Indonesian Journal of Science & Technology

Journal homepage: http://ejournal.upi.edu/index.php/ijost/

Identifying the Factor that Promotes Vertical Partnerships: Empirical Evidence from Tier-1 and Tier-2 Companies in Jabodetabek-Indonesia

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ABSTRACT

Indonesian automotive sector played an important role to Indonesian GDPs; it contributes 28% in manufacturing composition. The goal of this research is to examine the vertical partnership between tier-1 and tier-2 automotive component companies in Jabodetabek, Indonesia, as concerns technology transfer, technical exchange, government role, and supplier performance. 93 companies, consisting of 59 tier-1 companies and 34 tier-2 companies, became respondents in this study. The research was conducted by visiting sites and interviewing companies, based on Likert-scale questionnaires. Interviewees were persons at the middle management level or higher who understood or were responsible for measuring product quality (purposive sampling). The results of questionnaires were proceeded and analyzed by Structural Equation Model Partial Least Square (SEM-PLS) path modeling using smart-PLS 3.2.7 software. The results showed that there is a significant relationship between the government's role and technology transfer, as well as between technology transfer and supplier performance improvement. However, there was no significant relationship between government role and supplier performance improvement, nor between technical exchange and supplier performance improvement.

ARTICLE INFO

Article History:
Submitted/Received 12 Nov 2018
First revised 20 Jan 2019
Accepted 07 Mar 2019
First available online 09 Mar 2019
Publication date 01 Apr 2019

Keywords:
Technology transfer,
Technical exchange,
Government role,
Supplier performance improvement,
Automotive industry
Jabodetabek, Indonesia.

1. INTRODUCTION

Business attractiveness within the automotive component industry is an important subject of study. In particular, management supply chains and inter-organizational relations, both vertical and horizontal, are key areas of research. Supply chain relationships in the automotive sector have evolved into a complex and increasingly competitive situation. Origin Equipment Manufacturers (OEMs) or assembler companies are facing 'tight competition' to remain in a fierce market (Oliver *et al.,* 2008). In the era of globalization, success in the global market is based not only on the strength of OEMs (assemblers), but also on the whole of the supply chain (Cousin and Spekman, 2003).

Besides the assembler itself, which holds an important role as the owner of the automotive brand, tier-1 and tier-2 automotive component companies are indispensable. In the UK (Thomas and Oliver, 1991), for example, Toyota and Honda procure approximately 70-75% of their automotive components from other companies (tier-1 companies). At the same time, tier-1 companies do not produce all the components by themselves, often outsourcing their components to tier-2 companies. According to Bresnen (1996), also Lee and Oakes (1996), it is estimated that around 50-60% of the total cost of assemblers is allocated to the outsourcing of components. Based on the above information, the key to the success of a single automotive product relies not only on the activities of the assembler; supply chain companies also play an important role.

In Southeast Asia, Indonesia has one of the fastest growing automotive industries. Alongside the Philippines, Thailand, and Malaysia, it is of the dominant players (Irawati 2012). As one of the dominant players in South East Asia, it is important to explore further the vertical relationships among automotive component companies in Indonesia.

The goal of the study is to examine the relations between four dimensions of government role, technology transfer, technical exchange, and supplier performance improvement in vertical relationship tier-1 and tier-2 automotive companies in Jabodetabek, Indonesia.

Jabodetabek (stands for the name of cities of Jakarta, Bogor, Depok, Tangerang, and Bekasi) was chosen as the site for field research because more than 80% of Indonesia's automotive component companies are located in this area. Similar to other automotive spare part maker structure in other countries, Indonesian structure of supply chain automotive is divided into three layers. The first layer is assembler companies or Original Equipment Manufacturer (OEM), the second layer is tier-1 companies, and the third layer is tier-2 companies. In this article, the author focuses on vertical relationship between tier-1 and tier-2 companies.

The author admitted there are some weakness or limitation in this research. However, author study develops the empirical literature at a significant angle. First, the previous study mostly focused on examining relation buyer-supplier in the case of assembler-tier-1 companies. This study focused on the relation of tier-1 and tier-2 companies since in the developing country like Indonesia, the role Small and Medium Enterprises (SMEs) is important, and many tier-2 companies are SMEs. Second, the author included the role of government in the study because their policies still imply the industry.

2. LITERATURE REVIEW

2.1. The relation of transfer technology and technical exchange to Supplier performance improvement

Several kinds of the literature of supplier performance improvement or other literature mentioned as supplier development focus on the relation between a buying firm and its supplier in the way to elevate the supplier improvement to meet buyer requirement. The area of improvement will vary, starting from technical

DOI:http://dx.doi.org/10.17509/ijost.v4i1.14427 |
p- ISSN 2528-1410 e- ISSN 2527-8045 |

capability of supplier arena, delivery and cost ability. The terminology of supplier development firstly introduced by Leenders (1966) that described efforts by manufacturers (buyers) to improve the number of viable suppliers and improve supplier performance.

