
Real life technology
transfer experiences –
factors driving success,
and lessons learned

REDDAL

**UN APCTT-ESCAP regional workshop on
new paradigm in technology transfer and
commercialization**

Ghaziabad, India, July 8-10, 2019

Key messages

Recap from our previous APCTT-ESCAP presentation – we are facing a new world market, where all players need a real strategy

The role of nations in power, prosperity and poverty – understanding the effect of originating nation institutions

When the big squabble, doors can open but also close fast – politics can have big effects

Urge to internationalize might prompt quick sales approaches but growth SMEs need to execute a systematic strategy

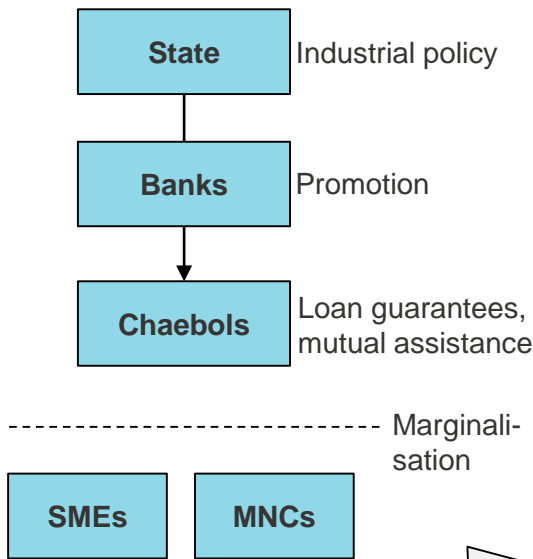
Case studies on growth – understanding the big picture and considering all angles is key for success

Conclusion and Q&A

Korea pursued substitution, while Malaysia, Taiwan and Vietnam pursued complementary strategy – the choice had effects on SMEs

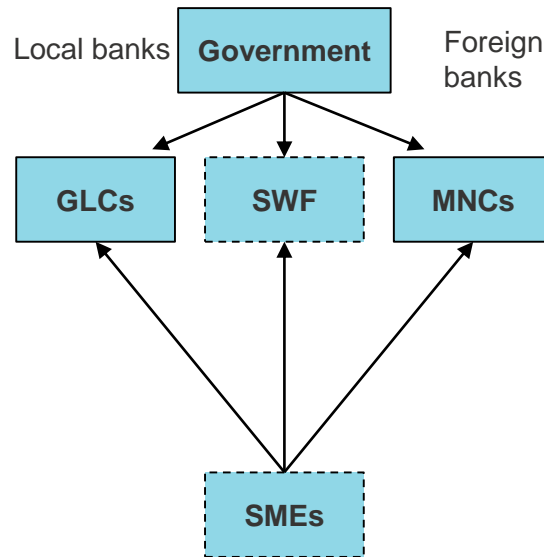
Comparison on national growth models

Korea
(substitution strategy)

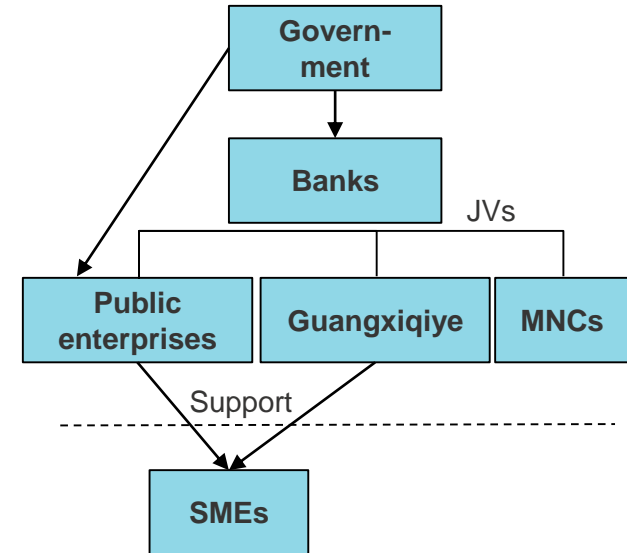


Unlike Japan, Taiwan and Singapore, Korean model required large outside financing (debt and other funding).

Singapore and Malaysia
(compl. strat. – int'l model)



Taiwan and Vietnam
(compl. strat. – semi-int'l model)



Vietnam pursues a semi-international complementary strategy similar to Taiwan model, yet with emergence of local conglomerates and weaker links to SMEs.

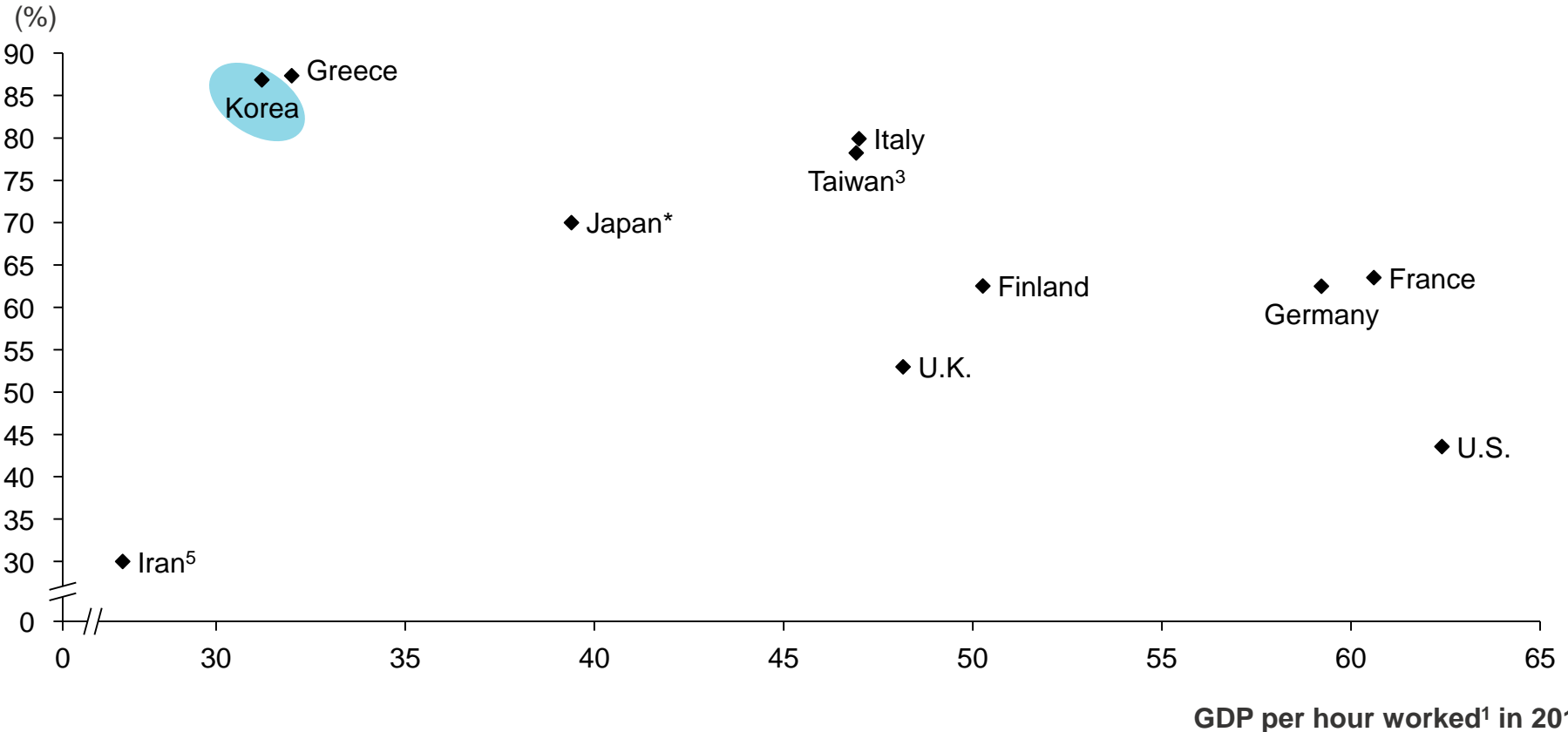
Note: MNC = multinational company, SME = small and medium sized enterprise, GLC = government linked company, SWF = sovereign wealth fund, SOE = 100% state owned enterprise, Guangxiqiye = local business groups; China applies a modified substitution strategy, leveraging JVs to expediate tech transfer process.

Source: Shin, Chang, *Restructuring Korea Inc.*, pp. 11-22; Ha Thanh, Nguyen & Klaus Meyer (2004); Van Chung, Vu (2015); Reddal analysis.

A burning issue of Korean economy is that the SME sector is extremely inefficient and employs a large share of the population

SMEs contribution to overall economy by country

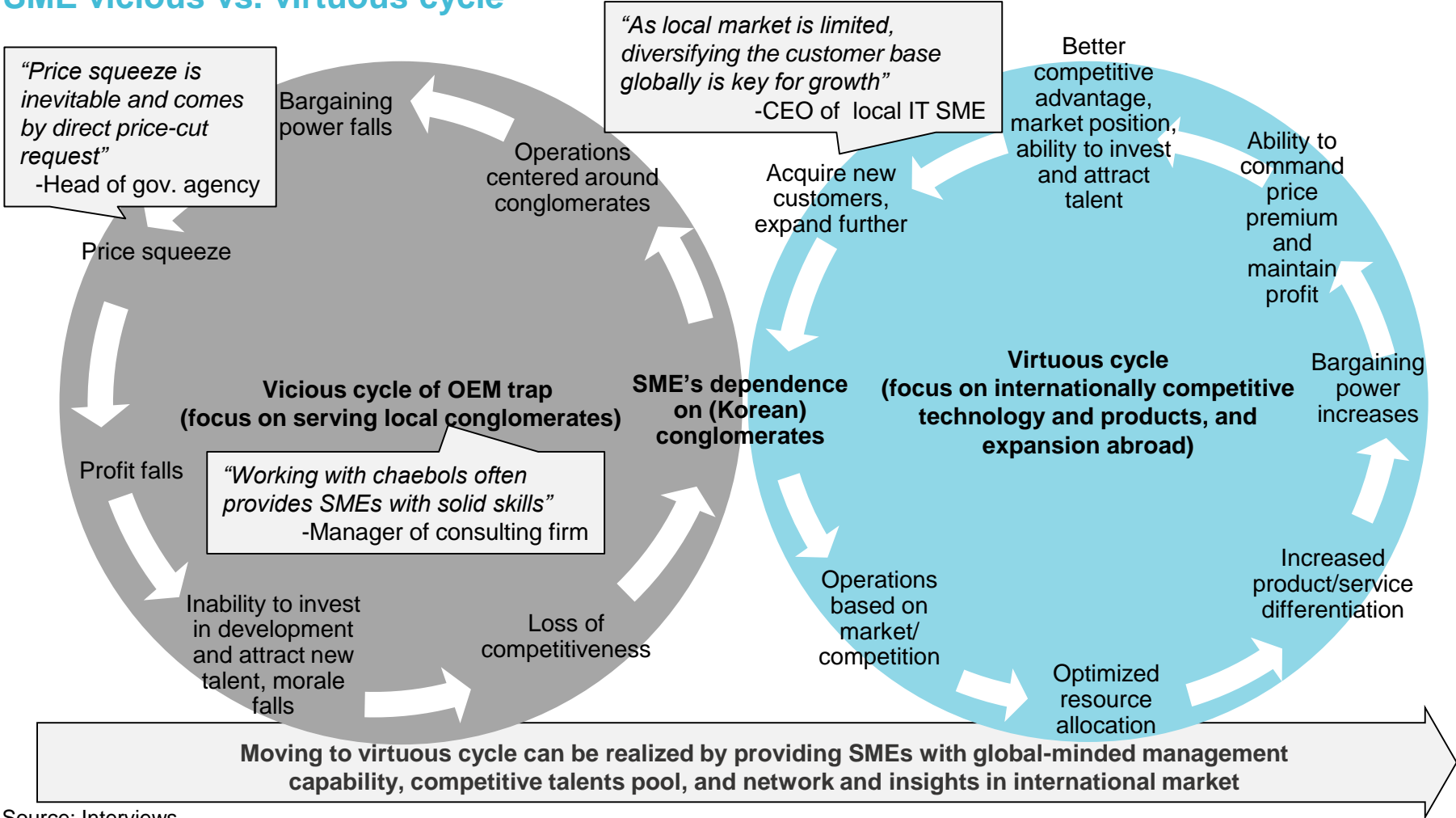
SMEs share of total employment² in 2012**



*Used 2013 number of labor forces and 2016 GDP for Iran and 2014 data for Korea and the U.S.; **Used 2013 data for Korea. (PPP)
Source: ¹OECD, *Compendium of Productivity Indicators* (2016); ²OECD, *Entrepreneurship at a Glance* (2015); ³Ministry of economic affairs of the R.O.C and The conference board total economy database; ⁴General Statistics Office of Vietnam; ⁵ Statistical Center of Iran (www.amar.org.ir).

