

報告番号	※	第	号
------	---	---	---

## 主 論 文 の 要 旨

論文題目

**Identifying Vertical Partnership in the Automotive Industry:  
Empirical Evidence from Jabodetabek, Indonesia**

インドネシアの自動車産業における垂直的パートナーシップに  
関する実証研究  
—ジャワ—ジャボデタベック地域を例にとって—

氏 名

Donny Oktavian Syah

## 論 文 内 容 の 要 旨

### 1. Introduction

In this relation of buyer-supplier, knowledge transfer will be an issue to examine in this study. Knowledge transfer probably affects the outcome of the relationship between buyer-supplier. Knowledge transfer in this research will be divided into two categories: technology transfer and technical exchange. According to Kotabe et al., (2003), theoretically, these two types of knowledge transfer differ in the scope of the degree of knowledge concerned. Technology transfer is a broader term in the knowledge that includes a set technique and method involving higher-level abilities (Szulanski, 1996). Abilities are cumulative technology that is usually not easy to develop (Helfat, 1997). Based on this fact, transferring technology, followed by sharing and implementing it to support partners (usually top-down from buyer to suppliers), is also not an easy task.

Conversely, a technical exchange is simpler than technology transfer. For instance, during coordination between buyer-supplier, they need to exchange explicit engineering knowledge. Arranging regular meetings, discussions about developing a product, and all that is related to small work that requires verbal and written communication units is categorized as technical exchange (Kogut and Zander, 1992). Even in trivial things, previous researchers argued that technical exchange support buyer's performance (Clark and Fujimoto, 1991); this also solves problems and elevates products and process (Takeishi, 2001).

Meanwhile, in Southeast Asia, Indonesia is one country that the automotive industry has a relatively growing. Its growth leads to successfully creating many jobs and enhancing per capita GDP. Alongside Thailand, Malaysia, and the Philippines, Indonesia has become a dominant player in the automotive industry (Irawati, 2012) in the Southeast Asian region. Nearly one-third of cars in the Southeast Asian region were produced and assembled in Indonesia. According to Jan and Hsiao (2004),

the government role in the automotive industry is one important 4 pivotal players; the other players are the consumers, domestic industry firms, and foreign technology partners. So, the author intends to explore further the perceived role of the Indonesian government in the automotive industry in technology transfer and technical exchange in Jabodetabek.

## **2. Vertical Partnership in Automotive Industry in Jabodetabek, Indonesia**

Similar to the other automotive structure in other countries, the Indonesian structure of supply chain automotive divided into three layers of players. They have their different functions and responsibility. The pyramid structure of the supply chain in the automotive industry can be described as follow (i) The first layer is the automotive maker (assembler companies). An assembler company or used to call OEM (Original Equipment Manufacturer) is the highest top rank automotive-pyramid supply chain. (ii) The second layer is the tier-1 companies. Tier-1 companies are direct suppliers to assembler companies. The phrase is especially familiar in the automotive industry and relates to major suppliers of parts to Assembler. (iii) The third layer is tier-2 companies: Tier-2 companies are tier-1 suppliers without providing automotive parts directly to assembler or OEM companies. The assembler, tier-1 companies and tier-2 companies of automotive in Jabodetabek are the main respondents in this research.

This study is set within the Jabodetabek automotive industries in Indonesia. It has raised the following central research question: What are the vertical partnerships in the automotive industry in Jabodetabek, Indonesia?

The question is further divided into the following six research questions:

1. Is there any relationship between government role and technology transfer in Jabodetabek automotive industries?
2. Is there any relationship between government role and supplier performance improvement in Jabodetabek automotive industries?
3. Is there any relationship between technology transfer and supplier performance improvement in Jabodetabek automotive industries?
4. Is there any relationship between technical exchange and supplier performance improvement in Jabodetabek automotive industries?
5. Identify the role of link duration buyer-supplier in the relationship between technology transfer and supplier performance improvement in Jabodetabek automotive industries?
6. Identify the role of a link duration buyer-supplier in the relationship between technical exchange and supplier performance improvement in Jabodetabek automotive industries?

Basically, this dissertation will examine 6 questions above.

## **3. Partial Least Square (PLS) and Multi-group Analysis (MGA) as Measurement Tools.**

In order to examine the relationship among technology transfer, technical exchange,

government role and supplier performance suppliers, author conducted a questionnaire survey to all levels of supply chain players (assemblers, tier-1 companies and tier-2 companies) in car and motorcycle industry in Jakarta and 4 four cities surrounding it, Bogor, Depok, Tangerang and Bekasi. Question 1 until 4 will be analyzed using SmartPLS software which is based on Structural Equation Modelling-Partial Least Square (SEM-PLS) path modeling, as mentioned above, the result of the analysis will be reported in Chapter 4 of dissertation. Meanwhile, question 5 and 6 will be analyzed by PLS-MGA (Partial Least Square Multi-Group Analysis) with the same software, and the result of the analysis will be reported in Chapter 5 of dissertation.

Partial Least Squares is a family of regression based-methods designed for the analysis of high dimensional data in a low-structure environment (Chin, 2010 in Vinzi et al.). The partial least squares approach to SEM (or PLS path modeling), originally developed by (Wold, 1966, 1982, 1985) and (Lohmöller, 1989), offers an alternative to the more prominent covariance-based (Monecke and Leisch, 2012). The advantage, including its ability to use characteristics data such as minimum sample size, non-normal data, and scale of measurement is among the most often stated reasons for applying PLS-PM; Henseler, et al., (2009). PLS-PM, on many occasions implemented across different management disciplines, involving organization research (Sosik, et al.,2009) and strategic management (Hair, et al., 2012).