Many of supplier literature focuses on automotive industries because automotive industries are unique, as mentioned in the introduction 50-60 % of total cost of a vehicle come spare parts provided by the supplier. Therefore, if the buyer companies want to be competitive in the market, they must assist their supplier companies to operate competitively and efficiently. Technology transfer and technical exchange are indicators to examine the process of supplier performance improvement.

According to Kotabe *et al.* (2003), they defined technology transfer as a collaborative relationship that permits one partner to look into and duplicate full technological qualification of the other partner. Theoretically, if the process of technology transfer is implementing well from buyer to supplier, the capability of supplier will improve. The complexity of automotive spare parts required complex technology is needed and also required broad coordination between buyer-supplier companies. A study from Kadir *et al.* (2011) in Malaysian automotive industry found that assistance from the buyer will increase the capability of suppliers. In this study, technology transfer indicators emphasize on four issues, sharing high-level engineering, willingness to transfer technology to supplier, partners' willingness to share technology and technology support will lead to solving technical problems.

In this research, supplier performance improvement will be measured by four variables of continually improving process that represent four questions in the questionnaire in product design, process design, product quality, and capability to reduce lead time (questionnaire base, detail questionnaire in **Table 1**). According to Twigg (1998), a usually improving process in product design occurs at the beginning of involvement of interaction between buyer-supplier, following process design and product quality (engineering process) that demand more complicated phase, and also the following capability to reduce the cycle time of product development. If the involvement supplier firms in 4 variables above run well, the capabilities of supplier will improve, and it will lead to long-term buyer-supplier relation (in this study the relation between tier-1 and tier-2 companies).

Meanwhile, technical exchange will also affect to the buyer-supplier relation. Technical exchange basically similar to technology transfer, and both are exchange of knowledge between buyer and supplier. However, the technical exchange scale is smaller than technology transfer. As in the scale, technical exchange is narrower than technology transfer. In this research, the indicators introduce question in the survey with a narrower independent piece of information like building a relationship between engineers and sales team, implementing "two-way communication," regular contact, sharing strategic engineering in an informal meeting, implementing informal communication leads reducing lead time.

2.2. The relation of government role to technology transfer and Supplier performance improvement.

The government may play an important role in speeding up the process of technology transfer, including in the automotive area. Each government has their own strategy to support their own automotive industry, especially in technology transfer and supplier performance improvement. In this literature subsection, the author will compare another government role in other countries.

In Japan, the Japanese government has actively involved generating technical change within the automotive manufacturing when they want to implement an electric vehicle. In that study, government role focused as a conductor in the development process, especially in research and development (R & D) and building a niche market (Ahman, 2006).

| DOI: http://dx.doi.org/10.17509/ijost.v4i1.14427
| p- ISSN 2528-1410 e- ISSN 2527-8045

Table 1. Indicator Variables

Latent Variables	Indicators	Symbol	Scale
Government Role	Providing sufficient training	GR1	Likert 1-5
	Assistance to promote automotive products	GR2	Likert 1-5
	Providing tax incentives	GR3	Likert 1-5
	Supportive local content (TKDN) policy	GR4	Likert 1-5
	The recent policy supports the automotive performance industry	GR5	Likert 1-5
Transfer Technology	Sharing high-level engineering capability to suppliers	TT1	Likert 1-5
	Willing to transfer technology to suppliers	TT2	Likert 1-5
	Our partner's will to share technologies with us	TT3	Likert 1-5
	Technological support from our partner firm on many occasions assists us to work out technical problems	TT4	Likert 1-5
Technical Exchange	Our engineers and sales teams have a close relationship with our supplier's personnel.	TE1	Likert 1-5
	The way of communication is "two-way communication" rather than unilateral in the development process.	TE2	Likert 1-5
	Regular contact between our partner and engineers is valuable (important).	TE3	Likert 1-5

Source: Adopted a question from previous research (Kotabe *et al*., 2003) and based on preliminary interviewed with automotive players in Jabodetabek-Indonesia (author).

In China, in the early 80s, Chinese Government invited foreign firm to get transfer technology through a joint venture to SOEs (State Owned Enterprises), General Motors (GM) asked to send their delegate to discuss with Government (Chu, 2011). In order to improve supplier performance improvement, Chinese local government built up SOEs to assemble an automobile. One example of success story is Chery Automobile Company of Wuhu in Anhui province (Chu, 2011).

