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Producing High-Tech in China and Malaysia: Location Choice and Lean Management

Topic and Research Question

The thesis focuses on the high-tech industry since this sector plays a key role in today's economy, due to its tight connection to economic growth and political power (Galbraith and Noble 1988, p. 31-32).

By answering the research questions "Is it economically reasonable to produce high-tech products in China and Malaysia?" and the sub question "What are the barriers of Lean Management in China and Malaysia?" an important gap is being closed, as prior literature did not connect local high-tech markets with high-tech production in China or Malaysia. For this reason, criteria have been extracted, in order to compare success-critical factors for the high-tech industry, in countries that were not yet given much attention as high-tech markets and producers simultaneously.

As China has been known for the world's factory of cheap products and low quality, technological spillovers (Kynge 2014) and a rising consumer group have made it to one of the most important high-tech markets worldwide (Matuszak 2013, p.1). Yet, existing challenges, such as weak protection of intellectual property rights, are major barriers for the industry (Contractor, Kumar, Kundu and Pedersen 2011, p. 25-31). Malaysia in contrast, offers a business friendly environment and a highly sophisticated, intellectual property law (The Economist 2007).

Moreover, this thesis also explains country-specific barriers towards Lean Management (LM) that prevent high-tech companies from leveraging their potential for efficiency.

State of the Art

Weber led the theoretical foundation of neoclassical approach to "location factors" in 1929, arguing that location success factors were mostly equal with cost savings (Weber 1929, p. 17-18). Alacer and Chung countered by identifying intellectual resources as the most important factor for high-tech locations (2007, p. 775).

Nordin, Deros and Wahab (2010, p. 374) claimed that global competition forces companies to enhance efficiency and competitiveness and calls for the implementation of Lean Management as the strategy of choice. Mefford and Bruun (1998, p. 433) found emerging countries to have several distinct barriers, arising in the stage of development specifically.

Methodology and Approach

First, the countries' macroeconomic environment is briefly addressed by comparing political, economic, social and environmental aspects. High-tech specific aspects are then extracted from theory and academic sources to build a framework (set of criteria), that adds upon existing location frameworks by focusing on the high-tech sector specifically. Both country's feasibility as high-tech production location are tested and compared according to the aspects concerning high-tech market, technological sophistication, productivity, quality of employees, legal sophistication, infrastructure and factor costs.

The second research question is being answered by explaining country-specific barriers towards the implementation of Lean Management (LM) occurring in China and Malaysia respectively.

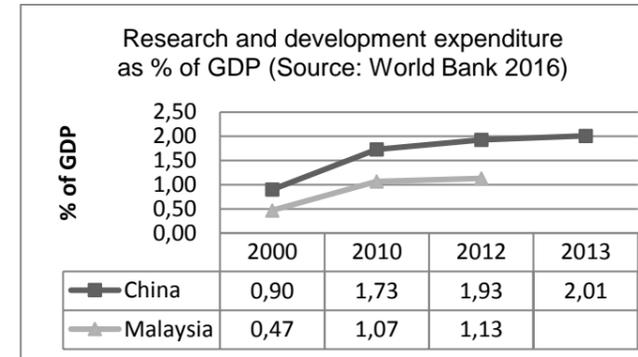
Main Facts

High-tech locations China and Malaysia

China holds, together with the US, the position as the most important market for high-tech worldwide. The country adapts fast to new technologies and has, due to technological spillovers and significant investments into R&D, become serious competition as a high-tech production location.

In Malaysia, few innovations have been developed. The country makes little use of technological spillovers. However, Malaysia has set up a highly sophisticated intellectual property law and an environment that has been regarded as one of the most business friendliest worldwide.

The following graph shows the Chinese government spending a higher percentage of its GDP on R&D than Malaysia. While China invests heavily in foreign technologies and R&D, Malaysia allocates less money on R&D, despite the fact that its annual GDP per capita has exceeded China's by about USD 3,720 per annum in 2014.



Barriers of Lean Management (LM)

Regarding major technical barriers towards LM, several important findings could be extracted. Barriers within the Chinese social sub-system are the high turnover rates, insufficient qualifications across all levels and consequently a low labor moral. The lack of technical and managerial skills, as well as manufacturing know-how, even the understanding of waste and tidiness is very often not existent. Especially low-level employees enjoy little recognition or respect, thus it is not a surprise, if people are not willing to learn and take some extra work, without extra rewards. Concerning barriers within the technical sub-system, the different understandings of quality, as well as the general preference for quantity and discounts versus quality and just-in time production are the major obstacles.

Few literature contributions on the application of LM in Malaysia exist. Nonetheless it has been detected that communication of LM is poor, resulting in the incapability of understanding the philosophy. Moreover, when overcoming this barrier, along with eliminating the fear of job-loss, researcher found out that LM is neither accepted nor understood across all levels, from the top management to the shop floor. Consequently people block the philosophy along across the entire hierarchy.

Results

The research questions "Is it economically reasonable to produce high-tech products in China and Malaysia?" can be answered positively. The main reason, speaking for China as a high-tech nation, is the vast market, due to the local purchasing power. The major advantage that speaks for Malaysia is its enormously business friendly environment and its IP protection and legal sophistication. China and Malaysia move into opposite directions.

Whereas data and literature forecasts China as the next high-tech nation with increased domestic innovation and openness for tools enhancing efficiency, Malaysia's high-tech industry seems to be left behind. Malaysia's FDI inflow has been increasing while the country has not established a strong domestic innovation hub.

China is in many aspects more challenging, due to legal uncertainty, protectionism, the efforts to affect technological spillovers, language barriers and the high level of bureaucracy. Yet, this country also offers better market perspectives. Nevertheless it is noteworthy that both countries high-tech production and market opportunities are only available in their highest developed regions, China's coastal areas and some parts in Central China. Malaysia's suitable areas for high-tech are mostly limited to the Western side of the Western peninsula, especially in the wider area of Kuala Lumpur.

Regarding Lean Management, the case of China shows that LM is actively perused, if companies are economically forced to do so. Consequently, China has a great potential for LM but will certainly, due to the high cultural barriers, always remain a challenging market. In Malaysia, it is more realistic that foreign companies start implementing LM successfully, if fierce competition pressures to adapt to this philosophy, as barriers do not appear as severe as in China.

References

All references can be found in the full version of the MA thesis available at <http://othes.univie.ac.at/>

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