ASEAN's Innovation in Manufacturing: Evidences from ERIA's Studies

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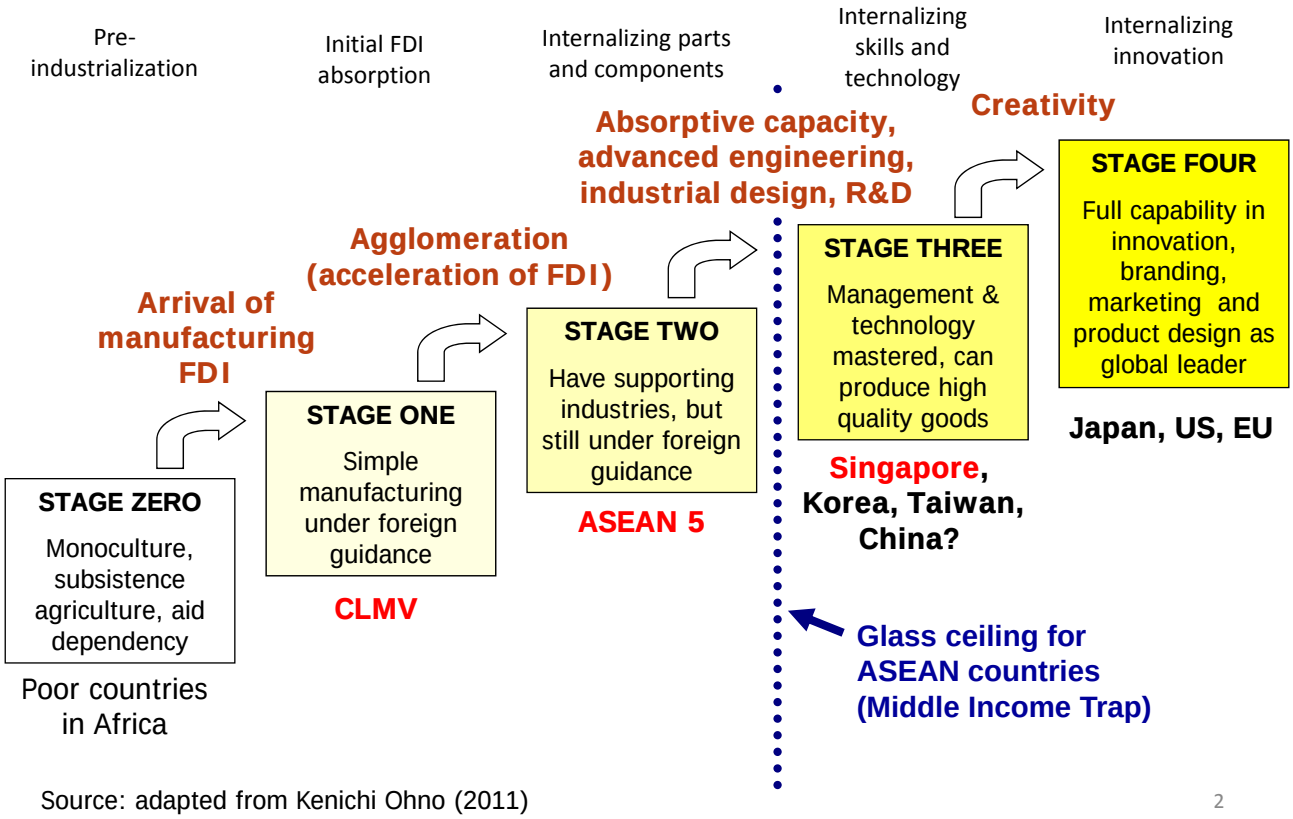
Stages of Catching-up Industrialization: ASEAN's Position in the World



Source: adapted from Kenichi Ohno (2011)