In Korea, starting in 60-70s, the Korean government decided to push hard to initiate localization auto parts and quickly shifted to indigenous development (Kim, 1997). Korean government policy was favoring to develop indigenous firms rather than joint venture approaches because leading firms in Korea relied on technology purchase and learning (Chu, 2011).

In this study, government role is defined as the role of government in Indonesia on its relationship with the automotive industry,

DOI:http://dx.doi.org/10.17509/ijost.v4i1.14427 |
p- ISSN 2528-1410 e- ISSN 2527-8045 |

especially in relation with technology transfer and supplier performance improvement. Government role indicators in this research consist of sufficient training, promotion, tax incentives, local-content policies, and overall perform support policy in Indonesia.

3. METHODOLOGY AND DATA

3.1. Hypothesis

In this study, the author will examine four hypotheses as follows:

H1: There is a significant relationship between government role and technology transfer

H2: There is a significant relationship between government role and supplier performance

H3: There is a significant relationship between technology transfer and supplier performance improvement.

H4: There is a significant relationship between technical exchange and supplier performance improvement

3.2. Sample and Criterion Variables

To examine the relationships among technology transfer, technical exchange, government role, and supplier performance improvement, the author conducted a questionnaire survey of tier-1 and tier-2 automotive component companies in Jakarta and 4 four cities surrounding it, Bogor, Depok, Tangerang, and Bekasi. The questionnaire was distributed using a list of PIKKO (Medium-Sized Automotive Component Companies of Indonesia) and KIKO (Indonesian Automotive Component Industry Cooperative of Indonesia) for tier-1 and tier-2 companies; both organizations are automotive associations in Indonesia.

In an industrial survey like the one conducted in this study, it is considered discreet to sample all corporate entities in the population to ensure representation (Lehman, 1995). One company is equivalent to one respondent. A questionnaire was developed in Indonesian (*Bahasa Indonesia*) and English, and it encompassed a broad range of questions relating to the nature of supplier relationships with their vertical partners. More than 150 companies were contacted to be respondents. However, only 93 companies agreed to participate in this study. Respondents consisted of 59 tier-1 companies and 34 tier-2 companies.

To avoid bias, it was necessary to make sure that respondents (interviewees) who represented assemblers and supplier companies are "the right persons" to be interviewed. Therefore, there were additional requirements for respondents (interviewees) in this research:
(1) the owner, the head of the production, or the director that has authority to measure technical aspects of products in the company;
(2) person in charge for at least 2 years, and
(3) person in charge in supplier companies.

3.3. Latent variables and indicators

In this study, there are four latent variables (constructs) with five indicators of government role, four indicators of technology transfer, six indicators of technical exchange and four indicators of supplier performance improvement.

3.4. Statistical Method

All multi-item questionnaires were measured on 5-point Likert scales (1 = strongly disagree to 5 = strongly agree). The data was processed with PLS-PM (Partial Least Square Path Modelling) using Smart-PLS 3.2.7 software. Partial Least Squares is a group of regression based-methods designed for the analysis of high dimensional data in a low structure environment (Chin, 2010). There are several reasons why this study used PLS-PM. First, this study involved several latent variables, so the ideal method for this case is PLS-PM. Second, in the PLS-PM method, there is no prerequisite for minimum sample unlike, for instance, the Structural Equation Model (SEM) method which has a minimum requirement for a sample of 100-150 (Schumacker and Lomax, 2010). This study used a sample of 93 respondents; in this case, PLS-PM is fit for this research (**Figure 1**).

| DOI: http://dx.doi.org/10.17509/ijost.v4i1.14427
| p- ISSN 2528-1410 e- ISSN 2527-8045

