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Manufacturing in the Digital Economy: The Rise of Regionalisation as an Organisation Strategy

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Introduction

- A contradiction
  - Prevalence of backshoring/nearshoring
  - At the same time, prevalence of “localising”
- Why is this important
  - Presence of multinational enterprises (MNEs) in developing countries supports the process of economic development
  - Transition to a developed economy usually happens through industrialisation; one that is being replaced with “premature de-industrialisation” (Rodrik, 2015)
  - ICT is suppose to be an opportunity for developing countries to be included in global trade (Baldwin, 2016)
- Research question
  - How has digital technologies change the way MNEs organise in the digital economy?

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Firm Organisation Strategy

- Control Decision
  - Make (vertically integrated/insource) OR Buy (specialise/outsource)
  - Trade-off between cost of running vertically integrated firm or cost from search friction
- Location Decision
  - Domestic (backshore) OR Overseas (offshore)
  - Trade-off between cost savings from offshoring and losing out on responsiveness
- Identifying the gaps
  - Current model assumes a firm's country of origin as the point of reference
  - Current model focus on optimising cost of production

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The Digital Economy and Industry 4.0

- The idea of Digital Economy is ambiguous
  - "Digital is not just part of the economy – it is the economy" (HBR, 2016)

- Application of the digital economy through Industry 4.0
  - I categorise Industry 4.0 applications into three broad categories:
    (1) Automation
    (2) Additive Manufacturing (AM)
    (3) Internet of Things (IoT)

Automation

- Manufacturing sector is more susceptible to automation
  - 60% automation potential (MGI, 2017); 736,000 job loss in 10 years (BLS, 2016)
- Labour market polarisation
  - Occupations in the middle of the skill distribution are more likely to be automated than others at the top and bottom (Autor et al., 2003; Frey and Osborne, 2013)
  - New technologies need the support of high-skilled labour
  - Developing countries more susceptible to automation (World Bank, 2016)
- Cost considerations
  - Cost of robotics system is projected to fall to less than $20 per hour by 2020 (BCG, 2015)
  - Savings in manufacturing labour cost from automation in China, Germany and U.S., estimated to be between 18% to 25%, 33% in South Korea

Automation

- MNE offshore decision tree

1) Can offshored tasks be automated? 

2) Is it cost effective? 

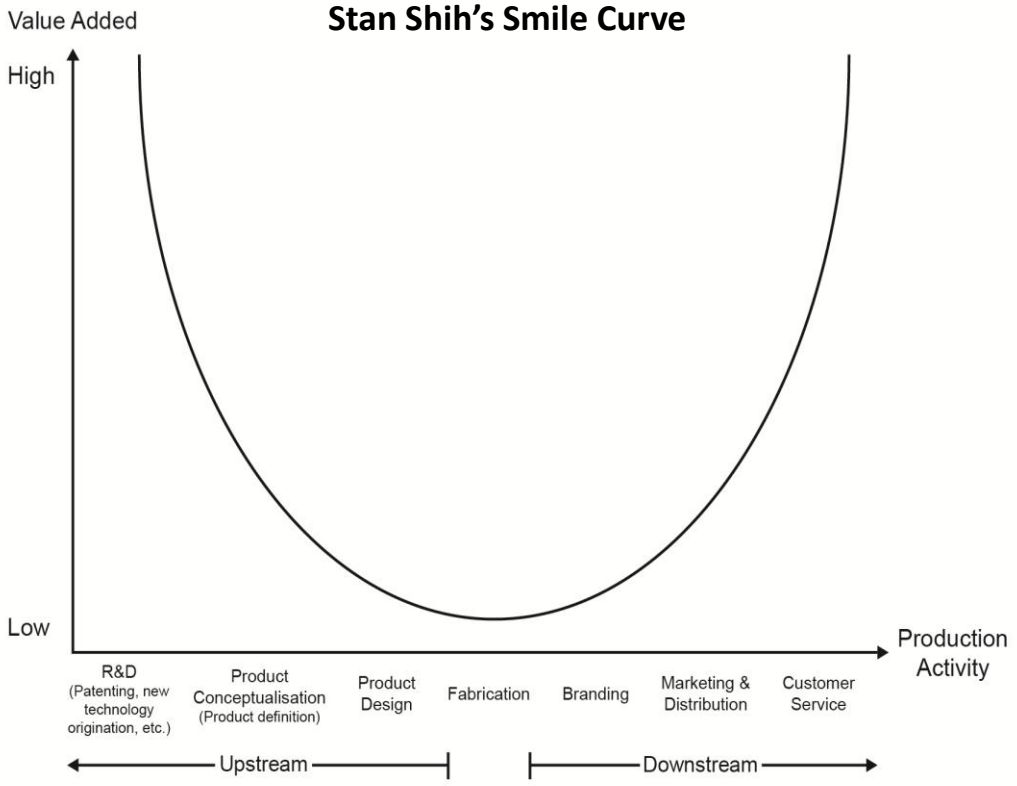
3) Does my home country have the required high-skilled labour? 