Korean SMEs are often locked in vicious cycle, as SMEs are complacent with their role as supplier – transition to virtuous cycles requires internationalization

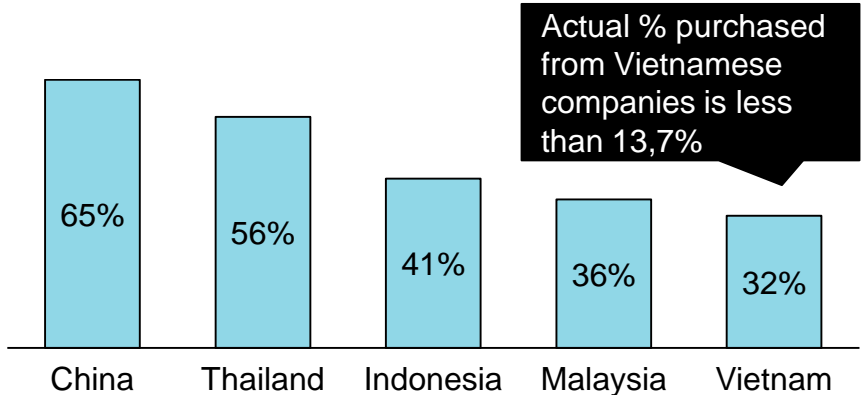
SME vicious vs. virtuous cycle



Localization rate and local (Vietnamese) supplier quality assessments highlight the competitiveness issue of Vietnamese players

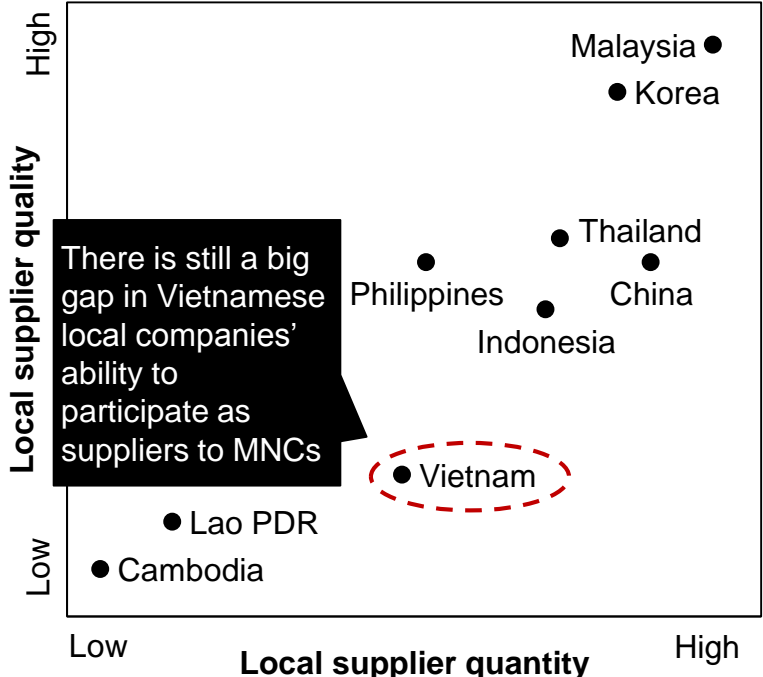
Competitiveness of Vietnamese suppliers

Localization rate* of Japanese-invested manufacturers by country, 2015



- Out of 32% Japanese local sourcing in Vietnam, 45% was sourced from Japanese companies operating in Vietnam and 14% from Taiwanese companies operating in Vietnam
- Low localization rate has directly affected Japanese invested companies' profitability in Vietnam
- Vietnam has been cooperating with Japan since 2000s to build supporting industries but have failed to realize two planned supporting industrial parks after 14 years

Local supplier quantity and quality**, 2015

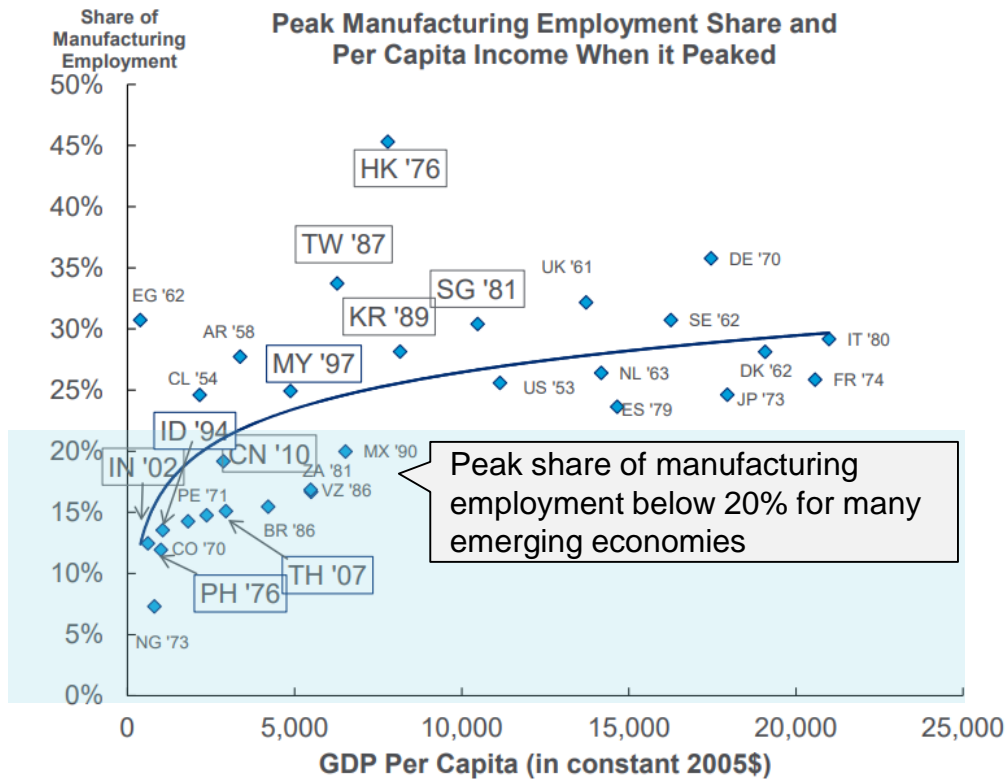


*Localization rate is defined as % of raw material and intermediary goods sourced locally, **Based on OECD ranking of 140 countries
Source: JETRO annual survey, OECD, press articles

Avoiding OEM trap is even more critical for SMEs in developing nations – advantage in manufacturing, arising out of cheap labor will diminish

Peak manufacturing employment share and GDP per capita when it peaked

Percent, constant 2005 USD



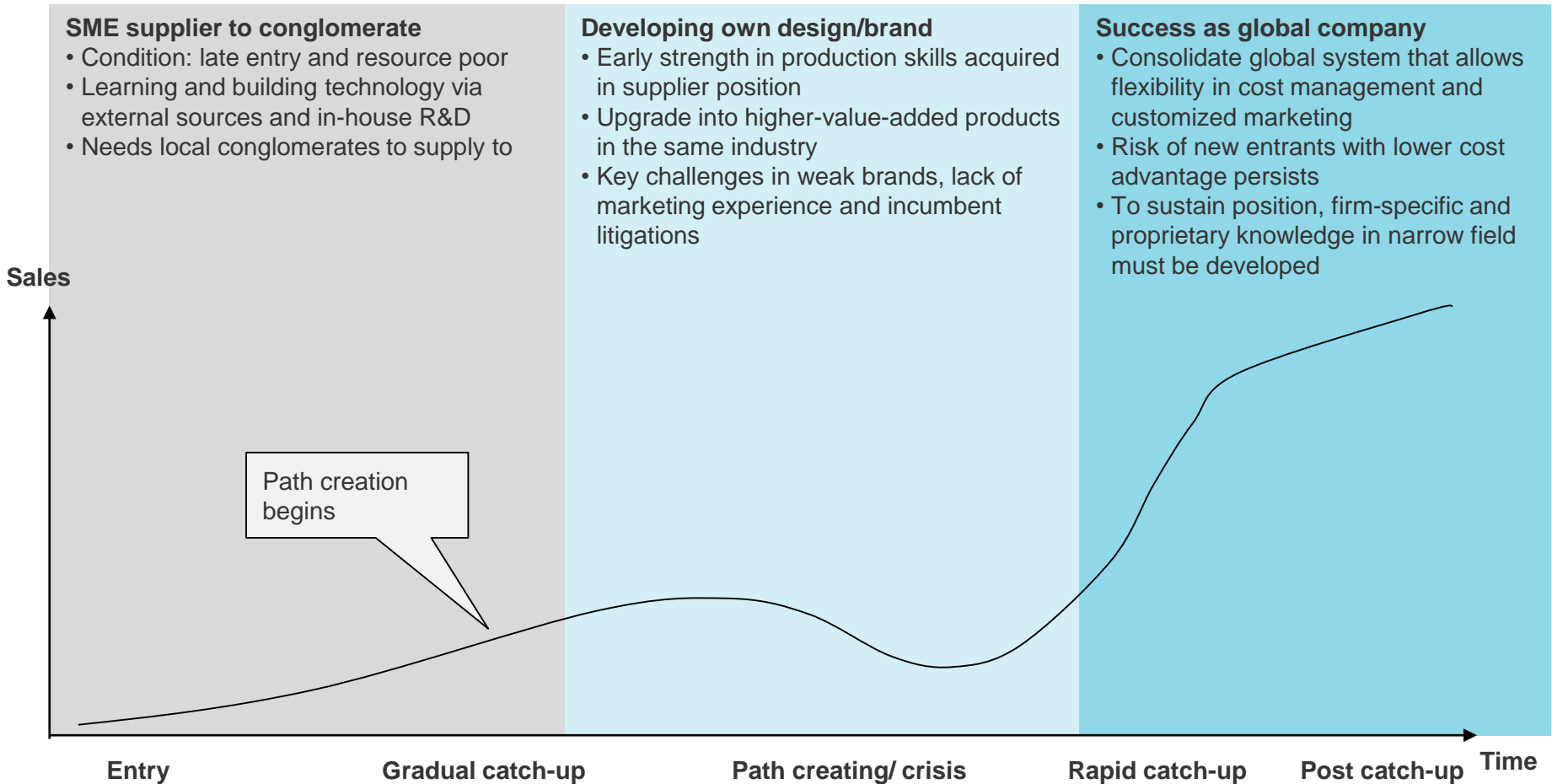
Observations

- Trade has induced productivity gaps to close faster than gap in income as manufacturers must follow similar international standards
- Manufacturing is becoming less labor-intensive also in developing economies; thus peaked share of manufacturing employment has declined
- Automation coupled with additive manufacturing making OEMs from developing economies risk becoming redundant

Source: GGDC-10 Sector database, World Bank Development Indicators, Citi Research in “Technology at work v2.0: The future is not what it used to be.”

SMEs in developing nations require a unique path creation strategy, where internationalization is an integral part of success

Path creation strategy for SMEs: from OEM to OBM*



*OEM = original equipment manufacturer, OBM = original brand manufacturer; concepts can be also extended to services

Source: Lee, *Economic catchup and technological leapfrogging*

Young technology companies need to build internal R&D capabilities and leverage digital technologies and service platforms to drive growth

Tips on internationalization for technology SMEs



Avoid the OEM trap – being complacent in playing the role of part manufacturers in the global value chain.



Invest in internal R&D to develop internationally competitive technology and products, and expansion abroad.



Over-rely on low-cost advantages without realizing other value-adding advantages from local resources.



Digital technologies make cross-border collaboration more easily, which young companies can leverage to build optimal teams.



Overly ambitious expansion plan, risk stretching themselves too thin over mass expansion without a clear go-to-market strategy/strategies.



Digital and service platforms make scaled internationalization more feasible for young companies with local resources – but local know-how essential for success.

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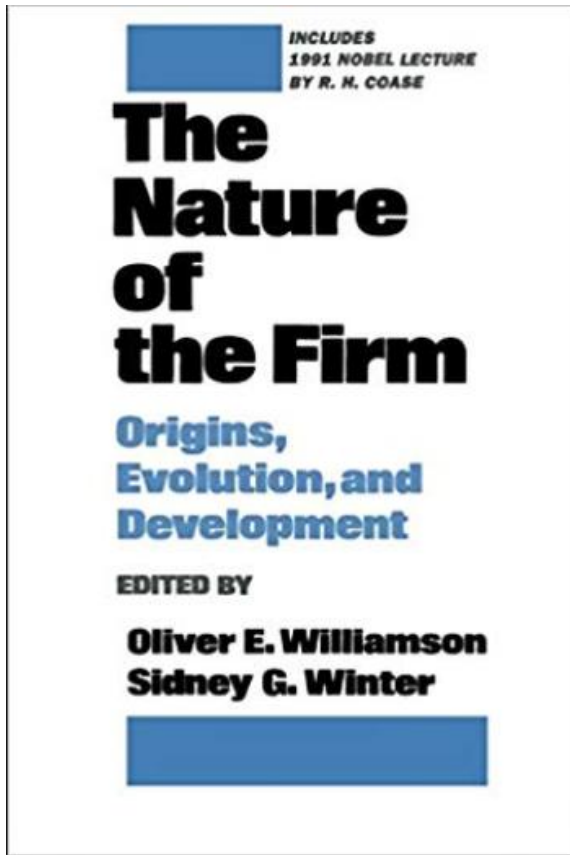
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Coase developed a basic theory of a firm, and this can partially be extended to nations as well

Ronald Coase main theses on the nature of the firm



“As long as there is a cost of using the price-mechanism, it is advantageous to organize within a firm and reduce uncertainty by making a promise of loyalty to a certain extent. Within a firm, an unsustainably large number of contracts is replaced by one.”

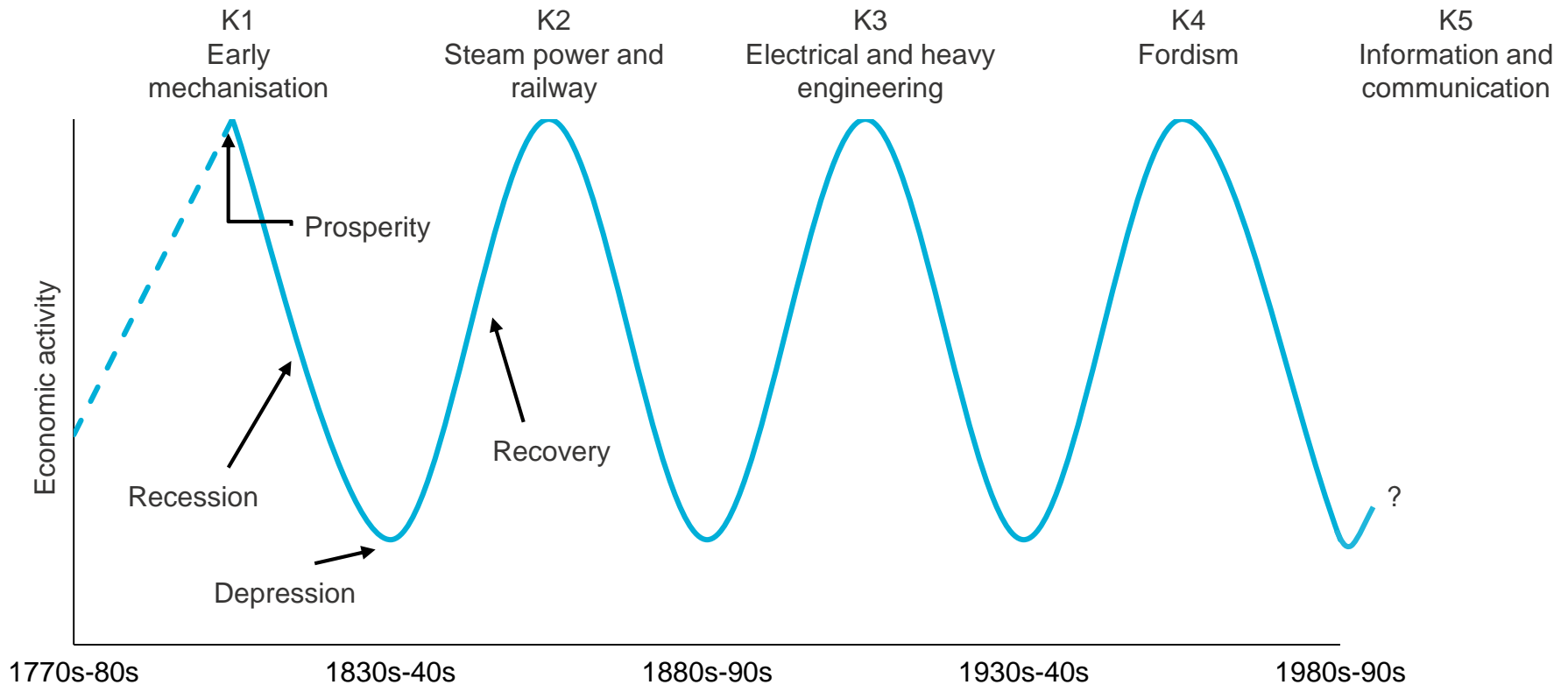
“A firm stops growing at some point due to the law of diminishing returns to management: the cost of organizing rises with additional transactions due to inability to place resources effectively, and at some point surpasses the costs of carrying out the transaction in the open market. A firm therefore tends to be larger

- The less the cost of organizing is and the slower the cost grows with expansion
- The less likely is the entrepreneur to make mistakes and the smaller the probability of being inefficient grows with accepting additional transactions
- The less the supply price of factors of production rises as the firm grows larger”

Source: <https://www.scribd.com/doc/156497850/Summary-Coase-1937-the-Nature-of-the-Firm>.