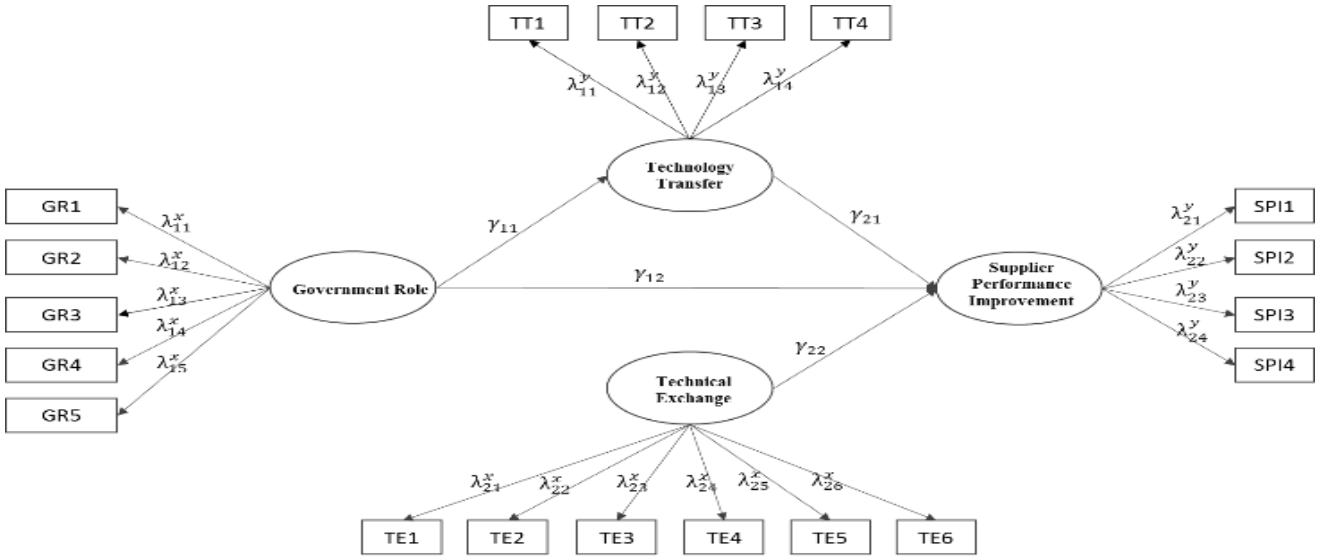

Figure 1. Structural Model and Measurement Model

3.5. Formula and Equation

Structural model formula:

$$TT = \gamma_{11} GR + \zeta_1 \quad (1)$$

$$SPI = \gamma_{12} GR + \gamma_{21} TT + \gamma_{22} TE + \zeta_2 \quad (2)$$

Measurement model formula:

$$\begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \\ X_5 \end{bmatrix} = \begin{bmatrix} \lambda_{11}^x \\ \lambda_{12}^x \\ \lambda_{13}^x \\ \lambda_{14}^x \\ \lambda_{15}^x \end{bmatrix} GR + \begin{bmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \end{bmatrix} \quad (3)$$

$$\begin{bmatrix} X_6 \\ X_7 \\ X_8 \\ X_9 \\ X_{10} \\ X_{11} \end{bmatrix} = \begin{bmatrix} \lambda_{21}^x \\ \lambda_{22}^x \\ \lambda_{23}^x \\ \lambda_{24}^x \\ \lambda_{25}^x \\ \lambda_{26}^x \end{bmatrix} TE + \begin{bmatrix} \delta_6 \\ \delta_7 \\ \delta_8 \\ \delta_9 \\ \delta_{10} \\ \delta_{11} \end{bmatrix} \quad (4)$$

$$\begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \end{bmatrix} = \begin{bmatrix} \lambda_{11}^y \\ \lambda_{12}^y \\ \lambda_{13}^y \\ \lambda_{14}^y \end{bmatrix} TT + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \end{bmatrix} \quad (5)$$

$$\begin{bmatrix} Y_5 \\ Y_6 \\ Y_7 \\ Y_8 \end{bmatrix} = \begin{bmatrix} \lambda_{21}^y \\ \lambda_{22}^y \\ \lambda_{23}^y \\ \lambda_{24}^y \end{bmatrix} TT + \begin{bmatrix} \varepsilon_5 \\ \varepsilon_6 \\ \varepsilon_7 \\ \varepsilon_8 \end{bmatrix} \quad (6)$$

3.6. Evaluation Model

There are two evaluation models, namely the measurement model, and the structural model. The measurement model is assessed by convergent validity, discriminant validity, and internal consistency reliability. The measurement model is evaluated by convergent validity, discriminant validity, and internal consistency reliability. Structural model is accessed by R-Square value and goodness of fit (GoF).

DOI:http://dx.doi.org/10.17509/ijost.v4i1.14427 |
p- ISSN 2528-1410 e- ISSN 2527-8045 |

3.7. Hypothesis Test

T-test aims to examine path coefficient value. Moreover, the t-test is also to examine the relation of the latent variable on the inner model. Hypothesis 0 is rejected if coefficient path has t value > 1.96 on significant level 5% (p-value 0.05), or p-value < 0.1 if significant level 10%. In this study, t-test implements on significant level 10%.

$$t = \frac{\hat{\gamma}_i}{SE(\hat{\gamma}_i)}$$

where

t = t-value

γ = path coefficient

SE = standard of error

4. RESULTS AND FINDINGS

4.1. Respondents Profiles

Total of respondents for the study are 93 companies (N = 93). It consists of 59 tier-1 companies and 34 tier-2 companies. The respondent's profile details are shown in **Table 2**.