Presentation Outline

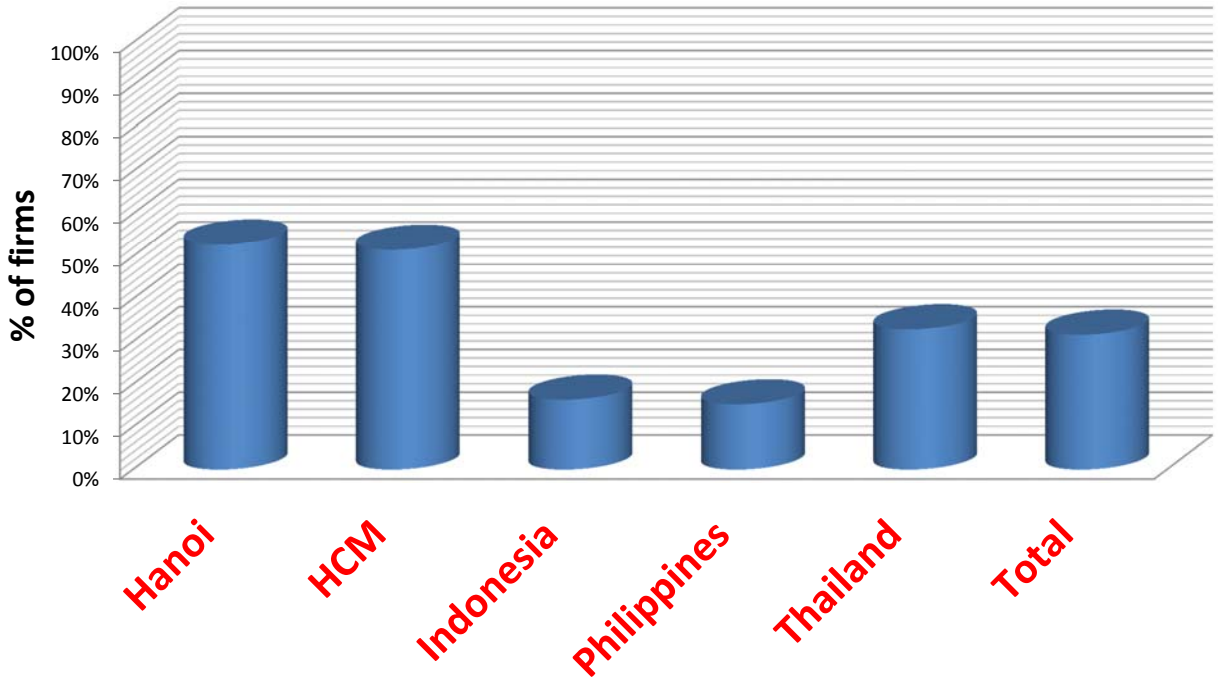
- Key Findings from ERIA's studies on ASEAN's Innovation
  - Questionnaire surveys
  - Case studies (Electronics, Automotive, Machinery, Resource-based)
- Future Challenges

