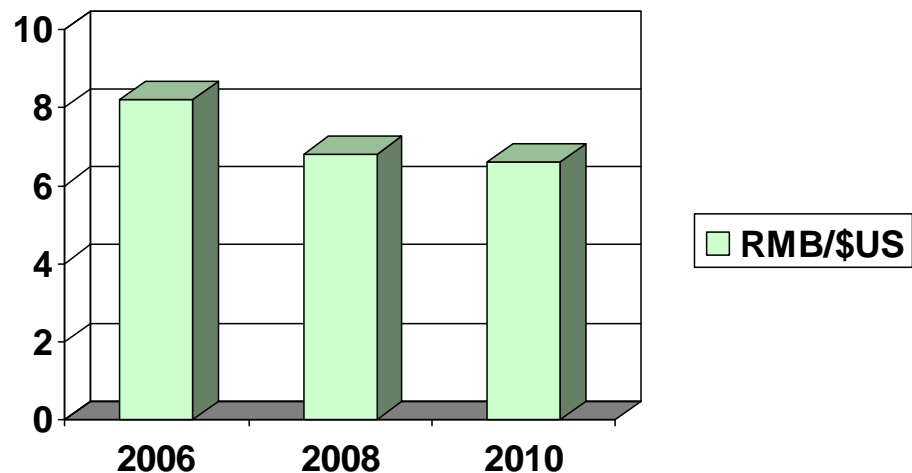


SOURCE: CHINA NATIONAL BUREAU OF STATISTICS
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GLOBALIZATION EVOLUTION TODAY: CHINA DRIVEN

- RMB currency appreciation
- Labor costs up 65-80% (last four years)
- Property cost escalation
- China position as low cost labor/manufacturing location eroded
- Innovation taking off
 - Original Chinese designs
- Higher value, higher technology industries being targeted with government support vs. the early labor intensive entrants into China: footwear, toys and textiles
- As cost of labor > cost of capital Chinese companies will utilize higher productivity technologies developed in the West (i. e. overmolding vs. 2K molding) which are more capital intense

RMB Currency Exchange Rates



GLOBALIZATION VS. LOCALIZATION

Globalization

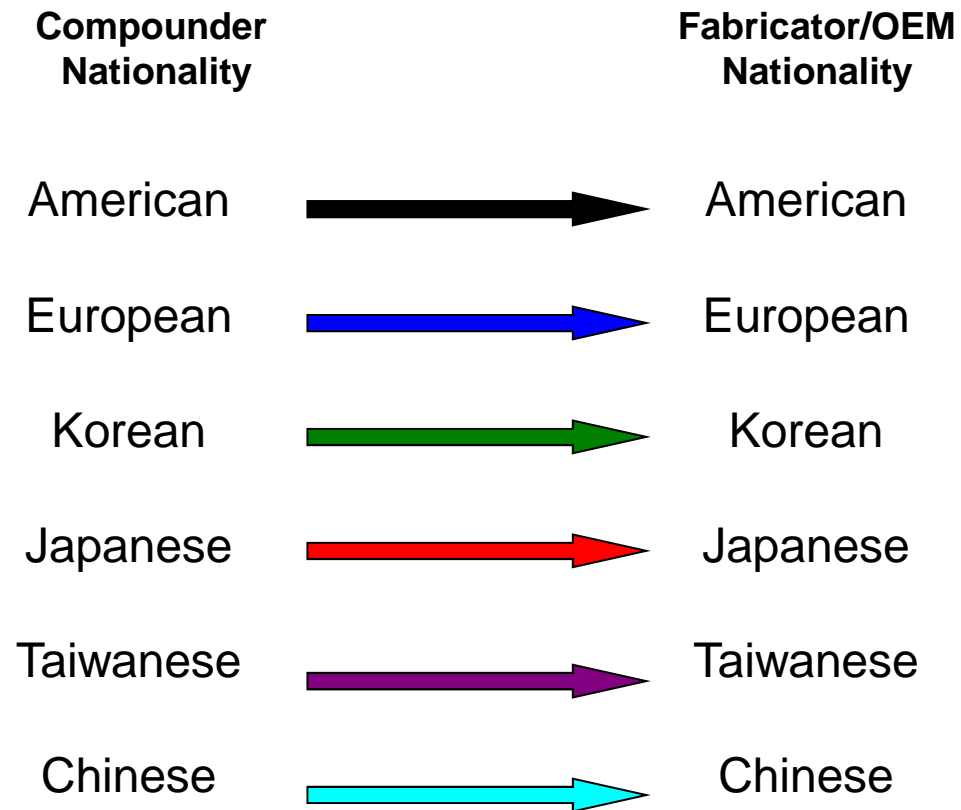
- Lowest Global manufacturing cost
- OEM Regulatory/Specification process
- Export driven