Table 2. Respondents Profile

		Frequency	Percentage (%)
Company Types	Tier-1	59	63.4
	Tier-2	34	36.6
Location (City)	Jakarta	6	6.50
	Bogor	9	9.70
	Depok	1	1.10
	Tangerang	1	1.10
	Bekasi	74	79.60
	Karawang	2	2.20
Sales	Less than 300 million IDR	2	2.20
	300 million - 2.5 trillion IDR	18	19.40
	2.5 - 50 trillion IDR	35	37.60
	More than 50 trillion IDR	25	26.90
	Neglect to Answer	13	14.00
Link Duration (Length of relation)	2-3 years	1	1.10
	3-5 years	15	16.10
	5-10 years	20	21.50
	10-15 years	33	35.50
	More than 15 years	17	18.30

| DOI: http://dx.doi.org/10.17509/ijost.v4i1.14427
| p- ISSN 2528-1410 e- ISSN 2527-8045

Most of the respondent sales are in the range of 2.5 trillion to less than 50 trillion IDR (Indonesia Dollar Rupiahs); it covers 37.60% of respondents. The second range is more than 50 trillion IDR, covers 26.90%. Sales codification above is based on Ministry Cooperative and Small-Medium Enterprise of Indonesia range. Around 14% of respondents refused to share the answer.

The majority of respondents are from Bekasi city that holds 79.60%, followed by DKI Jakarta city as a second place with 6.50%, the smallest respondents come from Depok and Tangerang city with 1% of respondents. Based on field observation, it is understandable that Bekasi holds the majority of respondents, because there are several industrial areas in Bekasi city. At least the author observed that there are seven industrial areas in Bekasi city, like PT Hyundai Inti Development Park Dae Woo, PT Bekasi Fadjar Hungkang PT Cikarang Industrial Estate (Jababeka), PT Lippo Cikarang, PT East Jakarta Industrial Park (EJIP), PT. Delta Mas and PT Megapolis Manunggal Industrial Development (MM2100).

Regarding link duration of supplier-buyer relationship, the share of distribution is equally distributed. The highest link duration is more than 15 years relationship (35.5 %), followed by link duration of 5-10 years relationship (21.5 %) and link duration of 10-15 years relationship as shown in **Table 2**.

4.2. Calculation

In Partial Least Square path modeling (PLS-PM), two models are evaluated, namely the outer model and inner model. The purpose of evaluation of the outer model is to examine the relationship between indicators and its latent variables. Meanwhile, the evaluation goal of the inner model is to measure the relation among latent variable (Hair *et al.*, 2014).

Validity score of indicators is measured by loading, cross-loading and AVE (Average Variance Extracted) factors. The indicator is valid if it has loading factor > 0.70, cross loading is valid if each indicator that measures latent variable has higher score compared to another construct, and AVE score is > 0.50 (Wetzels, 2009).

Based on the result of processing data, all loading factors are > 0.7, except for loading factor TE 5 and TE 6 (0.68 and 0.61, means < 0.7). However, for this study, indicator TE 5 and TE 6 do not drop out because its latent variable has AVE > 0.5 (see **Table 3**).

4.3. Convergent validity test

The result of AVE (Average Variance Extracted) score showed that all latent variables have AVE score of more 0.5. It means that all indicators are valid as shown in **Table 4**.

4.4. Discriminant Validity

The purpose of discriminant validity is to test indicator that measure one latent variable is not used for other latent variables. The result of discriminant validity in table 5 below shows that each cross loading of the latent variable is higher than other latent variables. It means that the latent variable and the indicators that implement in this research fulfill the requirement of discriminant validity. **Table 5** shows that GR 1 until GR 5 indicators fit to measure latent variables of government role, SPI 1 until SPI 4 indicators fit to measure latent variables of supplier performance improvement, TE 1 until TE 6 indicators fit to measure latent variables of technical exchange and TT 1 until TT 4 fit to measure latent variables of technology transfer. All measurements that are not supposed to be connected are unconnected (**Table 5**).