ERIA Studies on ASEAN's Innovation

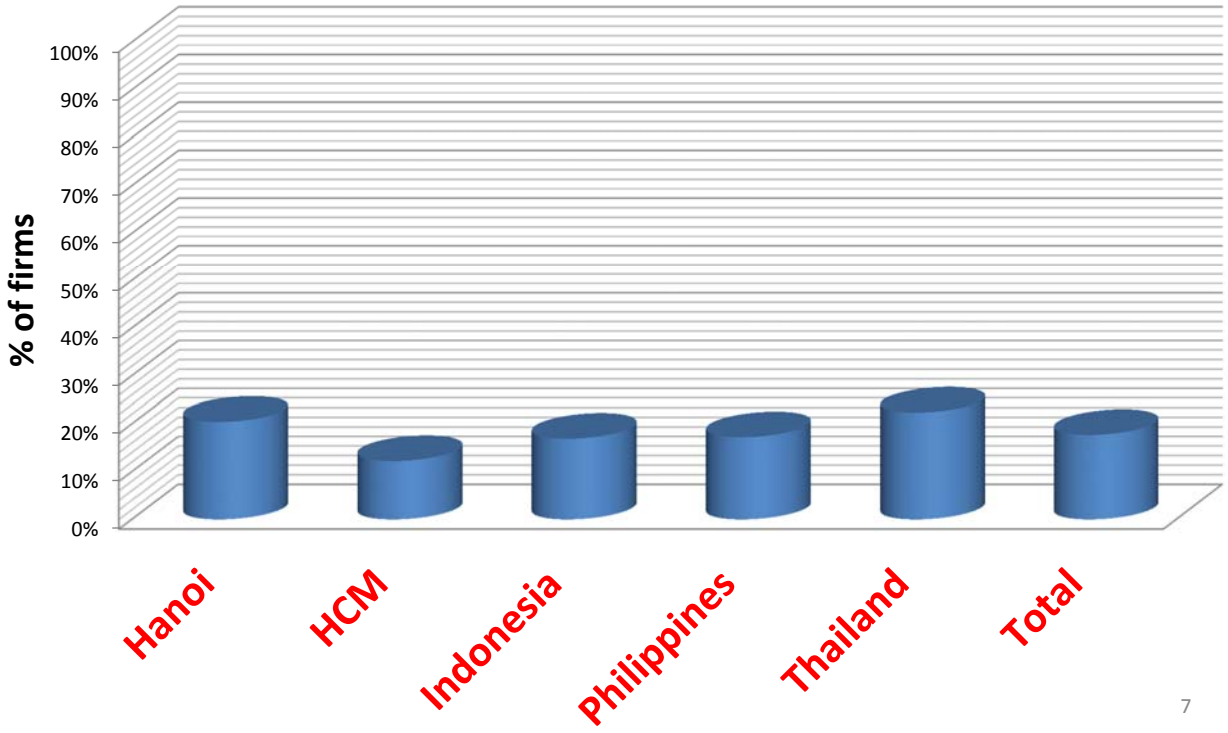
- Since 2008, Economic Research Institute of ASEAN and East Asia (ERIA) has annually commissioned ASEAN-wide studies on innovation situation
- Surveys of 100-150 respondent firms in each key production area of ASEAN: Greater Jakarta (Jabodetabek), the Philippine's CALABARZON, the Greater Bangkok, Hanoi and Ho Chi Minh City.
- Case studies on electronics, automotive, and machinery industries (Malaysia included)

Key Findings from the Surveys

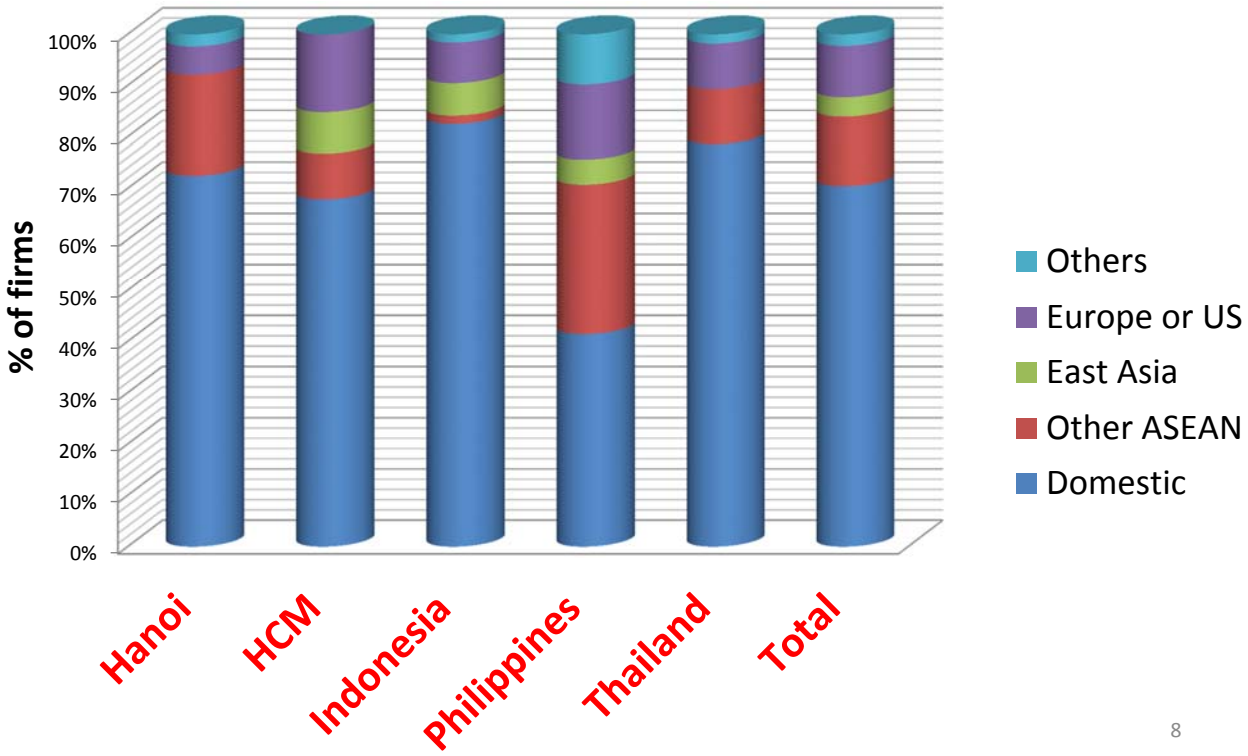
Product Innovations Based on "Existing" Technologies (2011)