Localization

- Low cost raw materials
- Global vs. Local: Products for the local market
 - Chery, Nissan
- Meets local quality and performance needs
- Cell phones: Nokia, Motorola, Samsung vs. TCL/Bird
 - Smaller, fewer features
 - Branding
- Colgate Palmolive: San Xiao

PARALLEL SUPPLY CHAIN: FOLLOWING YOUR CUSTOMER INTO NEW ECONOMIES

Nationality Based



SOURCE: ROBERT ELLER ASSOCIATES LLC, 2010

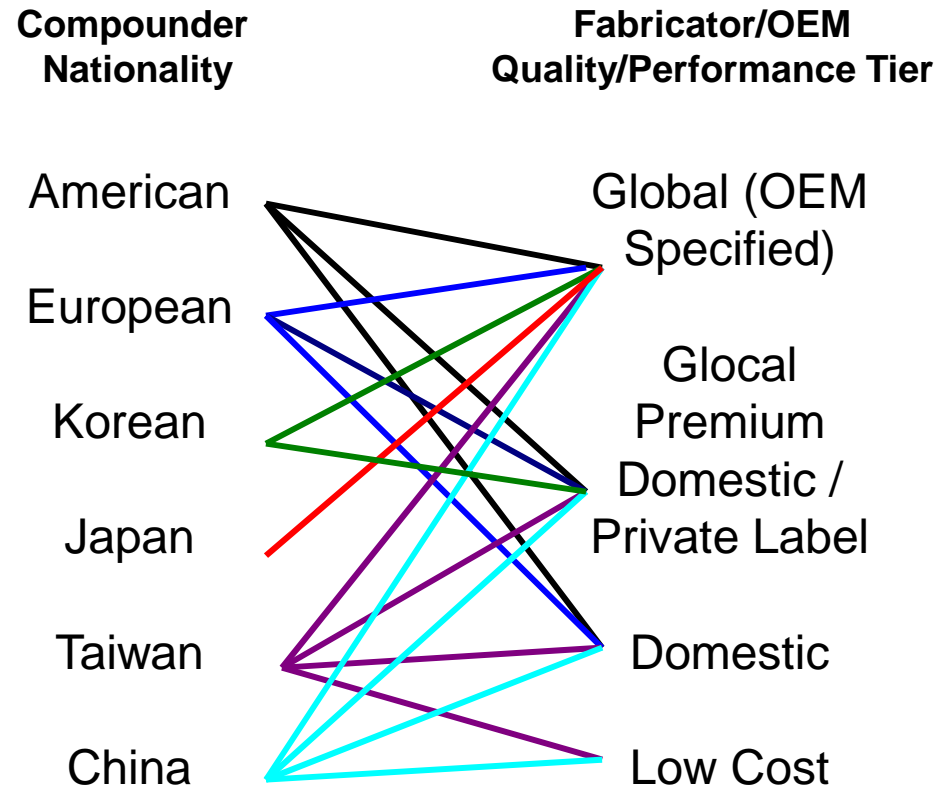
EMERGENCE OF QUALITY/ PERFORMANCE TIERING IN EMERGING ECONOMIES

MARKET SEGMENT	PRODUCT/QUALITY DEFINITION
Global	Products produced for Global market meeting global quality and performance standards at global pricing
Glocal*	Products produced for domestic and export markets with near global quality and performance standards with near global pricing
Local*	Products produced for the local market meeting local performance, quality and price requirements
Low End*	Products marketed based solely on price, with low concern for quality, and performance

SOURCE: ROBERT ELLER ASSOCIATES LLC, 2010

Note: * = Have gained share in global recession

BREAKDOWN OF PARALLEL SUPPLY CHAIN: QUALITY/PERFORMANCE BASED TIERING



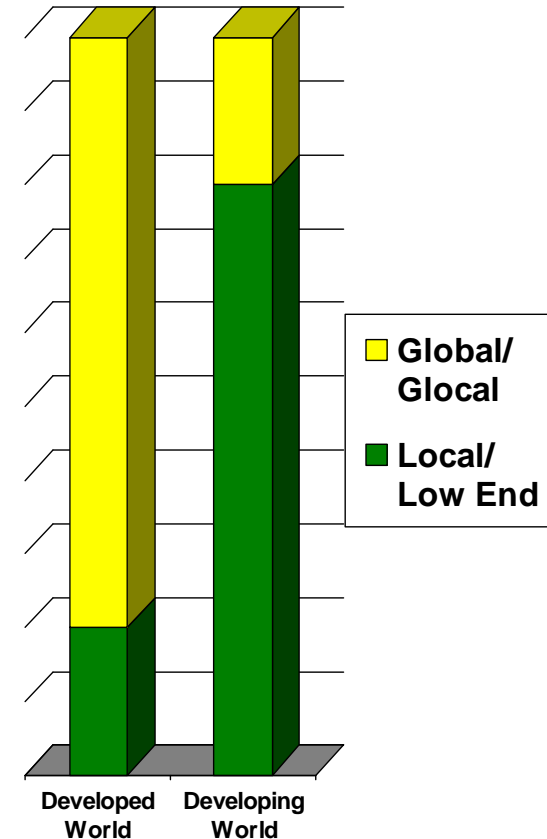
SOURCE: ROBERT ELLER ASSOCIATES LLC, 2010