- Change 1: In light of automation, offshoring to developing countries is no longer as profitable

Additive Manufacturing (AM)

- Disruption through personalisation/customisation
  - Firms are able to differentiate products that have traditionally been characterised by homogeneity

- Value added by production activity shifts
  - Hollowing out of value from *fabrication*
  - Greater value in *customer service* through servitisation
  - Value of *R&D* accentuated through circular causation of customisation



Source: Author

Additive Manufacturing (AM)

- Paradigm shift towards customer centricity
  - Firms can no longer compete solely on supply factors
  - Firms have to shift towards competing on demand factors (creating markets)
  - Firms differentiate themselves through customisation

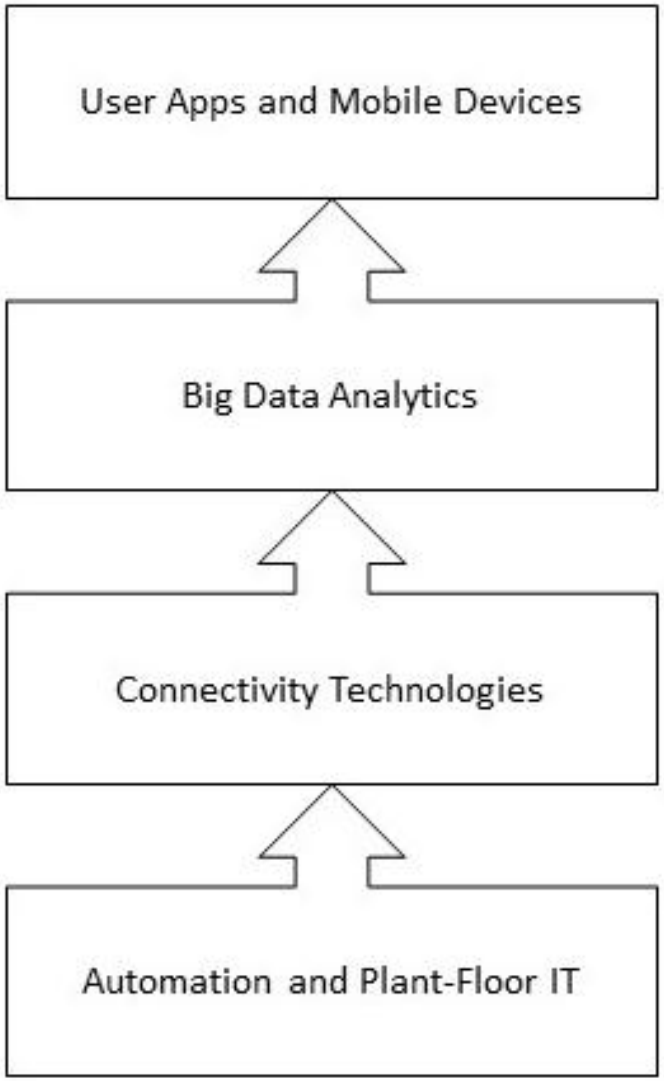
Profit = Revenue - Cost of Production

- Change 2: The advent of customisation through AM places customers at the centre of firm's business consideration; indirectly accentuating the value of R&D and customer service

Internet of Things (IoT)

- Ability for machines to communicate
  - Creation of cyber-physical systems
  - Unit-level visibility
- Reduces the cost of control
  - Allows the flow of information in real-time
  - Allows these information to be accessed remotely
- Change 3: IoT reduces the barrier for firms to be more dispersed and fragmented

Essential IoT Technology Stack



Source: O'Marah, 2015

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Manufacturing in the Digital Economy

- Three fundamental changes for MNEs in the digital economy
  1) Offshoring no longer as profitable
  2) Priority shift toward customer centricity
  3) Easier for firms to disperse and fragment