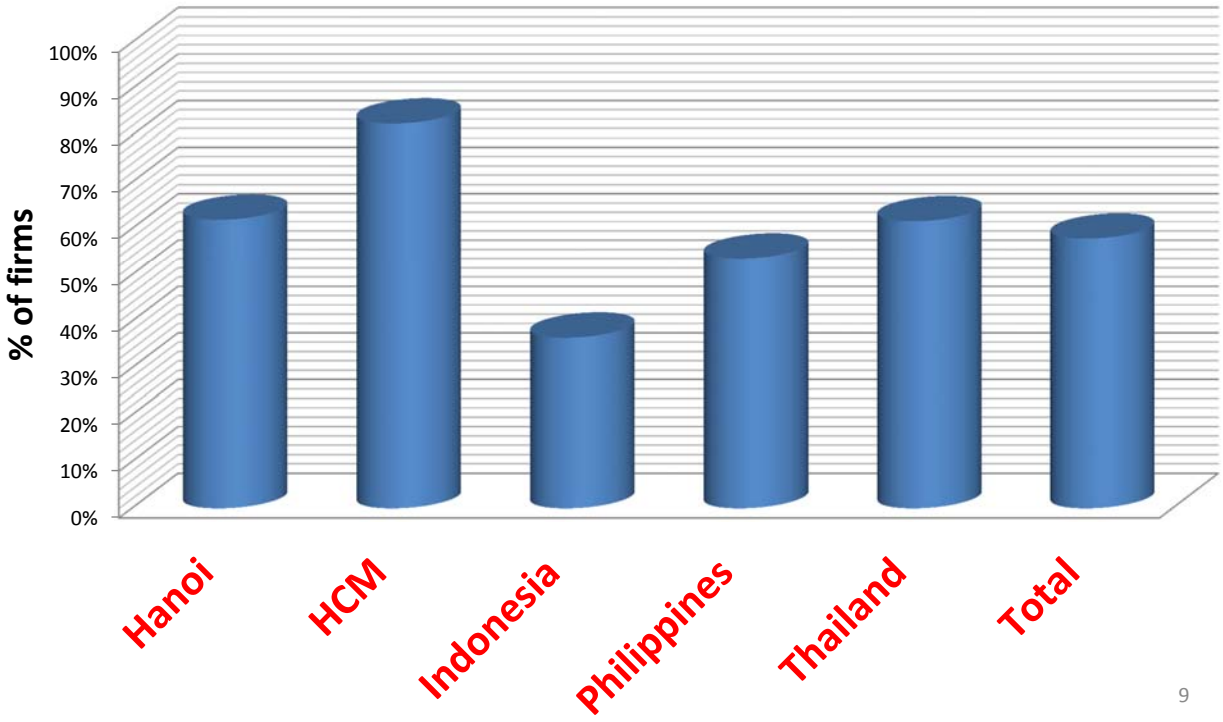
Product Innovations
Based on "new" technologies (2011)