QUALITY/PERFORMANCE TIERING

	Quality	Performance	Service	Price
Global	High	High	High	High
Glocal	Near Global	Near Global	Moderate	Near Global
Local	Local standards	Local requirements	Low	Local
Low End	Low	Low	None	Low

THE EVOLVING LEVEL OF QUALITY: DEVELOPED WORLD VS. UNDEVELOPED WORLD

- Developed World vs. Undeveloped World
 - 80% of the opportunity in the Developed World is global/ glocal tiers
 - 80% of the opportunity in the Undeveloped World is local/low end tiers
- Japan (1960s), Korea (1990s) are comparable models
 - Low cost, low quality manufacturing cultures evolved to high quality, high productivity, high labor cost global competitors
- Quality importance evolves as manufacturing culture matures
 - Concepts like six sigma and high productivity manufacturing techniques put greater pressure on the supply chain for higher quality, performance and consistency
 - As cost of labor increases, consumers in the undeveloped world will increasingly be willing to pay for reliability and quality until a global quality level is achieved



QUALITY TIERING: SOME CHINA EXAMPLES

	GLOBAL	GLOCAL	LOCAL	LOW END
Toothbrushes	Colgate Palmolive	San Xiao	San Xiao	One time use like hotel amenities
Toothbrushes (SEBS Compounds)	PolyOne (GLS)	Hotai	TSRC	Not used
Automobiles	Honda Toyota Nissan Hyundai	Buick Excelle BYD SAIC FAW VW	Chery	
Compounding Extruders (Coperion)	ZSK: Designed and made in Germany.	STS: Designed and parts made in Germany, rest in China. Cost 35-45% of a ZSK	CTE: Designed and made in China. Cost 10-15% of a ZSK	
SEBS Resin	Kraton	TSRC	Sinopec Baling	Wide spec
TPV	Santoprene		Dawnprene	

SOURCE: ROBERT ELLER ASSOCIATES LLC, 2010

CHINESE MANUFACTURING COST ADVANTAGES (PLASTIC COMPOUNDING)

- Local raw materials based
- Typically lower wage rate than western companies
- 4-10 times lower capital depreciation
- Greater creativity in raw materials/raw material sourcing
- Lower packaging costs: returnable bags, reuse of bags
- Lower shipping costs
- Government funded institutes provide R&D sources for compounders as advanced material or high technology centers

PRODUCT DEVELOPMENT VS. CAPITAL BASE


(FOR A COMPOUNDED PRODUCT)

	Local Quality Extruders	Glocal Quality Extruders	Global Quality Extruders
Global Quality Raw Materials			
Glocal Quality Raw Materials			
Local Quality Raw Materials			


SOURCE: ROBERT ELLER ASSOCIATES LLC, 2010

PRODUCT DEVELOPMENT VS. CAPITAL BASEan example

SEBS Resin	Coperion Twin Screw Extruder		
	CTE	STS	ZSK
Kraton			Highest Price
TSRC			
Sinopec	Lowest Price		