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Table 3. Validity Test

No	Item Indicators	Loading Factor	Description
1.	Government Role (GR 1)	0.861	Valid
2.	Government Role (GR 2)	0.858	Valid
3.	Government Role (GR 3)	0.756	Valid
4.	Government Role (GR 4)	0.768	Valid
5.	Government Role (GR 5)	0.763	Valid
6.	Transfer Technology (TT 1)	0.777	Valid
7.	Transfer Technology (TT 2)	0.704	Valid
8.	Transfer Technology (TT 3)	0.828	Valid
9.	Transfer Technology (TT 4)	0.726	Valid
10.	Technical Exchange (TE 1)	0.740	Valid
11.	Technical Exchange (TE 2)	0.749	Valid
12.	Technical Exchange (TE 3)	0.775	Valid
13.	Technical Exchange (TE 4)	0.735	Valid
14.	Technical Exchange (TE 5)	0.687	Valid
15.	Technical Exchange (TE 6)	0.610	Valid
16.	Supplier Performance Improvement (SPI 1)	0.823	Valid
17.	Supplier Performance Improvement (SPI 2)	0.852	Valid
18	Supplier Performance Improvement (SPI 3)	0.824	Valid
19.	Supplier Performance Improvement (SPI 4)	0.821	Valid

Table 4. Average Variance Extracted (AVE)

Latent Variables	Average Variance Extracted (AVE)
Government Role (GR)	0.644
Transfer Technology (TT)	0.578
Technical Exchange (TE)	0.516
Supplier Performance Improvement (SPI)	0.578

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Table 5. Cross Loading

Indicators	GR	SPI	TT	TE
GR1	**0.861**	0.274	0.359	0.251
GR2	**0.858**	0.285	0.350	0.253
GR3	**0.756**	0.149	0.214	0.204
GR4	**0.768**	0.292	0.395	0.323
GR5	**0.763**	0.207	0.281	0.228
SPI1	0.311	**0.823**	0.363	0.291
SPI2	0.251	**0.852**	0.314	0.389
SPI3	0.193	**0.824**	0.459	0.425
SPI4	0.291	**0.821**	0.442	0.360
TE1	0.368	0.352	0.546	**0.740**
TE2	0.191	0.339	0.563	**0.749**
TE3	0.307	0.315	0.555	**0.775**
TE4	0.296	0.343	0.447	**0.735**
TE5	0.143	0.336	0.519	**0.687**
TE6	-0.043	0.175	0.437	**0.610**
TT1	0.322	0.301	**0.777**	0.539
TT2	0.251	0.259	**0.704**	0.461
TT3	0.343	0.503	**0.828**	0.586
TT4	0.328	0.346	**0.726**	0.570

4.5. Internal consistency reliability test

Reliability test refers to the degree to which a test is compatible and consistent in measuring what it is expected to measure reliability test using Cronbach's alpha and composite reliability. A set of indicators is reliable if it has Cronbach's alpha value of more than 0.70 and the composite reliability value of more than 0.70. **Table 6** shows that all set indicators are reliable, that means indicators are consistent and stable in measuring latent variable.

Table 6. Internal consistency reliability test

Latent Variable	Cronbach Alpha	Composite Reliability	Conclusions
Government Role	0.863	0.900	Reliable
Technology transfer	0.760	0.845	Reliable
Technical exchange	0.813	0.864	Reliable
Supplier Performance Improvement	0.850	0.899	Reliable

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4.6. Path coefficient test

Path Coefficient Test is a tool to measure influence between latent variables. The criteria decision is measured by:

- Reject Ho if t-value > t-table or Reject if P-value < alpha (0.1).
- If the p-value is less than 0.1, so path coefficient is significant.

Based on **Table 7**, the study found:

1. A significant impact on government role (GR) to transfer technology (TT). The p-value is 0.00 in Table 7. So, the first hypothesis (H1) of this study shows a positive relationship between government role and transfer technology.
2. No significant impact on government role (GR) to supplier performance improvement (SPI). The p-value is 0.214> 0.1, means that the path coefficient is bigger than 0.1. So, the second hypothesis (H2) of this study shows insignificant impact on government role and supplier performance improvement.
3. A significant impact transfer technology (TT) to supplier performance improvement (SPI). The p-value is 0.044 based on the result above. So, the third hypothesis (H3) of this study shows positive relationship technology transfer and supplier performance improvement.
4. No significant impact on technical exchange (TE) to supplier performance improvement (SPI). The p-value is 0.123 based on the result above. So, the fourth hypotheses (H4) of this study shows insignificant relationship between technical exchange and supplier performance improvement.