Earlier Kondratieff presented the notion of long-term waves in global economy and Schumpeter "creative destruction"

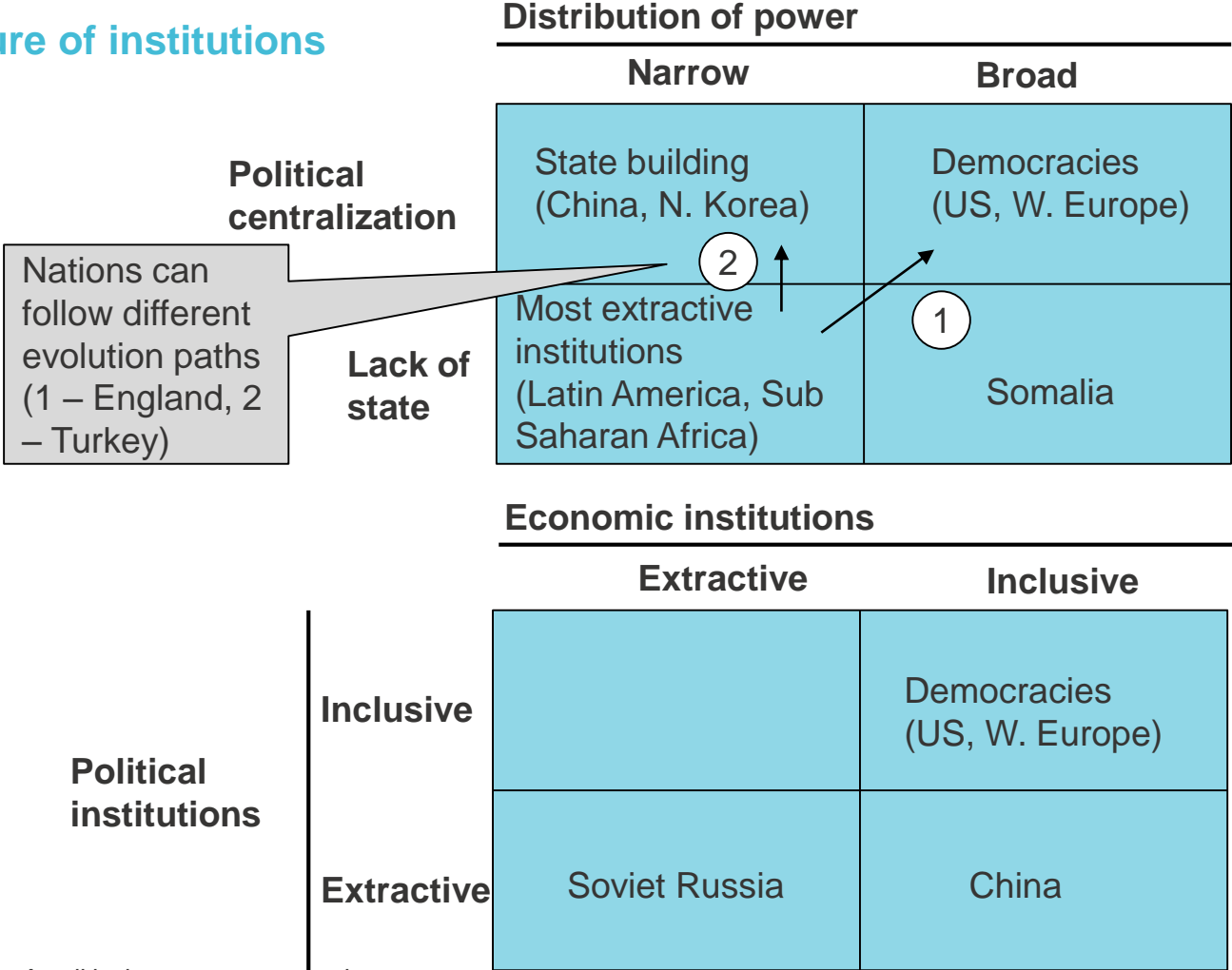
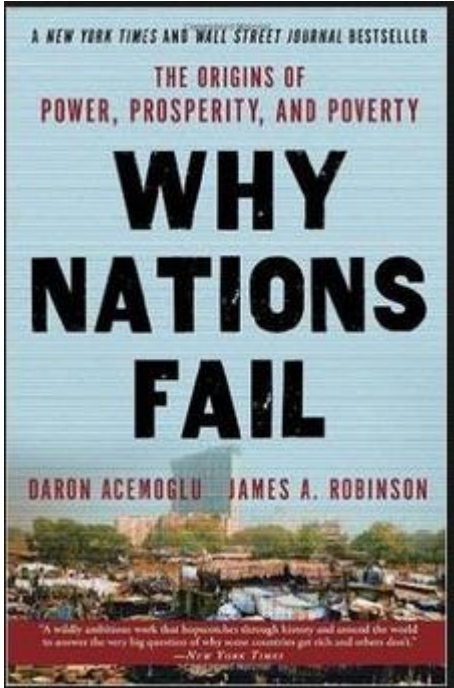
Kondratieff waves of growth and their main features



Source: Trott, *Innovation Management and New Product Development*, 5th ed., pp. 6-8, 54-55; see also Shin, *The Global Financial Crisis and the Korean Economy*

These can now be connected to a theory of nations and their success – and it lends itself perhaps also back to ventures

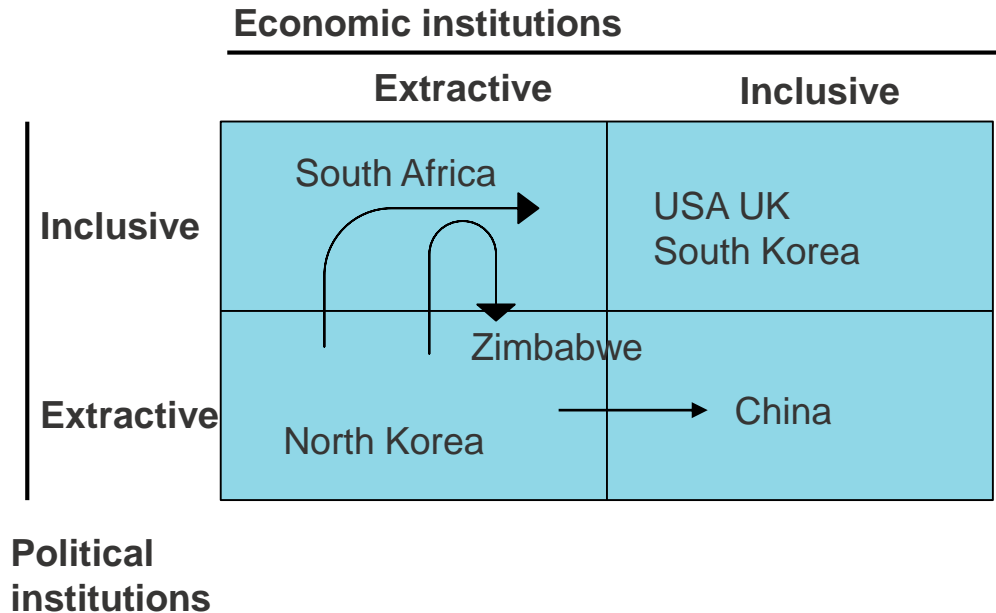
Basic concepts on structure of institutions



Source: Daren Acemoglu, MIT, *State building: A political economy perspective*.

The basic idea is that innovation is driven by freedom and creativity; institutions can improve that by incentivizing everyone to participate

Rents and economic development



Source: Daren Acemoglu, James A. Robinson, *Rents and economic development: the perspective of Why Nations Fail*.

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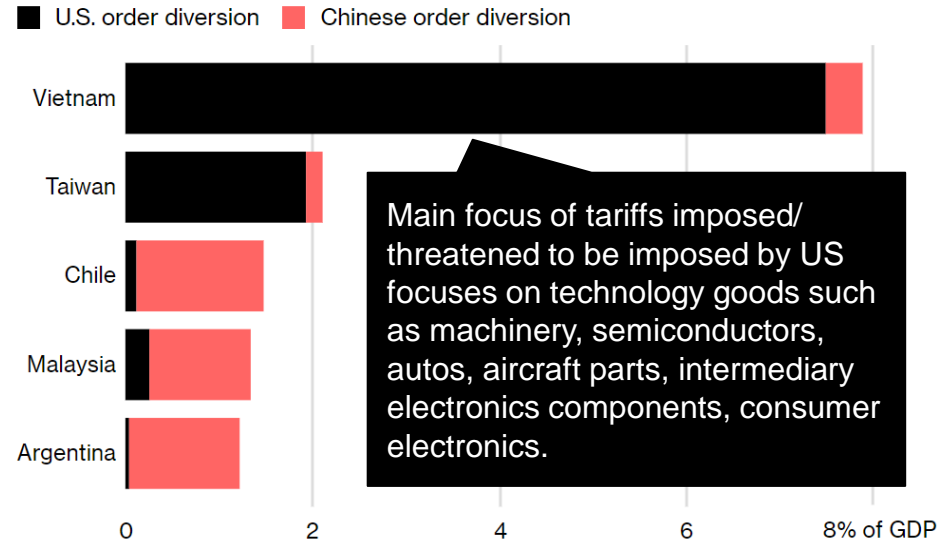
Ongoing US-China trade wars might accelerate the internationalization of technology companies from developing countries, like Vietnam and Malaysia

Implications of trade policies on internationalization trends – US-China trade wars

Vietnam stands to benefit mainly from US order diversions up to 8% GDP

Vietnam Wins, Again

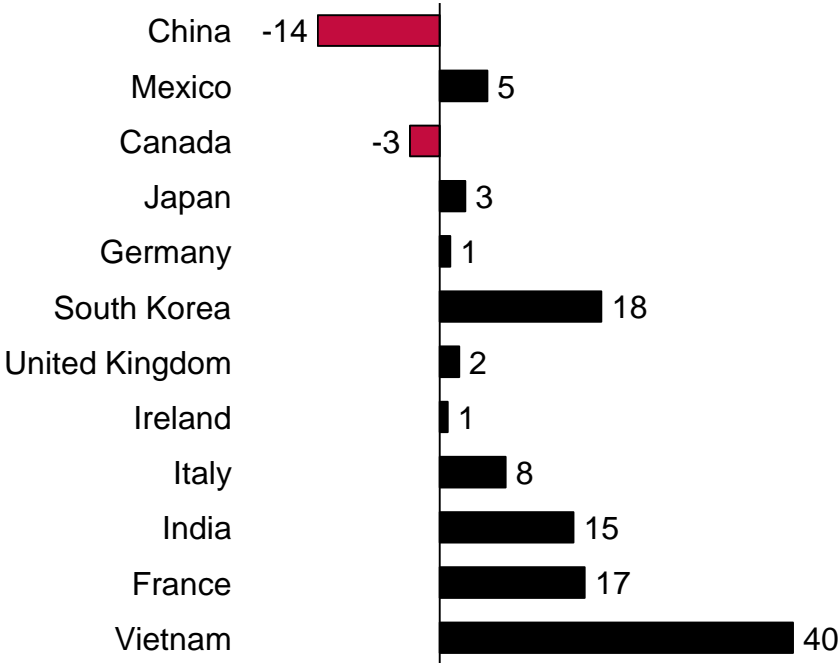
Third-party economies gain from goods diversion in U.S.-China tariff battles



Main focus of tariffs imposed/ threatened to be imposed by US focuses on technology goods such as machinery, semiconductors, autos, aircraft parts, intermediary electronics components, consumer electronics.

US imports from Vietnam surged in Q1 in anticipation of tariffs wars

Q12019 YoY in US import volumes



Source: Nomura
 Notes: U.S. trade diversion is American shift in orders due to higher tariffs on China; Chinese order diversion is that economy's order substitution due to higher levies on U.S. Data are for year through Q1 2019

However, Trump's recent threats and the EU-Vietnam FTA may make the situation of local Vietnamese tech firms more precarious

Implications of trade policies on internationalization trends – EU-Vietnam FTA

Recent comments on the trade from politicians in US and Vietnam

“ *Well, a lot of companies are moving to Vietnam, but Vietnam takes advantage of us even worse than China.*

- US President Donald Trump (reportedly),
June 2019

“ *... would slap tariffs of up to 456 per cent on certain steel produced in South Korea or Taiwan which are then shipped to Vietnam for minor processing and finally exported to the United States.*

- US Commerce Department, July 2019

“ *The Ministry of Industry and Trade has warned local companies about possible moves by importing countries, including the United States, to apply stricter requirements in trade protection cases.*”

- Foreign Ministry spokesman Le Thi Thu Hang,
July 2019

EU-Vietnam FTA will increase competition in high-tech sector in Vietnam

99% Customs duties to be eliminated.