Partial Least Square Multi-Group Analysis (PLS-MGA) often called by the “moderating effect” to moderate the causal effect between exogenous and endogenous constructs (Afthanorhan et al., 2014). Based on (Keil et al., 2000), the standard error for every sample uses to get the outcome of probability (known as the p-value). In this study, the p-value is being used in statistical analysis to examine the potential of analysis. In this regard, the result of the p-value is to decide the significance of the method applied.

#### 4. The Relationship of Vertical Partnership in Automotive Industry in Jabodetabek

The result of first analysis regarding vertical partnership among government role (GR), technology transfer (TT), technical exchange (TE) and supplier performance improvement (SPI) in table below:

Path Relations	Overall	Assembler-Tier-1	Tier-1-Tier-2
GR → TT	significant	significant	Significant
GR → SPI	in-significant	significant	in-significant
TT → SPI	significant	in-significant	Significant
TE → SPI	significant	significant	in-significant

Regarding exploratory research the effect of link duration as moderating effect in relation

of technology transfer and technical exchange in relationship supplier buyer-supplier, The moderating variables of link duration for more than five years, technology transfer has a significant relationship to supplier performance improvement. Also, link duration less than 10 has significant relationship. It means that in the case of automotive Indonesia, technology transfer has solid interaction with supplier performance improvement in a range between five years until ten years in the automotive industry of Jabodetabek. In means that based author exploratory research on link duration, technology transfer will affect supplier performance improvement for more than five years and less than ten years.

## 5. Policy Recommendation

Moreover, there is some limitation in this study. One limitation among others is the number of respondents of tier-2 companies is less than tier-1 companies. If examining the pyramid of the automotive industry in Jabodetabek, the composition of respondents from tier-2 companies should be more than tier-1 companies. Because of difficulty in getting tier-2 respondents in the field, it made the amount of tier-2 is less than tier-1 companies.

Nevertheless, this empirical study hopefully will enhance the horizon of automotive industry perspective, especially in Indonesia and will be benefited for all people in the industry. All weakness occurred in this study will be a good lesson to other researchers who will conduct similar investigation in automotive sector.

### Summary of Findings and Policy Recommendation

Research Goal	Findings	Policy Recommendation
Identify the relationship between government role and technology transfer	All layer of the relationship between government role and technology transfer are significant	(1) Support further the government policy that has a positive impact and strengthen to technology transfer atmosphere.  (2) The government should have each different blueprint policy for assembler, tier-1 companies, and tier-2 companies
Identify the relationship between government role and supplier performance improvement	Not significant in overall relation, also not significant in the relationship between tier-1 and tier-2 companies	Need further research to examine why, in both relationships, the relationship is not significant. It is possible other variables influenced

		to make it insignificant.
	A significant relationship between assembler and tier-1 companies.	Key success solid and long relationship between assembler and tier-1 should monitor to imitate and implement in overall relation and tier-1 and tier-2 relation.
Identify the relationship between transfer technology and supplier performance improvement	Not Significant relation in between assembler and tier-1 companies	Several tier-1 companies have their specialty that assembler has not.  Supplier development for the tier-1 program focuses on the development of local suppliers is needed. Either support through government mechanisms or involve other parties (such as foreign technical partners).
	Significant relation in overall relation and relationship between tier-1 and tier-2 companies	The role of Japanese industrialization was accumulated largely in the automotive industries in the Jabodetabek area is the key process of technology transfer. It recommends building further technical cooperation with the Japanese automotive industry.
Identify the relationship between technical exchange and supplier performance improvement	Not significant in the relationship between tier-1 and tier-2 companies	(1) first, feeling “insecure feeling” from tier-2 companies face the “short contractual” base that widely happened. (2) The tier-1 company feels that the ability of tier-2 does not meet their standard. It recommends to government conduct training for tier-2 to meet with their standard.

	Significant relation in overall relation and the relationship between assembler and tier-1 companies	Maintain and keep a positive relation.
Identify the role of link duration buyer-supplier in the relationship between technology transfer and supplier performance improvement	Link duration in the relationship between technology transfer and performance improvement occurred in link duration more than five years relation and not significant in less than five years relation.	Link Duration less than five years in to short of building relations, but significant in more than five years. So, it recommends back up automotive companies in Jabodetabek to survive more than five years in the automotive industry.
	Link duration in the relationship between technology transfer to supplier performance improvement is not occurred both in less also than ten years.	Duration of fewer than ten years has a strong effect on technology transfer, however, not more than ten years. It means that in terms of more than five years and less than ten years, link duration is needed to build solid supplier performance improvement.
Identify the role of link duration buyer-supplier in the relationship between technical exchange and supplier performance improvement	Link duration in the relationship between technical exchange and supplier performance improvement in-significant both in less also than five years.	It needs more time to implement technical exchange between buyer-suppliers.
	Link duration in the relationship between technical exchange and supplier performance improvement only occurred in link duration less than ten years, and not in duration more than ten years relation.	It is significant in link duration less than ten years, so, the author recommends that both parties must accelerate the technical exchange process faster. It needs solid coordination for the buyer-supplier to accelerate the process.