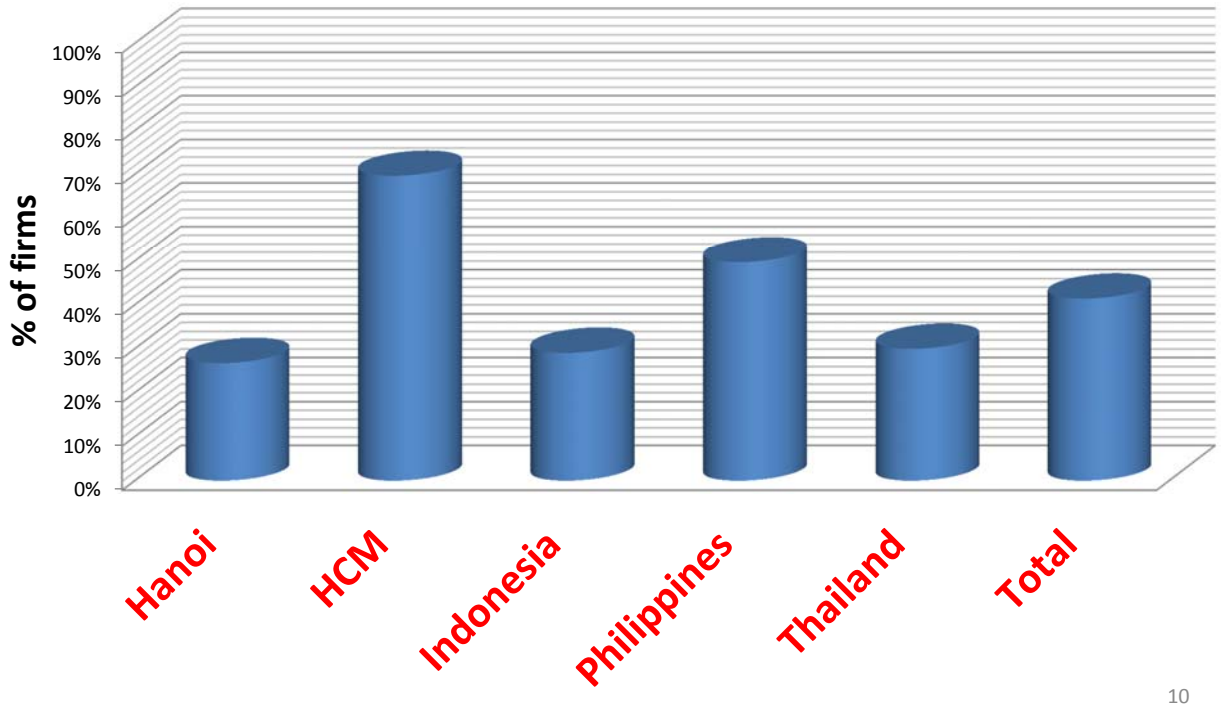
Main markets of the new products



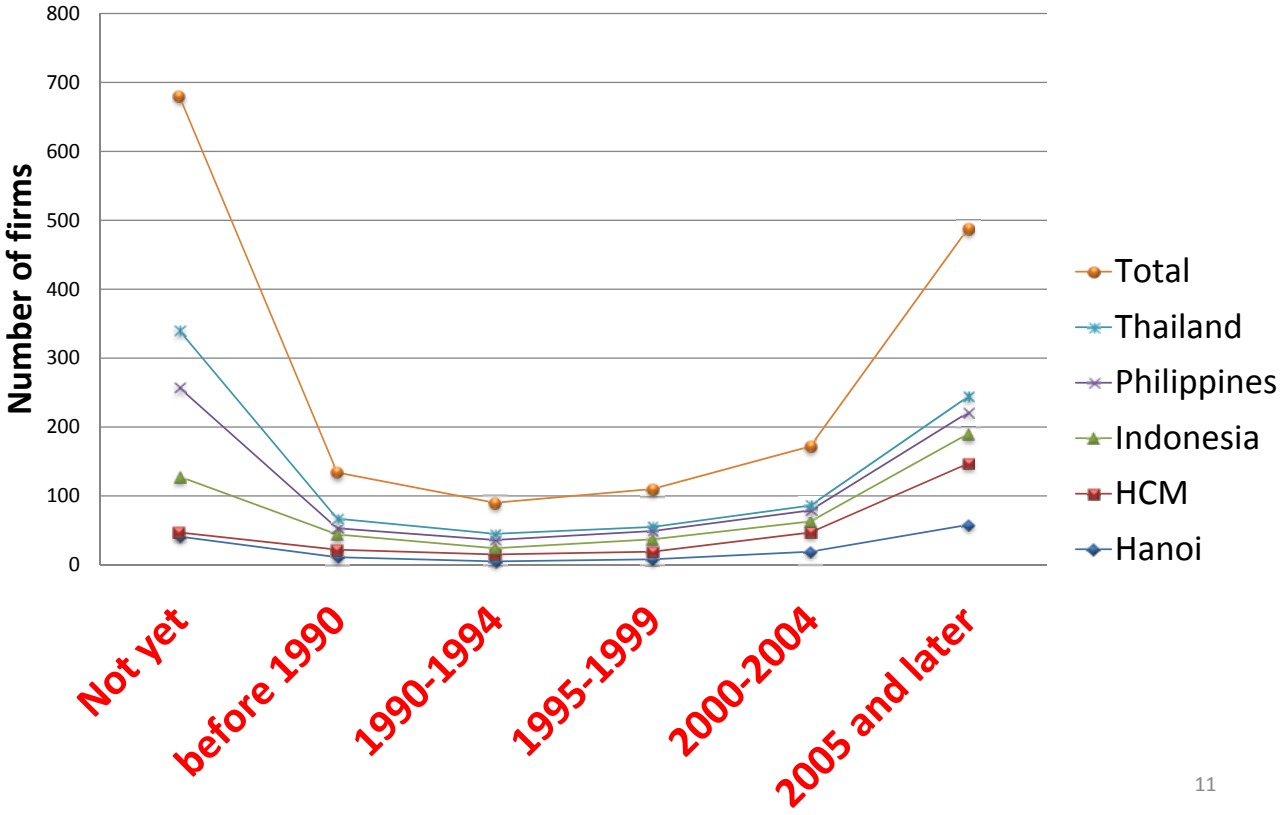
Process Innovation: reducing raw materials/energy usage (2011)