50_{BEUR} Values of traded goods and services.



Main exports to VN include: high-tech, electrical, machinery, aircraft.



Main exports to EU include: telephone sets, footwear, textiles, rice.

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Without a dedicated entry strategy, many young companies fall to the pitfalls of relying on the “sales” approach only for short-term gain

Entry strategy approach versus “sales” approach to international markets

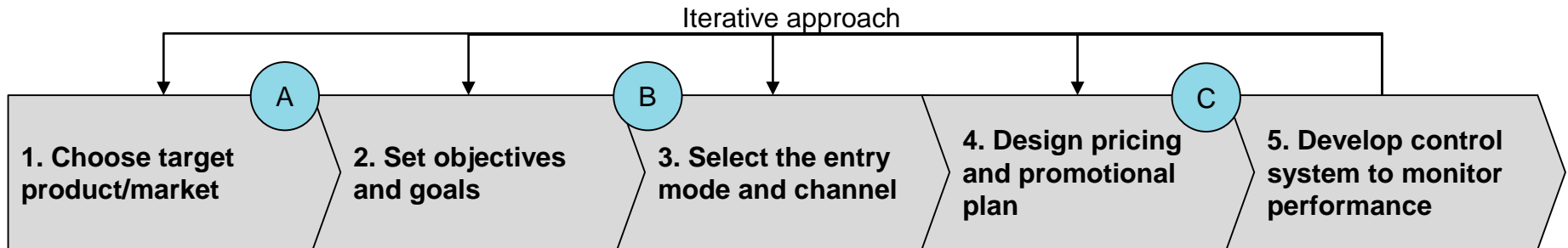
	”Sales” approach	Entry strategy approach (go-to-market system)
Time horizons	Short-run.	Long-run (say, 3 to 5 years).
Target markets	No systematic selection.	Selection based on analysis of markets/sales potential.
Dominant objectives	Immediate sales.	Build permanent market position.
Resource commitment	Only enough to get immediate sales.	What is necessary to gain permanent market position.
Entry mode	No systematic choice.	Systematic choice of most appropriate mode.
New product development	Exclusively for home market.	For both home and foreign markets.
Product adoption	Only mandator adaptions (to meet legal/technical requirements) of domestic products.	Adaption of domestic products to foreign buyers’ preferences, incomes, and use conditions.
Channels	No effort to control.	Effort to control to drive market objectives/goals.
Price	Determined by domestic full cost with some ad hoc adjustments to specific sales situations.	Determined by demand, competition, objectives, and other marketing policies, as well as cost.
Promotion	Mainly confined to personal selling or left to middlemen.	Advertising, sales promotion, and personal selling mix to achieve market objectives/goals.

Without a go-to-market system with entry strategy for a product/target market, a company only has a “sales” approach.

Source: Franklin R. Root, Entry strategies for international markets (2008).

A go-to-market (GTM) system is needed for long-run success, where entry strategy can be continuously reviewed and updated

Three common decision making pitfalls during GTM journeys



A. Availability bias, grasping the first opportunities, can lead executives in rushing into a decision to enter a market without a proper market scanning exercise can lead to dire consequences and bad subsequent decisions to make up for the initial choice.

B. A rush decision to enter market often entails a “sales approach” when deciding on the entry mode with an objective is to get an immediate sales instead of building a permanent position in the host market, which is not viable in the long run.

C. It is important to not downplay the need for cultural sensitivity when forming management team to lead/manage international expansion efforts, who must be able to be the “messenger” especially between two distant cultures to ensure timely strategy adaptation and effective governance.

Source: Reddal analysis based on recent client work, Franklin R. Root, Entry strategies for international markets (2008)

Recent work with European and Asian companies highlights the importance of avoiding decision bias to rush into market expansion and cultural sensitivity for successful execution

Practical tips in executing a GTM strategy

GTm tips	Client case	Lessons learnt
✓ Culture bridges are important	A Nordic part manufacturer with entry into China	<ul style="list-style-type: none"> • Be sensitive about cultural differences • Having someone familiar with two distant cultures as communication bridge is beneficial while avoiding psychological alliance
✓ Creative field research is essential	A Nordic energy company sourcing new supplies in China	<ul style="list-style-type: none"> • Desktop research is handy but has clear limitations • Field research leveraging supplier, partner connections, government agencies, cold call is essential in building fact-based approach
✓ Own networks can be insightful	A Nordic energy company expanding into new EU markets	<ul style="list-style-type: none"> • Using external research companies might be costly yet ineffective without clear objectives and scopes • Leverage inhouse contacts for first-hand insights can be more efficient
⊗ Do not rush into partnership	German part manufacturer with entry into Korea	<ul style="list-style-type: none"> • Over-reliance on a limited distributor network can be costly • Lack of proper scanning and distributor relationship governance can risk brand damages which takes years to rebuild
⊗ Lack of market understanding limits scalability	Vietnamese part manufacturers with entry into EU	<ul style="list-style-type: none"> • Tendency to grab at the first sales opportunities without clear value propositions in a new markets limits scalability
✓ Expatriate network can be helpful	Vietnamese agricultural products with entry into Nordics	<ul style="list-style-type: none"> • Consumer product SMEs can leverage existing expatriate network in the host country to do a quick market-product fit validation

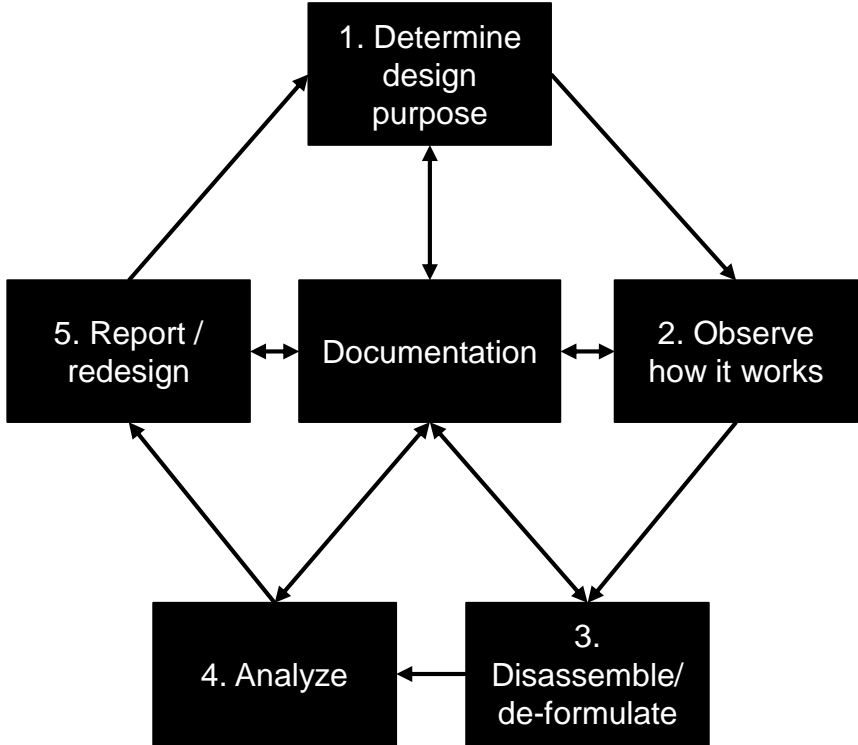
Source: Reddal analysis based on recent client work.

In sanctioned countries like Iran, reverse engineering is a key technology development process both for local demands but also future market expansion

Role of reverse engineering in accelerating technical and internationalization capacity

Unlike duplicating, reverse engineering is a systematic process that can lead to innovation

Examples of commercial outcomes



Same functionalities with lower costs

or
enhanced functionalities

Domestically produced radiopharmaceuticals being exported to 15 countries including Egypt, India, Pakistan, Iraq, Lebanon, Syria, and some EU countries.

Iran used to have to import centrifuges but through the process of reverse engineering, now able to produce not only the 1st generation but also latest models.

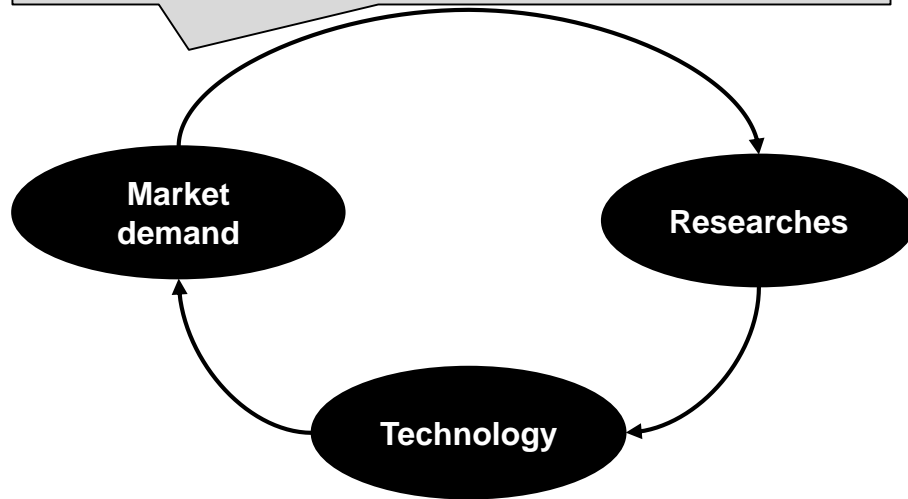
Source: Dehaghi and Goodarzi, "Reverse Engineering: A Way of Technology Transfer in Developing Countries like Iran", International Journal of e-Education, e-Business, e-Management and e-Learning, IEEE GlobalSpec's Engineering360 (2011), press clippings, Reddal analysis.

Technical investments in developing countries may be driven by factors such as oil income (Iran) or real estate/consumer sector profits (Vietnam)

Technology development in market vs. non-market driven economies

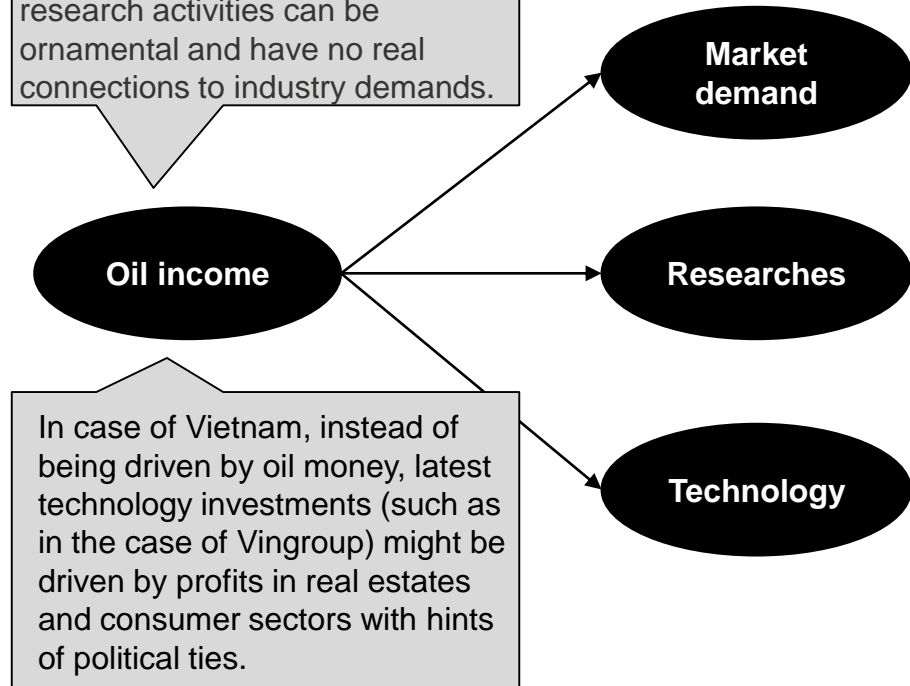
In developed countries, technology and innovations normally initiated by market demands

In industrial countries, research and technology development is normally initiated by market demands in an endless cycles that fuel innovation.



In developing countries, technology and innovations can be initiated by other factors

In oil-rich countries like Iran, research activities can be ornamental and have no real connections to industry demands.



Source: Dehaghi and Goodarzi, "Reverse Engineering: A Way of Technology Transfer in Developing Countries like Iran", International Journal of e-Education, e-Business, e-Management and e-Learning, IEEE GlobalSpec's Engineering360 (2011), press clippings, Reddal analysis.

It remains to be seen how such willfull yet systematic and deliberate efforts contribute to boosting technological advances in a developing country

Systematic venture into technology development from deep pocket Asian consumer conglomerates – VinGroup (Vietnam)

Vingroup path from a real estate and retail conglomerate into the local tech scene



Revenue 5.3
BUSD (2018)

Profit 1.2
BUSD (2018)

- Founded by Pham Nhat Vuong in early 2000s with two main arms: Vinpearl (resorts) and Vincom (retail)
- 2012: both brands merged into Vingroup and expanded into healthcare with Vinmec, into education with Vinschool in 2013, grocery with VinMart, luxury residential apartments with Vinhomes in 2014, automobile with Vinfast in 2017, higher education with VinUni, pharmaceuticals with VinFa, smartphones with VinSmart and technology with VinTech in 2018
- In 2019, its greenfield automobile plant inaugurated in Hai Phong after two years of construction
- VinFast capacity: 250,000 cars annually in next 5 years

Source: VinGroup website, press clippings.

How Vingroup ventured into automotive with VinFast despite previous lack of expertise

Acquired foreign tech and design capabilities

- Purchased GM entire operations in Vietnam including its assembly plant and distribution network and license to produce
- First two SUV models built on BMW frame, components engineered by Canadian Magna International, parts made by German Robert Bosch and design by Italian Pininfarina

Management and R&D expertise transfer

- Five of VinFast top leadership team came from GM Vietnam, including CEO Jim DeLuca
- Joint research center staffed by both international and local experts with close connection with German suppliers

Local skill and supporting industry development

- 8 on-going projects to develop supporting industries with 50% localization aim
- A local vocational school to be opened in the plant proximity

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Booming regional market motivated an East Asian SME to acquire know-how from a small but advanced Nordic underwater vessel maker

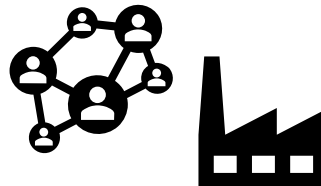
Driving factors for decision to acquire technology

Booming market + ready access + mature technology = what can go wrong?



