

COMPLETION REPORT

[Research Summary]

Based on the empirical findings, the responded Japanese E&E manufacturing firms indicated the significant and expensive R&D functions are mainly implemented in the HQ Japan. Since the overseas production for Japanese E&E product has been increasing significantly, the abroad R&D with various functions from trial, test, design, development and research activities, have been invested by the Japanese E&E manufacturing firms at those potential industrial regions in Asia region. . The trend of R&D functions for Japanese E&E manufacturing industry started actively with development activity at NIEs in 1980s. The R&D functions for Japanese E&E manufacturing industry have been progressed from development and design activities in the 1990s to the expensive research activity in the millennium. The factors of domestic market, human capital, well equipped infrastructures and facilities in Malaysia successfully attracted the R&D oriented JFDI from the top leading Japanese E&E manufacturing firm Matsushita Electric Industrial Corporation (Panasonic Malaysia) and Sharp Corporation to established R&D laboratory clustered at Central Industrial Region in Malaysia. Worth mentioning is the research function for Panasonic Malaysia that upgraded from development, design, trial and test to the expensive research activity in year 2003. This eventually contributed to advanced technology and scientific knowledge transfer with higher value added to the manufacturing E&E industry in Malaysia.

There are two top Japanese leading E&E manufacturing firms namely Matsushita Electric Industrial Corporation and Sharp Corporation that allocated their R&D activities agglomerated at Central Industrial Region in Malaysia. The first production manufacturing plant of Sharp Corporation established in Kedah in 1974, eventually set up its R&D laboratory emphasized on development and design functions at Shah Alam Selangor located in Central Industrial Region in 1995. Matsushita Industrial Corporation (MAICO) was the first air conditioner manufacturing operation plant that established in Shah Alam at Central Industrial Region in 1972. Subsequently R&D laboratory were established with various R&D functions implemented, like development, design, trial and test. Eventually in 2003, R&D with significant functions of research and development first invested and implemented by MAICO now known as Panasonic Malaysia in Central Industrial Region in Malaysia.

In 1974 at Sungai Petani Kedah located at the Northern Industrial Region in Peninsular Malaysia, Sharp Corporation established its first overseas production and export base called Sharp-Roxy Corporation (SRC) with specialization in audio-visual products. Subsequently in 1980, Sharp-Roxy Electronic Corporation (SREC) was set up for television (TV) manufacturing plant positioned in Batu Pahat Johor at the Southern Industrial Region. Then in 1985, office of marketing and sale named Sharp-Roxy Sale and Service Company (SRSSC) was established to support the sale and product services in Shah Alam Selangor at Central Industrial Region. Followed in 1989, in Batu Pahat Johor at the Southern Industrial Region, Sharp Manufacturing Corporation (SMM) was founded for Video Tape Recorder (VTR), Video Compact Disc (VCD) and Digital Video Disc (DVD) manufacturing to fulfill the domestic and global markets. With the well-equipped infrastructures and facilities in the mentioned industrial regions in Peninsular Malaysia, Sharp Electronic Malaysia (SEM) was eventually established as first R&D base with international procurement function in Shah Alam Selangor at Central Industrial region in 1995. The key functions of SEM comprising R&D for consumer electronic appliances, procurement of part and components, product engineering and distribution of service parts. In Fiscal 2008, Sharp Corporation allocated a total of JPY196.2 billion in R&D expenditure, similar to 5.74% of total net

sales. In the following Fiscal 2009, Sharp Corporation incurred JPY195.5 billion of R&D expenditure that amounted to 6.87% of decreased total net sales. Nevertheless Sharp Corporation's R&D expenditure declined to JPY166.5 billion with 6.04% of total net sales. In Fiscal 2011, an increased total net sales contributed 5.76% of R&D expenditure amounted to JPY 173.9 billion. Due to continuous drop in total net sales for Sharp Corporation, a total of JPY154.8 billion R&D expenditure, similar to 6.30% of total net sales in Fiscal 2012. As of March 31, 2012 Sharp had approximately 20,644 patents in Japan and 24,232 in overseas.

Panasonic established its first air conditioner company named Matsushita Industrial Corporation (MAICO) in Shah Alam located in Central Industrial Region in 1972. However in 1992 MAICO changed to Panasonic Malaysia. In 1991, Matsushita Air Conditioning R&D Centre (MACRAD) and MACTEC were established for R&D with development and design functions in air conditioner product. Subsequently in 1997, millions have been invested in the highly advanced R&D facilities namely Panasonic HA Air-conditioning R&D (PHAARADM) as a big step in making Panasonic HA Air-Conditioning (PHAAM) the most integrated air-conditioning manufacturer in the globe. The R&D functions encompassed development and design for compressor is emphasized. The established R&D laboratory with its detail R&D activities description at the existing manufacturing plants located in Central Industrial Region in Malaysia. Compared with the R&D functions with its detail description for Matsushita Electric Industrial Corporation in the Asia region. In the millennium of 2003, R&D functions comprising research and development for information and communication product was materialized in Malaysia. In Fiscal 2008, then Matsushita recorded JPY554.5 billion in R&D expenditures to accelerate R&D in priority areas including full HD plasma TVs, Blu-ray disc (BD) recorders, its UniPhier® systems LSIs, and household fuel-cell cogeneration systems. Panasonic Corporation recorded JPY517.9 billion as R&D expenditures in fiscal 2009, with an R&D expenditures/sales ratio of 6.7%. In fiscal 2010, Panasonic Corporation accelerated R&D, mainly in the areas of key R&D topics, energy-saving and environmental technologies, incurred JPY476.9 billion in R&D expenditures which amounted to 6.4% of total sales. In Fiscal 2011, Panasonic allocated JPY527.8 billion in R&D expenditures, which amounted to 6.1% of total sales. Compared with total R&D expenditures of JPY520.2 billion, amounted to 6.6% from the declined total sales in Fiscal 2012.

[Publication of the Results of Research Project]

Verbal Presentation (Date, Venue, Name of Conference, Title of Presentation, Presenter, etc.)

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– A Case Study of Japanese Leading Electronic and Electric (E&E) Manufacturing Companies**

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Thesis (Name of Journal and its Date, Title and Author of Thesis, etc.)

Ph.D. Thesis: Dynamics of Japanese Foreign Direct Investment (JFDI) in Electronic and Electrical (E&E) Manufacturing Sector in Malaysia

Tan Swee Ean (USM 2011)

Book (Publisher and Date of the Book, Title and Author of the Book, etc.)

Not yet.