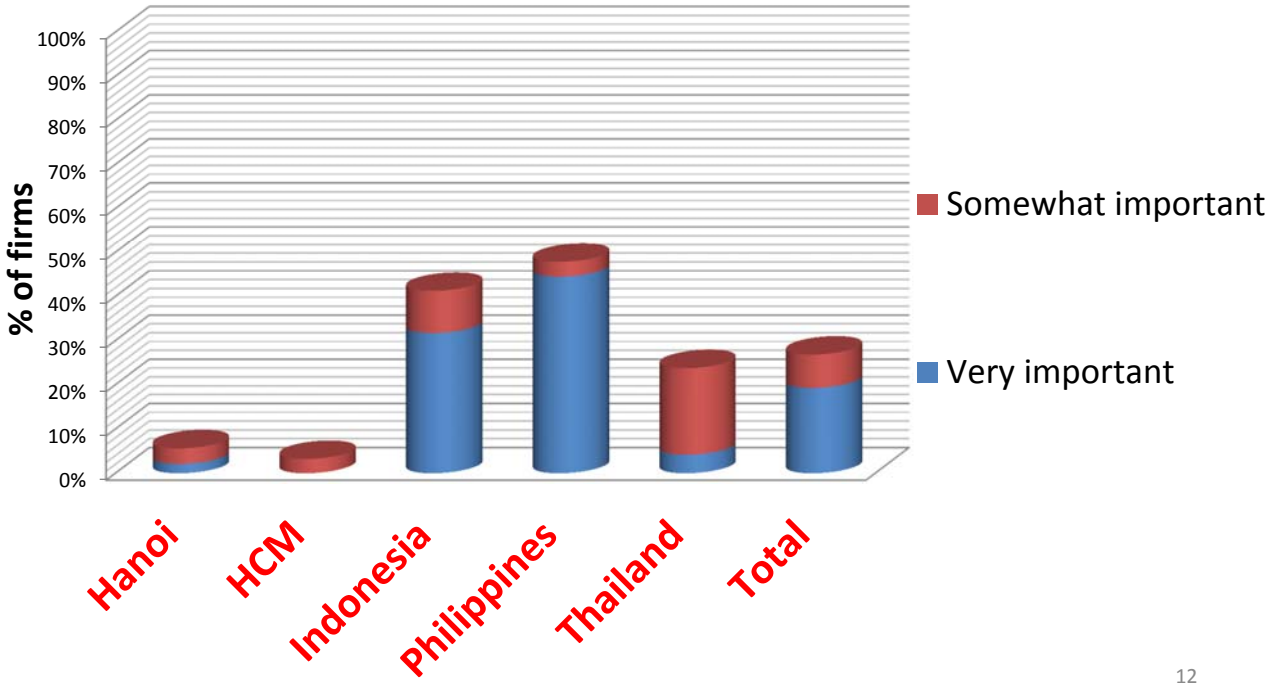
Process Innovation: reducing labor input (2011)