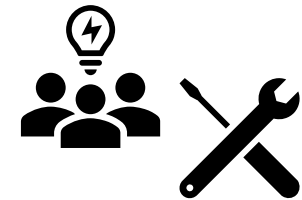
Market shows great potential

- Tourism underwater market is booming in East and South-east Asian regions as thriving mid-class drive tourism
- Supply of suitable underwater vessels are highly limited due to high technical entry barrier – only few manufacturers in the world are in the business



The company has ready market access and local facility

- A regional marine player is eager to capture the opportunities
- Company has experience from research vessel, ready market access and local production facility
- However company lacks experience and know-how in building tourism suited vessels



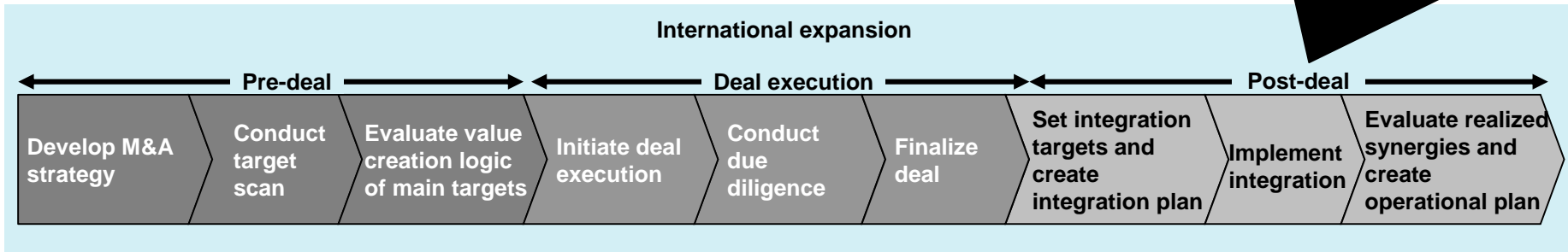
A European company has advanced technical know-how

- The company has built several models of tourism underwater vessels, and owns some of the drawings
- The owner and core technical team are at retiring age, and look for people to carry on the business
- Both parties positive to the acquisition after several rounds of contact

When conducting cross-border M&A you need to understand differences in legislation, culture and business practices – beforehand!

M&A process in international context

Unfortunate in this case, the client only took it seriously and reach out us when things started to fall apart – all can be avoided with proper pre-deal and deal execution actions.



Pre-deal considerations

- Prior to initiating the M&A process you need to be aware of possible differences in legislation, accounting standards, culture, way of doing business and political stability

Existing and new management

- The role of the management is also crucial to understand in an early stage
- In some countries it is vital that the management is not changed due to the importance of client networks and it might also be that the management has important relationships with authorities

Post merger integration (PMI)

- The PMI-process can be highly affected by cultural differences
- Conducting a too ambitious and fast-paced PMI in a country where changes generally are made over longer periods can have adverse affects on the business

Other aspects

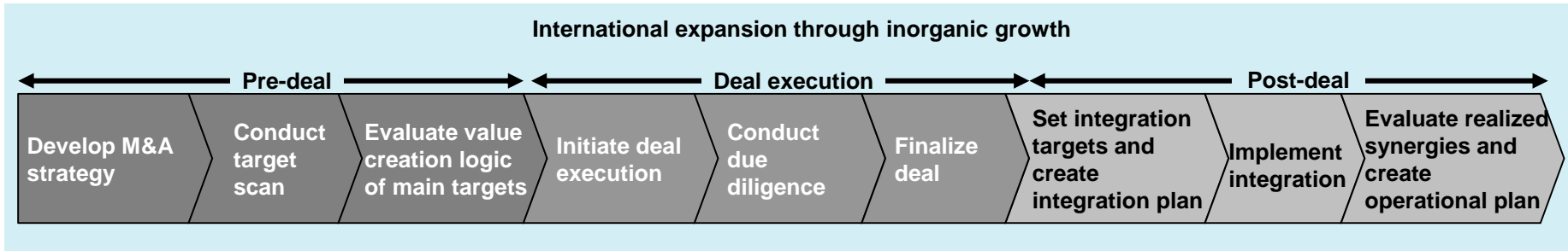
- Other important aspects to consider are the macro situation of the country, including political risk, stability of markets, exchange rate risks and other risks affecting the entire country

Note: M&A = mergers and acquisitions.

Inexperienced in global M&A, the East Asian SME underestimated the significance of post merger integration and due diligence

Key issues identified in the acquisition process

- No issue/good practice
- Moderate issue
- Serious issue



- Legal due diligence is done with a local branch of a reputable global law firm in the target SME's home country ●
- Some flags have been raised in the DD report, for example, ambiguity over ownership of some core technical assets ●
- However these flags were ignored by the eager acquirer who is fully biased by the huge market potential and try to accelerate the process in order to secure first mover advantage ●
- No other forms of due diligence, such as business due diligence, was done ●

- Post merger integration were completely neglected until the collaboration hit a rock ●
- Acquirer's capability of managing the acquired company was overlooked – lack of local presence also contributed to the difficulty of integration ●
- Language and cultural barrier further dampened the situation – although an on-site interpreter was hired by the acquirer, this in fact caused more issues as person was not able to convey root causes in rift between parties ●

Conflict of working culture and way of conducting business in general undermines mutual trust, resulting in disrupted operation

Drivers of conflicts

Contractual

- Versions of the pre-contract memo and contracts were poorly managed and mis-aligned
- Some of the contract clauses, like stock option incentives and buy-back clauses were not clearly defined – resulted in different interpretations

Financial

- Difference in revenue recognition and order management brought unnecessary confusion
- Untimely payments due to foreign exchange restrictions and lack of transparency caused further mistrust and dissatisfaction

Administration and HR

- Staff (interpreter) suggested by the East Asian company to the acquired company caused suspicion among local staff
- The acquired company MD expected full control of “his” company, while the East Asian company thought it has full authority to “manage” its subsidiary

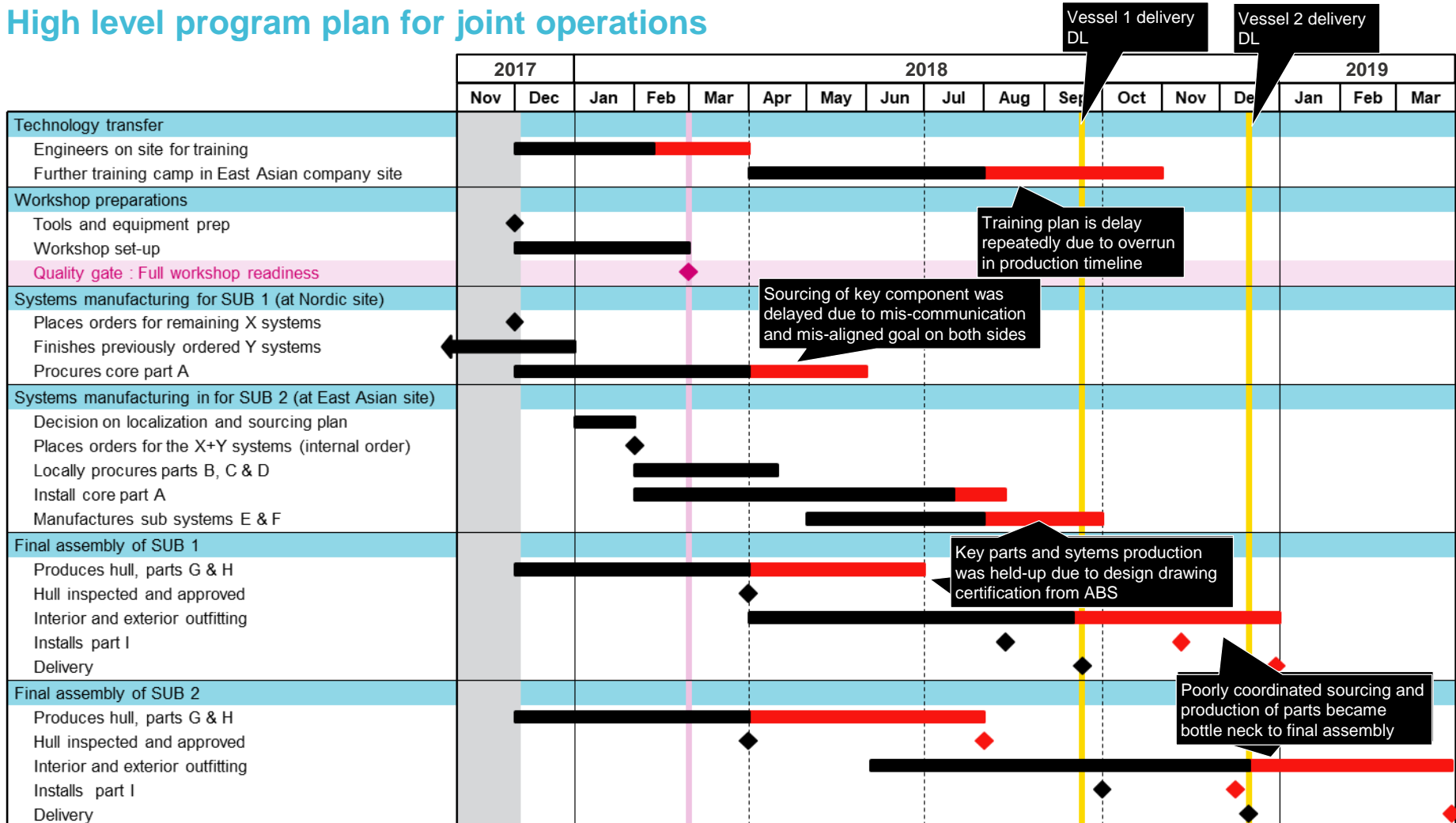
Without transparency and trust, things escalated quickly and were hard to correct!

Consequences

- Disagreement in payment recognition raised tension in every management meeting
- Board dismissed MD in the acquired company, but still lacked capability to manage the local subsidiary effectively
- Auditing team was sent from the parent company to check book on site amid the chaotic situation, sending wrong messages to the staff (further distrust)
- Legal action was taken to settle the disputed incentives
- Lack of mutual trust also makes further attempts to fix the situation difficult

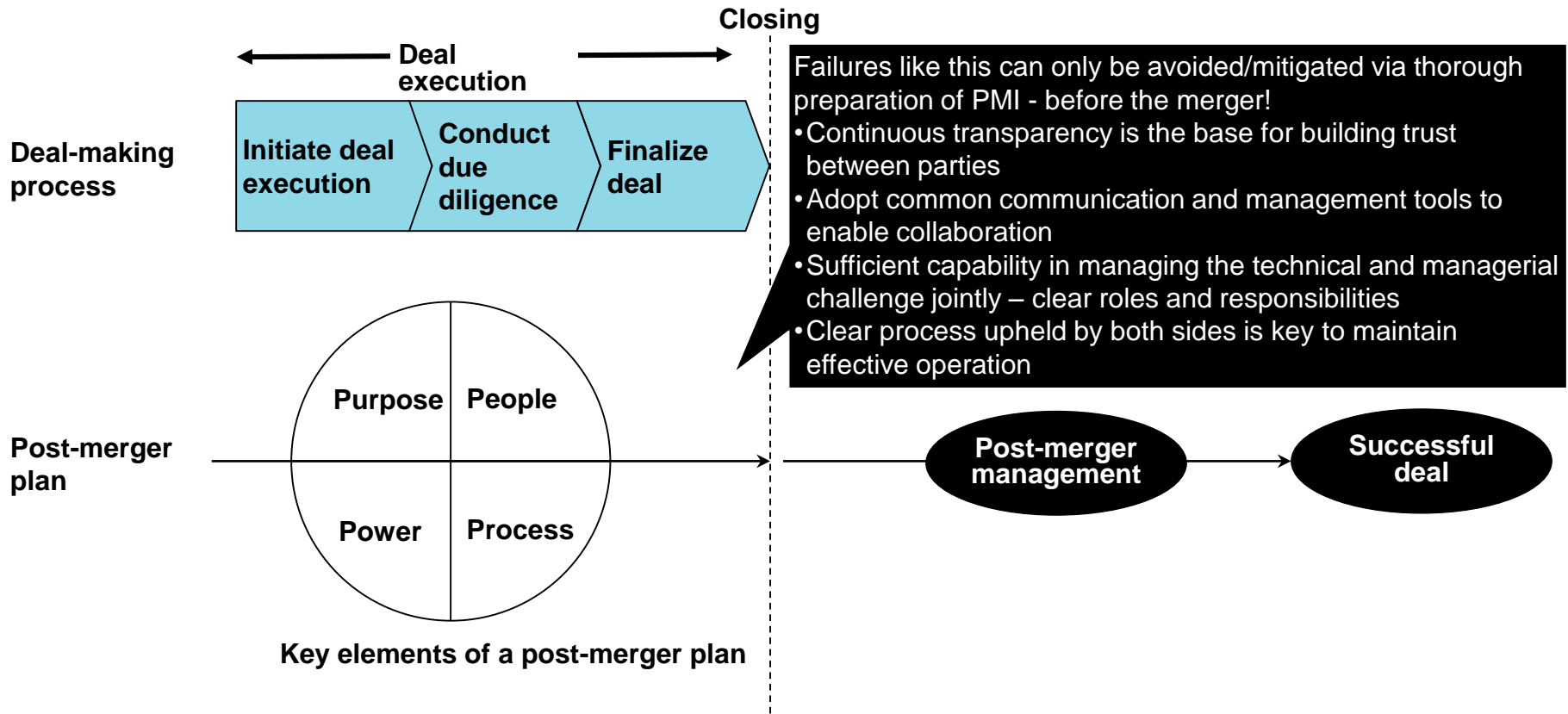
Continued delays and unexpected issues in sourcing, production and certification process caused first two orders to miss delivery deadlines

High level program plan for joint operations



Building sufficient capability to maintain transparent and collaborative way of working is the basis to enable integration

Learnings and mitigation: post-merger planning parallel to deal



Source: Reddal case analysis; framework adapted from McKinsey & Company.