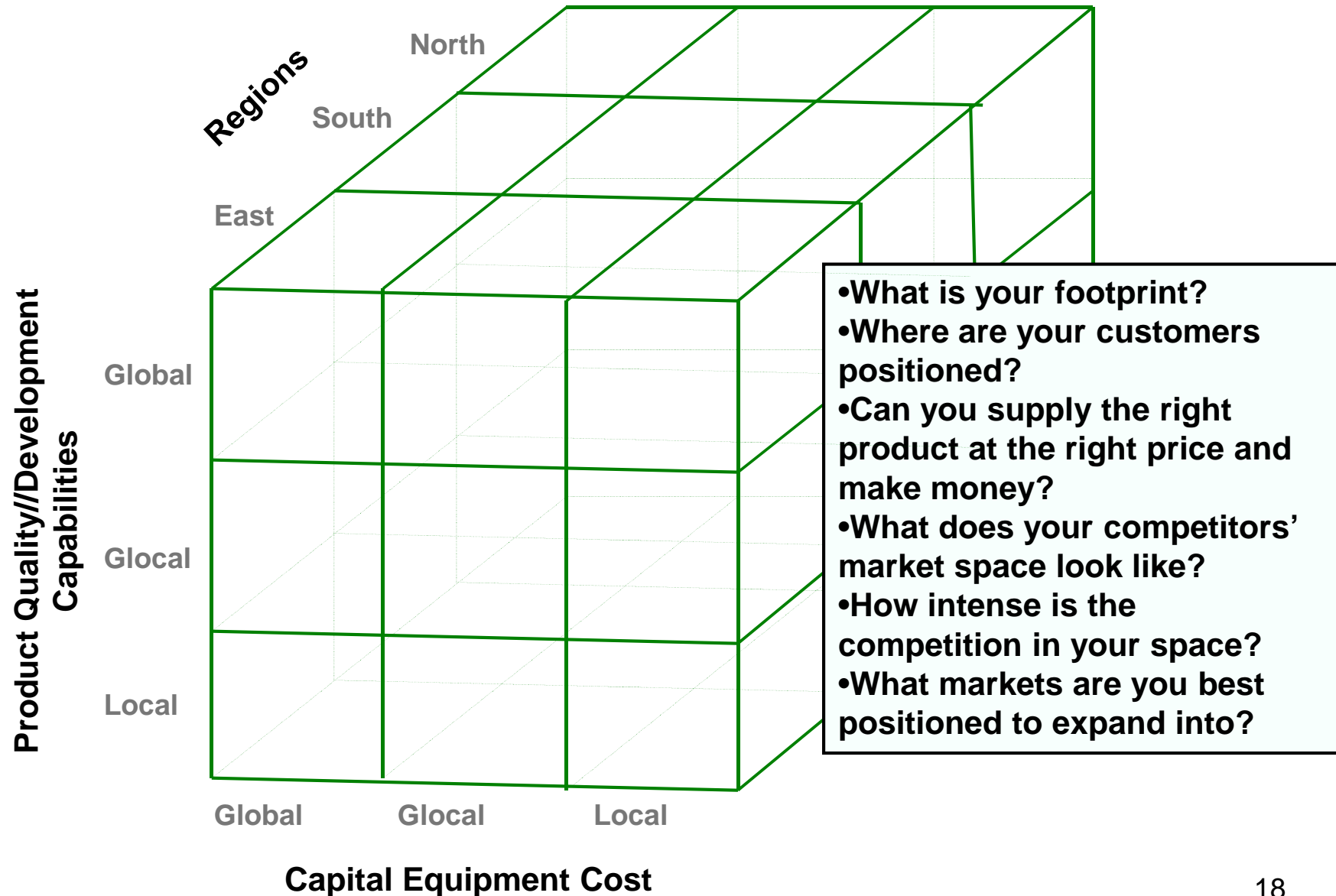
Increasing Costs



Increasing Costs

SOURCE: ROBERT ELLER ASSOCIATES LLC, 2010

STRATEGIC COMPETITIVE POSITIONING: REGIONALISM AND QUALITY/PERFORMANCE TIERING IN CHINA



QUALITY/ PERFORMANCE SUPPLY CHAIN STRATEGY: REDUCED SERVICE LEVELS

- Dow Corning Xiameter
- LyondellBasell's Alastian
- "Stripped out bare bones products"
 - No service (pay for any services)
 - Minimum to no technical help
 - No direct sales contact/ e-commerce based
 - Take the costs out
 - Few options
 - Rebranding the role in the supply chain
- Shifting a quality tier: making a product glocal or local?

QUALITY PERFORMANCE TIERING: SUPPLY CHAIN CONSIDERATIONS



- | | | |
|---|--|---|
| <ul style="list-style-type: none">• What is the price?• What is the quality?• What are the service requirements?• Where does the end product get consumed (export/domestic)? | <ul style="list-style-type: none">• Who are my target customers?• What quality tier are they in?• How do I maximize profit?• What quality do they need (defines the price)?• What service do they require?• How do I protect my branding in multi-tiered markets?• How do I protect my IP? | <ul style="list-style-type: none">• Quality expectation match?• Quality performance requirements met• Price/ quality requirement• Good value?• Acceptable delivery/logistics?• How is the quality assured?• How do I insure the quality?• What service do I require? |
|---|--|---|

CONCLUSIONS

- China is the latest of the Asian economies to evolve as being the global low cost producer
 - China losing its position of being the low cost labor location
 - Globalization shift: China → Next generation emerging economies
- Quality is a function of culture, raw materials and plant design (capital cost)
 - Asian manufacturers have the capability and skills to produce global products at high quality levels/ but also reduced quality products at lower costs
- Emerging economies evolve to a quality performance tiering supply chain (from a parallel supply chain) as the domestic market takes off from the empowered middle class purchasing durable goods
- What quality tier are you participating in or targeting?

Thank You!



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