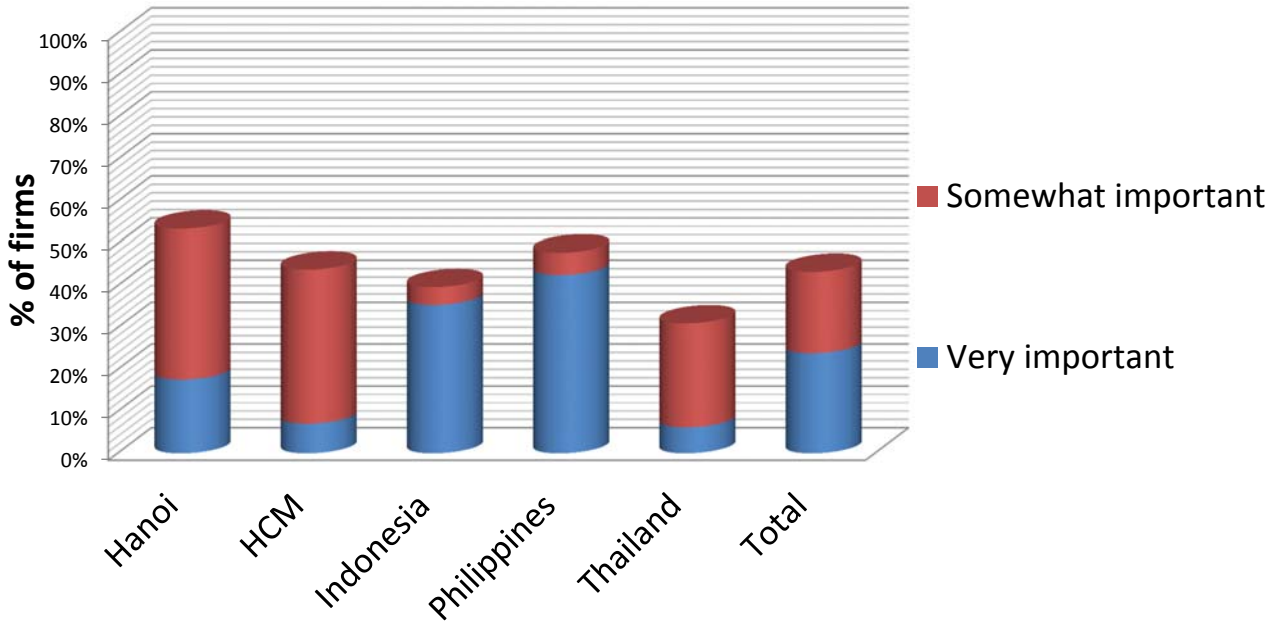
Increasing Number of R&D performers



Foreign /Joint Venture 'Demanding' Customers are More Important



Universities or Public Research Institutes are 'Increasingly' Important Sources of Innovation



Key Findings from Case Studies

Automotive

- Many TNCs' subsidiaries are passive because no 'independence' in strategy formulation technology selection, building up core capability, with exception in Thailand and Vietnam
- Local firms: two groups
  - Make from order; relying on 'senior' partners/customers
  - tried to develop their own strategy; actively enhance absorptive capacity.
- Large volume and demanding export markets and local content requirement are helpful
- University-industry link is much better in Thailand, followed by Indonesia and Malaysia

Electronics

- Innovations are mostly incremental/new to the firms.
- Penang is relatively more advanced: more design and development activities (vs. assembling). Radical innovations in a few cases
- Customers are the major source of knowledge.
- In-house R&D is very important innovation source
- The role of MNCs as lead firms are critical.
- PSDC: trainers and intermediaries between MNCs and local firms
- Universities and public research institutes are much less significant. It might starting to change in Penang where firms is increasing their R&D

Resource-based industries

- Malaysia's natural rubber and palm oil:
  - world class with several R&D performing firms,
  - sector-specific government R&D/marketing agencies
  - export-led innovations
- Thailand's seafood processing industry:
  - several Thai multinationals with R&D, own brands, and international distributional channels.
  - Vietnam and Indonesia are catching up.
- Cebu's furniture cluster in the Philippines
  - several firms with design capabilities
  - public and private intermediaries linking producers-customers and providing technical and marketing supports

Machinery

- Low technological and innovative capability due to insufficient interactive learning between producers and users beyond providing market information.
- Demands for improved machinery are there, but customers prefer imported machine.
- Linking with MNCs as 'demanding' customers is critical.
- Roles of finance and knowledge intensive service providers (e.g. testing, consultancy)
- Roles of parent companies in case of subsidiaries
- Roles of suppliers in subsequent improvement
- universities and research institutes are less important, but can help to strengthen 'absorptive capacity'

Future Challenges

Future Challenges (1)

- Human Resources:
  - From production to R&D/design/testing engineers
  - Product designers
  - R&D/innovation strategists/managers
  - Branding/international marketing
- Financing innovation
  - Low R&D/innovation intensity even in large firms
  - Limited government incentives beyond tax
  - Inactive VCs and business angels (except Singapore)

Future Challenges (2)

- Policy design and implementation:
  - More selective policies (cluster/sector/product)
  - More coherent inter-ministerial coordination
  - Innovation policy as an integral part of economic policy
  - Better links with industry (firms/industrial associations)
  - Better monitoring/evaluation
- Strategies/Capabilities of local firms
  - Many entrepreneurs do not believe and put enough effort in technology upgrading
  - R&D/innovation management not part overall business strategy
  - Lack of technopreneurs

Future Challenges (3)

- Institutional reform
  - From teaching to research and entrepreneurial universities
  - Risk-taking attitude
  - Trust between TNCs-local firms, university-firms
  - Roles of local/regional governments
  - Roles of intermediaries (industrial/professional associations/public research institutes/grass-root organizations)

Conclusion

- Regarding innovation, ASEAN is not doing as bad as many people think
- Since 2005, more firms started R&D activities
- Vietnam is coming from the low base but has high potential to catch up
- Positive changes in resource-based, automotive and electronics but not machinery (capital goods)
- Still, need to overcome challenges