Initiating global sales of an Asian production equipment manufacturing company through systematic network building

Global market expansion – network building

Methodology

Industry analysis and target prioritization

Select target countries (2-3) and analyze value chain

Identify target contacts

Initiating contacts via cold emails and calls

Meeting and follow up

Case summary

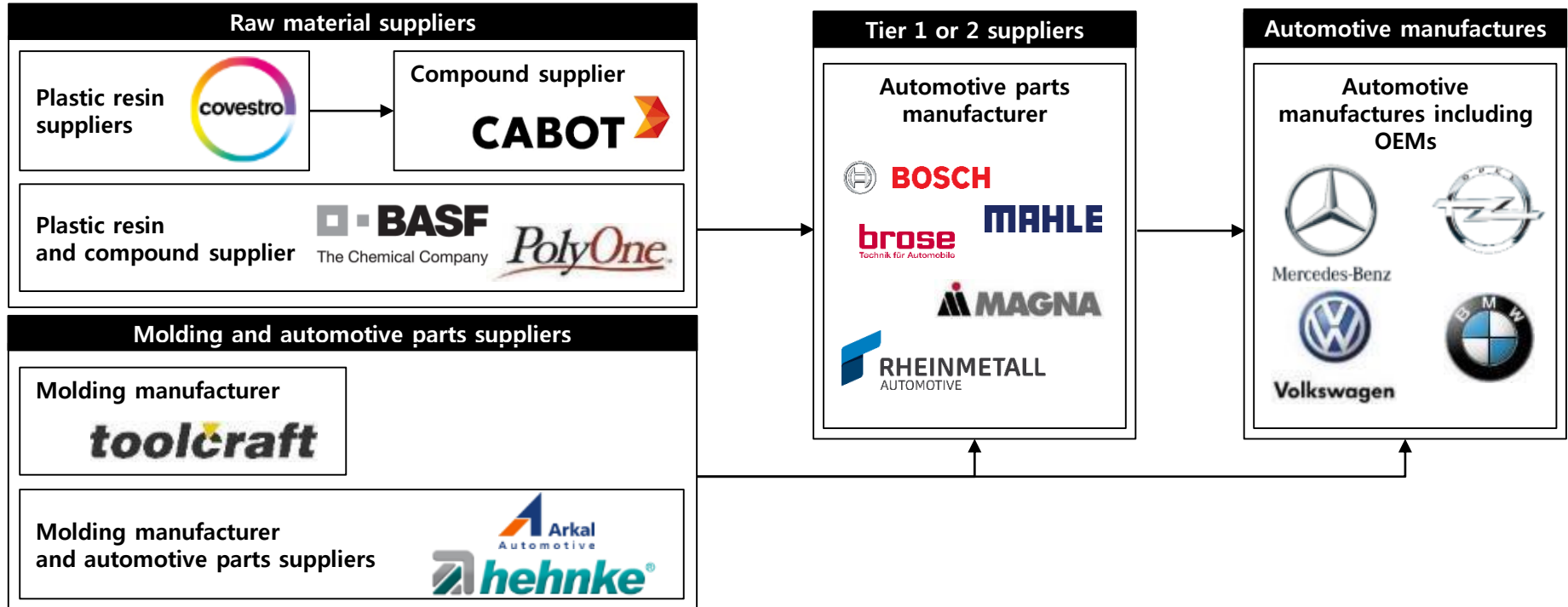
- An Asian production equipment supplier wanted to expand market in Europe by obtaining potential customers
- The company's offering is specialized, thus industry analysis and value chain analysis were required in the beginning

Key challenges and solution

- The European companies who are interested in improving cost position already have partnerships with companies in China
- In addition, the European market has higher standards on products, thus value proposition of a company had to be carefully reviewed
- A systematic cold emailing and calling process was done where the contact list is carefully selected after analyzing the full value and supply chain of industry
- Emails were reviewed and tailored to improve the hit rate
- Follow-ups done to arrange a physical meetings for sales director to introduce the company and discuss further

Understanding the full value and supply chain of an industry is a first step in order to reach out to the most relevant targets

Value chain and supply chain analysis

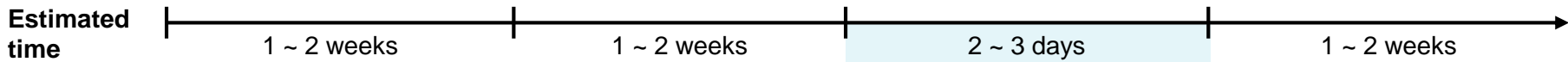
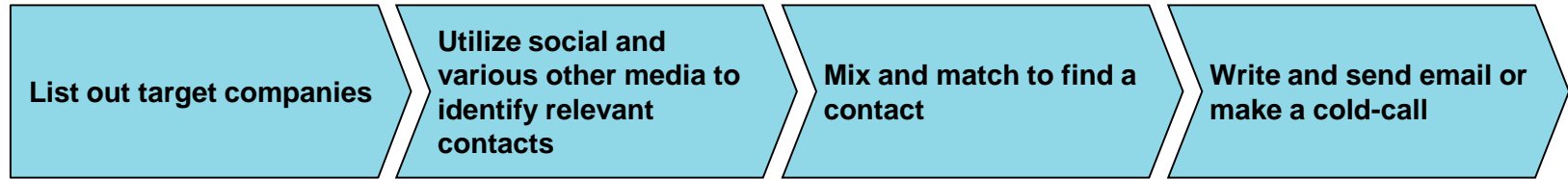


Description

- Mapping out major participants in the market helps to map which company or area of the value chain should be targeted
- This process also helps understanding other players' business characteristics and its own problems
- Such in-depth understanding helps writing very personalized appealing cold-email at later stage

Success rate of cold emails and cold calls can be increased with careful selection of contact, optimized contents and tools

Cold-contacting process overview



- Description**
- Start by scanning and listing target companies based on the value and supply chain analysis
 - Categorize and prioritize based on evaluation criteria
 - Start with first priority list
- Define the department/ position relevant to the objective of contacts
 - Utilize LinkedIn/Twitter/ Facebook/personal blog/ journals and other media to search the person in the pre-defined position
 - Usually these sources also provide contact information
 - Finding a relevant contact is crucial in order to increase hit rate of the email
- If no material or contact information are found under his/her name, use a combination of LinkedIn and Rapportive to guess and find the email contacts of target
 - Company's general inquiry email is usually the last resort
- Cold email only*
- Avoid generics when writing email
 - Utilize the knowledge gained about the contact and the company from previous steps to make appealing business proposal
 - Mailchimp and Gmail extension can be used to send large number of highly personalized emails at once

The process is repeated based on the findings from the previous cold email and/or call campaign.

Iranian company acquired a European component manufacturer to manage costs and build a platform for international expansion

Rationale behind the acquisition

Manage costs

- Expand the component and raw material suppliers' network and get access to more cost-effective new suppliers
- Reduce dependency on few component suppliers
- Leverage economies of scale to reduce costs



Develop technical know-how

- Proximity to technical HR pool
- Acquiring R&D and component production technologies to become more independent in the product portfolio
- After filling the technological gaps, expand into new products



Build a platform for international expansion

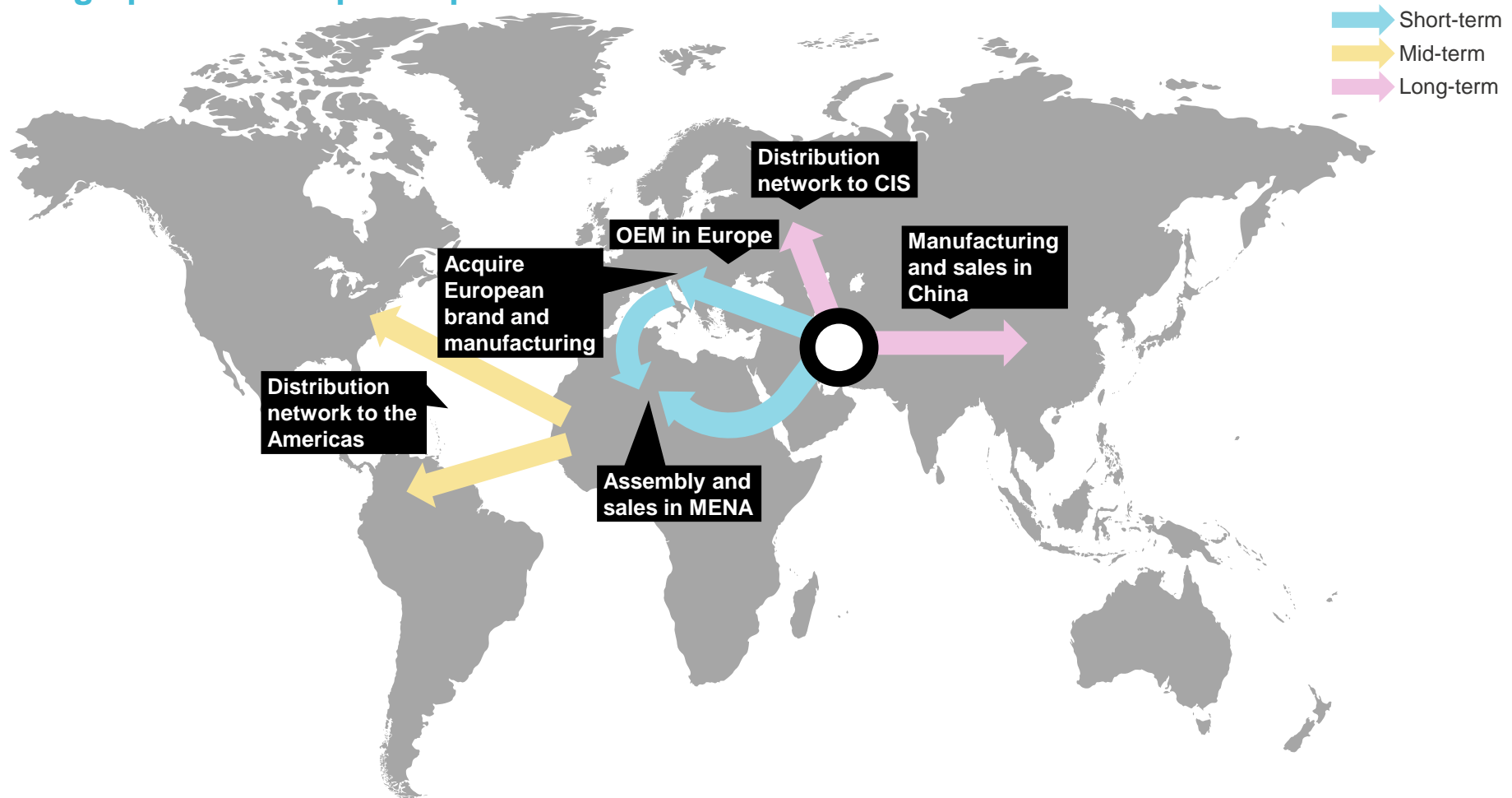
- Proximity to new target markets
- Own a brand with international appeal to ensure competitiveness
- Boost OEM sales in Europe with the help of the acquired brand's sales and distribution network
- Better access to sales HR pool



OEM = Original equipment manufacturer (company with own brand and end-product).

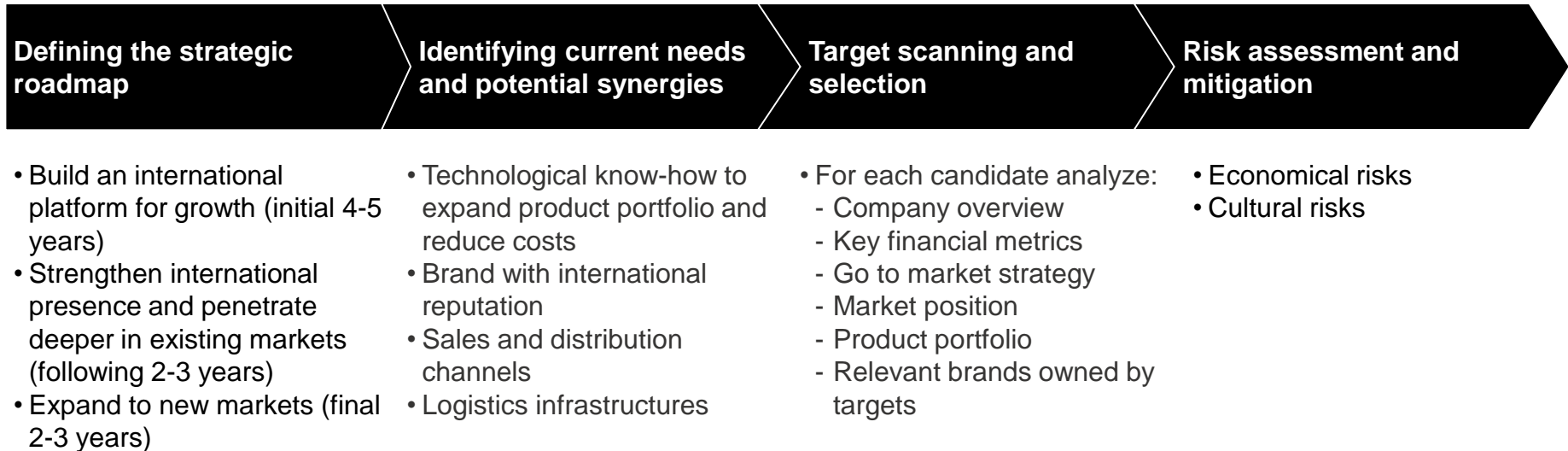
Geographical expansion phases were prioritized based on the required capabilities and the company's readiness for each stage

Geographic roadmap of expansion



For a successful acquisition, a systematic approach should be defined and followed

Systematic approach to acquisition (methodology)



Required design and production technology would be analyzed through the whole product portfolio

Technology gap analysis – what the acquired company should provide

■ Have required capability
 ■ Want to and can feasibly develop internally
■ Would like to but cannot feasibly develop internally (need M&A or licensing)
 ■ Prefer to source externally