How to unlock customer value?
1. Information
2. Innovation
3. Duration

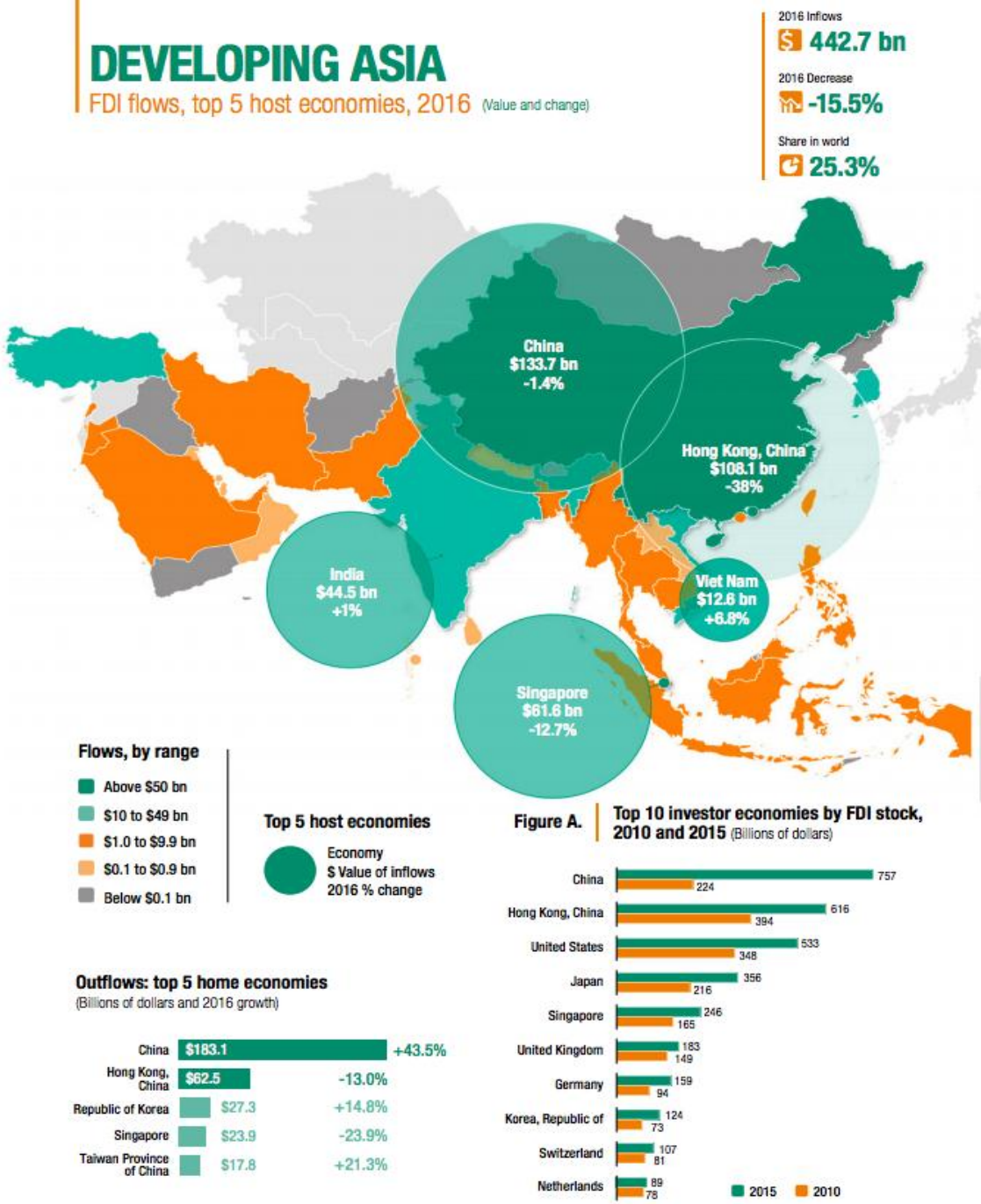
- MNEs have to operate closer to their customers
  - Global growth in demand materialising in developing countries
  - MNEs have to widen and stretch their footprint to be agile

Regionalisation as an Organisation Strategy

- Point of reference is in major consumer markets
  - MNEs will still make control and location decisions but only after deciding on regional strategy
- Duplication of structure/tasks across consumer market
  - MNEs should be able to segment their major markets and respond accordingly to each with minimal reorganisation or interruption to other markets
  - Smaller and more specialised MNE facilitites
- <u>Conclusion:</u> Observed contradiction is explained by advent of regionalisation among MNEs

Policy Considerations

- Integration of ASEAN as a single market
- Identify niche specialisation for Malaysia



Source: UNCTAD, 2017

Thank you.

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