The result of overall research can be described in **Figure 2**

Table 7. Path Coefficient Test

Path				Path Coefficient	t-value	p-value
GR	→	TT	H1	0.413	5.175	0.000***
GR	→	SPI	H2	0.132	1.244	0.214
TT	→	SPI	H3	0.286	2.022	0.044*
TE	→	SPI	H4	0.198	1.545	0.123

* p-value < 0.1, ** p-value< 0.05, ***p-value< 0.01

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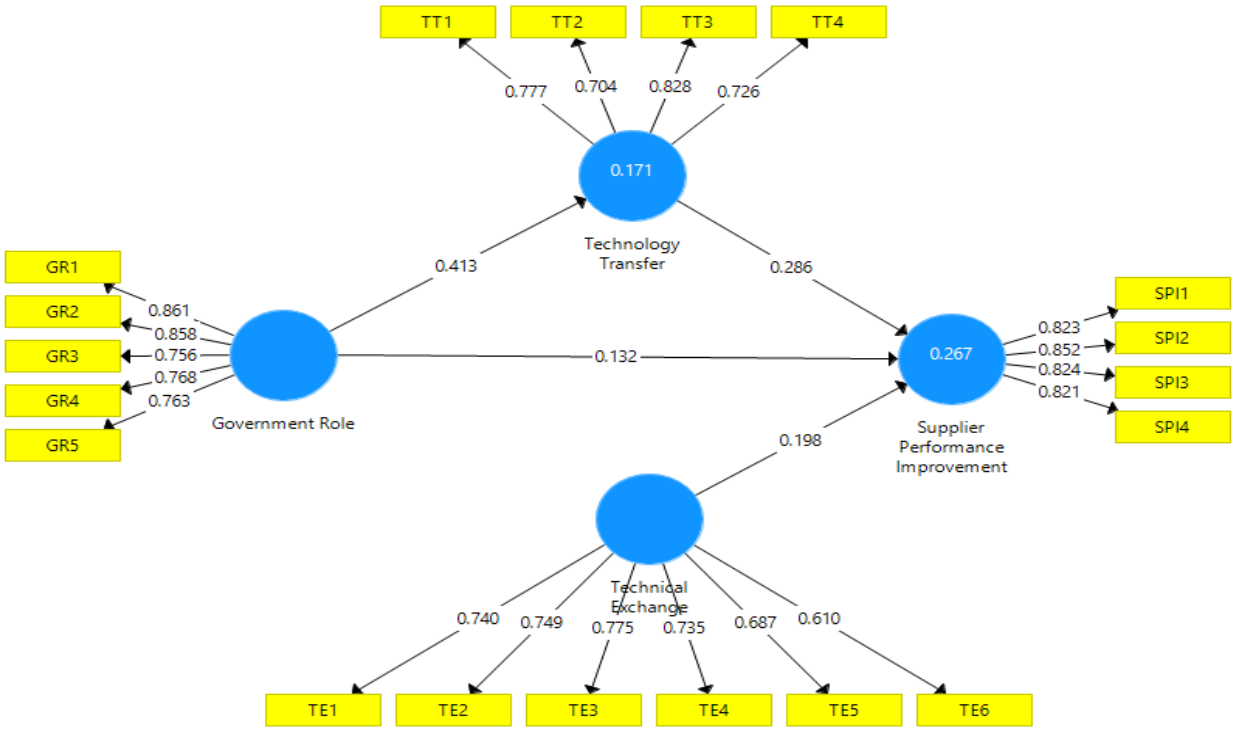

Figure 2. Result

| DOI: http://dx.doi.org/10.17509/ijost.v4i1.14427
| p- ISSN 2528-1410 e- ISSN 2527-8045

Structural Equation 1

$\widehat{TT} = 0.413\widehat{GR} + \xi$, with R-square= 17.1%

Structural Equation 2

$\widehat{SPI} = 0.132\widehat{GR} + 0.198\widehat{TE} + 0.286\widehat{TT} + \xi$, with R-square= 26.7%

Goodness of Fit (GoF) Model = 37.24%

The equation for Goodness of Fit: $GoF = \sqrt{\overline{com} \times \bar{R}^2}$

Goodness of Fit (GoF) Model = 37.24 %. So, it means that overall the result of this research above can explain 37.24 % of the relationships among government role, technology transfer, technical exchange, and supplier performance improvement. If the result of GoF model value is more than 0.36, it is categorized as "good model." (Wetzels *et al*, 2009).

5. DISCUSSION

In the case of Indonesian part automotive relation between tier-1 and tier-2 companies reveals that government role has a positive impact on transfer technology. The result of the study was coherent with the previous study in other countries, in Malaysia (Sadoi, 2013), China (Sadoi, 2008) and Thailand (Lecler, 2002). Eventhough not mentioned specifically on vertical relation in tier-1 and tier-2 relation, in those countries, for the successful technology transfer process, an effective government or local government policies are needed. Other studies also mentioned government role is one of four important interactions pillar in developing countries in building initial of their automotive industry development (Jan and Hsiao, 2004).