Group	Technology	Product 1	Product 2	Products3
Product	Product design	Have required capability	Want to and can feasibly develop internally	Would like to but cannot feasibly develop internally (need M&A or licensing)
	Product improvement	Have required capability	Want to and can feasibly develop internally	Would like to but cannot feasibly develop internally (need M&A or licensing)
	Product manufacturing	Have required capability	Have required capability	Have required capability
Procurement	Component sourcing	Have required capability	Have required capability	Have required capability
	Material sourcing	Have required capability	Have required capability	Have required capability
Components	Water regulation	Have required capability	Want to and can feasibly develop internally	Prefer to source externally
	Burner (design)	Would like to but cannot feasibly develop internally (need M&A or licensing)	Would like to but cannot feasibly develop internally (need M&A or licensing)	
	Heat exchanger	Have required capability	Want to and can feasibly develop internally	
	Electronics (circuit board)	Want to and can feasibly develop internally	Want to and can feasibly develop internally	
	Storage tanks	Prefer to source externally	Prefer to source externally	
	Sensors	Prefer to source externally	Prefer to source externally	
	Plastic components (design)	Have required capability	Have required capability	
	Press	Have required capability	Have required capability	
	Press tooling	Have required capability	Have required capability	
	Brass forging	Have required capability	Have required capability	
Manufacturing capability and manufacturing know-how	Aluminum die casting (small and large)	Have required capability	Have required capability	Have required capability
	Die cast tooling	Want to and can feasibly develop internally	Want to and can feasibly develop internally	Would like to but cannot feasibly develop internally (need M&A or licensing)
	Assembly	Have required capability	Have required capability	Have required capability
	Quality assurance and testing	Have required capability	Have required capability	Have required capability
	Welding	Prefer to source externally	Prefer to source externally	Have required capability
	Enameling	Prefer to source externally	Prefer to source externally	Prefer to source externally
	Powder painting	Have required capability	Have required capability	Have required capability
	Liquid painting	Prefer to source externally	Prefer to source externally	Have required capability
	Brazing	Have required capability	Have required capability	Prefer to source externally
	Insulating	Prefer to source externally	Prefer to source externally	Prefer to source externally
Injection molding (for plastic componenets)	Have required capability	Have required capability	Prefer to source externally	

Key messages

Recap from our previous APCTT-ESCAP presentation – we are facing a new world market, where all players need a real strategy

The role of nations in power, prosperity and poverty – understanding the effect of originating nation institutions

When the big squabble, doors can open but also close fast – politics can have big effects

Urge to internationalize might prompt quick sales approaches but growth SMEs need to execute a systematic strategy

Case studies on growth – understanding the big picture and considering all angles is key for success

Conclusion and Q&A

Understand the picture, do your homework, and invest in interpersonal relationships

Summary

- Understand the institutional factors that may influence your situation and how you ended up where you are – if you want to commercialize your technology must understand big picture
- Understand the real market and the real opportunity
- Make sure you have a solid methodology for what you want to do – a step by step process that guides you and your team
- Do your homework – spend time to understand the industry, its value chain and the competitive landscape
- Build interpersonal relationships – in the end it is all about trust and collaboration
- ... and, in the end, check everything... In business (especially entrepreneurship) only the paranoid survive...

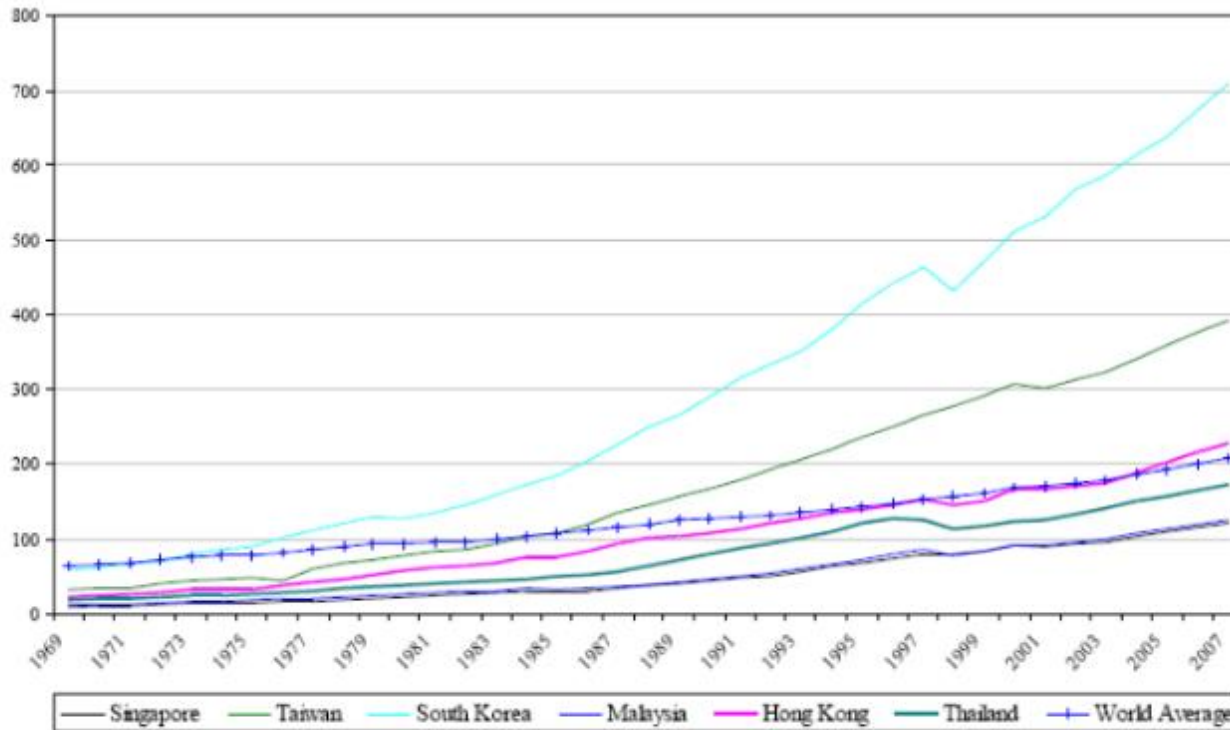
A large, dark, 3D letter 'J' sculpture stands on a rooftop covered in gravel. The background shows a cityscape with buildings and cranes under a cloudy sky. The text 'Working together for successful growth!' is overlaid in white.

Working together for
successful growth!

Among similar nations, Korea's growth rate has been stunning and is only surpassed by China

Countries with highest GDP growth (excluding China)

Real GDP



Prepared and copyright by Gene Shackman
The Global Social Change Research Project
<http://gsociology.icnap.org>

Data from USDA
The International Macroeconomic Data Set
<http://www.ers.usda.gov/Data/Macroeconomics/>

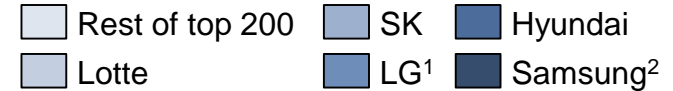
Source: Prof. Jaehoon Hahn, Yonsei University, *Introduction to the Korean economy and society* (lecture).

Korea used interventionist/protectionist strategy to drive manufactured goods exports by subsidizing target industries and related chaebols

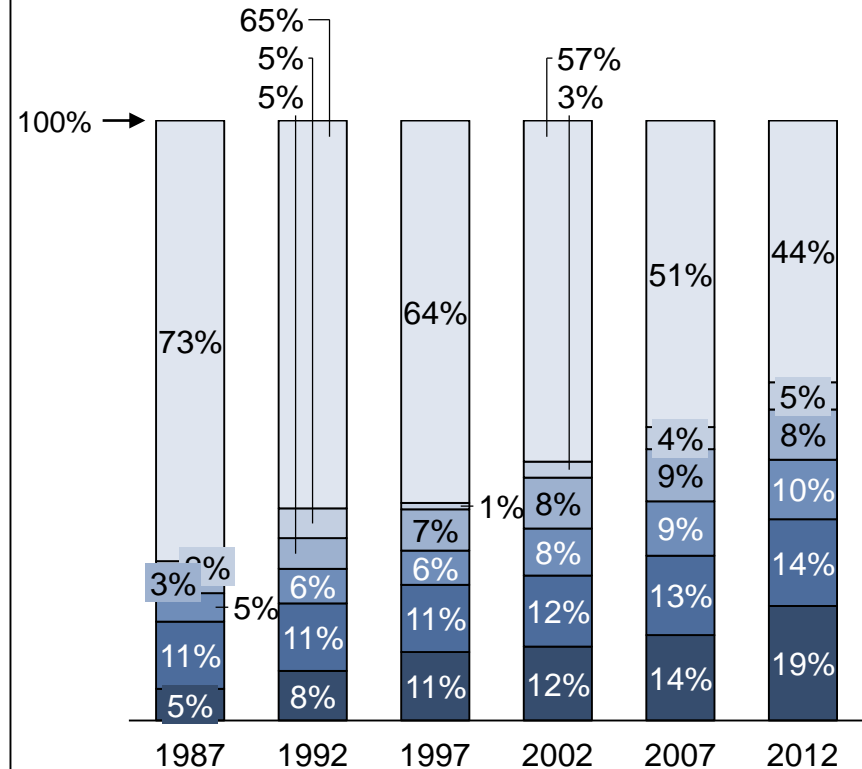
Korean growth and industrial policy

Guided capitalism model

Period	Main policy direction
1950s	<ul style="list-style-type: none"> • Import substitution • Price stability
1962-1971	<ul style="list-style-type: none"> • Policy shift to export promotion (EP) • Expanding SOC³
1972-1981	<ul style="list-style-type: none"> • Heavy and Chemical Industrialization under EP • Administered credit allocation • Import substitution of parts and components
1982-1991	<ul style="list-style-type: none"> • Industrial rationalization • Initial liberalization and opening • Shift to private sector initiatives
1993-1998	<ul style="list-style-type: none"> • Deregulation • Globalization (capital and foreign exchange liberalization) • Fairness and transparency in industrial and trade policy • Technology based industrial policy



Chaebols' assets as a share of top 200 corporate assets (1987-2012)

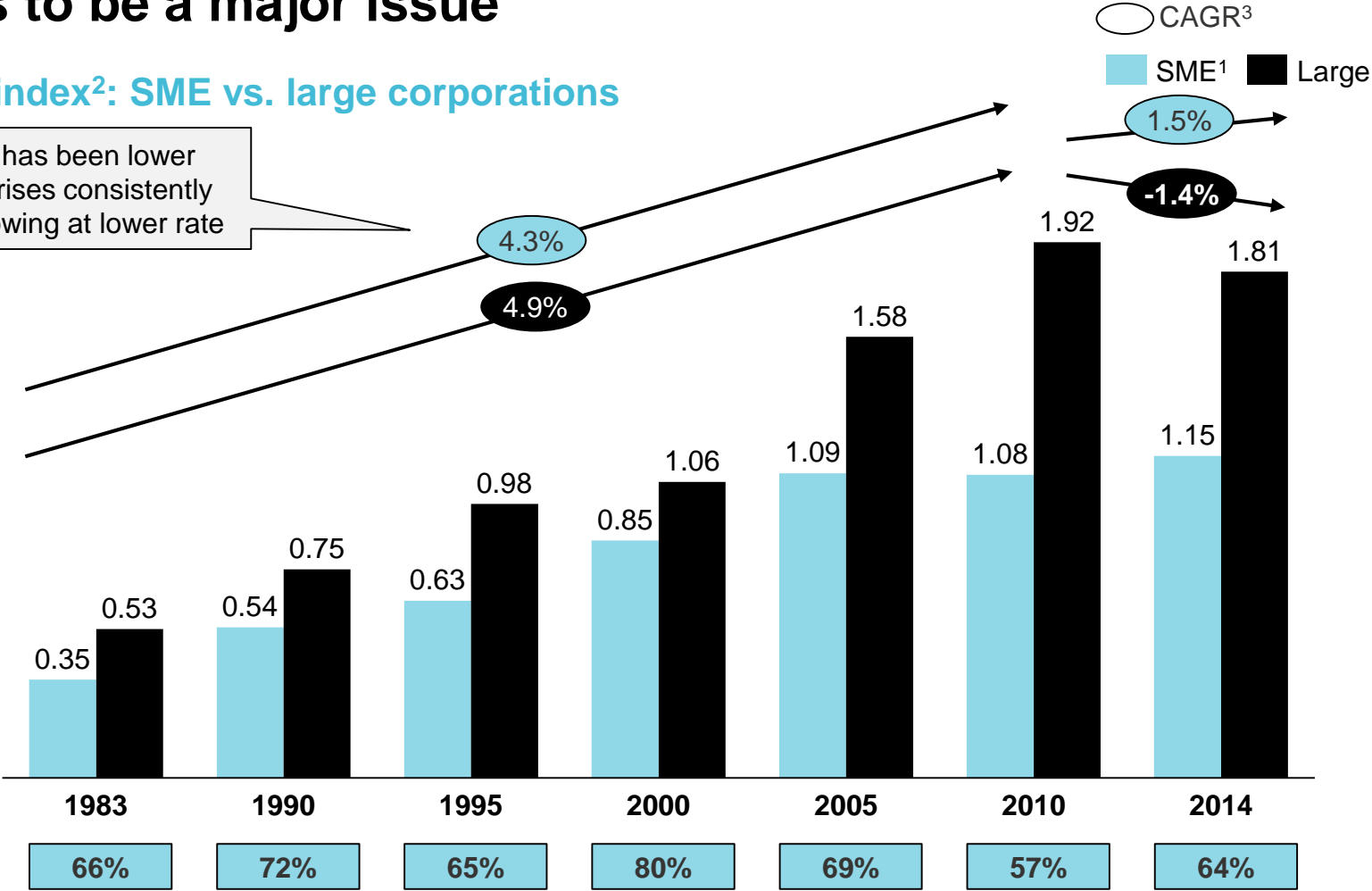


¹ Includes LG, GS, LS and their affiliates; ² includes Samsung, Shinsegae, CJ and Hansol; ³Social overhead capital such as roads, schools and hospitals.
 Source: ERRI, 재벌 및 대기업으로의 경제력집중과 동태적 변화분석; Ahn, The outward-looking trade policy and the industrial development of South Korea.

Productivity gap between Korean SME and conglomerates continues to be a major issue

Productivity index²: SME vs. large corporations

SME productivity has been lower than large enterprises consistently and has been growing at lower rate



Note: ¹SME includes companies with 10 – 300 employees; ² Total productivity index, including labor and capital; ³Compounded annual growth rate
Source: KEIT (2017).

Without a dedicated entry strategy, many young companies fell to the pitfalls of relying on the “sales” approach only for short-term gain

Entry strategy approach versus “sales” approach to international markets




	”Sales” approach	Entry strategy approach (go-to-market system)
Time horizons	Short-run	Long-run (say, 3 to 5 years)
Target markets	No systematic selection	Selection based on analysis of markets/sales potential
Dominant objectives	Immediate sales	Build permanent market position
Resource commitment	Only enough to get immediate sales	What is necessary to gain permanent market position
Entry mode	No systematic choice	Systematic choice of most appropriate mode
New product development	Exclusively for home market	For both home and foreign markets
Product adoption	Only mandatory adaptations (to meet legal/technical requirements) of domestic products	Adaptation of domestic products to foreign buyers’ preferences, incomes, and use conditions
Channels	No effort to control	Effort to control to drive market objectives/goals
Price	Determined by domestic full cost with some ad hoc adjustments to specific sales situations	Determined by demand, competition, objectives, and other marketing policies, as well as cost
Promotion	Mainly confined to personal selling or left to middlemen	Advertising, sales promotion, and personal selling mix to achieve market objectives/goals

Without a go-to-market system with entry strategy for a product/target market, a company only has a “sales” approach

Source: Franklin R. Root, Entry strategies for international markets (2008)

Past Korean cases show that while OEM experience can expediate the tech transfer, investment in in-house R&D is even more critical

In-house R&D essential for hi-tech SMEs in internationalization – Korean cases

Firm	Products	Incumbent competitors	Tech acquisition sources	Performance
	Embroidery machinery	• Tajima (Japan)	• In-house R&D • Licensing from Belgian firms	Largest market share in the world market
	Helmets	• Shoei (Japan) • Bieffe (Italy)	• OEM • In-house R&D	20% of world market share
	Production equipment for semiconductor and flat panels	• AKT (U.S.)	• In-house R&D • Collaboration with universities	33% world market share



Observations

- HJC leveraged the learnings from their previous position as OEM parts supplier to further develop their own product and brand
- SunStar and Jusung leveraged other channels to expediate the technology acquisition process: licensing and collaboration with academia
- These cases suggest that tech transfer alone is not enough and in-house R&D must be an integral part to develop competitiveness

Source: Lee, *Economic catchup and technological leapfrogging*

Manufacturing share of GDP is declining worldwide – manufacturing export led growth will not be the panacea it used to be

Manufacturing share of GDP Percent

Regions	2000	2005
East Asia and Pacific	19	15
Europe and Central Asia	25	23
Latin America and Caribbean	17	14
North America	16	12
South Asia	15	16
Sub-Saharan Africa	11	11
Tanzania	9	6
World	19	15
Low income	10	8
Lower middle income	17	16
Upper middle income	24	21
High income	18	15

Implications

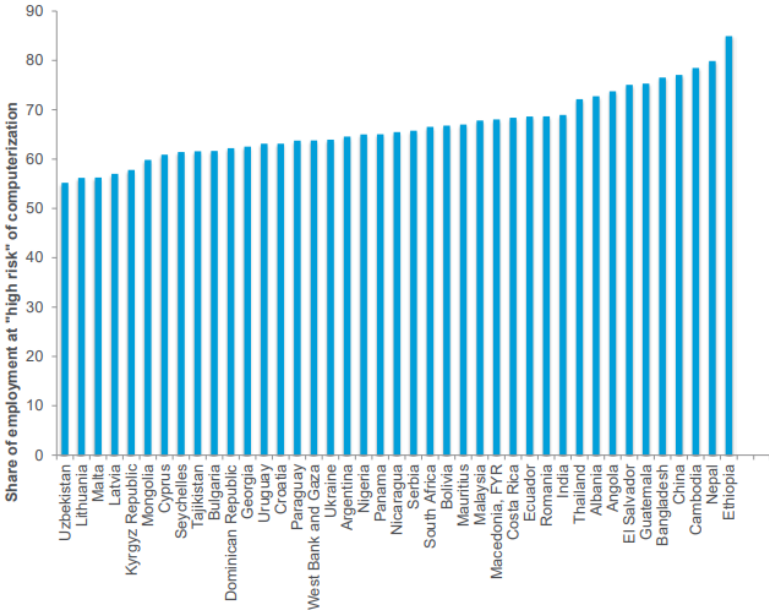
- Share of manufacturing in GDP is declining everywhere in the world
- Stiglitz argues that this is the result of manufacturing productivity exceeding the rate of increase in demand
- 20th century national growth model characterized by export-led growth will not work in the future to the extent it did for East Asian countries
- Developing nations today need to define new national growth strategy that balances industry, services and other parts of the economy

Source: World Bank Development Indicators from Stiglitz, UNU-WIDER Conference Presentation (2018)

Reaching prosperity is getting harder for developing countries – their workforce is more susceptible to automation overall

Impact of automation on workforce

Figure 2. Developing Countries Susceptibility to Automation



Source: World Bank Development Report 2016; based on Frey and Osborne (2013) methodology, Citi Research

Figure 3. Countries Susceptibility to Automation is Negatively Associated with their GDP per Capita



Source: World Bank Development Report 2016; World Bank national accounts data. Note: For Angola and Malta 2013 GDP per capita figures were used, Citi Research

Source: World Bank Development Indicators, Citi Research in "Technology at work v2.0: The future is not what it used to be."



In addition, young technology companies in especially in regional trading hubs should build internal R&D capabilities and leverage digital technologies and service platforms to drive growth

Practical tips for young technology SMEs



Avoid the OEM trap – being complacent in playing the role of part manufacturers in the global value chain



Invest in internal R&D to develop internationally competitive technology and products, and expansion abroad



Over-rely on low-cost advantages without realizing other value-adding advantages from local resources



Digital technologies make cross-border collaboration more easily, which young companies can leverage to build optimal teams



Overly ambitious expansion plan, risk stretching themselves too thin over mass expansion without a clear go-to-market strategy/strategies

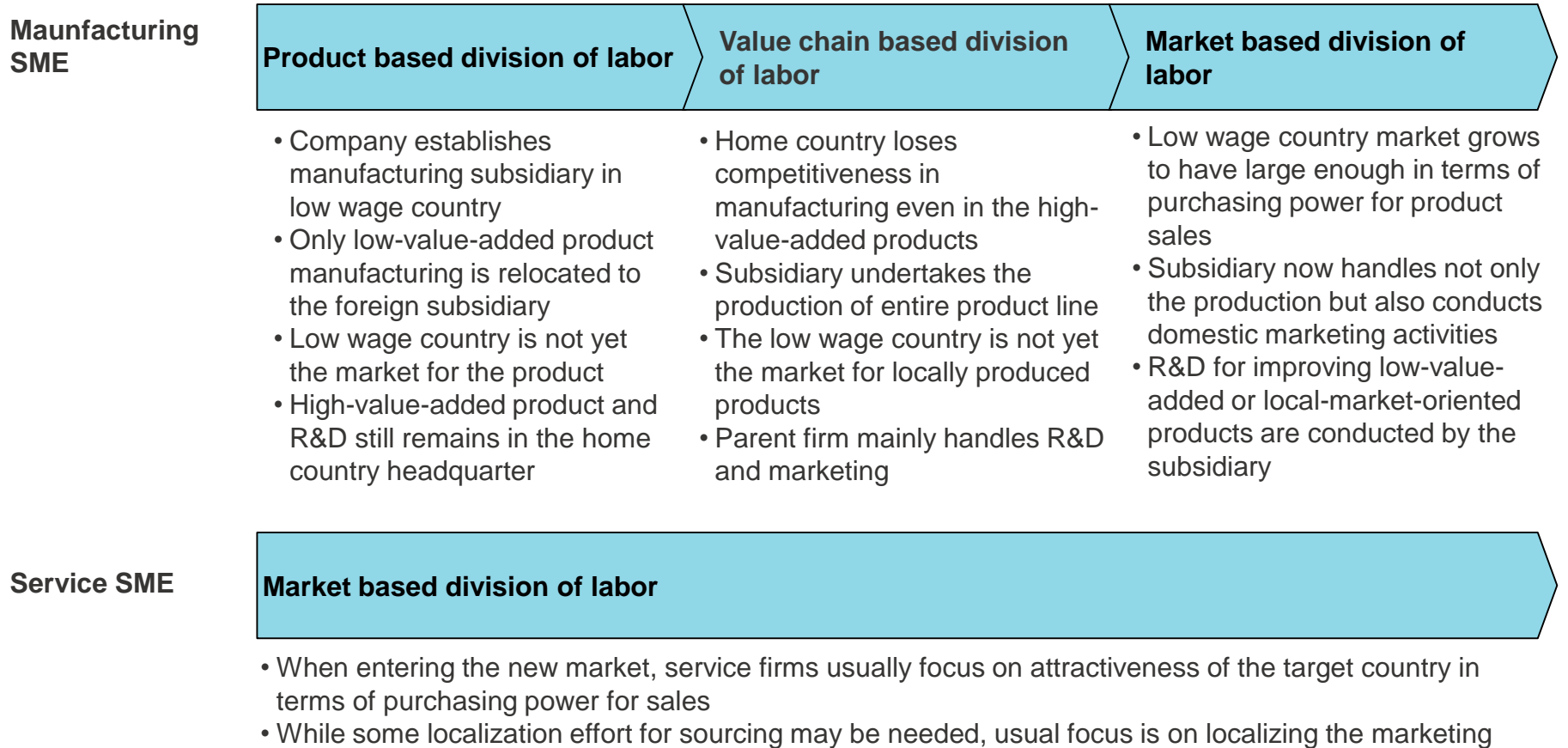


Digital and service platforms make scaled internationalization more feasible for young companies with local resources – but local know-how essential for success

Source: Reddal analysis

Services can be more easily inserted into global economy, bypassing steps manufacturing went through in sequential internationalization

Internationalization model: manufacturing vs. service



Source: Lee, *Economic catchup and technological leapfrogging*

Misfit combined local capabilities across multiple countries in a unique way to fuel its growth

Leveraging international connections for acceleration: Misfit Wearables

About Misfit (now part of Fossil Group)



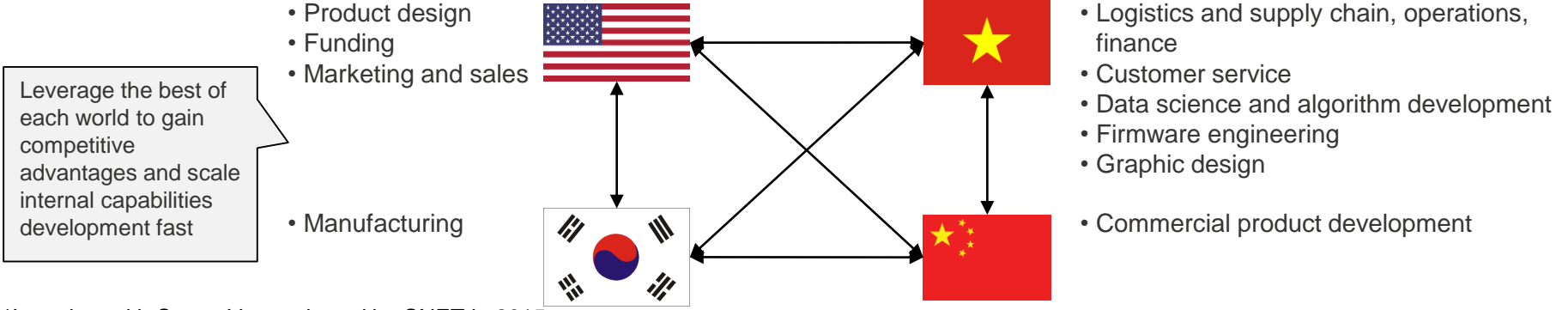
- Founded in 2011 by Sony Vu (CEO and President), Sridhar Lyengar and former Apple CEO John Sculley
- Offering: health tracker wearables
- Available in 20 countries (US, Canada Mexico, Brazil, UK, Germany, Italy, France, Switzerland, Spain, Sweden, Russia, Australia, China, Hong Kong, Japan, Singapore, Taiwan, South Korea and India)
- Acquired by Fossil Group at 260MUSD in November 2015

On organizing international operations in Vietnam*

Q: *What prompted the decision to have so many employees here [in Vietnam], aside from your background?*

Vu: *“So we have to get the best talent at the best price. So what we’ve done is optimized our hiring to be in places where we have an unfair competitive advantage”*

Vu: *“If you just come here with a mentality, I’m going to get cheap outsourced labor, then that’s exactly what you’re going to get...So we really give them [the Vietnamese staff] a lot of authority...And people rise up to the challenge”*



*Interview with Sonny Vu conducted by CNET in 2015
 Source: Company website, press articles

Uber's struggles to scale in China, Russia and SEA illustrate that global success of digital services still require local know-how

Lessons learnt from some of Uber internationalization journey

UBER

Uber expansion timeline in selected markets

- Feb 2013 – Uber launched in Singapore, starting its expansion in South East Asia (SEA)
- Jul 2014 – Uber officially launched in China. Also in Russia
- August 2016 – Uber China merged into Didi Chuxing. Uber China would own 20% of the new entity. Didi to own \$1bn share in Uber global
- July 2017 – Uber merged its operations in Russia, Azerbaijan, Belarus and Kazakhstan with Yandex. Uber would own 36.6% of the new entity
- March 2018 – Uber sold its operations in SEA for 27.5% stakes in Grab – a Singapore based competitor

Uber Slayer: How China's Didi Beat the Ride-Hailing Superpower

"We felt like the People's Liberation Army, with basic rifles, and we were bombed by airplanes and missiles."

By Brad Stone and Lulu Yilun Chen | October 6, 2016

Photographs by Ka Xiaoxi

From **Bloomberg Businessweek**

Uber stages retreat in Russia as it merges with rival Yandex

Ride-hailing company makes second embarrassing climbdown after selling its Chinese operations last year

Technology

Grab Vanquishes Uber With Local Strategy, Billions From SoftBank

By Yoolim Lee

March 26, 2018, 10:00 PM GMT+3

UBER EVERYWHERE

Uber's defeat in Southeast Asia calls into question its "barge in" expansion strategy worldwide

By Jane Wollmer | March 26, 2018

Source: Press clippings

REDDAL

Grab focused on building "segmented, localized and tailored service" to foster customer experience and loyalty

Grab localization strategy to succeed in regional expansion

South East Asia special characteristics



- Traffic congestion make motorbike a more convenient and faster choice



- Cash payments are still prevalent in many South East Asian cities



- SEA is a fragmented region with different languages; many still do not speak English



- Durian is a special and popular local fruit in many parts of SEA

How Grab cater to local needs and tastes



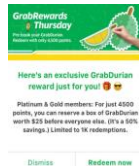
- GrabBike was launched in 2014, two years ahead of Uber Motor



- Grab has traditionally accepted cash payments, long before Uber began to pilot it, first in India in 2015



- Grab launched GrabChat in 2016 with template messages and auto translation for quick communication between drivers and riders



- Grab organized special campaigns/ redeem offer for special treats of high-quality durian

Source: Press clippings

REDDAL