At the same time, the study also found that there is insignificant relationship between government role and supplier performance improvement. Based on observation in field research, the author has several explanations. The role of government especially on providing technical training was not meet their expectation. One tier-2 supplier explained to the author in interview session, "Actually government provides a series of training for us. However the training that they provided is not matched to our needs, sometimes training is too general, not specific." Accordingly, the government should provide technical training based on their needs, not training that the government could provide. In this case, the government should evaluate technical training to meet their expectations. The second explanation is regarding limitation of a government role in this study only certain limit in five indicators: providing sufficient training, assistance to promote automotive products, tax incentives, supportive local content policy, and overall recent policy supports performance in automotive industries. It predicts that expectation point from respondents regarding government role is wider than indicator above, so the result leads to insignificant relations.

The study also discovered slightly positive eventhough it is not high, transfer technology process between tier-1 and tier-2 companies in Jabodetabek has a positive impact on supplier performance improvement. So, knowledge spillover of technology transfer from tier-1 to tier-2 companies are positively related to firm trust. Eventhough, in this research not emphasized on "trust", but indicator like sharing high-level engineering capability, willing to transfer technology represent "trust each other." In Indonesia, tier-2 companies are dominantly SMEs enterprises. Willingness in sharing technological support by tier-1 companies as "a buyer" leads to positive implications on their performance. The act above represents "trust" in buyer-supplier relations. This case was consistent

DOI:http://dx.doi.org/10.17509/ijost.v4i1.14427 |
p- ISSN 2528-1410 e- ISSN 2527-8045 |

with previous findings in manufacturing industries in India; trust was one of four aspects that effect in buyer-supplier relation (Mohanty and Gahan, 2012).

The final result of the study also found that there was a negative relation between technical exchange and supplier performance improvement between tier-1 and tier-2 companies. Based on the evidence in the real field, the author observed that collaborative buyer-supplier in tier-1 and tier-2 relationship in Jabodetabek is mainly in the "contractual stage." (Kamath and Liker, 1994) It means that tier-1 treated tier-2 companies as simple assembler or standard commodity part provider during product development. So, tier-1 just sent specific design (blueprint) or their product catalog and tier-2 just executed it. Sometimes, lack of technical support from tier-1 company and if other supplier tier-2 companies can offer a cheaper price, the contract will discontinue. It is called "driven by the buyer" (Roy and Potter, 1996). So, it is understandable that the related technical exchange and supplier performance improvement shows negative relations.

6. CONCLUSION

This study reveals that vertical partnership between tier-1 and tier-2 companies has several relations, namely there is a significant impact on government role to technology transfer. Tier-1 and tier-2 companies perceived that the Indonesian government has a significant role. Moreover, government role has been initiated successful technology transfer. The study found that there is no significant impact on government role to supplier performance improvement. Tier-1 and tier-2 automotive component companies do not think or perceive that government role is not significantly affected supplier performance improvement. The variable of transfer technology has a positive impact on supplier performance improvement. There is no significant impact technical exchange to supplier performance improvement. Technical exchange between tier-1 companies and tier-2 automotive companies do not lead to their performance improvement.

7. ACKNOWLEDGMENTS

The Author acknowledges the funding support of the Ministry of Research, Technology and Higher Education of Indonesian Government through Ristekdikti Scholarship scheme which made the study possible. I would like to thank my board-chair supervisor, Professor Tetsuo Umemura (Nagoya University, Japan), Professor Kiyoshi Fujikawa (Nagoya University, Japan), Associate Professor Someya Masakazu (Nagoya University, Japan) who shared their valuables ideas and constructive input during the discourse of this research.

Special thank to Mr. Dr. M. Kosasih, Chairman of KIKO (Indonesian Automotive Component Industry Cooperative of Indonesia), Mrs. Ir. Rosalina Faried, chairwoman of PIKKO (Association of Small and Medium Sized Automotive Component Companies of Indonesia), Mr. Kukuh Kumara, General secretary of GAIKINDO (The Association of Indonesia Automotive Industries), Mr. Ir. I Made Dana Tangkas, MSc, Director of Toyota Motor Manufacturing Indonesia (TMMIN), and Mr. Ir. Ady Rosdarmawan, General Manager Engineering, Logistics & Procurement of Hyundai Indonesia Motor (HIY) who kindly responded to my interviews and shared insightful comments for this study.

8. AUTHORS' NOTE

The author declares that there is no conflict of interest regarding the publication of this article. The author confirmed that the data and the paper are free of plagiarism.

| DOI: http://dx.doi.org/10.17509/ijost.v4i1.14427
| p- ISSN 2528-1410 e- ISSN 2527-8045

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p- ISSN 2528-1410 e- ISSN 2527-8045 |